



CERTIFICATE OF ANALYSIS

Work Order	: EW1511307	Page	: 1 of 4
Client	: WOLLONGONG CITY COUNCIL	Laboratory	: Environmental Division NSW South Coast
Contact	: MR WAYDE PETERSON	Contact	: Glenn Davies
Address	: 41 BURELLI STREET WOLLONGONG NSW, AUSTRALIA 2500	Address	: 99 Kenny Street, Wollongong 2500 Unit 4 / 13 Geary Place, PO Box 3105, North Nowra 2541 AUSTRALIA
E-mail	: wpeterson@wollongong.nsw.gov.au	E-mail	: glenn.davies@alsglobal.com
Telephone	: +61 02 4227 7111	Telephone	: 02 42253125
Facsimile	: +61 02 4227 7277	Facsimile	: W 02 42253128 N 02 44232083
Project	: Helensburgh Groundwater Quarterly	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 3044522	Date Samples Received	: 14-Aug-2015 12:50
C-O-C number	: ----	Date Analysis Commenced	: 14-Aug-2015
Sampler	: Craig Wilson	Issue Date	: 20-Aug-2015 16:44
Site	: ----		
Quote number	: ----	No. of samples received	: 9
		No. of samples analysed	: 9

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



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been 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
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong
Raymond Commodore	Instrument Chemist	Sydney Inorganics



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.

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.

- Sampling and sample data supplied by ALS Wollongong.
- Sampling completed as per FWI-EN001 Groundwater Sampling.
- Field tests completed on day of sampling/receipt.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH1	BH2	BH4	BH5	BH6
Client sampling date / time				14-Aug-2015 08:47	14-Aug-2015 09:20	14-Aug-2015 10:00	14-Aug-2015 08:25	14-Aug-2015 09:50	
Compound	CAS Number	LOR	Unit	EW1511307-001	EW1511307-002	EW1511307-003	EW1511307-004	EW1511307-005	
				Result	Result	Result	Result	Result	
EA005FD: Field pH									
pH	----	0.1	pH Unit	4.8	6.5	7.0	4.5	4.4	
EA015: Total Dissolved Solids									
^ Total Dissolved Solids @180°C	----	1	mg/L	459	479	359	127	247	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	118	<1	<1	201	
Total Alkalinity as CaCO3	----	1	mg/L	<1	118	<1	<1	201	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	143	61	94	24	11	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	111	104	100	33	12	
ED093T: Total Major Cations									
Calcium	7440-70-2	1	mg/L	36	10	<1	4	52	
Magnesium	7439-95-4	1	mg/L	30	6	6	5	26	
Sodium	7440-23-5	1	mg/L	64	148	115	31	20	
Potassium	7440-09-7	1	mg/L	<1	23	<1	<1	2	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.03	4.15	0.03	0.03	0.03	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	5	26	<1	<1	7	
FWI-EN/001: Groundwater Sampling - Depth									
Depth	----	0.01	m	3.23	2.12	2.33	4.50	3.16	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		LGMB1	LGMB2	LGMB3	LGMB4	----	
Client sampling date / time		14-Aug-2015 08:37		14-Aug-2015 08:55		14-Aug-2015 09:12		14-Aug-2015 09:05	
Compound	CAS Number	LOR	Unit	EW1511307-006	EW1511307-007	EW1511307-008	EW1511307-009	-----	
				Result	Result	Result	Result	Result	
EA005FD: Field pH									
pH	----	0.1	pH Unit	5.0	5.2	5.5	5.0	----	
EA015: Total Dissolved Solids									
^ Total Dissolved Solids @180°C	----	1	mg/L	161	157	88	156	----	
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	10	4	20	10	----	
Total Alkalinity as CaCO3	----	1	mg/L	10	4	20	10	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	71	34	14	50	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	12	27	12	14	----	
ED093T: Total Major Cations									
Calcium	7440-70-2	1	mg/L	9	10	8	10	----	
Magnesium	7439-95-4	1	mg/L	9	8	5	5	----	
Sodium	7440-23-5	1	mg/L	28	29	9	12	----	
Potassium	7440-09-7	1	mg/L	2	4	2	28	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.08	0.04	----	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	<1	2	<1	<1	----	
FWI-EN/001: Groundwater Sampling - Depth									
Depth	----	0.01	m	2.77	2.80	2.63	2.63	----	