



## CERTIFICATE OF ANALYSIS

**Work Order** : **EW2400595**  
**Client** : **WINGECARRIBEE SHIRE COUNCIL**  
**Contact** : Resource  
**Address** : PO BOX 141  
MOSSVALE NSW  
AUSTRALIA  
**Telephone** : ----  
**Project** : RRC Quarterly  
**Order number** : 00262511  
**C-O-C number** : ----  
**Sampler** : Robert DaLio  
**Site** : ----  
**Quote number** : EW23WINSHI0002  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Page** : 1 of 5  
**Laboratory** : Environmental Division NSW South Coast  
**Contact** : Aneta Prosaroski  
**Address** : 1/19 Ralph Black Dr, North Wollongong 2500 NSW Australia  
**Telephone** : 02 42253125  
**Date Samples Received** : 08-Feb-2024 14:45  
**Date Analysis Commenced** : 08-Feb-2024  
**Issue Date** : 07-Mar-2024 11:28



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Robert DaLio	Sampler	Laboratory - Wollongong, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- **Analytical work for this work order will be conducted at ALS Sydney.**
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Ionic Balance out of acceptable limits for sample 1 due to analytes not quantified in this report.
- pH performed by ALS Wollongong via in-house method EA005FD and EN67 PK.
- Sampling and sample data supplied by ALS Wollongong.
- Electrical conductivity performed by ALS Wollongong via in-house method EA010FD and EN67 PK.
- Sampling completed as per FWI-EN001 Groundwater Sampling.
- Sampling and groundwater depth measurements completed by ALS Wollongong via inhouse sampling method EN/67.11 Groundwater Sampling Via Method.
- Sampling completed as per FWI-EN002 Surface Water Sampling.
- Field tests completed on day of sampling/receipt.
- Sampling completed by ALS Wollongong in accordance with in-house sampling method EN/67.4 Lakes and Reservoirs
- Sample collection of Ground Waters by in-house EN67 where the “surface layer of the aquifer was sampled”.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



## Analytical Results

Sub-Matrix: WATER  
 (Matrix: WATER)

Sample ID

				Point 1 MW1B (Front Gate)	Point 2 MW06 (Car Park)	Point 3 MW7 (South of Pond)	Point 5 SW01 (Upstream Stormwater)	Point 6 SW02 (Holding Pond)
Sampling date / time				08-Feb-2024 11:30	08-Feb-2024 09:35	08-Feb-2024 10:25	08-Feb-2024 09:55	08-Feb-2024 10:10
Compound	CAS Number	LOR	Unit	EW2400595-001	EW2400595-002	EW2400595-003	EW2400595-004	EW2400595-005
				Result	Result	Result	Result	Result
<b>EA005FD: Field pH</b>								
pH	----	0.1	pH Unit	5.8	5.0	6.6	7.4	7.8
<b>EA010FD: Field Conductivity</b>								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	2930	274	2050	444	340
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	3150	212	1850	----	246
<b>EA025: Total Suspended Solids dried at 104 ± 2°C</b>								
Suspended Solids (SS)	----	5	mg/L	----	----	----	100	20
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	84	13	236	----	----
Total Alkalinity as CaCO3	----	1	mg/L	84	13	236	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	190	19	2	----	69
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	714	72	638	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	192	2	98	----	----
Magnesium	7439-95-4	1	mg/L	97	3	68	----	----
Sodium	7440-23-5	1	mg/L	349	56	302	----	----
Potassium	7440-09-7	1	mg/L	37	<1	8	----	----
<b>EG020T: Total Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	1.37
Copper	7440-50-8	0.001	mg/L	----	----	----	----	0.006
Lead	7439-92-1	0.001	mg/L	----	----	----	----	0.005
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	0.025



## Analytical Results

Sub-Matrix: WATER  
 (Matrix: WATER)

Sample ID

				Point 1 MW1B (Front Gate)	Point 2 MW06 (Car Park)	Point 3 MW7 (South of Pond)	Point 5 SW01 (Upstream Stormwater)	Point 6 SW02 (Holding Pond)
Sampling date / time				08-Feb-2024 11:30	08-Feb-2024 09:35	08-Feb-2024 10:25	08-Feb-2024 09:55	08-Feb-2024 10:10
Compound	CAS Number	LOR	Unit	EW2400595-001	EW2400595-002	EW2400595-003	EW2400595-004	EW2400595-005
				Result	Result	Result	Result	Result
<b>EG020T: Total Metals by ICP-MS - Continued</b>								
Iron	7439-89-6	0.05	mg/L	----	----	----	----	1.54
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.09	0.13	0.29	0.22
<b>EK086: Sulfite as SO3 2-</b>								
Sulfite as SO3 2-	14265-45-3	2	mg/L	----	----	----	----	<2
<b>EN055: Ionic Balance</b>								
∅ Total Anions	----	0.01	meq/L	25.8	2.69	22.8	----	----
∅ Total Cations	----	0.01	meq/L	33.7	2.78	23.8	----	----
∅ Ionic Balance	----	0.01	%	13.3	----	2.30	----	----
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	----	1	mg/L	25	7	4	10	12
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	----	2	mg/L	----	----	----	4	6
<b>QWI-EN 67.11 Sampling of Groundwaters</b>								
Depth	----	0.01	m	3.40	1.93	2.55	----	----



## Analytical Results

Sub-Matrix: WATER  
 (Matrix: WATER)

Sample ID

				Point 7 SW03 (Polishing Pond)	----	----	----	----
Sampling date / time				08-Feb-2024 10:15	----	----	----	----
Compound	CAS Number	LOR	Unit	EW2400595-006	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA005FD: Field pH</b>								
pH	----	0.1	pH Unit	<b>8.6</b>	----	----	----	----
<b>EA010FD: Field Conductivity</b>								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	<b>630</b>	----	----	----	----
<b>EA025: Total Suspended Solids dried at 104 ± 2°C</b>								
Suspended Solids (SS)	----	5	mg/L	<b>22</b>	----	----	----	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	<b>0.31</b>	----	----	----	----
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	----	1	mg/L	<b>22</b>	----	----	----	----
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	----	2	mg/L	<b>3</b>	----	----	----	----

## Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

- (WATER) EP005: Total Organic Carbon (TOC)
- (WATER) EK055G: Ammonia as N by Discrete Analyser
- (WATER) ED045G: Chloride by Discrete Analyser
- (WATER) ED041G: Sulfate (Turbidimetric) as SO<sub>4</sub><sup>2-</sup> by DA
- (WATER) ED037P: Alkalinity by PC Titrator
- (WATER) ED093F: Dissolved Major Cations
- (WATER) EA015: Total Dissolved Solids dried at 180 ± 5 °C
- (WATER) EN055: Ionic Balance
- (WATER) EP030: Biochemical Oxygen Demand (BOD)
- (WATER) EA025: Total Suspended Solids dried at 104 ± 2°C
- (WATER) EK086: Sulfite as SO<sub>3</sub><sup>2-</sup>
- (WATER) EG020T: Total Metals by ICP-MS