Performance Compliance Report 2016-2017

Ministerial Statement 665

Use of the Cape Peron Outlet Pipeline to Dispose of Industrial Wastewater to the Sepia Depression, Kwinana

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Fresh Water Thinking

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Document History

Version	Author	Reviewed by	Approved	Date
1	D. Berry			22/11/2017
1B		C.Byers		7/12/2017
1G		B Scott		19/12/2017

Contents

1. Introduction

The use of the Sepia Depression Ocean Outlet Landline (SDOOL) to dispose of up to 30 ML/d of industrial wastewater, in addition to treated wastewater from Woodman Point and Point Peron wastewater treatment plants and water from the Jervoise bay Groundwater Recovery Scheme, was approved by the Minister for the Environment on 28 October 2004 (Assessment 1471, Ministerial Statement 665).

Ministerial Statement (MS) 665 Schedule 1 includes the following specified sources and further unspecified sources of industrial wastewater disposed to the SDOOL:

- the Kwinana Wastewater Reclamation Plant (KWRP);
- BP Refinery (Kwinana);
- CSBP Limited; and
- Edison Mission Energy (Western Energy)

This report covers the reporting period from 1 July 2016 to 30 June 2017. It outlines the compliance status with the conditions of MS 665 and the Water Corporation's Environmental Management Commitments as reported in the Statement and incorporated into the monitoring framework detailed in the SDOOL Monitoring and Management Plan (M&MP).

Condition 5-1 of MS 665 describes the requirements for compliance reporting:

> *5-1 the proponent shall prepare an audit program and submit compliance reports to the Department of Environment which address:*
>
> 1. *the status of implementation of the proposal as defined in schedule 1 of this statement;*
> 2. *evidence of compliance with the conditions and commitments; and*
> 3. *the performance of the environmental management plans and programs.*

This Performance and Compliance Report (PCR) fulfils the requirements of MS 665 condition 5-1.

2. Current Status

All participants with the exception of the Jervoise Bay Groundwater Recovery Scheme continued to discharge into the SDOOL. The Jervoise Bay Groundwater Recovery Scheme bores ceased discharging to the SDOOL in October 2010.

Table 1 summarises the volumes discharged into the SDOOL during the 2016-17 reporting period. The Kwinana Water Reclamation Plant (KWRP) processed 19.62 ML/day from SDOOL for use by industry. Of this, 13.3 ML/day was used by industries in the Kwinana area and the remaining 3.92 ML/day redirected back into the SDOOL. Industry participants discharged approximately 4.64 ML/day into the SDOOL. Table 1 shows the breakdown of the volumes discharged to the SDOOL.

Table 1 – Volume of treated wastewater discharged via SDOOL

Site	Volume Discharged via SDOOL
Unit	ML/day (2016-17 average)
Woodman Point WWTP	146.32
Point Peron WWTP	18.23
KWRP	3.92
Kwinana Industries	4.64
Kwinana WWTP	1.62
East Rockingham WWTP	2.42

There were no changes to MS 665 or the Monitoring and Management Plans (M&MP) during the reporting period.

3. Compliance

3.1 MS 665 Proposal (Schedule 1)

During 2016-17 the Proposal was fully implemented in accordance with Schedule 1, as shown in Table 2 below.

Table 2 – Compliance with Schedule 1 Key Characteristics Table

Parameter	Current plus initial KWRP (2013)	Possible expansion (2030)	2016-17 Compliance
Industry reclaimed water reuse	17 ML/day	Up to 27 ML/d	13.3 ML/day
Industry wastewater discharge to SDOOL Typical Maximum	 6 ML/day 13 ML/day	Up to 30 ML/d	KWRP discharge: 3.92 ML/d Industry discharge: 4.64 ML/d Total industry wastewater discharge to SDOOL: 8.56 ML/d
Combined Treated wastewater quantity and quality Average volume Typical* Maximum**	 145 ML/day 160 ML/day	 Up to 200 ML/d Up to 208 ML/d	 177.15 ML/day
Suspended Solids	39-90 mg/L	35** mg/L	Compliant – see Table 3
Biochemical Oxygen Demand (BOD5)	24-40 mg/L	16** mg/L	Compliant – see Table 3
Total Phosphorous (TP)	11-22 mg/L	11*-12** mg/L	Compliant – see Table 3
Total Nitrogen (TN)	1,778 tonnes per annum	1,778 tonnes per annum	1,244 tonnes – see Table 3
Dilution	Average dilution of the SDOOL wastewater stream will be at least 1:300 with the dilution being above 1:200 99% of the time within 100 metres of the Sepia Depression Ocean Outlet (SDOO) diffuser.		1:310
Annual Toxicant Loads from Industrial	In order to manage the capped toxicant load, at a maximum permissible level of 208 ML/day, the Water Corporation is responsible to carefully consider any proposed increase in toxicant loads to ensure ecological and social values of the marine environment are protected.	New proposals for discharges to the SDOOL will be referred to the EPA	

*Typical means the expected average daily operational target

**Maximum means the expected infrequent (<10% of the time) operational targets based on the monthly average contributions from each industry participant.

Combined treated wastewater quality limits were assessed on a rolling 12 month average basis as per the SDOOL M&MP (with the exception of TN, which is a total loading criterion). As Table 3 demonstrates, there were no non-compliances with the Schedule 1 criteria throughout 2016/17.

Table 3– Schedule 1 Combined Treated Wastewater Quality Limits

Toxicant	TSS	BOD	TP	TN (Loading)*	
Unit	mg/L	mg/L	mg/L	tonnes/m	tonnes/yr
Criteria	39-90	24-40	11-22	-	1,778
Jul-16	54.3	28.1	6.0	115.2	
Aug-16	51.9	27.2	5.8	120.4	
Sep-16	46.3	26.3	5.4	108.8	
Oct-16	45.9	25.1	5.2	117.9	
Nov-16	45.6	25.0	5.1	104.0	
Dec-16	42.8	24.5	5.1	114.1	
Jan-17	42.9	24.4	5.1	84.5	
Feb-17	43.9	23.5	5.3	94.4	
Mar-17	38.0	23.4	5.0	102.2	
Apr-17	34.3	23.4	4.8	81.6	
May-17	31.6	23.0	4.6	103.1	
Jun-17	25.1	22.1	4.4	97.4	
Total					1,244

*Annual TN loading is a sum of monthly TN loadings for the reporting year.

3.2 MS 665 Conditions and Commitments

Each condition and environmental management commitment specified in MS 665 was assessed for compliance, the results of which are presented in the OEPA Audit Table in section 6 of this PCR. There were no non-compliances with MS 665 conditions or commitments during the 2016-17 reporting period.

3.3 Environmental Quality Objectives (EQO)

During the reporting period specific Environmental Quality Guidelines (EQG) for Ecosystem Integrity, Aesthetic Values and Primary Contact Recreation EQOs were not met with the Primary Contact Recreation result exceeding the Environmental Quality Standard (EQS) thereby triggering a management response.

As specified in the letter to DWER dated 29 November 2017 (Appendix A), the Water Corporation management response included consultation with the Department of Health (DoH) who have recommended that no immediate action is required due to the low risk to bathers. The low risk assessment is based on:

- The low probability of bathers swimming over the outfall, which is 4.2 km offshore;
- The rate of 'die off' where the *Enterococci* levels return to below compliance levels a short distance beyond the post upgrade boundary; and
- The typical direction of the wastewater plume being north westerly therefore preventing easterly shorelines being influenced.

Water Corporation intends to consult further with DWER, in liaison with DoH, to establish longer term options to effectively monitor and manage public health issues within the vicinity of SDOOL ocean outfall.

Table 4 – Non-conformance details for reporting period.

Environmental Quality Indicator	Environmental Quality Criteria	Result	Management Response
EQO1: Maintenance of Ecosystem Integrity			
Salinity	**Environmental Quality Guideline:** Median salinity (0.5 m below the water surface) at an individual site over any period not to deviate beyond the 20th and 80th percentile of natural salinity range over the same period. **Environmental Quality Standard:** No deaths of marine organisms resulting from anthropogenically-sourced salinity stress.	Within the HEPA, median salinity was below the 20th percentile of reference site data at 100, 350 and 1000 m down-current	Within the HEPA, there were no observed (or reported) deaths of marine organisms over the 2016–2017 monitoring period.
EQO3: Primary Contact Recreation			
Faecal pathogens	**Environmental Quality Guideline:** The 95th percentile value of *Enterococci* taken over the bathing season not to exceed 200 MPN/100 mL, outside the post upgrade boundary **Environmental Quality Standard:** The 95th percentile value of *Enterococci* taken over the bathing season not to exceed 500 MPN/100 mL, outside the post-upgrade boundary	The 95th percentile of *Enterococci* spp. concentrations was 722 MPN/100mL	Faecal pathogen results for 2016/17 reported to DWER (Appendix A) on 29 November 2017. DoH notified and consulted on possible management response. Letter received from DoH confirming the management response 20 September 2017 (Appendix B).
EQO5: Maintenance of Aesthetic Values			
Colour	**Environmental Quality Guideline:** The natural hue of the water should not be changed by more than ten points on the Munsell scale. **Environmental Quality Standard:** There should be no overall decrease in the aesthetic water quality	There was a noticeable colour on 31 March 2017 (one sampling occasion out of eight). No other colour variations were recorded.	There were no complaints from the community and no overall decrease in the aesthetic water quality values of Cockburn Sound in direct measures of the community's perception of aesthetic values.

	values of Cockburn Sound using direct measures of the community's perception of aesthetic value.		
EQO5: Maintenance of Aesthetic Values			
Odour	**Environmental Quality Guideline:** There should be no objectionable odours. **Environmental Quality Standard:** There should be no overall decrease in the aesthetic water quality values of Cockburn Sound using direct measures of the community's perception of aesthetic value.	A noticeable odour was recorded on two of the eight sampling occasions (16 February 2017 and 31 March 2017).	Concentrations of contaminants did not exceed the aesthetics guidelines for fish tainting substances at the Shellfish Harvesting Safety Zone boundary.

3.4 Internal/External Audits

No external audits of MS 665 were undertaken during the reporting period. The development of this report and scrutiny through internal review encompasses the requirements of an internal audit.

3.5 Complaints Register

No complaints were received during the reporting period.

4. Marine Monitoring

Marine water quality monitoring for the reporting period was undertaken in accordance with the SDOOL M&MP

In accordance with the M&MP, the following environmental quality objectives (EQOs) were assessed:

- Maintenance of Ecosystem Integrity (EQO 1);
- Maintenance of Aquatic Life for Human Consumption (EQO 2);
- Maintenance of Primary and Secondary Contact Recreation (EQO 3 & 4); and
- Maintenance of Aesthetic Values (EQO 5).

The extent to which the EQOs were met was assessed against a suite of Environmental Quality Criteria (EQC), consisting of Environmental Quality Guidelines (EQG) and Environmental Quality Standards (EQS).

The compliance Audit Table for 2016-17 is shown in Table 6 below, and demonstrates that all but four EQO were met during the reporting year. The compliance summary uses colour coding to represent the extent to which the EQC were met (Table 5).

Detailed results of SDOOL Ocean Monitoring Annual Report for 2016-17 can be found in Appendix C.

Table 5 - Compliance Report Card Legend

Management response	Legend
Monitor: EQG met: continue monitoring	
Investigative: EQG not met: assess against EQS. EQS met	
Action: EQS not met: management response required	

Table 5 – 2016-17 Marine Monitoring Compliance Report Card

Indicator	Environmental Quality Criteria (EQC)	Assessment
EQO 1 – MAINTENANCE OF ECOSYSTEM INTEGRITY		
Toxicants in treated wastewater	**EQG:** Concentration of contaminants will not exceed the ANZECC & ARMCANZ (2000) 80% species protection guideline trigger levels for bio-accumulating toxicants at the diffuser	
	EQG: The ANZECC/ARMCANZ (2000) 99% species protection guideline trigger levels for non bio-accumulating are met at the edge of the low ecological protection area (LEPA).	
	EQG: The total toxicity of the mixture (TTM) for the additive effect of dissolved ammonia, copper and zinc (as per ANZECC/ARMCANZ (2000) guidelines) is less than 1.0.	
Whole of Effluent Toxicity Testing	**EQG:** The EQG will be exceeded if after the 1 hr sea urchin test: $\frac{TDA}{DRNOEC} \leq 1.0$	
Receiving waters physio/chemical measures	**EQG:** Median chlorophyll-*a* concentration during non-river-flow period not to exceed 80th percentile of reference site data	
	EQG: Median light attenuation (LAC) during non-river-flow period not to exceed 80th percentile of reference site data	
	EQG: 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 more than six weeks	
	EQG: Median salinity (0.5 m below the water surface) at an individual site over any period not to deviate beyond the 20th and 80th percentile of natural salinity range over the same period. **EQS:** No deaths of marine organisms resulting from anthropogenically-sourced salinity stress	
Receiving water biological measures	**EQG:** 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	
	EQG: 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	
EQO 2 – MAINTENANCE OF AQUATIC LIFE FOR HUMAN CONSUMPTION		
Thermotolerant Coliforms	**EQG:** Median TTC counts at sites at the boundary of the Shellfish Harvesting Exclusion Zone (SHEZ) are not to exceed 14 CFU 100 mL, with no more than 10% of the samples exceeding 21 CFU 100 mL as measured using the membrane filtration method	

Indicator	Environmental Quality Criteria (EQC)	Assessment
Algal biotoxins	**EQG:** Concentrations of potentially toxic algae at sites at the boundary of the SHEZ are not to exceed the WASQAP trigger concentrations	
EQO 3 – MAINTENANCE OF PRIMARY CONTACT RECREATION		
Faecal pathogens	**EQG:** The 95th percentile value of *Enterococci* taken over the bathing season not to exceed 200 MPN/100 mL, outside the post upgrade boundary **EQS:** The 95th percentile value of *Enterococci* taken over the bathing season not to exceed 500 MPN/100 mL, outside the post upgrade boundary	
Algal biotoxins	**EQG:** Median total phytoplankton cell count for the area of concern should not exceed 15,000 cells/mL	
EQO 4 – MAINTENANCE OF SECONDARY CONTACT RECREATION		
Faecal pathogens	**EQG:** The 95th percentile value of *Enterococci* taken over the bathing season not to exceed 2000 MPN/100 mL, outside the post upgrade boundary	
EQO 5 – MAINTENANCE OF AESTHETIC VALUES		
Nuisance organisms	**EQG:** Macrophytes, phytoplankton scums, filamentous algal mats, blue-green algae and sewage fungus should not be present in excessive amounts	
Faunal deaths	**EQG:** There should be no reported incidents of large-scale deaths of marine organisms relating from unnatural causes	
Water Clarity	**EQG:** The natural visual clarity of the water should not be reduced by more than 20%	
Colour	**EQG:** The natural hue of the water should not be changed by more than ten points on the Munsell scale. **EGS:** There should be no overall decrease in the aesthetic water quality values using direct measures of the community's perception of aesthetic value.	
Surface films	**EQG:** Oil and petrochemicals should not be noticeable as a visible film on the water or detectable by odour	
Surface debris	**EQG:** Water surfaces should be free of floating debris, dust and other objectionable matter, including substances that cause foaming	
Odour	EQG: There should be no objectionable odours. EQS: There should be no overall decrease in the aesthetic water quality values of Cockburn Sound using direct measures of the community's perception of aesthetic value.	

Indicator	Environmental Quality Criteria (EQC)	Assessment
		
Fish tainting substances	**EQG:** Concentrations of contaminants will not exceed the aesthetics guidelines for fish tainting substances at the Shellfish Harvesting Safety Zone boundary.	

5. Stakeholder Consultation

5.1 Stakeholder Liaison Group (SLG)

The 2016-17 SDOOL Annual Performance Summary Report was sent to all members of the SLG on 18 July 2017. This report provided a summary of MS 665 compliance; results of the ocean monitoring program; details of the non-conformances and proposed management responses; any changes to MS 665 or the M&MP; complaints received; and any other emerging issues. A link to the SDOOL Annual Report was also provided.

6. OEPA Audit Table

Table 6 – Audit Table (Provided by OEPA)

Government of **Western Australia**

Office of the **Environmental Protection Authority**

AUDIT TABLE

Statement Compliance Section

PROJECT: Use of Cape Peron Outlet Pipeline to Dispose of Industrial Wastewater to the Sepia Depression, Kwinana

Note:

- Phases that apply in this table = Pre-Construction, Construction, Operation, Decommissioning, Overall (several phases)
- This audit table is a summary and timetable of conditions and commitments applying to this project. Refer to the Minister's Statement for full detail/precise wording of individual elements.
- Code prefixes: M = Minister's condition; P = Proponent's commitment
- Acronym list: CEO = Chief Executive Officer of OEPA; DEC = Department of Environment Regulation; DPAW = Department of Parks and Wildlife; DIA = Department of Indigenous Affairs; DMP = Department of Mining and Petroleum; EPA = Environmental Protection Authority, DoH = Department of Health; DoW = Department of Water, Minister for Env = Minister for the Environment; OEPA = Office of the Environmental Protection Authority.
- Compliance Status: C = Compliant, CLD = Completed, NA = Not Audited, NC = Non – compliant, NR = Not Required at this stage. Please note the terms VR = Verification Required and IP = In Progress are only for OEPA use.

Audit Code	Subject	Requirement	How	Evidence	Phase	Timeframe	Status	Further Information
665:M1.1	Implementation	Implement the proposal as documented in Schedule 1 of Statement 665, subject to the conditions of this statement		MS 665 2016-17 Performance Compliance Report (this document)	Overall	Throughout the life of the project	**C**	
665:M2.1	Proponent Commitments	Implement the environmental management commitments documented in Schedule 2 of Statement 665		MS 665 2016-17 Performance Compliance Report (this document)	Overall		**C**	Refer to individual comments listed below (665:P1-P13.2)
665:M3.1	Nominated Proponent	The proponent nominated by the Minister for the Environment, under S38(6) or (7) of the EP Act is responsible for the implementation of the proposal until the Minister has revoked this nomination and nominated another person in respect of the proposal under S38(7) of the EP Act			Overall		**C**	Proponent remains the Water Corporation
665:M3.2	Change in Proponent	Any request for a change in proponentship shall be accompanied by a copy of the Minister's statement endorsed with an undertaking by the proposed replacement proponent to carry out the proposal in accordance with the conditions and procedures set out in Statement 665. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided.		1. Letter applying for a transfer of proponent and a copy of the Statement endorsed by the proposed replacement proponent; 2. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal	Overall	Before transfer of ownership of the proposal	**C**	Proponent remains the Water Corporation
665:M3.3	Proponent	Notify the DoE of any change of proponent contact name and address		Notification of change of proponent contact name and address	Overall	Within 60 days of any change of address	**C**	No change in proponent name or address
665:M4.1	Commencement	If the proposal has not been substantially commenced within five years of the date of this statement, the approval to implement the proposal as granted in Statement 665 shall lapse and be void	The Minister will determine any question as to whether the proposal has been substantially commenced	Statement issued October 2004, CSBP discharging to SDOOL October 2005, BP commenced discharging in Sept 2009	Overall	By 28 October 2009	**CLD**	Proposal was commenced within five years of the date of MS 665.

Audit Code	Subject	Requirement	How	Evidence	Phase	Timeframe	Status	Further Information
665:M4.2	Commencement	Make an application to the Minister for the Environment for any extension of approval for the substantial commencement of the proposal beyond five years from the date of Statement 665	An approval may be granted for an extension of the approval period if 1. The environmental factors of the proposal have not changed significantly; 2. new, significant environmental issues have not arisen; and 3. all relevant government authorities have been consulted . Note: The Minister for the Environment may consider the grant of an extension of the time limit of approval not exceeding five years for the substantial commencement of the proposal.	Letter regarding extension required, stating that the proposal is to be implemented as approved.	Overall	At least six months prior to the expiration date of the five year period (by 28 April 2009)	**CLD**	Proposal was commenced within five years of the date of MS 665.
665:M5.1	Compliance Auditing	Prepare an audit programme and submit compliance reports (CR's) to the DoE	Compliance reports to address 1. the status of implementation of the proposal as defined in Schedule 1 of Statement 665; 2. evidence of compliance with the conditions and commitments; and 3. the performance of the environmental management plans and programmes. Note - Under sections 48(1) and 47(2) of the Environmental Protection Act 1986, the Chief Executive Officer of the Department of Environment is empowered to monitor the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions, procedures and commitments contained in this statement.	1. Initial Compliance report to be submitted at Pre-operation addressing all Pre-operation phase and any relevant "Overall' phase requirements. 2. Annual compliance reporting for the first five years commencing one year after the date that the Statement was issued, then reporting as required by the DoE. MS 665 Performance Compliance Reports (PCR)	Overall	1. Initial Compliance report Pre-operation addressing all "Pre-operation' and relevant "Overall' phase elements. 2.Annual compliance reporting for the first five years, then reporting as required by the DoE	**C**	2015-16 MS 665 PCR submitted to OEPA on 16 December 2016. Submission of 2016-17 PCR - this report
665:M5.2	Performance Review	Submit a Performance Review	Addressing - (1) the major environmental issues associated with the project; the targets for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those targets; (2) the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable; (3) significant improvements gained in environmental management, including the use of external peer reviews; (4) stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and (5) the proposed environmental targets over the next five years, including improvements in technology and management processes	Performance Review MS 665 Performance Review Reports (PRR)	Operation	Each five years after the start of the operations phase	**C**	2015 MS 665 PRR was submitted to the OEPA on 25 November 2015. Next PRR due for submission in Nov 2020
665:M5.3	Report prepared by an auditor	The proponent may submit a report prepared by an auditor (approved by the DoE under the' Compliance Auditor Accreditation Scheme') on each condition/commitment of this statement which requires the preparation of a management plan, programme, strategy or system	Stating that the requirements of each condition/commitment have been fulfilled within the timeframe stated within each condition/commitment	Auditor's report if appropriate	Overall	As appropriate	**NR**	Auditors report not required during 2016/17 reporting period.

Audit Code	Subject	Requirement	How	Evidence	Phase	Timeframe	Status	Further Information
665:M6.1	Monitoring and management of the Outlet	Prepare a Preliminary Sepia Depression Ocean Outlet Monitoring and Management Plan. See also P3, P4.	Include: 1. the monitoring and evaluation of the environmental effects of discharging treated wastewater into the Sepia Depression; 2. long-term environmental quality objectives and their spatial application consistent with the Environmental Protection Authoritys objectives as described in the publication Perths Coastal Waters, Environmental Values and Objectives, Environmental Protection Authority, February 2000; 3. a programme to achieve long-term environmental quality objectives through short to medium term targets; 4. agreed trigger levels for further investigations (environmental quality guidelines); 5. agreed trigger levels for remedial and/or preventative actions to protect the water quality and the environment of the Sepia Depression (environmental quality standards); and 6. management actions to be taken in the event that environmental quality guidelines or environmental quality standards are not met	Preliminary Sepia Depression Ocean Outlet Monitoring and Management Plan	Pre-operation	Prior to the acceptance of industrial effluent into the Sepia Depression Ocean Outlet Landline	**CLD**	
665:M6.2	Monitoring and management of the Outlet	Prepare a Sepia Depression Ocean Outlet Monitoring and Management Plan. See also P3, P4.	Address: items 1 to 6 of condition 6-1 and any matters arising during the twelve months of operation, and shall be subject to amendment from time to time	Sepia Depression Ocean Outlet Monitoring and Management Plan	Operation	Within twelve months following the acceptance of industrial effluent into the Sepia Depression Ocean Outlet Landline	**CLD**	Latest SDOOL M&MP version approved by OEPA on 9 May 2014.
665:M6.3	Monitoring and management of the Outlet	Implement the Sepia Depression Ocean Outlet Monitoring and Management Plan		CR MS 665 2016-17 Performance Compliance Report (this document)	Operation		**C**	See Appendix C for 2016/17 SDOOL M&MP Annual Report
665:M6.4	Sepia Depression Ocean Outlet Monitoring and Management Plan	Make the Sepia Depression Ocean Outlet Monitoring and Management Plan, publicly available	Carry out the following: 1) Request DoE to advertise the availability in the EPA/DoE weekly advertisement in the Monday edition of "The West Australian" newspaper; 2) Provide free copies of the documentation when approved for release to organisations nominated by EPA, such as the DoE library (2 copies), Battye Library (2 copies) and local Government libraries (2 copies each). 3. Post the document on the proponent's website.	CR Water Corporation website	Operation		**C**	SDOOL M&MP available on the Water Corporation's website- http://www.watercorporation.com.au/about-us/environment-and-sustainability/ocean-outfall/point-peron-monitoring-program
665:M7.1	Ecological Protection Zones and Toxicant Criteria	Determine and report to the Department of Environment whether the concentrations of bio-accumulating toxicants in the effluent at the diffuser exceed the ANZECC & ARMCANZ 80% species protection guideline trigger levels (as published from time to time) for bio-accumulating toxicants in accordance with the Sepia Depression Ocean Outlet Monitoring and Management Plans required by conditions 6-1 and 6-2	Implement the SDOOL Monitoring and Management Plan. Report through the SDOOL Annual Reports and this PCR.	CR MS 665 2016-17 Performance Compliance Report (this document) MS 665 M&MP Annual Report	Operation		**C**	Concentrations of bio-accumulating toxicants (cadmium and mercury) were below ANZECC/ ARMCANZ (2000) 80% species protection guideline "trigger" levels for the reporting period. See Table 3, or Appendix C for 2016/17 SDOOL M&MP Annual Report

Audit Code	Subject	Requirement	How	Evidence	Phase	Timeframe	Status	Further Information
665:M7.2	Ecological Protection Zones and Toxicant Criteria	In the event that a guideline trigger level for a bio-accumulating toxicant, referred to in condition 7-1, is exceeded, the proponent shall report the matter to the Department of Environment within one working day of determining that this has occurred, and shall initiate an investigation against the environmental quality standards and into the cause of the exceedance in accordance with the framework developed in Revised Environmental Quality Criteria Reference Document (Cockburn Sound)		1. Report to DoE within one working day when the guideline trigger level for a bio-accumulating toxicant referred to in condition 7-1 is exceeded. 2. Initiate an investigation against the environmental quality standards and into the cause of the exceedance in accordance with the framework developed in Revised Environmental Quality Criteria Reference Document (Cockburn Sound)	Operation		C	No “trigger” levels for bio-accumulating toxicants were exceeded during this period.
665:M7.3	Ecological Protection Zones and Toxicant Criteria	If an environmental quality standard for a bio-accumulating toxicant, referred to in condition 7-2, is exceeded, the proponent shall initiate a management response to determine the cause and remedy the exceedance in accordance with the implementation framework for the National Water Quality Management Strategy		CR	Operation		C	No management response required (Refer to M7.2 above).
665:M7.4	Ecological Protection Zones and Toxicant Criteria	Determine and report to the Department of Environment whether the ANZECC & ARMCANZ 99% species protection guideline trigger levels (as published from time to time) for toxicants (with the exception of cobalt, where the 95% guideline shall apply), identified in accordance with the Sepia Depression Ocean Outlet Monitoring and Management Plans required by conditions 6-1 and 6-2, are being exceeded within the Zone of High Ecological Protection (i.e. beyond a 100 metre radius of the diffuser)	Implement the SDOOL Monitoring and Management Plan. Report through the SDOOL Annual Reports and this PCR.	CR MS 665 2016-17 Performance Compliance Report (this document) MS 665 M&MP Annual Report	Operation		C	Concentrations of toxicants were below ANZECC/ ARMCANZ (2000) 99% species protection guideline “trigger” levels (95% for cobalt) for the reporting period. See Table 3, or Appendix C for 2016/17 SDOOL M&MP Annual Report
665:M7.5	Ecological Protection Zones and Toxicant Criteria	In the event that a guideline trigger level for a toxicant, referred to in condition 7-4 is exceeded, the proponent shall report the matter to the Department of Environment within one working day of determining that this has occurred, and shall initiate an investigation against the environmental quality standards and into the cause of the exceedance in accordance with the framework developed in Revised Environmental Quality Criteria Reference Document (Cockburn Sound)		1. Report to DoE within one working day when guideline trigger level for a toxicant referred to in condition 7-4 is exceeded. 2. initiate an investigation against the environmental quality standards and into the cause of the exceedance in accordance with the framework developed in Revised Environmental Quality Criteria Reference Document (Cockburn Sound)	Operation		C	No “trigger” levels for toxicants were exceeded during this period.
665:M7.6	Ecological Protection Zones and Toxicant Criteria	If an environmental quality standard for a toxicant, referred to in condition 7-5, is exceeded, the proponent shall initiate a management response to determine the source and remedy the exceedance in accordance with the implementation framework for the National Water Quality Management Strategy		CR as appropriate	Operation		C	No management response required (Refer to M7.4 above).
665:M8.1	New Discharges and Changes to Industrial Wastewater Discharge	The proponent shall not accept industrial effluent from industries not specified in schedule 1 unless a proposal has been referred to the Environmental Protection Authority		CR	Operation		C	No industrial waste has been accepted from industries other than those specified in Schedule 1 or approved via a Section 45C application to the OEPA

Audit Code	Subject	Requirement	How	Evidence	Phase	Timeframe	Status	Further Information
665:M9.1	Toxicant Loads	The proponent shall only accept and convey effluent from the industry participants to the Sepia Depression where industrial toxicant loads to be discharged do not exceed those authorised for discharge into Cockburn Sound by the relevant individual industry Environmental Protection Act Part V licences	SDOOL M&MP Participant effluent monitoring data	CR Participant effluent monitoring data Communication protocols.	Operation		C	Effluent monitoring results are analysed individually and as a composite in accordance with the M&MP. Industry has been instructed to only discharge toxicant loads if they fall within Part V Licence criteria. Communication protocols have been developed to keep both parties aware of changes in discharge quality.
665:M9.2	Toxicant Loads	The proponent shall not accept discharges which are not licensed under Part V of the Environmental Protection Act 1986 into the Sepia Depression Ocean Outlet Landline for disposal to the Sepia Depression		CR • Woodman Point WWTP Licence L4201 • Point Peron WWTP Licence L4202 • Kwinana WWTP Licence L6543 • East Rockingham WWTP Licence L8960 • CSBP Licence L6107 • BP Licence L5938 • Western Energy Licence L8471 • Kwinana Cogeneration Plant (Edison Mission Energy) Licence L8247	Operation		C	All participants discharging to SDOOL are licensed under Part V of the EP Act. Note KWRP is not a prescribed premise so does not operate under a Part V Licence. KWRP only discharges Woodman Point WWTP effluent back into SDOOL.
665:M10.1	Nitrogen Loads	Operate the Sepia Depression Ocean Outlet Landline so that the annual nitrogen load to the Sepia Depression does not exceed the nitrogen load discharged from the outlet in 1994		CR	Operation		C	TN load discharged to the Sepia Depression during the reporting period was 1,244 tonnes/year. This figure does not exceed the 1994 level of 1,778 tonnes/year. See Table 3 of this PCR.
665:M10.2	Nitrogen Loads	In the event that subsequent monitoring shows an adverse environmental impact at the 1994 nitrogen load, the proponent shall reduce the annual nitrogen load to 75% of the load discharged from the outlet in 1994.		CR	Overall		C	Not required as TN loadings are below 1994 levels.
665:M11.1	Sediment Quality	Monitor sediment quality within and at the boundary of the Zone of Low Ecological Protection, and report to the Department of Environment on whether sediments exceed the ANZECC & ARMCANZ Interim Sediment Quality Guidelines-low trigger levels	Implement the SDOOL Monitoring and Management Plan. Report through the SDOOL Annual Reports and this PCR.	CR Completed 2014/15 Sediment Survey and Report	Operation		C	Sediments are collected every five years as per the M&MP. The last sediment survey was undertaken in 2015. No sample from any site exceeded the ISQG trigger levels (see Table 3)
665:M11.2	Sediment Quality	In the event that a guideline trigger level for sediment quality, referred to in condition 11-1, is exceeded, the proponent shall report the matter to the Department of Environment within one working day of determining that this has occurred, and shall initiate an investigation against the environmental quality standards and into the cause of the exceedance in accordance with the framework developed in Revised Environmental Quality Criteria Reference Document (Cockburn Sound).		1. Report to DoE within one working day when guideline trigger level for sediment quality referred to in condition 11-1 has been exceeded. 2. initiate an investigation against the environmental quality standards and into the cause of the exceedance in accordance with the framework developed in Revised Environmental Quality Criteria Reference Document (Cockburn Sound)	Operation		C	No “trigger” levels for sediment quality were exceeded during this period.
665:M11.3	Sediment quality	If an environmental quality standard for sediment quality referred to in condition 11-2 is not met, the proponent shall initiate a management response to determine the cause and act to prevent further sediment quality degradation		CR as appropriate	Operation		C	No management response required (Refer to M11.1 above).

Audit Code	Subject	Requirement	How	Evidence	Phase	Timeframe	Status	Further Information
665:M12.1	Preliminary Decommissioning Plan	Prepare a Preliminary Decommissioning Plan, which provides the framework to ensure that the site is left in an environmentally acceptable condition	Addressing: conceptual plans for the removal or, if appropriate, retention of infrastructure; long-term management of systems affected by the discharge of waste.	Preliminary Decommissioning Plan	Overall	Before 1 May 2005	**CLD**	
665:M12.2	Final Decommissioning Plan	Prepare a Final Decommissioning Plan designed to ensure that the site is left in an environmentally acceptable condition	Addressing: conceptual plans for the removal or, if appropriate, retention of infrastructure; long-term management of systems affected by the discharge of waste.	Final Decommissioning Plan	Operation	At least twelve months prior to the anticipated date of decommissioning	**NR**	
665:M12.3	Final Decommissioning Plan	Implement the Final Decommissioning Plan		CR-closure	Post-operation	Until such time as the Minister for the Environment determines, on advice of the Environmental Protection Authority, that the proponents decommissioning responsibilities have been fulfilled	**NR**	
665:P1	Marine Environmental Values	Attain an average dilution of the Sepia Depression Ocean Outlet Landline (SDOOL) wastewater stream of at least 1:300 with the dilution being above 1:200 at least 99% of the time within 100 metres of the Sepia Depression Ocean Outlet (SDOO) diffuser	Dilution will be demonstrated by modelling and monitoring	CR MS 665 2016-17 Performance Compliance Report (this document) MS 665 M&MP Annual Report	Operation		**C**	Based on modelling results, the average initial dilution for the reporting period at Sepia Depression was 1:310. See Table 3, or Appendix C for 2016/17 SDOOL M&MP Annual Report
665:P2	Marine Environmental Values	Accept only wastewater from industrial participants whose discharge is authorised by the relevant licence and/or Ministerial conditions issued to them, or as otherwise authorised in writing by the DoE from time to time	Keep a Register of relevant industries licences or Ministerial Statement numbers	CR • CSBP Licence L6107 • BP Licence L5938 • Western Energy Licence L8471 • Kwinana Cogeneration Plant (Edison Mission Energy) Licence L8247	Operation		**C**	Industry participants CSBP, BP, Kwinana Cogen Plant (formerly Edison Mission Energy) and Perth Energy (formerly Western Energy) are currently discharging to SDOOL and have relevant approvals through a DER Part V Licence.
665:P3	Marine Environmental Values	Manage the discharge of treated wastewater to the Sepia Depression, including that accepted from industrial participants and future expansion of the wastewater treatment system to ensure that the concentration of toxicants meets agreed EQC 100 metres from the diffuser	Compliance will be demonstrated by modelling and monitoring	CR-Modelling and monitoring results MS 665 2016-17 Performance Compliance Report (this document) MS 665 M&MP Annual Report	Operation		**C**	All toxicants met the EQC at 100m from the diffuser (edge of the LEPA). See Table 3, or Appendix C for 2016/17 SDOOL M&MP Annual Report
665:P4	Protection of Marine Flora and Fauna	Conduct specific investigations and annually report the effects of wastewater discharge to the Sepia Depression through the Perth Long-term Ocean Outlet Monitoring programme or other agreements	Implement the SDOOL Monitoring and Management Plan. Report through the SDOOL Annual Reports and this PCR.	CR MS 665 2016-17 Performance Compliance Report (this document) MS 665 M&MP Annual Report	Operation		**C**	Relevant aspects of the PLOOM program are included in the 2016/17 SDOOL M&MP Annual Report (Appendix C)

Audit Code	Subject	Requirement	How	Evidence	Phase	Timeframe	Status	Further Information
665:P5	Protection of Marine Flora and Fauna	Conduct specific investigations in the event that toxicants in the treated wastewater exceed concentrations which will result in the EPAs relevant high protection EQG being exceeded following 1:200 initial dilution, with the relevant industrial participant/s and in consultation with the DoE to identify the source and cause of the identified condition	Report any exceedances in the Compliance Report	CR MS 665 2016-17 Performance Compliance Report (this document) MS 665 M&MP Annual Report	Operation		C	No exceedances of toxicant EQG during this reporting period
665:P6	Protection of Marine Flora and Fauna	Undertake assessment of the risk presented to the ecological processes in the Sepia Depression by the exceedance in commitment 5, and undertake measures necessary to mitigate those risks		CR-report mitigation measures	Operation		C	No exceedances of the EQG as specified above in P5
665:P7	Protection of Marine Flora and Fauna	Undertake Whole Effluent Toxicity (WET) testing using a method agreed with the DoE following the principles contained in the USEPA, APHA and ASTM protocols at a NATA accredited laboratory in accordance with the protocols set out in ANZECC/ARMCANZ 2000 and in accordance with the Monitoring Program specified in Plan for Monitoring and Management of SDO0	Implement the SDOOL Monitoring and Management Plan.	CR MS 665 2016-17 Performance Compliance Report (this document) MS 665 M&MP Annual Report	Operation		C	Quarterly WET testing undertaken with EQG met during the reporting period. See Table 3, or Appendix C for 2016/17 SDOOL M&MP Annual Report
665:P8	Public Health Values	Participate in close consultation with the Department of Health, the Department of Conservation and Land Management and DoE to further refine the notional social environmental quality objectives for the maintenance of seafood for human consumption and recreation and aesthetic EQC values and boundaries for treated wastewater discharge to the marine environment. Deploy sentinel mussels to monitor tissue coliform levels in accordance with the Monitoring Program specified in Plan for Monitoring and Management of SDOO.	Implement the SDOOL Monitoring and Management Plan.	Report results in CR. MS 665 2016-17 Performance Compliance Report (this document) MS 665 M&MP Sediments and Sentinel Mussel Report (2015)	Overall		C	In accordance with the SDOOL M&MP, sentinel mussels monitoring is undertaken every five years. Monitoring results demonstrated concentrations were all lower than their relevant reporting limits with the majority below detection limits. The last sentinel mussel survey was undertaken in 2015, with results demonstrating compliance with EQC (see Table 3)
665:P9	Public Health Values	Notify the Department for Planning and Infrastructure of the spatial extent of the area in proximity to the Sepia Depression Ocean Outlet where primary contact recreation and taking of seafood is not recommended, with a request for inclusion on relevant Maritime Charts. DOC74273	Provide evidence of the notification	CR	Pre-operation	Prior to industrial wastewater discharge and following any change to spatial extent of area	C	Copy of correspondence was provided in the 2005-06 PCR submitted to the OEPA.

Audit Code	Subject	Requirement	How	Evidence	Phase	Timeframe	Status	Further Information
665:P10	Environmental Management	Prepare a Wastewater Monitoring and Management Plan to address the receipt and discharge of wastewater from the SDOOL	Including: 1. The monitoring and evaluation of combined treated wastewater and industrial effluent into the Sepia Depression. The monitoring will include as far as practicable: a) Real-time monitoring of all streams of wastewater returned to the SDOOL and combined streams prior to discharge. Routine monitoring is to include flow-rate, pH, conductivity, turbidity and temperature; and b) Routine monitoring of prescribed contaminant levels in all streams of wastewater returned to the SDOOL and combined streams prior to discharge. Prescribed contaminants are those agreed from time to time under this Plan. 2. Procedures required to be implemented by the proponent and Kwinana Water Reclamation Plant participants if the wastewater contamination has the potential to cause the toxicant concentrations and loads specified in Table 1 of schedule 1 to be exceeded; and; 3. Mode of operation of the SDOOL to attain an average dilution of the combined wastewater stream of at least 1:300 with the dilution being above 1:200 at least 99% of the time within 100 metres of the diffuser	Wastewater Monitoring and Management Plan framework SDOOL Monitoring and Management Plan.	Pre-operation	Framework of the management plan agreed prior to industrial wastewater acceptance	**C**	The M&MP specifies requirements for real-time monitoring of all streams of wastewater returned to the SDOOL and combined streams prior to discharge; as well as monitoring of prescribed contaminant levels. See sections 5.2 and 5.3 of the SDOOL M&MP.
665:P11	Environmental Management	Finalise the Wastewater Monitoring and Management Plan referred to in commitment 10		Wastewater Monitoring and Management Plan	Operation	Plan finalised within 6 months of commencement of acceptance of Wastewater to SDOOL	**C**	Latest SDOOL M&MP version approved by OEPA on 9 May 2014.
665:P12	Environmental management	Implement the Plan referred to in commitments 10 and 11	SDOOL M&MP	CR MS 665 2016-17 Performance Compliance Report (this document) MS 665 M&MP Annual Report	Operation		**C**	M&MP was fully implemented during the reporting period.

Audit Code	Subject	Requirement	How	Evidence	Phase	Timeframe	Status	Further Information
665:P13.1	Stakeholder Consultation Strategy	Develop a Stakeholder Consultation Strategy	The Strategy will: Identify relevant stakeholders including community groups, environmental groups, local governments (including the City of Rockingham) and government agencies; Describe stakeholder consultation measures, having regard for the Governments consultation strategy; Require stakeholder input into the Plans and Strategies required to be prepared by these commitments; Describe opportunities to publicly review annual reports and data on the Sepia Depression Ocean Outlet environmental performance and monitoring programs; Make reports on Kwinana Water Reclamation Plant environmental performance readily available to the public and advertise their availability; Make the results of the Perth Long-term Ocean Outlet Monitoring programme readily available to the public and advertise their availability; Maintain a complaints/response record of actions taken to address matters arising from the project; and Present up to date information and data, consult on and receive input on current and possible future industry participation prior to any referral under section 38 of the Environmental Protection Act 1986	Stakeholder Consultation Strategy	Pre-operation	At least six months prior to industrial wastewater discharge	**CLD**	
665:P13.2	Stakeholder Consultation Strategy	Implement the Stakeholder Consultation Strategy		CR -report monitoring results, complaints and responses in the CR	Operation		**C**	The Stakeholder Consultation Strategy has been implemented in accordance with the Terms of Reference

Appendix A: EQO3 Exceedance Notification

629 Newcastle Street
Leederville WA 6007

PO Box 100
Leederville WA 6902

T (08) 9420 2420
F (08) 9420 3626

WATER CORPORATION

Your Ref: MS665
Our Ref: JT1 2005 06220 V02
Enquiries: Danielle Berry
Telephone: 9371 4058

29 November 2017

Ian Munro - Manager: Ministerial Statement Section
Department of Water and Environmental Regulation
Locked Bag 33
Cloisters Square
Perth WA 6850

Attention: Cameron Hanush

NOTIFICATION OF EXCEEDENCE RELATED TO USE OF CAPE PERON OUTLET PIPELINE TO DISPOSE OF INDUSTRIAL WASTEWATER TO THE SEPIA DEPRESSION, KWINANA (MINISTERIAL STATEMENT 665)

Water Corporation wishes to report an exceedance of faecal pathogens within the receiving water for the Sepia Depression Ocean Outfall Landline (SDOOL) during the 2016/17 reporting period.

In accordance with the SDOOL Monitoring and Management Plan (2014), faecal pathogens (*Enterococci* spp.) are measured over the summer period at the post upgrade boundary. The results are compared against the Environmental Quality Guideline (EQG) and Environmental Quality Standard (EQS) that relate to the 'Maintenance of Primary Contact Recreation' Environmental Quality Objective (EQO). In this instance, both the EQG and EQS were exceeded, as detailed in Table 1 below.

Table 1 – 2016/17 faecal pathogen results

Quality Indicator	Environmental Quality Criteria		Result
Faecal pathogens	Environmental Quality Guideline	95th percentile value of *Enterococci* spp. taken over bathing season not to exceed 200 MPN/100mL outside post-upgrade boundary.	722 MPN/100 mL
	Environmental Quality Standard	95th percentile value of *Enterococci* spp. taken over bathing season not to exceed 500 MPN/100mL outside post-upgrade boundary.	

Water Corporation has advised the Department of Health (DoH) who have recommended that no immediate action is required due to the low risk to bathers. The low risk assessment is based on:

- The low probability of bathers swimming over the outfall, which is 4.2 km offshore;
- The rate of 'die off' where the *Enterococci* levels return to below compliance levels a short distance beyond the post upgrade boundary; and
- The typical direction of the wastewater plume being north westerly therefore preventing easterly shorelines from being influenced.

Water Corporation intends to consult further with Department of Water and Environmental Regulation, in liaison with DoH, to establish longer term options to effectively monitor and manage public health issues within the vicinity of SDOOL ocean outfall.

Please do not hesitate to contact Danielle Berry, Technical Advisor - Environment on 9371 4058 or danielle.berry@watercorporation.com.au should you need to discuss this exceedence further.

Yours sincerely

Dr Digby Short
Manager Governance, Assurance and Approvals
Safety, Environment and Aboriginal Affairs Branch

Appendix B: EQO 3 Exceedance – Management Response Letter from DoH

Government of **Western Australia**
Department of **Health**

Your ref:
Our ref: F-AA-39594
Job: 16506
Enquiries: Clemencia Rodriguez (9388 4812)

Mrs Rachael Miller
Manager Water Quality Branch
Water Corporation
PO Box 100
Leederville WA 6902

Dear Rachael,

SEPIA DEPRESION OCEAN OUTLET LANDLINE MONITORING AND MANAGEMENT PLAN WATER QUALITY CRITERIA FOR PUBLIC HEALTH PROTECTION

I refer to your correspondence of 1st September 2017 seeking Department of Health (DoH) comments on:

1. The suitability of using guidelines to protect the health of humans to the Sepia Depression Ocean Outlet Landline (SDOOL) zone boundary.

2. The use of primary contact recreational water criteria compliance at the SDOOL zone boundary as part of the SDOOL Monitoring and Management Plan (MMP).

The Technical Guidance – Protecting the Quality of Western Australia's Marine Environment (EPA 2016) states that "*For most environmental values numerical criteria for a range of potential indicators can be determined using the default trigger values or recommended approaches in ANZECC and ARMCANZ (2000)*". During the consultation period of the Technical Guidance, the DoH requested advice to be sought from this Department in relation to human health (e.g. indicators for recreational values and for seafood safe for human consumption) matters.

Item No 6 of the SDOOL Monitoring and Management Plan, Ministerial Statement 665 of 28 October 2004 (MMP) aims to protect ecological and social environmental values for marine waters using the water quality objectives of the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZEC & ARMCANZ 2000). In 2014 the MMP was revised in consultation with the Office of Environmental Protection Authority (OEPA) and the *Guidelines for Managing Risk in Recreational Water* (NHMRC 2008 Guidelines) were adopted with the aim of protecting recreation and aesthetic (social use) environmental values to the SDOOL zone boundary.

Environmental Health
All correspondence PO Box 8172 Perth Business Centre Western Australia 6849
Grace Vaughan House 227 Stubbs Terrace Shenton Park WA 6008
Telephone (08) 9388 4999 Fax (08) 9388 4955
wa.gov.au
28 684 750 332

The DoH agrees that recreation and aesthetics as contained within the five environmental values should be protected in Western Australia's coastal waters. However, the DoH considers that it is not appropriate to apply primary contact recreation water quality standards as recommended in the NHMRC 2008 Guidelines to the SDOOL zone boundary as it is unreasonable to expect members of the public the readily access and use the zone for primary contact purposes.

Given the distance of the SDOOL zone boundary to the coast and the unlikely occurrence of primary contact water activities (such as swimming or other whole body immersion activities) in the proximity of the SDOOL zone boundary the DoH recommends the use of secondary contact recreation quality criteria as per Table 7 of the *Environmental Quality Criteria reference document for Cockburn Sound (2005)* to be applied to ensure to ensure adequate public health protection.

Although not referenced in your correspondence, I would also recommend that the SDOOL zone boundary be reviewed as it is inappropriate to apply a square or rectangular profile when waste water dispersion through the water column is more in keeping with known plume modelling.

I trust that this information is of use to you. Should you wish to discuss further, please do not hesitate to contact the Water Unit of the Health Department on (08) 9388 4999.

Yours sincerely

Richard Theobald
Manager Water Unit
Public Health Division
20 September 2017

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Appendix C: 2016-17 SDOOL Ocean Monitoring Annual Report (aqua#18444282)

Provided digitally in attached CD