

Adelaide Desalination Project (ADP) – DBOM

# Quarterly Salinity Monitoring Report

July to September 2023

| Rev | Date     | Approved<br>AdelaideAqua |
|-----|----------|--------------------------|
| 1   | 8-Nov-23 | R. Liu                   |

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## 1. Volumes of seawater received, and outfall discharged

Table 1 below shows the summary of seawater received and outfall discharged volumes for this reporting period. Plant winter shutdown period started from 9<sup>th</sup> June to 3<sup>rd</sup> September.

**Table 1 - Intake and Discharge Volume Summary**

| Month                  | Intake (ML)  | Outfall (ML) |
|------------------------|--------------|--------------|
| July                   | 232          | 232          |
| August                 | 467          | 424          |
| September              | 1,362        | 835          |
| <b>Quarterly Total</b> | <b>2,061</b> | <b>1,491</b> |

## 2. Water Quality

### 2.1 Seawater Characteristics Results

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

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

| Parameter      | Conductivity | Temperature | pH  | DO   |
|----------------|--------------|-------------|-----|------|
|                | µS/cm        | C           |     | mg/L |
| <b>Average</b> | 56,576       | 15.5        | 8.0 | 9.3  |
| <b>Minimum</b> | 53,389       | 11.3        | 6.2 | 5.5  |
| <b>Maximum</b> | 57,976       | 22.5        | 8.9 | 13.0 |

Source: Online analyser (10 minutes intervals data over 3 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           |
| <b>Average</b> | <2                        | 2.5              | 0.12             | 0.010              | <0.0004      | <0.0002      | <0.0003        |
| <b>Minimum</b> | <2                        | 2                | 0.08             | 0.008              | <0.0004      | <0.0002      | <0.0003        |
| <b>Maximum</b> | <2                        | 3                | 0.16             | 0.012              | <0.0004      | <0.0002      | <0.0003        |

Source: AWQC

The ADP conducts intake chemical shock dosing to control the bio-growth in the intake tunnel. During the intake shock dosing, pH dropped to 6.0 (normal operation range 8.0-8.5) due to the acid dosing and came back to normal sea water pH range after shock dosing.

## 2.2 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**

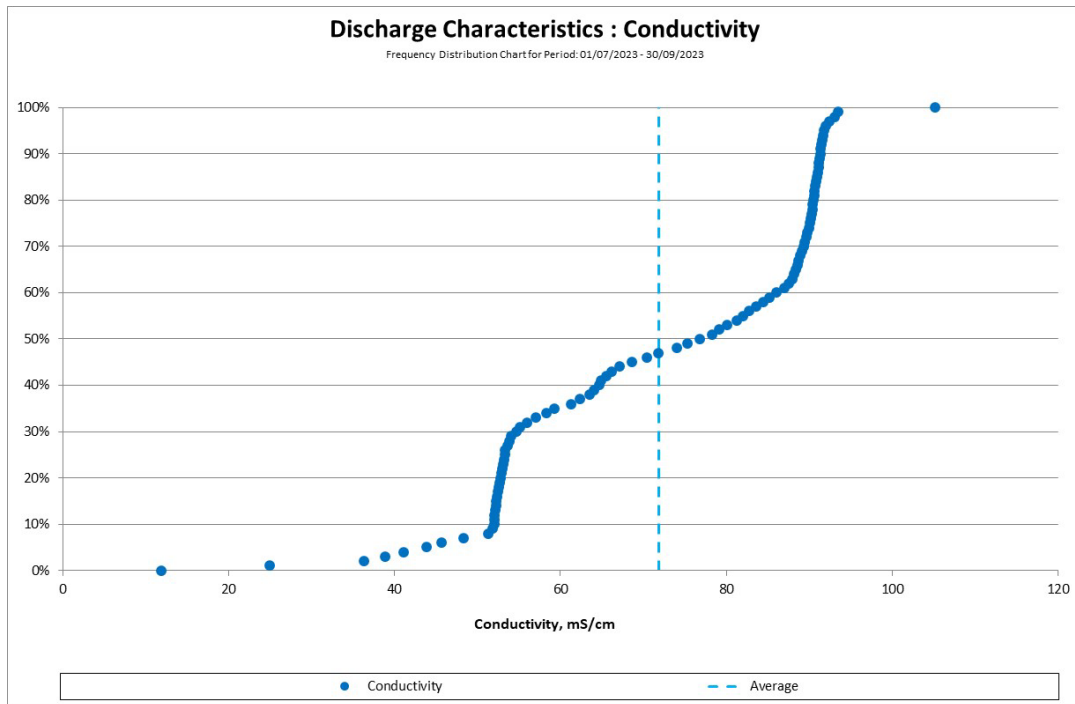
| Parameter      | Conductivity | Temperature | pH   | DO   | Cl <sub>2</sub> |
|----------------|--------------|-------------|------|------|-----------------|
|                | µS/cm        | C           |      | mg/L | mg/L            |
| <b>Average</b> | 71,953       | 15.5        | 7.52 | 9.9  | 0.0             |
| <b>Minimum</b> | 11,834       | 9.3         | 6.03 | 7.2  | 0.0             |
| <b>Maximum</b> | 105,198      | 24.3        | 9.17 | 12.0 | 0.0             |

*Source: Online analyser (10 minutes intervals data over 3 months)*

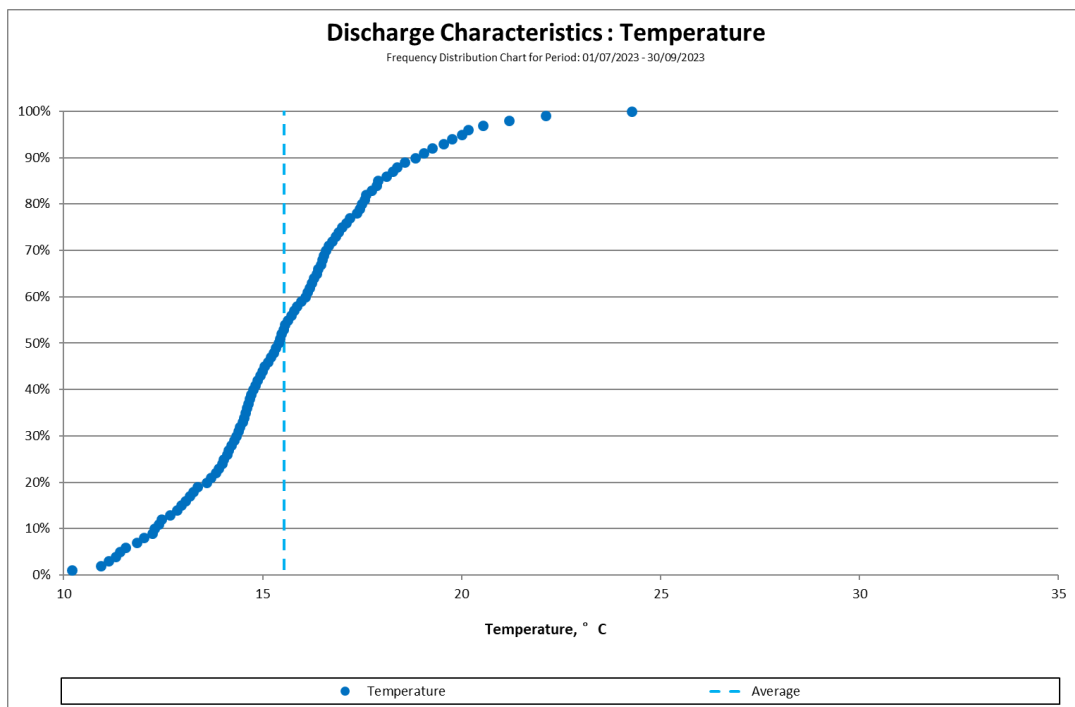
**Table 3B - Discharge Characteristics Summary- External lab**

| 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>Average</b> | <2                        | 6.6              | 0.19             | 0.098              | <0.0004      | <0.0002      | <0.0003        |
| <b>Minimum</b> | <2                        | 3                | 0.12             | 0.094              | <0.0004      | <0.0002      | <0.0003        |
| <b>Maximum</b> | <2                        | 10               | 0.26             | 0.101              | <0.0004      | <0.0002      | 0.0005         |

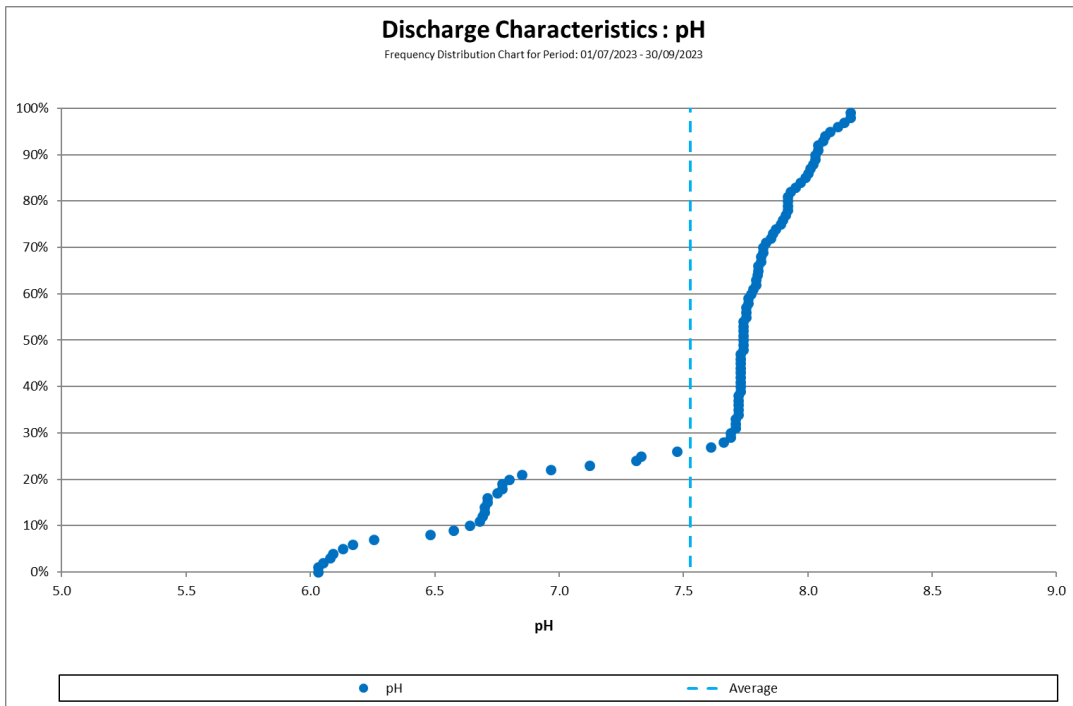
*Source: AWQC*



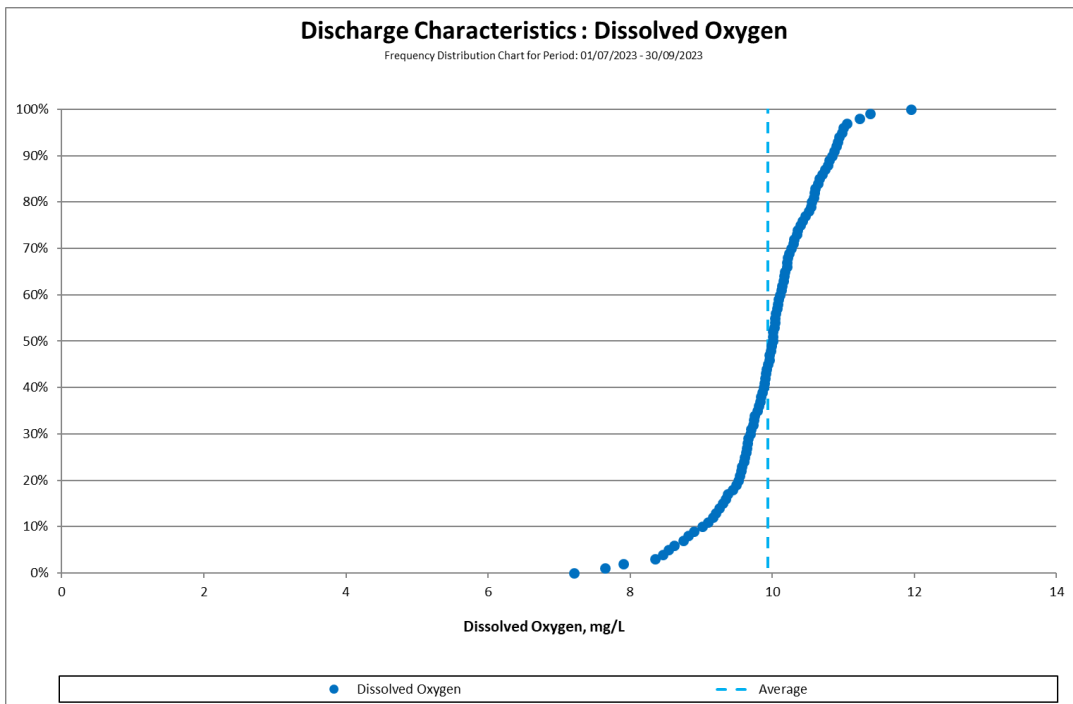
**Figure 1 - Discharge Characteristic: Conductivity - Frequency Distribution**



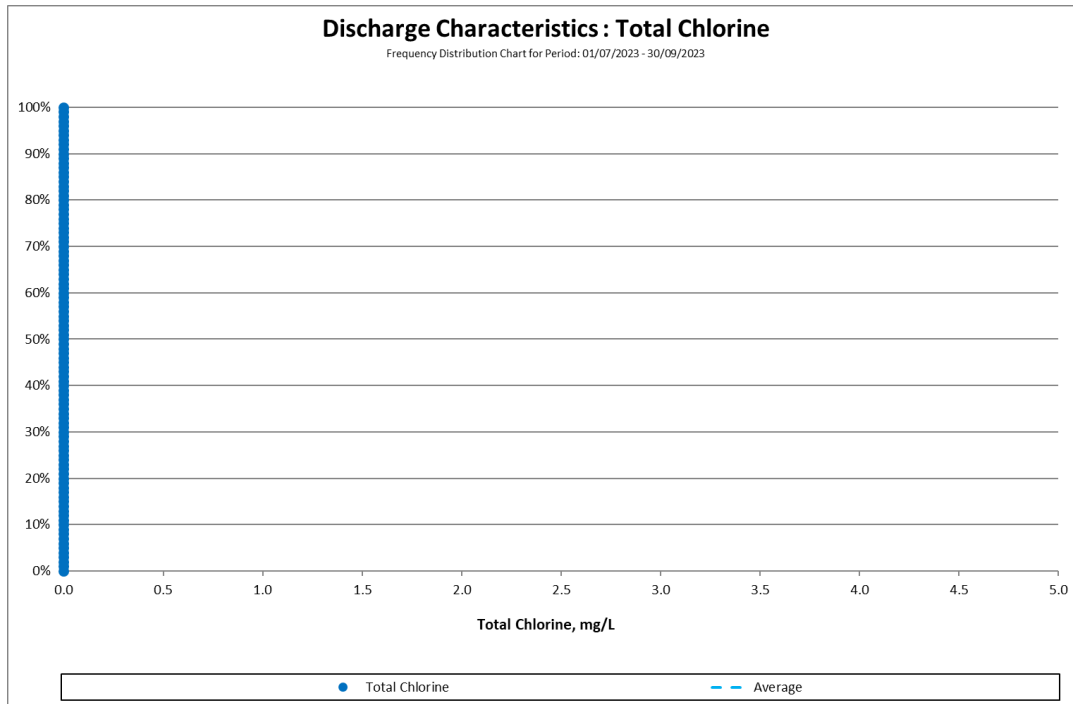
**Figure 2 - Discharge Characteristics: Temperature - Frequency Distribution**



**Figure 3 - Discharge Characteristics: pH - Frequency Distribution**



**Figure 4 - Discharge Characteristics: DO - Frequency Distribution**



**Figure 5 - Discharge Characteristics: Chlorine - Frequency Distribution**

### 3. Salinity Monitoring Results

#### 3.1 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) |        |           |
|----------------|----------------------------------|--------|-----------|
|                | July                             | August | September |
| <b>Average</b> | N/A                              | N/A    | 40.15     |
| <b>Minimum</b> | N/A                              | N/A    | 39.49     |
| <b>Maximum</b> | N/A                              | N/A    | 41.25     |

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

### 3.2 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 |        |           |
|----------------|--------------------------|--------|-----------|
|                | July                     | August | September |
| <b>Average</b> | 1.0                      | 1.0    | 1.15      |
| <b>Minimum</b> | 1.0                      | 1.0    | 1.0       |
| <b>Maximum</b> | 1.0                      | 1.0    | 1.84      |

Over the quarter, the highest salinity discharge ratio recorded was 1.84 on 18/09/2023. 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.