

Adelaide Desalination Project (ADP) – DBOM

# Yearly Marine Monitoring Report

For 2022

Rev	Date	Approved AdelaideAqua
1	14-Mar-23	R. Liu

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## 1. Ambient Marine Ecological Monitoring

### 1.1 Subtidal Reef

As Per the agreed OEMMP, ADP has performed this survey in 2022, and the final report has been presented in January 2023. This condition has been closed until 2025.

### 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 January 2022. This condition has been closed until 2024.

### 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 from June to 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	1,350	803
February	2,905	1,708
March	1,654	1,047
April	892	542
May	1,490	894
June	88	88
July	107	107
August	618	550
September	1,623	979
October	1,765	1,193
November	1,463	919
December	1,269	794

### 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 from June to August and Instruments have been preserved therefore results are not available from June to August.

**Table 2A - Seawater Characteristics Summary-Online Analyser**

Parameter	Conductivity	Temperature	pH	DO
	µS/cm	°C	-	mg/L
January	56,821	21.1	7.99	7.18
February	57,171	21.8	7.99	8.08
March	57,330	21.4	7.95	8.78
April	55,940	19.5	7.93	8.31
May	55,751	17.9	7.95	8.61
June	N/A	N/A	N/A	N/A
July	N/A	N/A	N/A	N/A
August	N/A	N/A	N/A	N/A
September	55,023	15.8	8.00	8.80
October	56,103	15.4	7.85	7.80
November	56,704	17.2	7.98	7.92
December	55,282	18.5	8.00	7.81

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	0.11	<0.005	<0.003	<0.001	<0.001
February	<2	<1	0.11	<0.005	<0.003	<0.001	<0.001
March	<2	<1	0.14	0.021	<0.003	<0.001	<0.001
April	<2	<1	0.09	0.012	<0.003	<0.001	<0.001
May	N/A	<1	0.22	0.012	<0.003	<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	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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	<1	0.17	0.013	<0.003	<0.001	<0.001
October	<2	<1	0.14	0.083	<0.003	<0.001	<0.001
November	<2	<1	0.13	0.070	<0.003	<0.001	<0.001
December	<2	<1	0.11	<0.005	<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 <sub>2</sub>
	µS/cm	°C	-	mg/L	mg/L
January	78,609	21.7	7.72	7.69	0
February	91,777	21.6	7.80	8.38	0
March	81,177	20.1	7.75	8.48	0
April	87,370	19.2	7.74	9.13	0
May	84,330	17.4	7.71	9.80	0
June	N/A	N/A	N/A	N/A	N/A
July	N/A	N/A	N/A	N/A	N/A
August	N/A	N/A	N/A	N/A	N/A
September	78,542	14.1	7.86	8.63	0
October	68,579	17.1	7.72	8.40	0
November	77,793	18.3	7.71	8.09	0
December	77,740	19.6	7.83	7.73	0

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

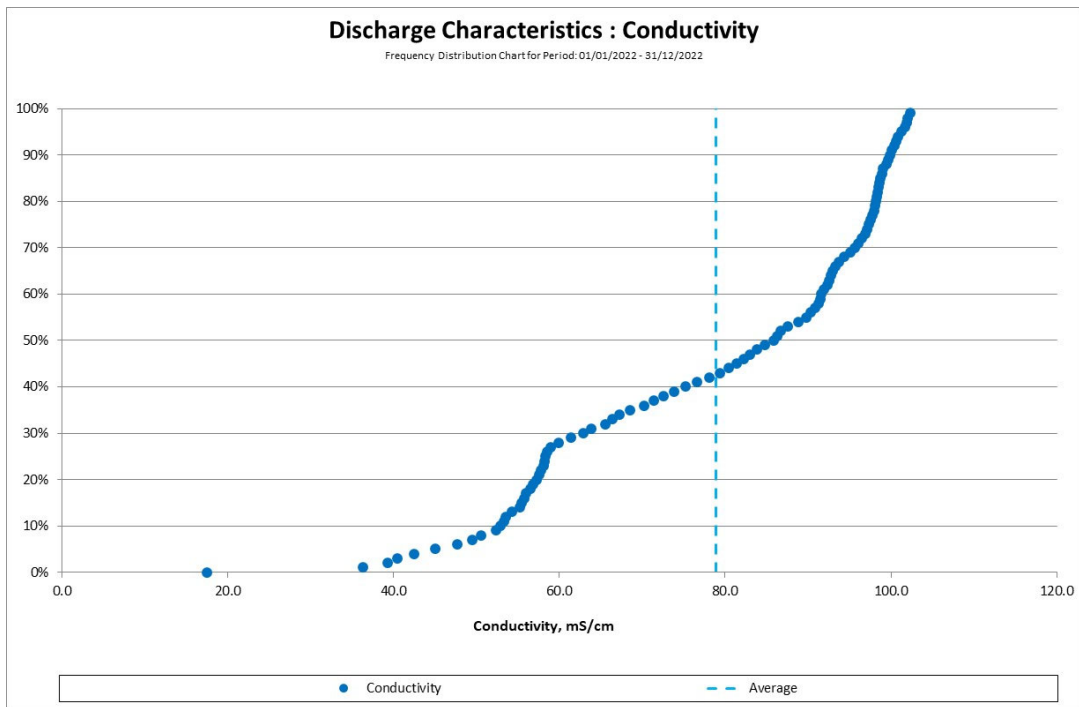
**Table 3B - Discharge Characteristics Summary- External lab**

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
<b>January</b>	<2	2	0.13	0.07	<0.003	<0.001	<0.001
<b>February</b>	<2	<1	0.16	0.06	N/A	N/A	N/A
<b>March</b>	<2	<1	0.16	0.08	<0.003	<0.001	<0.001
<b>April</b>	<2	<1	0.24	0.08	N/A	N/A	N/A
<b>May</b>	<2	<1	0.28	0.06	N/A	N/A	N/A
<b>June</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>July</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>August</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>September</b>	<2	<1	0.18	0.07	<0.003	<0.001	<0.001
<b>October</b>	<2	<1	0.19	0.08	<0.003	<0.001	<0.001
<b>November</b>	<2	6	0.11	0.11	<0.003	<0.001	<0.001
<b>December</b>	<2	<1	0.13	0.09	<0.003	<0.001	<0.001

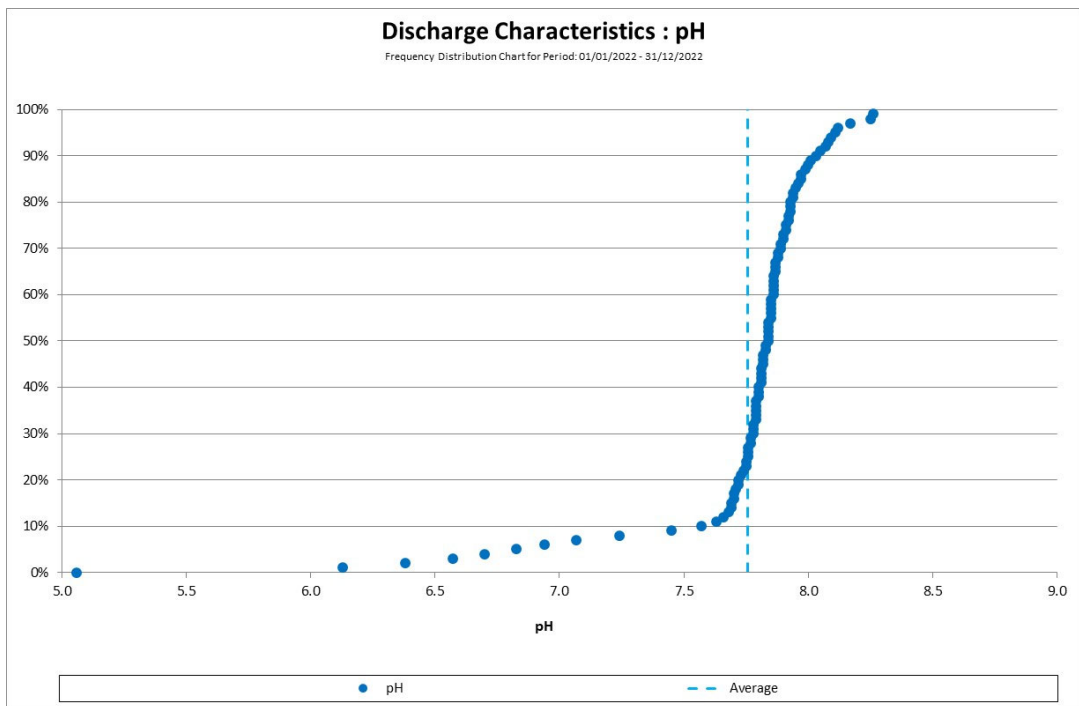
Source: AWQC

The plant was in winter shutdown from June to August and Instruments have been preserved therefore results are not available from June to August.

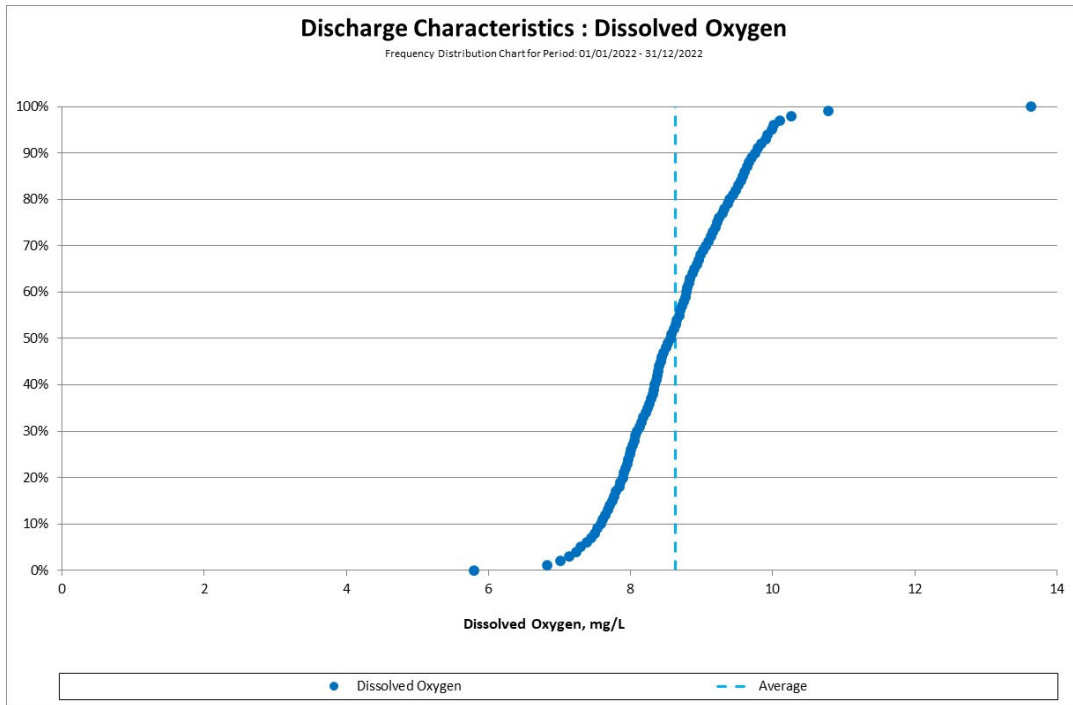
Discharge stream pH value dropped in correlation to intake pH drop due to intake shock dosing and came back to normal operation range after shock dosing.



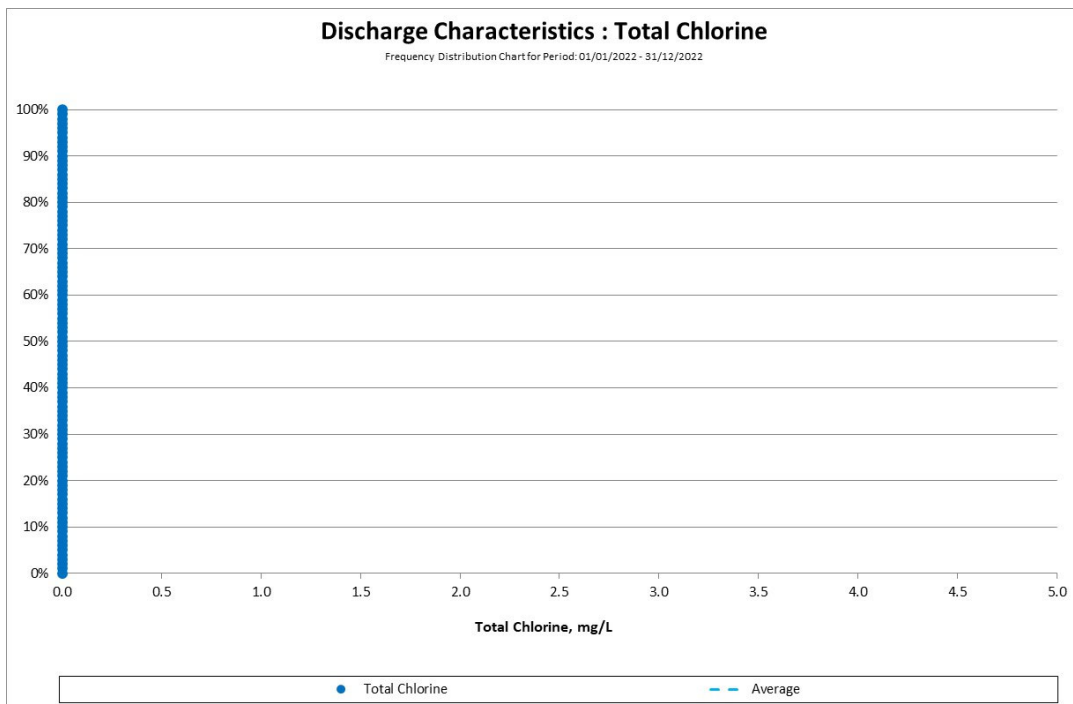
**Figure 1 - Discharge Characteristic: Conductivity - Frequency Distribution**



**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.

	Average Salinity Discharge (ppt)											
	January	February	March	April	May	June	July	August	September	October	November	December
<b>Average</b>	36.59	36.55	36.40	36.61	36.77	36.64	36.65	36.65	36.50	40.19	36.60	35.15
<b>Minimum</b>	34.13	34.10	36.11	36.27	36.26	36.23	36.29	36.34	36.00	39.56	29.87	30.05
<b>Maximum</b>	37.75	37.62	37.50	37.96	37.91	41.05	36.95	37.43	37.55	41.87	40.91	41.06

**Table 4 – Average Salinity Discharge Summary**

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.

	Salinity Discharge Ratio											
	January	February	March	April	May	June	July	August	September	October	November	December
<b>Average</b>	1.15	1.30	1.16	1.16	1.15	1.0	1.0	1.0	1.2	1.1	1.2	1.2
<b>Minimum</b>	1.00	1.01	1.00	1.00	1.00	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Maximum</b>	1.88	1.88	1.89	1.92	1.86	1.0	1.0	1.8	1.9	1.9	1.9	1.9

**Table 5 Salinity discharge ratio summary**

Over the quarter, the highest salinity discharge ratio recorded was 1.92 on 25/04/2023. 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.