

Adelaide Desalination Project (ADP) – DBOM

Yearly Marine Monitoring Report

For 2020

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. This condition has been closed until 2022.

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 2020, and the final report has been presented in January 2021. This condition has been closed until 2023.

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	14,945	7,941
February	11,871	6,412
March	12,657	6,860
April	10,450	5,684
May	13,571	7,361
June	8,188	4,506
July	217	212
August	274	273
September	715	466
October	1,476	977
November	852	513
December	1,351	866

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	55,800	21.2	8.12	8.20
February	56,304	21.4	8.09	8.20
March	56,931	20.4	8.10	8.61
April	56,796	19.1	8.05	8.46
May	56,852	16.3	8.08	8.70
June	57,021	14.3	8.07	8.62
July	N/A	N/A	N/A	N/A
August	N/A	N/A	N/A	N/A
September	55,127	14.6	7.93	9.04
October	55,201	16.3	7.94	8.94
November	55,145	17.9	7.97	7.59
December	55,275	19.6	7.95	7.90

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	0.14	0.02	0.004	<0.001	0.001
February	<2	<1	0.11	0.01	<0.003	<0.001	<0.001
March	<2	<1	0.13	0.03	0.014	<0.001	<0.001
April	<2	<1	0.09	0.01	0.012	<0.001	<0.001
May	<2	<1	0.09	0.01	0.004	<0.001	<0.001

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	0.14	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	2	0.10	0.01	<0.003	<0.001	<0.001
October	<2	1	0.13	0.01	<0.003	<0.001	0.003
November	<2	<1	0.06	0.02	<0.003	<0.001	<0.001
December	<2	<1	0.22	0.03	<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	88,521	22.8	8.04	8.52	0.0
February	87,524	22.5	8.05	8.20	0.0
March	89,338	21.7	7.95	8.60	0.0
April	86,440	19.8	7.79	9.12	0.0
May	85,514	16.9	7.69	10.37	0.0
June	83,226	14.8	7.71	11.19	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	83,590	17.1	7.79	8.00	0.0
October	85,150	19.7	7.80	7.66	0.0
November	90,108	18.9	7.74	9.20	0.0
December	84,041	18.9	7.79	8.06	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	0.18	0.12	0.033	<0.001	0.007
February	<2	1.00	0.18	0.14	0.006	<0.001	0.002
March	<2	<1.00	0.19	0.08	0.005	<0.001	0.004
April	<2	<1.00	0.18	0.08	<0.003	<0.001	0.002
May	<2	<1.00	0.15	0.10	0.004	<0.001	0.003
June	<2	3.20	0.15	0.08	0.015	<0.001	0.003
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	2.00	0.16	0.10	0.086	<0.001	0.009
October	<2	<1.00	0.15	0.08	<0.003	<0.001	<0.001
November	<2	<1.00	0.13	0.07	0.008	<0.001	0.005
December	<2	<1.00	0.26	0.07	<0.003	<0.001	<0.001

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.

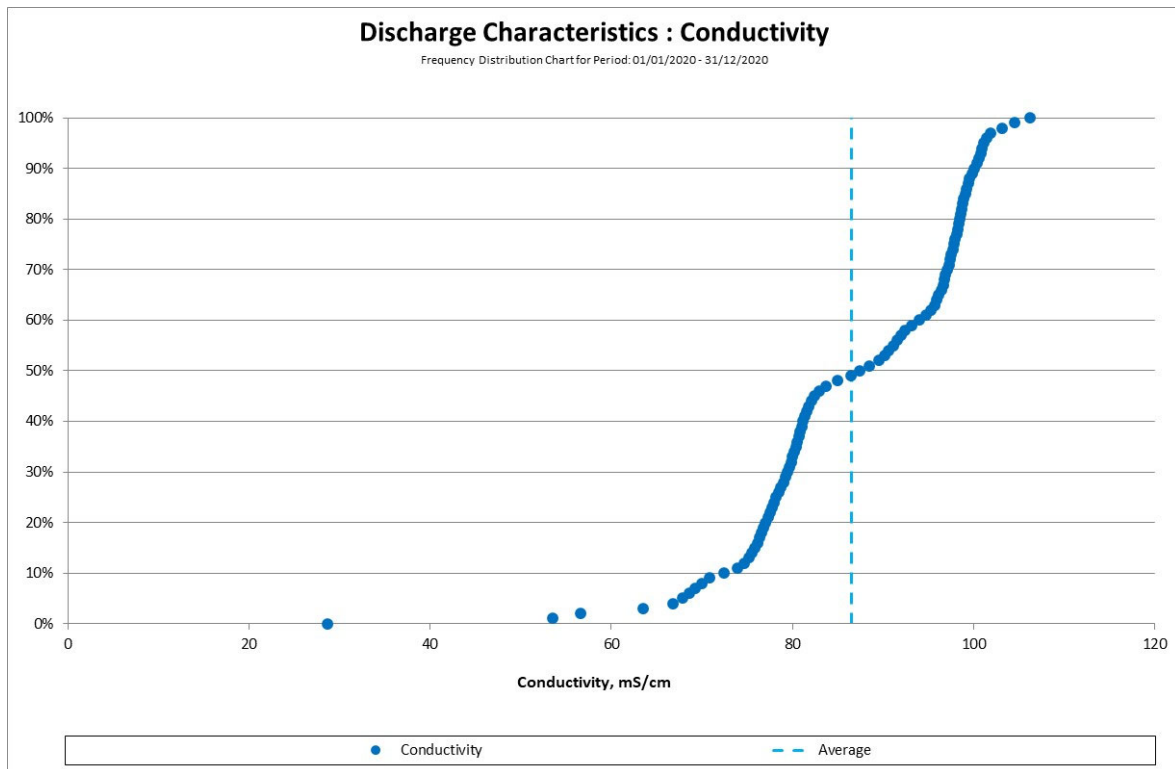


Figure 1 - Discharge Characteristic: Conductivity - Frequency Distribution

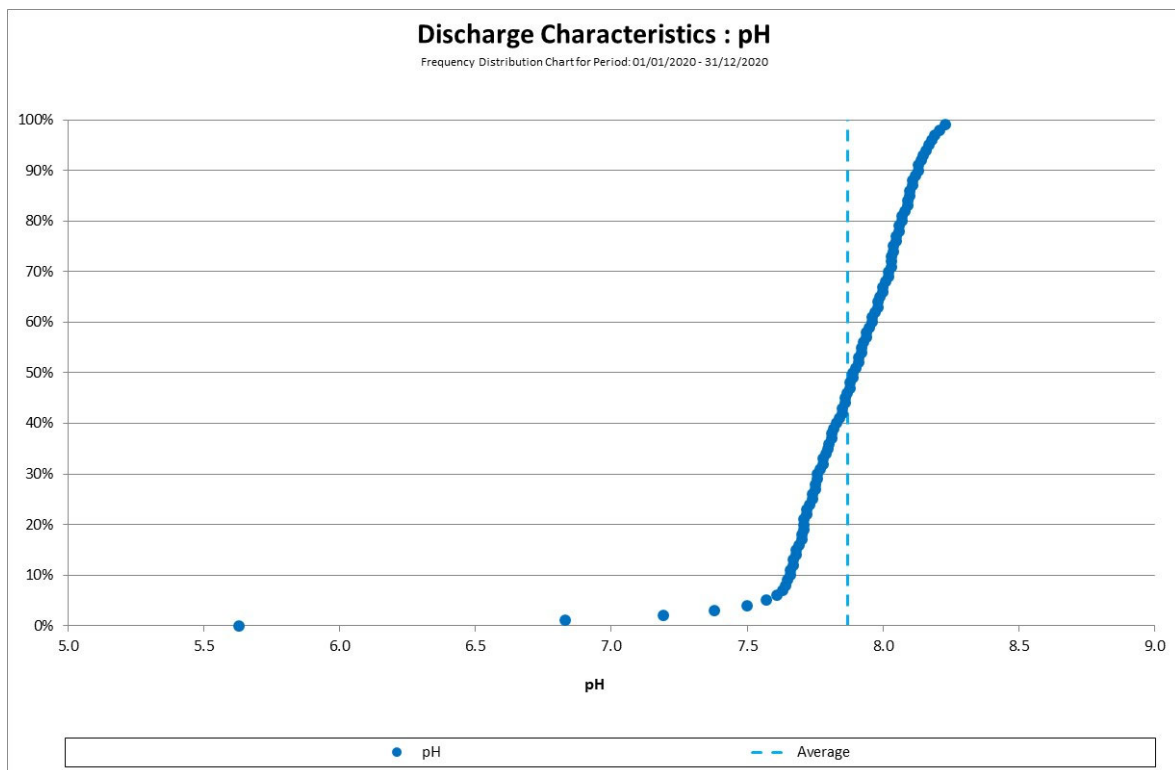


Figure 2 - Discharge Characteristics: pH - Frequency Distribution

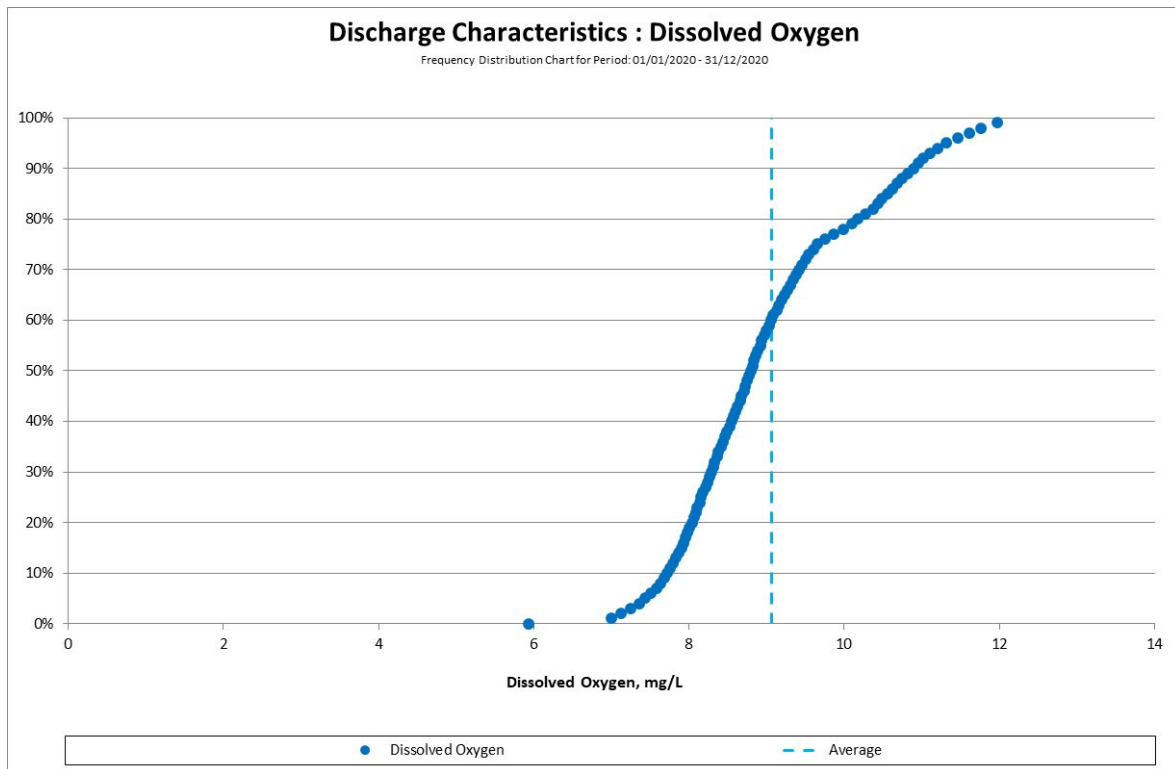


Figure 3 - Discharge Characteristics: DO - Frequency Distribution

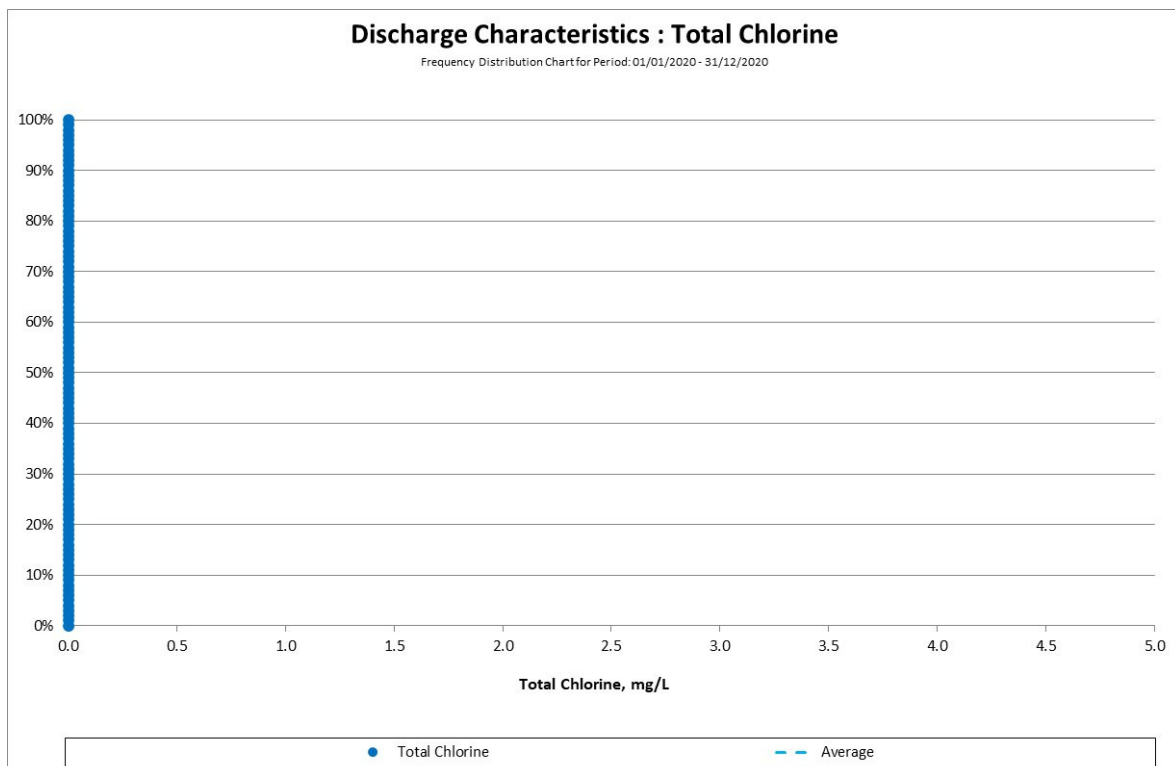


Figure 4 - Discharge Characteristics: Total Chlorine - Frequency Distribution

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	37.2	37.0	37.4	37.6	37.5	37.7	36.9	36.7	36.5	36.33	36.05	36.07
Minimum	36.0	36.0	36.6	36.7	36.5	36.6	36.4	36.3	36.1	35.75	35.62	35.80
Maximum	37.9	37.9	38.1	38.2	38.1	38.8	37.5	37.2	37.6	37.41	37.03	37.66

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	1.8	1.8	1.8	1.8	1.8	1.3	1.0	1.1	1.1	1.2	1.1	1.2
Minimum	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Maximum	1.9	1.9	1.9	1.9	1.9	1.9	1.0	1.6	1.9	1.8	1.9	1.9

Over the quarter, the highest salinity discharge ratio recorded was 1.93 on 05/01/2020. 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.