



Environmental Division

CERTIFICATE OF ANALYSIS

Work Order : **EW1202338** Page : 1 of 4

Client : WOLLONGONG CITY COUNCIL Laboratory : Environmental Division NSW South Coast

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Project : Helensburgh Groundwater Quarterly QC Level : NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Order number : 3001821

C-O-C number : 23-AUG-2012
Sampler : Craig Wilson : 39-SEP-2012
Sampler : 03-SEP-2012

Site · ----

Quote number : WL/001/11 Helensburgh Groundwater Quarterly 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.

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong
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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.

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

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Analytical Results

Sub-Matrix: WATER		Cli	ent sample ID	BH 1	BH 2	BH 4	BH 5	BH 6
	Client sampling date / time			23-AUG-2012 07:20	23-AUG-2012 08:05	23-AUG-2012 08:20	23-AUG-2012 09:30	23-AUG-2012 08:35
Compound	CAS Number	LOR	Unit	EW1202338-001	EW1202338-002	EW1202338-003	EW1202338-004	EW1202338-005
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	GIS-210-010	1	mg/L	242	420	356	127	176
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	65	47	<1	<1	2
Total Alkalinity as CaCO3		1	mg/L	65	47	<1	<1	2
ED041G: Sulfate (Turbidimetric) as SO4	2- by DA							
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	80	92	95	24	69
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	42	155	154	49	43
ED093T: Total Major Cations								
Calcium	7440-70-2	1	mg/L	19	3	<1	3	<1
Magnesium	7439-95-4	1	mg/L	14	2	6	5	4
Sodium	7440-23-5	1	mg/L	38	132	117	27	48
Potassium	7440-09-7	1	mg/L	2	13	<1	2	1
EK055G: Ammonia as N by Discrete Ana	alyser							
Ammonia as N	7664-41-7	0.01	mg/L	4.44	7.20	0.04	0.04	0.03
EN67 PK: Field Tests								
pH		0.1	pH Unit	6.1	5.6	4.2	4.6	4.6
Depth		0.01	m	3.63	2.20	3.53	5.60	3.18
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon		1	mg/L	<1	14	<1	<1	<1

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Analytical Results

Sub-Matrix: WATER	atrix: WATER Client sample ID Client sampling date / time		LGMB1	LGMB2	LGMB3	LGMB4		
			23-AUG-2012 07:10	23-AUG-2012 07:30	23-AUG-2012 07:50	23-AUG-2012 07:40		
Compound	CAS Number	LOR	Unit	EW1202338-006	EW1202338-007	EW1202338-008	EW1202338-009	
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	GIS-210-010	1	mg/L	132	204	96	171	
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	21	<1	7	8	
Total Alkalinity as CaCO3		1	mg/L	21	<1	7	8	
ED041G: Sulfate (Turbidimetric) as SO4	2- by DA							
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	63	79	29	86	
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	17	73	36	11	
ED093T: Total Major Cations								
Calcium	7440-70-2	1	mg/L	9	12	3	11	
Magnesium	7439-95-4	1	mg/L	8	13	2	5	
Sodium	7440-23-5	1	mg/L	25	36	20	12	
Potassium	7440-09-7	1	mg/L	5	5	7	32	
EK055G: Ammonia as N by Discrete Ana	alyser							
Ammonia as N	7664-41-7	0.01	mg/L	0.09	0.06	2.84	0.20	
EN67 PK: Field Tests								
рН		0.1	pH Unit	5.3	4.4	5.2	5.0	
Depth		0.01	m	2.98	3.24	3.18	2.82	
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon		1	mg/L	<1	<1	<1	2	