



Environmental

CERTIFICATE OF ANALYSIS

Work Order	: EW1401470	Page	: 1 of 4
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Project	: Helensburgh Groundwater Quarterly	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 3015425	Date Samples Received	: 14-MAY-2014
C-O-C number	: ----	Issue Date	: 26-MAY-2014
Sampler	: Glenn Davies	No. of samples received	: 9
Site	: ----	No. of samples analysed	: 9
Quote number	: WL/001/11 Helensburgh Groundwater Quarterly		

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>
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
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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

- **EA015 : TDS result has been confirmed by re-analysis for sample 5**
- **Sampling and sample data supplied by ALS Wollongong.**



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BH 1	BH 2	BH 4	BH 5	BH 6
				14-MAY-2014 11:05	14-MAY-2014 12:05	14-MAY-2014 12:20	14-MAY-2014 10:45	14-MAY-2014 12:25
Compound	CAS Number	LOR	Unit	EW1401470-001	EW1401470-002	EW1401470-003	EW1401470-004	EW1401470-005
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	1	mg/L	275	410	281	109	----
Total Dissolved Solids @180°C	----	1	mg/L	----	----	----	----	184
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	4	87	<1	<1	123
Total Alkalinity as CaCO3	----	1	mg/L	4	87	<1	<1	123
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	122	65	92	24	14
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	107	116	118	43	20
ED093T: Total Major Cations								
Calcium	7440-70-2	1	mg/L	30	11	<1	4	29
Magnesium	7439-95-4	1	mg/L	23	6	5	5	14
Sodium	7440-23-5	1	mg/L	48	110	90	24	16
Potassium	7440-09-7	1	mg/L	<1	22	1	<1	2
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.54	<0.01	0.19	0.01	<0.01
EN67 PK: Field Tests								
pH	----	0.1	pH Unit	5.2	6.5	4.4	4.6	6.9
Depth	----	0.01	m	3.26	1.98	3.11	4.41	2.37
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	4	19	2	2	10



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				LGMB1	LGMB2	LGMB3	LGMB4	----
				14-MAY-2014 10:55	14-MAY-2014 11:15	14-MAY-2014 11:45	14-MAY-2014 11:55	----
Compound	CAS Number	LOR	Unit	EW1401470-006	EW1401470-007	EW1401470-008	EW1401470-009	----
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	1	mg/L	126	147	85	145	----
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	14	6	16	2	----
Total Alkalinity as CaCO3	----	1	mg/L	14	6	16	2	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	60	32	16	36	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	13	56	13	11	----
ED093T: Total Major Cations								
Calcium	7440-70-2	1	mg/L	7	8	7	9	----
Magnesium	7439-95-4	1	mg/L	6	6	4	4	----
Sodium	7440-23-5	1	mg/L	24	32	10	8	----
Potassium	7440-09-7	1	mg/L	2	5	3	25	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.02	0.01	<0.01	----
EN67 PK: Field Tests								
pH	----	0.1	pH Unit	5.0	5.0	5.7	4.9	----
Depth	----	0.01	m	2.77	2.84	2.59	2.42	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	13	3	2	5	----