ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW1702290**	Page	: 1 of 4
Client	: **WINGECARRIBEE SHIRE COUNCIL**	Laboratory	: Environmental Division NSW South Coast
Contact	: MR CHRIS MURPHY	Contact	: Glenn Davies
Address	: PO BOX 141 MOSSVALE NSW AUSTRALIA	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia NSW
Telephone	: ----	Telephone	: 02 42253125
Project	: RRC Quarterly	Date Samples Received	: 24-May-2017 14:42
Order number	: 00188154	Date Analysis Commenced	: 24-May-2017
C-O-C number	: ----	Issue Date	: 31-May-2017 17:06
Sampler	: Glenn Davies		
Site	: ----		
Quote number	: WO/067/12		
No. of samples received	: 7		
No. of samples analysed	: 7		

ilac-MRA NATA

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.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Robert DaLio	Sampler	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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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.

- EP030 : The residue DO for sample 7 is less than 1 mg/L, this indicates that the sample has not been diluted enough and the BOD is greater than 1070 mg/L. The result reported is estimated from the greatest dilution.
- TDS by method EA-015 may bias high for sample 7 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	Point 1 - MW1B (FRONT GATE)	Point 2- MW06 (CAR PARK)	Point 3 - MW7 (SOUTH OF POND)	Point 4 - LT1 (LEACHATE)	Point 5 - SW1 (UPSTREAM STOREWATER)
				Client sampling date / time	24-May-2017 11:05	24-May-2017 09:30	24-May-2017 10:10	24-May-2017 10:45	24-May-2017 11:15
Compound	CAS Number	LOR	Unit		EW1702290-001	EW1702290-002	EW1702290-003	EW1702290-004	EW1702290-005
					Result	Result	Result	Result	Result
EA005FD: Field pH									
pH	----	0.1	pH Unit		**5.7**	**4.5**	**6.0**	**8.1**	**7.1**
EA010FD: Field Conductivity									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		**5540**	**556**	**2920**	**1570**	**585**
EA015: Total Dissolved Solids									
Total Dissolved Solids @180°C	----	10	mg/L		**3600**	**350**	**1450**	**989**	**407**
ED037P: Alkalinity by PC Titrator									
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		**77**	<1	**36**	**403**	----
Total Alkalinity as CaCO3	----	1	mg/L		**77**	<1	**36**	**403**	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		**114**	<1	<1	**170**	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		**1160**	**155**	**820**	**183**	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		**198**	**1**	**25**	**92**	----
Magnesium	7439-95-4	1	mg/L		**139**	**8**	**44**	**75**	----
Sodium	7440-23-5	1	mg/L		**627**	**87**	**443**	**104**	----
Potassium	7440-09-7	1	mg/L		**19**	<1	**2**	**20**	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.20**	**0.27**	**0.03**	**0.45**	<0.01
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		**36.6**	**4.37**	**23.8**	**16.8**	----
Total Cations	----	0.01	meq/L		**49.1**	**4.49**	**24.2**	**15.8**	----
Ionic Balance	----	0.01	%		**14.5**	**1.36**	**0.70**	**2.93**	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		**10**	**7**	**1**	**8**	**10**
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	----	2	mg/L		**----**	**----**	**----**	<2	**3**
FWI-EN/001: Groundwater Sampling - Depth									
Depth	----	0.01	m		**3.61**	**2.09**	**2.99**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Point 6 - LT2 (HOLDING POND)	Point 7 - SW3 (FINISHING POND)	----	----	----
			Client sampling date / time	24-May-2017 10:40	24-May-2017 10:20	----	----	----
Compound	CAS Number	LOR	Unit	EW1702290-006	EW1702290-007	--------	--------	--------
				Result	Result	----	----	----
EA005FD: Field pH								
pH	----	0.1	pH Unit	**8.4**	**7.6**	**----**	**----**	**----**
EA010FD: Field Conductivity								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	**1080**	**4520**	**----**	**----**	**----**
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	10	mg/L	**652**	**4160**	**----**	**----**	**----**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**2.86**	**59.8**	**----**	**----**	**----**
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	**34**	**1160**	**----**	**----**	**----**
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	----	2	mg/L	**24**	**1070**	**----**	**----**	**----**