

Adelaide Desalination Project (ADP) – DBOM

Yearly Marine Monitoring Report

For 2019

Rev	Date	Approved AdelaideAqua
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1. Ambient Marine Ecological Monitoring

1.1 Subtidal Reef

As Per the agreed OEMMP, ADP has performed this survey in 2019, and the final report has been presented in December 2019.

1.2 Baited Remote Underwater Video

As Per the agreed OEMMP, ADP has performed this survey in 2018, and the final report has been presented in December 2018. This condition has been closed until 2021.

1.3 Infauna Survey

As Per the agreed OEMMP, ADP has performed this survey in 2017, and the final report has been presented in December 2017. This condition has been closed until 2020.

2. Volumes of seawater received, and outfall discharged

Table 1 below shows the summary of seawater received and outfall discharged volumes for this reporting period.

The plant was in winter shutdown during July and August. The volume shown below during winter shutdown period is only seawater recirculation or shock dosing.

Table 1 - Intake and Discharge Volume Summary

Month	Intake (ML)	Outfall (ML)
January	1127	660
February	1920	1102
March	1324	729
April	881	522
May	1483	860
June	403	240
July	95	95
August	294	245
September	763	494
October	1604	932
November	2770	1512
December	7925	4210

3. Water Quality

3.1 Seawater Characteristics Results

Tables 2A and 2B below show the summary of seawater characteristics for this reporting period.

The plant was in winter shutdown during July and August and Instruments have been preserved therefore results are not available during July and August.

Table 2A - Seawater Characteristics Summary-Online Analyser

Parameter	Conductivity	Temperature	pH	DO
	µS/cm	C		mg/L
January	56,800	21.7	7.90	7.88
February	57,746	22.1	7.97	8.10
March	57,505	22.1	7.88	8.25
April	56,951	20.3	7.88	8.83
May	57,172	17.4	7.84	8.86
June	56,716	15.0	7.83	9.07
July	N/A	N/A	N/A	N/A
August	N/A	N/A	N/A	N/A
September	55,880	13.7	7.97	8.23
October	55,867	16.1	8.01	7.49
November	55,440	17.6	8.03	7.90
December	55,931	19.7	8.09	7.99

Source: Online analyser (10 minutes intervals data over 12 month)

Table 2B - Seawater Characteristics Summary-External lab

Parameter	Biochemical Oxygen Demand	Suspended solids	Nitrogen (Total)	Phosphorus (Total)	Zinc (Total)	Lead (Total)	Copper (Total)
	mg/L	mg/L	mg/L as N	mg/L as P	mg/L	mg/L	mg/L
January	<2	<1	0.12	0.01	0.004	<0.001	0.004
February	<2	<1	0.17	0.01	0.005	<0.001	0.005
March	<2	<1	0.10	0.03	<0.003	<0.001	<0.001
April	<2	<1	0.08	0.01	<0.003	<0.001	<0.001
May	<2	<1	0.18	0.02	0.009	<0.001	0.003

Parameter	Biochemical Oxygen Demand	Suspended solids	Nitrogen (Total)	Phosphorus (Total)	Zinc (Total)	Lead (Total)	Copper (Total)
	mg/L	mg/L	mg/L as N	mg/L as P	mg/L	mg/L	mg/L
June	<2	<1	0.10	0.01	<0.003	<0.001	0.001
July	N/A	N/A	N/A	N/A	N/A	N/A	N/A
August	N/A	N/A	N/A	N/A	N/A	N/A	N/A
September	<2	3	0.13	0.04	0.007	<0.001	<0.001
October	<2	1	0.10	0.05	<0.003	<0.001	0.003
November	<2	5	0.10	0.02	<0.003	<0.001	<0.001
December	<2	<1	0.13	0.01	<0.003	<0.001	<0.001

Source: AWQC

3.2 Discharge Characteristics Results

Tables 3A and 3B below show the summary of discharge characteristics for this reporting period.

Table 3A - Discharge Characteristics Summary-Online Analyser

Parameter	Conductivity	Temperature	pH	DO	Cl ₂
	µS/cm	C		mg/L	mg/L
January	84,027	24.4	8.05	8.01	0.0
February	85,668	23.1	8.12	8.50	0.0
March	84,779	21.3	7.92	8.70	0.0
April	83,256	18.5	7.78	8.45	0.0
May	84,778	17.3	7.53	8.50	0.0
June	91,947	16.3	7.63	9.09	0.0
July	N/A	N/A	N/A	N/A	N/A
August	N/A	N/A	N/A	N/A	N/A
September	81,331	14.8	7.74	6.94	0.0
October	82,511	19.1	7.72	7.94	0.0
November	90,108	18.9	7.74	9.20	0.0
December	90,801	21.5	7.79	8.48	0.0

Source: Online analyser (10 minutes intervals data over 12 months)

Table 3B - Discharge Characteristics Summary- External lab

Parameter	Biochemical Oxygen Demand	Suspended solids	Nitrogen (Total)	Phosphorus (Total)	Zinc (Total)	Lead (Total)	Copper (Total)
	mg/L	mg/L	mg/L as N	mg/L as P	mg/L	mg/L	mg/L
January	<2	<1.00	0.22	0.14	0.007	<0.001	0.008
February	<2	1.25	0.18	0.16	0.004	<0.001	0.005
March	<2	<1.00	0.12	0.13	0.006	<0.001	0.003
April	<2	<1.00	0.25	0.13	<0.003	<0.001	<0.001
May	<2	<1.00	0.21	0.11	0.014	<0.001	0.006
June	<2	<1.00	0.17	0.09	0.005	<0.001	0.005
July	N/A	N/A	N/A	N/A	N/A	N/A	N/A
August	N/A	N/A	N/A	N/A	N/A	N/A	N/A
September	<2	3.50	0.26	0.21	0.007	<0.001	0.006
October	<2	<1.00	0.19	0.11	0.006	<0.001	0.007
November	<2	1.50	0.18	0.07	0.005	<0.001	0.004
December	<2	1.33	0.15	0.07	0.004	<0.001	0.002

Source: AWQC

The plant was in winter shutdown during July and August and Instruments have been preserved therefore results are not available during July and August.

Discharge stream pH value dropped in correlation to intake pH drop due to intake shock dosing and came back to normal operation range after shock dosing.

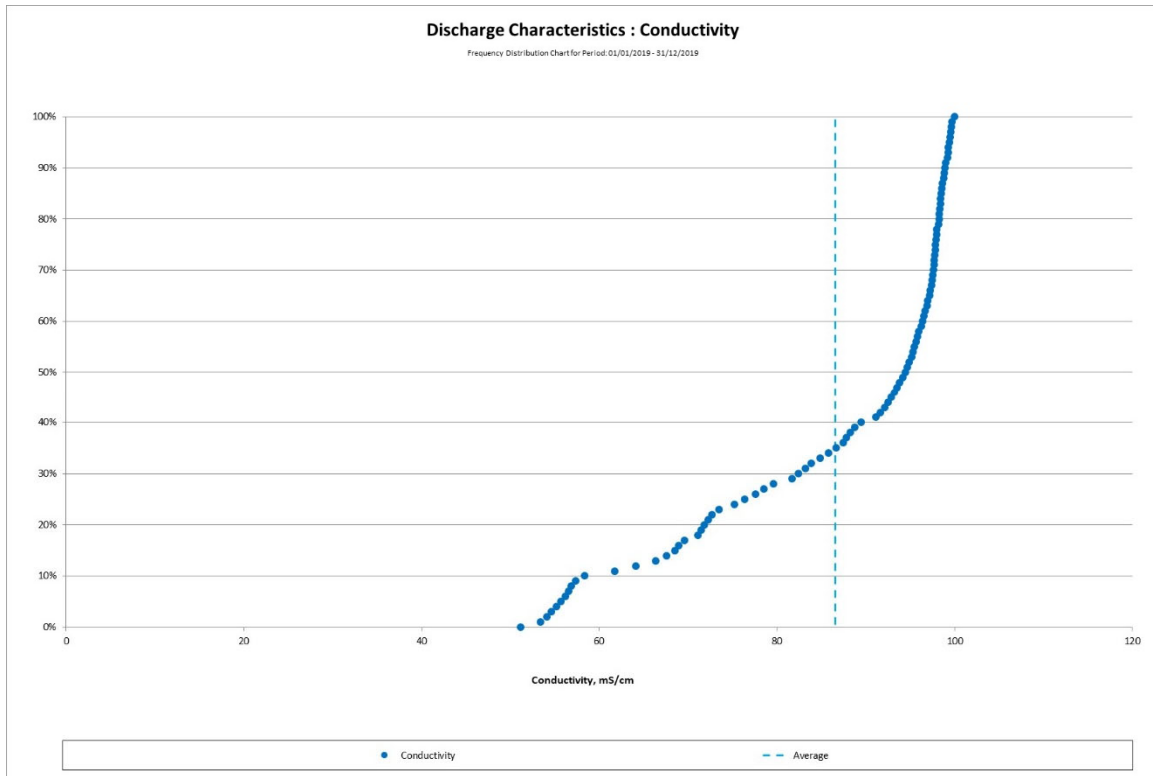


Figure 1 - Discharge Characteristic: Conductivity - Frequency Distribution

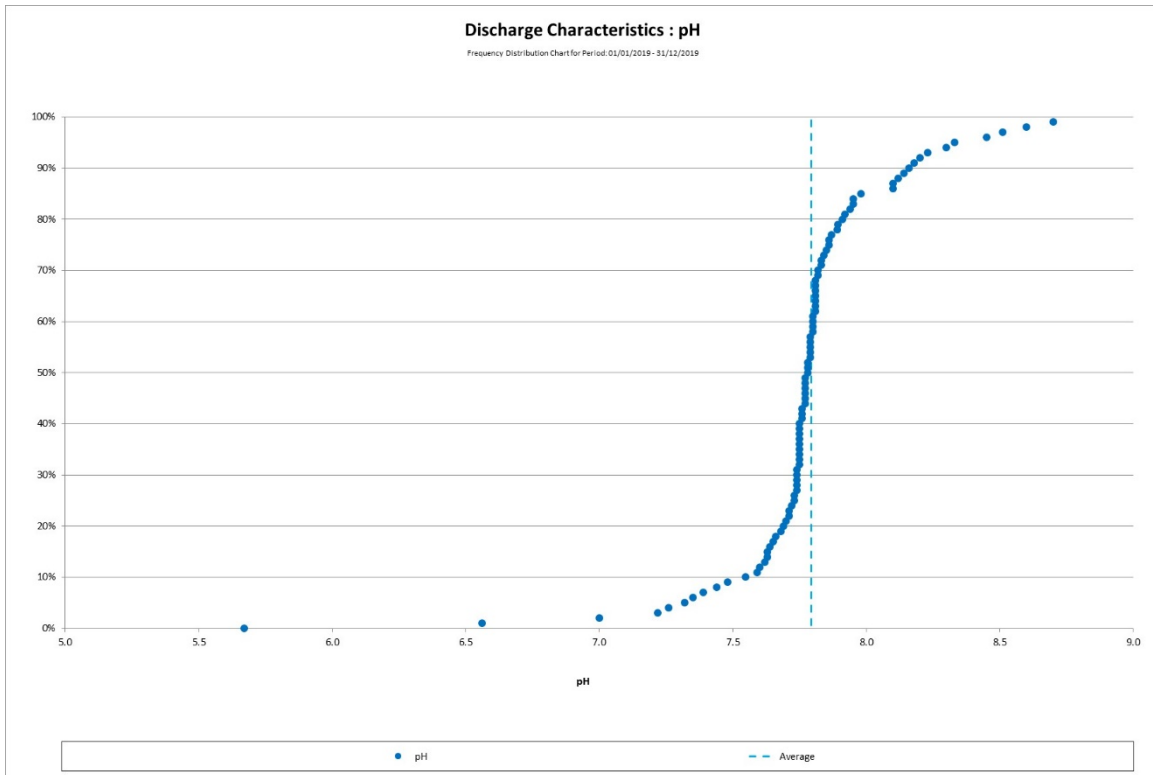


Figure 2 - Discharge Characteristics: pH - Frequency Distribution

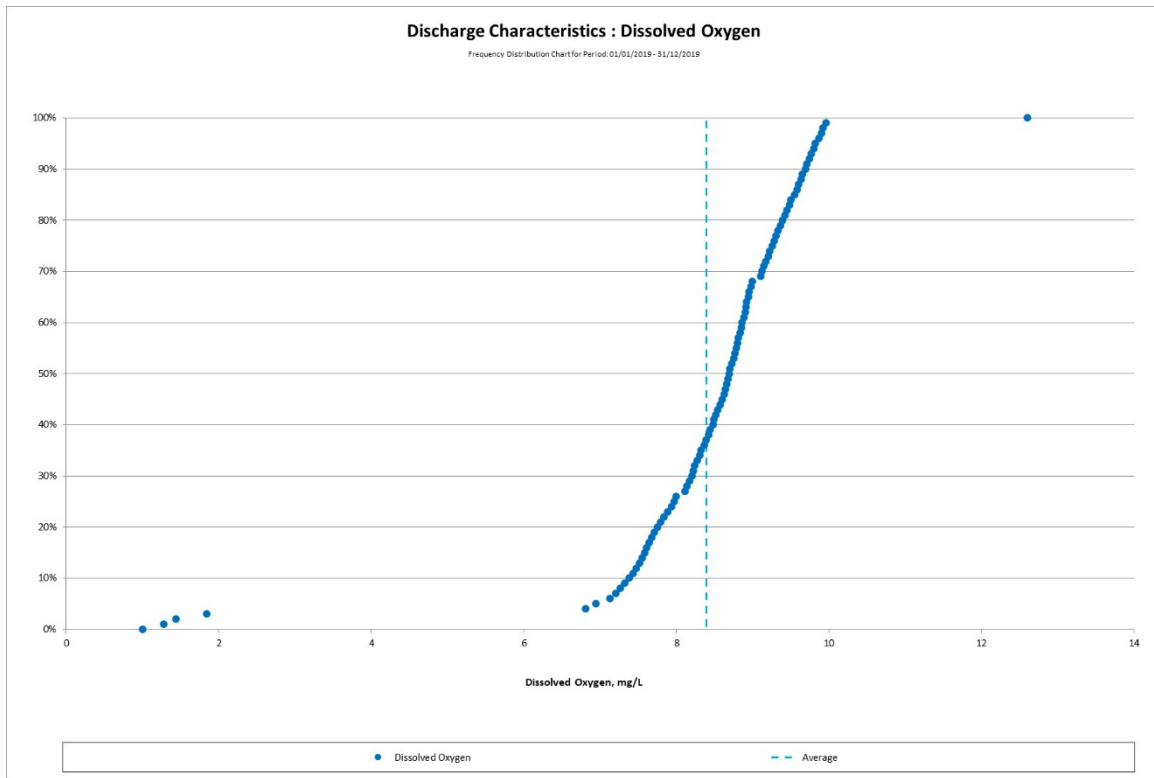


Figure 3 - Discharge Characteristics: DO - Frequency Distribution

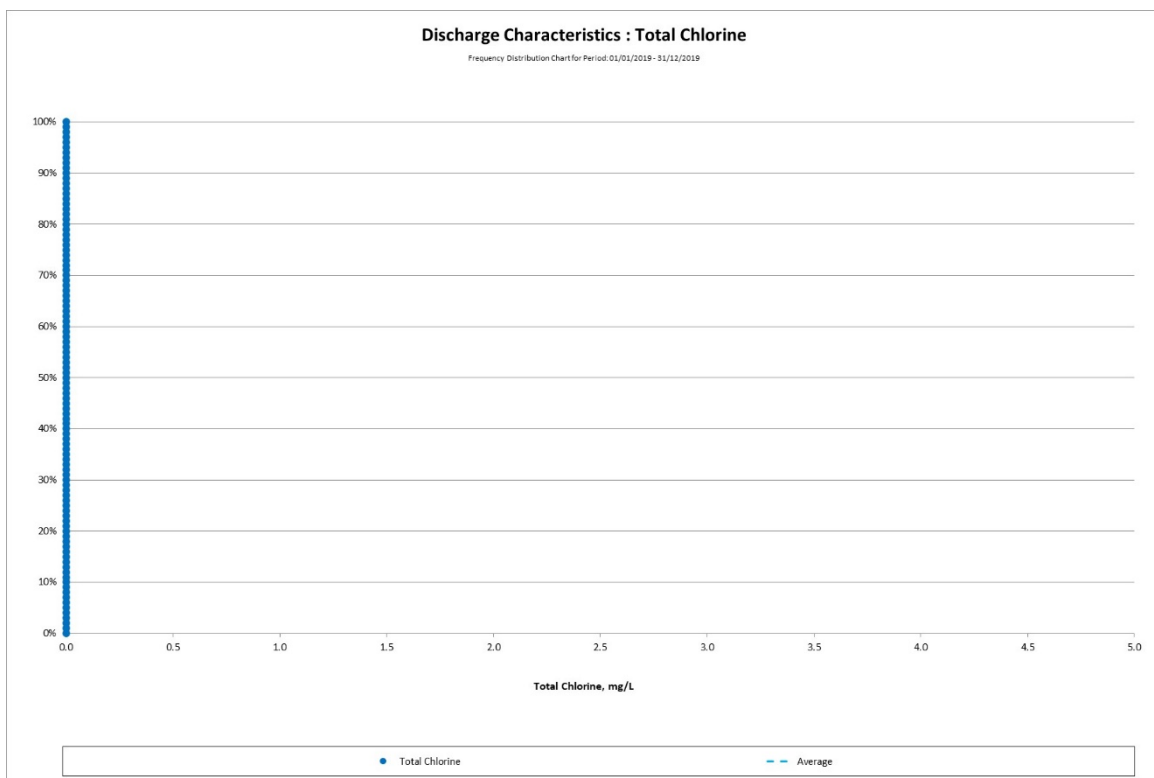


Figure 4 - Discharge Characteristics: Total Chlorine - Frequency Distribution

4. Salinity Monitoring Results

4.1 Average Salinity Discharge (U-149) Results

Table 4 below shows the summary of salinity readings at the edge of the mixing zone (100m from the discharge point) for this reporting period.

Table 4 – Average Salinity Discharge Summary

	Average Salinity Discharge (ppt)											
	January	February	March	April	May	June	July	August	September	October	November	December
Average	35.7	36.6	36.6	36.7	36.9	36.6	N/A	N/A	36.6	36.4	36.2	36.1
Minimum	35.5	35.7	35.9	36.3	36.5	36.3	N/A	N/A	35.6	35.9	34.6	35.3
Maximum	36.7	37.3	37.2	37.5	37.6	37.2	N/A	N/A	37.4	37.4	37.2	37.1

No exceedances or issues associated with Average Salinity Discharge (U-149) were identified during this reporting period.

4.2 Salinity Discharge (U-145, U-146) Results

Table 5 below shows the summary of salinity discharge ratio results for this reporting period.

Table 5 Salinity discharge ratio summary

	Salinity Discharge Ratio											
	January	February	March	April	May	June	July	August	September	October	November	December
Average	1.1	1.2	1.1	1.1	1.2	1.1	N/A	N/A	1.1	1.1	1.3	1.8
Minimum	1.0	1.0	1.0	1.0	1.0	1.0	N/A	N/A	1.0	1.0	1.0	1.0
Maximum	1.9	1.9	1.9	1.9	1.9	1.9	N/A	N/A	1.8	1.9	1.9	1.9

Over the quarter, the highest salinity discharge ratio recorded was 1.91 on 20/12/2019. This confirms that the discharge salinity did not exceed the intake salinity by a factor of 2.1. No exceedances, issues associated with Salinity Discharge (U-145, U-146) were identified during this reporting period.