

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>EW1601845</b> <b>Client</b> : <b>WINGECARRIBEE SHIRE COUNCIL</b> <b>Contact</b> : MR Scott McAllan <b>Address</b> : PO BOX 141 MOSSVALE NSW AUSTRALIA  <b>Telephone</b> : ---- <b>Project</b> : RRC Quarterly <b>Order number</b> : ---- <b>C-O-C number</b> : ---- <b>Sampler</b> : Glenn Davies, Robert DaLio <b>Site</b> : ---- <b>Quote number</b> : ---- <b>No. of samples received</b> : 6 <b>No. of samples analysed</b> : 6	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division NSW South Coast <b>Contact</b> : Glenn Davies <b>Address</b> : 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia <b>Telephone</b> : 02 42253125 <b>Date Samples Received</b> : 12-May-2016 15:20 <b>Date Analysis Commenced</b> : 12-May-2016 <b>Issue Date</b> : 23-May-2016 15:00
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

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



## 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.

- 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.
- 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.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	EPA 1	EPA 2	EPA 3	EPA 5	EPA 6
Client sampling date / time				12-May-2016 08:40	12-May-2016 08:45	12-May-2016 08:55	12-May-2016 08:50	12-May-2016 08:00	
Compound	CAS Number	LOR	Unit	EW1601845-001	EW1601845-002	EW1601845-003	EW1601845-004	EW1601845-005	
				Result	Result	Result	Result	Result	
<b>EA005FD: Field pH</b>									
pH	----	0.1	pH Unit	4.8	4.2	4.4	7.5	8.7	
<b>EA010FD: Field Conductivity</b>									
Electrical Conductivity (Non Compensated)	----	1	µS/cm	4540	549	3100	2360	620	
<b>EA015: Total Dissolved Solids</b>									
Total Dissolved Solids @180°C	----	10	mg/L	3360	460	1870	1360	430	
<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	6	<1	<1	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	6	<1	<1	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	143	<1	<1	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	843	166	865	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	176	<1	17	----	----	
Magnesium	7439-95-4	1	mg/L	117	8	50	----	----	
Sodium	7440-23-5	1	mg/L	506	86	488	----	----	
Potassium	7440-09-7	1	mg/L	26	<1	2	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.26	0.14	0.23	31.9	0.20	
<b>EP005: Total Organic Carbon (TOC)</b>									
Total Organic Carbon	----	1	mg/L	20	5	4	31	31	
<b>EP030: Biochemical Oxygen Demand (BOD)</b>									
Biochemical Oxygen Demand	----	2	mg/L	----	----	----	<2	10	
<b>FWI-EN/001: Groundwater Sampling - Depth</b>									
Depth	----	0.01	m	3.52	2.15	2.62	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		EPA 7	----	----	----	----
Client sampling date / time		12-May-2016 09:05		----	----	----	----	----
Compound	CAS Number	LOR	Unit	EW1601845-006	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA005FD: Field pH</b>								
pH	----	0.1	pH Unit	8.1	----	----	----	----
<b>EA010FD: Field Conductivity</b>								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	1740	----	----	----	----
<b>EA015: Total Dissolved Solids</b>								
Total Dissolved Solids @180°C	----	10	mg/L	1110	----	----	----	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	4.90	----	----	----	----
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	----	1	mg/L	63	----	----	----	----
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	----	2	mg/L	11	----	----	----	----
<b>FWI-EN/001: Groundwater Sampling - Depth</b>								
Depth	----	0.01	m	----	----	----	----	----