

## CERTIFICATE OF ANALYSIS

**Work Order** : **EW2002188**  
**Client** : **WINGECARRIBEE SHIRE COUNCIL**  
**Contact** : MR CHRIS MURPHY  
**Address** : PO BOX 141  
 MOSSVALE NSW  
 AUSTRALIA  
**Telephone** : ----  
**Project** : RRC Quarterly  
**Order number** : ----  
**C-O-C number** : ----  
**Sampler** : Robert DaLio  
**Site** : ----  
**Quote number** : WO/067/12  
**No. of samples received** : 7  
**No. of samples analysed** : 7

**Page** : 1 of 5  
**Laboratory** : Environmental Division NSW South Coast  
**Contact** : Tyler Cachia  
**Address** : 1/19 Ralph Black Dr, North Wollongong 2500  
 4/13 Geary Pl, North Nowra 2541  
 Australia NSW Australia  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 06-May-2020 16:19  
**Date Analysis Commenced** : 06-May-2020  
**Issue Date** : 13-May-2020 15:11



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. 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	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ashesh Patel	Senior Chemist	Sydney Inorganics, Smithfield, NSW
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, 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 Contact 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.**
- pH performed by ALS Wollongong via in-house method EA005FD and EN67 PK.
- Electrical conductivity performed by ALS Wollongong via in-house method EA010FD and EN67 PK.
- Sampling and groundwater depth measurements completed by ALS Wollongong via inhouse sampling method EN/67.11 Groundwater Sampling.
- All field analysis performed by ALS Wollongong were completed at the time of sampling.
- Sampling completed by ALS Wollongong in accordance with in-house sampling method EN/67.4 Lakes and Reservoirs
- 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.



## Analytical Results

Sub-Matrix: WATER  
 (Matrix: WATER)

Client sample ID

				Point 1 MW1B (Front Gate)	Point 2 MW06 (Car Park)	Point 3 MW7 (South of Pond)	Point 4 LT1 (Leachate)	Point 5 SW01 (Upstream Stormwater)
Client sampling date / time				06-May-2020 12:45	06-May-2020 11:25	06-May-2020 12:10	06-May-2020 12:28	06-May-2020 11:45
Compound	CAS Number	LOR	Unit	EW2002188-001	EW2002188-002	EW2002188-003	EW2002188-004	EW2002188-005
				Result	Result	Result	Result	Result
<b>EA005FD: Field pH</b>								
pH	----	0.1	pH Unit	6.2	5.1	5.4	8.1	----
<b>EA010FD: Field Conductivity</b>								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	7330	344	2540	2340	----
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	5000	202	1310	1430	----
<b>EA025: Total Suspended Solids dried at 104 ± 2°C</b>								
Suspended Solids (SS)	----	5	mg/L	----	----	----	<5	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	296	34	22	475	----
Total Alkalinity as CaCO3	----	1	mg/L	296	34	22	475	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	71	14	<1	294	----
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	2300	74	876	424	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	270	4	18	149	----
Magnesium	7439-95-4	1	mg/L	218	4	40	102	----
Sodium	7440-23-5	1	mg/L	862	54	383	146	----
Potassium	7440-09-7	1	mg/L	20	<1	2	36	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	0.13	0.09	<0.01	<0.01	----
<b>EN055: Ionic Balance</b>								
∅ Total Anions	----	0.01	meq/L	72.3	3.06	25.2	27.6	----
∅ Total Cations	----	0.01	meq/L	69.4	2.88	20.9	23.1	----
∅ Ionic Balance	----	0.01	%	2.01	3.04	9.23	8.82	----
<b>EN67 PK: Field Tests</b>								
Field Observations	----	0.01	--	----	----	----	----	DRY
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	----	1	mg/L	3	9	6	24	----



### Analytical Results

Sub-Matrix: **WATER**  
 (Matrix: **WATER**)

Client sample ID

				Point 1 MW1B (Front Gate)	Point 2 MW06 (Car Park)	Point 3 MW7 (South of Pond)	Point 4 LT1 (Leachate)	Point 5 SW01 (Upstream Stormwater)
Client sampling date / time				06-May-2020 12:45	06-May-2020 11:25	06-May-2020 12:10	06-May-2020 12:28	06-May-2020 11:45
Compound	CAS Number	LOR	Unit	EW2002188-001	EW2002188-002	EW2002188-003	EW2002188-004	EW2002188-005
				Result	Result	Result	Result	Result
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	----	2	mg/L	----	----	----	18	----
<b>QWI-EN 67.11 Sampling of Groundwaters</b>								
Depth	----	0.01	m	4.87	2.16	2.69	----	----



## Analytical Results

Sub-Matrix: WATER  
 (Matrix: WATER)

Client sample ID

				Point 6 SW02 (Holding Pond)	Point 7 SW03 (Polishing Pond)	----	----	----
Client sampling date / time				06-May-2020 12:35	06-May-2020 12:20	----	----	----
Compound	CAS Number	LOR	Unit	EW2002188-006	EW2002188-007	-----	-----	-----
				Result	Result	---	---	---
<b>EA005FD: Field pH</b>								
pH	----	0.1	pH Unit	9.0	8.8	----	----	----
<b>EA010FD: Field Conductivity</b>								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	570	2130	----	----	----
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	342	----	----	----	----
<b>EA025: Total Suspended Solids dried at 104 ± 2°C</b>								
Suspended Solids (SS)	----	5	mg/L	16	56	----	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	44	----	----	----	----
<b>EG020T: Total Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.15	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.002	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.045	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.59	----	----	----	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.02	----	----	----
<b>EK086: Sulfite as SO3 2-</b>								
Sulfite as SO3 2-	14265-45-3	2	mg/L	<2	----	----	----	----
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	----	1	mg/L	10	57	----	----	----
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	----	2	mg/L	58	28	----	----	----