

CERTIFICATE OF ANALYSIS

Work Order : EW1301483 Client : WOLLONGONG CITY COUNCIL Contact : MR WAYDE PETERSON Address : 41 BURELLI STREET WOLLONGONG NSW, AUSTRALIA 2500 E-mail : wpeterson@wollongong.nsw.gov.au Telephone : +61 02 4227 7111 Facsimile : +61 02 4227 7277 Project : Helensburgh Groundwater Quarterly Order number : ---- C-O-C number : ---- Sampler : Craig Wilson Site : ---- Quote number : WL/001/11 Helensburgh Groundwater Quarterly	Page : 1 of 4 Laboratory : Environmental Division NSW South Coast Contact : Glenn Davies Address : 99 Kenny Street, Wollongong 2500 Unit 4 / 13 Geary Place, PO Box 3105, North Nowra 2541 AUSTRALIA E-mail : glenn.davies@alsglobal.com Telephone : 02 4225 3125 Facsimile : 02 4225 3128 QC Level : NEPM 1999 Schedule B(3) and ALS QCS3 requirement Date Samples Received : 25-MAY-2013 Issue Date : 04-JUN-2013 No. of samples received : 9 No. of samples analysed : 9	
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Wisam Marassa	Inorganics Coordinator	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



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BH 1	BH 2	BH 4	BH 5	BH 6
				24-MAY-2013 10:20	24-MAY-2013 11:10	24-MAY-2013 10:30	24-MAY-2013 12:25	24-MAY-2013 10:55
Compound	CAS Number	LOR	Unit	EW1301483-001	EW1301483-002	EW1301483-003	EW1301483-004	EW1301483-005
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	1	mg/L	432	542	440	158	318
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	5	56	<1	3	134
Total Alkalinity as CaCO3	----	1	mg/L	5	56	<1	3	134
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	101	69	85	16	24
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	102	130	110	46	21
ED093T: Total Major Cations								
Calcium	7440-70-2	1	mg/L	24	7	<1	4	34
Magnesium	7439-95-4	1	mg/L	19	4	5	5	15
Sodium	7440-23-5	1	mg/L	48	148	101	26	26
Potassium	7440-09-7	1	mg/L	2	20	1	<1	3
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.32	2.99	0.04	<0.01	<0.01
EN67 PK: Field Tests								
pH	----	0.1	pH Unit	5.3	6.1	4.2	4.4	6.8
Depth	----	0.01	m	3.26	1.96	2.60	4.63	3.28
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	3	18	2	<1	10



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				LGMB1	LGMB2	LGMB3	LGMB4	----
				24-MAY-2013 10:14	24-MAY-2013 12:10	24-MAY-2013 11:35	24-MAY-2013 11:25	----
Compound	CAS Number	LOR	Unit	EW1301483-006	EW1301483-007	EW1301483-008	EW1301483-009	----
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	1	mg/L	330	296	128	162	----
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	111	14	26	2	----
Total Alkalinity as CaCO3	----	1	mg/L	111	14	26	2	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	42	40	22	36	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	13	63	12	10	----
ED093T: Total Major Cations								
Calcium	7440-70-2	1	mg/L	36	12	8	6	----
Magnesium	7439-95-4	1	mg/L	14	9	4	3	----
Sodium	7440-23-5	1	mg/L	26	39	15	8	----
Potassium	7440-09-7	1	mg/L	2	3	3	25	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.02	0.03	0.06	----
EN67 PK: Field Tests								
pH	----	0.1	pH Unit	6.0	5.0	5.6	4.7	----
Depth	----	0.01	m	2.59	1.81	1.94	2.23	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	4	2	2	5	----