

## CERTIFICATE OF ANALYSIS

**Work Order** : **EW1901970**  
**Client** : **WINGECARRIBEE SHIRE COUNCIL**  
**Contact** : MR CHRIS MURPHY  
**Address** : PO BOX 141  
 MOSSVALE NSW  
 AUSTRALIA  
**Telephone** : ----  
**Project** : RRC Quarterly  
**Order number** : 00210933  
**C-O-C number** : ----  
**Sampler** : Robert DaLio  
**Site** : ----  
**Quote number** : WO/067/12  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Page** : 1 of 5  
**Laboratory** : Environmental Division NSW South Coast  
**Contact** : Glenn Davies  
**Address** : 1/19 Ralph Black Dr, North Wollongong 2500  
 4/13 Geary Pl, North Nowra 2541  
 Australia NSW Australia  
**Telephone** : 02 42253125  
**Date Samples Received** : 09-May-2019 16:20  
**Date Analysis Commenced** : 09-May-2019  
**Issue Date** : 23-May-2019 09:58



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
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong, NSW



## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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  
∅ = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EN055: Ionic Balance out of acceptable limits for sample 1 and 2 due to analytes not quantified in this report.
- Sampling and sample data supplied by ALS Wollongong.
- Sampling completed as per FWI-EN001 Groundwater Sampling.
- Sampling completed as per FWI-EN002 Surface Water Sampling.
- Field tests completed on day of sampling/receipt.
- 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 5 SW01 (Upstream Stormwater)	Point 6 SW02 (Holding Pond)
Client sampling date / time				09-May-2019 13:40	09-May-2019 12:50	09-May-2019 13:10	09-May-2019 13:50	09-May-2019 13:30
Compound	CAS Number	LOR	Unit	EW1901970-001	EW1901970-002	EW1901970-003	EW1901970-005	EW1901970-006
				Result	Result	Result	Result	Result
<b>EA005FD: Field pH</b>								
pH	----	0.1	pH Unit	6.2	4.6	4.1	----	7.7
<b>EA010FD: Field Conductivity</b>								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	7200	298	2800	----	9310
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	4690	213	1390	----	----
<b>EA025: Total Suspended Solids dried at 104 ± 2°C</b>								
Suspended Solids (SS)	----	5	mg/L	----	----	----	----	12
<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	105	11	<1	----	----
Total Alkalinity as CaCO3	----	1	mg/L	105	11	<1	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	83	37	<1	----	----
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	1490	42	746	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	244	<1	4	----	----
Magnesium	7439-95-4	1	mg/L	250	2	45	----	----
Sodium	7440-23-5	1	mg/L	915	61	490	----	----
Potassium	7440-09-7	1	mg/L	17	<1	<1	----	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.05	<0.01	----	6.73
<b>EN055: Ionic Balance</b>								
Total Anions	----	0.01	meq/L	45.8	2.17	21.0	----	----
Total Cations	----	0.01	meq/L	73.0	2.82	25.2	----	----
Ionic Balance	----	0.01	%	22.8	----	9.02	----	----
<b>EN67 PK: Field Tests</b>								
Field Observations	----	0.01	--	----	----	----	DRY	----
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	----	1	mg/L	<1	8	4	----	41



### 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 5 SW01 (Upstream Stormwater)	Point 6 SW02 (Holding Pond)
Client sampling date / time				09-May-2019 13:40	09-May-2019 12:50	09-May-2019 13:10	09-May-2019 13:50	09-May-2019 13:30
Compound	CAS Number	LOR	Unit	EW1901970-001	EW1901970-002	EW1901970-003	EW1901970-005	EW1901970-006
				Result	Result	Result	Result	Result
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	----	2	mg/L	----	----	----	----	23
<b>FWI-EN/001: Groundwater Sampling - Depth</b>								
Depth	----	0.01	m	4.79	2.08	2.78	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Point 7 SW03 (Polishing Pond)	---	---	---	---
Client sampling date / time			09-May-2019 13:20	---	---	---	---	
Compound	CAS Number	LOR	Unit	EW1901970-007	-----	-----	-----	-----
				Result	---	---	---	---
<b>EA005FD: Field pH</b>								
pH	---	0.1	pH Unit	7.8	---	---	---	---
<b>EA010FD: Field Conductivity</b>								
Electrical Conductivity (Non Compensated)	---	1	µS/cm	5620	---	---	---	---
<b>EA025: Total Suspended Solids dried at 104 ± 2°C</b>								
Suspended Solids (SS)	---	5	mg/L	416	---	---	---	---
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	112	---	---	---	---
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	---	1	mg/L	1140	---	---	---	---
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	---	2	mg/L	1700	---	---	---	---