

Certificate of Analysis

GHD Pty Ltd NSW
 Level 15, 133 Castlereagh Street
 Sydney
 NSW 2000



NATA Accredited
 Accreditation Number 1261
 Site Number 18217

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: Andre Smit

Report 422041-W
 Client Reference YAGOONA 21-21890-01
 Received Date Jun 17, 2014

Client Sample ID			GG1	GG2	GG5	GG7
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S14-Jn13232	S14-Jn13233	S14-Jn13234	S14-Jn13235
Date Sampled			Jun 17, 2014	Jun 17, 2014	Jun 17, 2014	Jun 17, 2014
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	190	59	630	0.12
Chloride	1	mg/L	12000	24000	97000	8200
Nitrate (as N)	0.01	mg/L	9.8	0.11	^{R16} < 1	< 0.01
Nitrite (as N)	0.01	mg/L	0.03	0.01	^{R16} < 1	< 0.01
pH	0.1	units	5.4	4.2	1.8	6.3
Sulphate (as S)	2	mg/L	240	1700	3300	330
Total Kjeldahl Nitrogen (as N)	0.1	mg/L	180	85	620	0.2
Alkalinity						
Bicarbonate Alkalinity (as CaCO ₃)	5	mg/L	110	< 5	< 5	540
Carbonate Alkalinity (as CaCO ₃)	5	mg/L	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO ₃)	5	mg/L	110	< 5	< 5	540
Alkali Metals						
Calcium	0.5	mg/L	530	930	3800	86
Magnesium	0.5	mg/L	850	1300	1400	510
Potassium	0.5	mg/L	48	55	91	22
Sodium	0.5	mg/L	3100	3700	6500	3000
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	0.006	^{R16} < 1	0.001
Cadmium (filtered)	0.0001	mg/L	0.20	0.35	2.2	< 0.0001
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	23	< 0.001
Copper (filtered)	0.001	mg/L	0.010	0.86	31	< 0.001
Lead (filtered)	0.001	mg/L	0.097	11	100	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	^{R16} < 0.2	< 0.0001
Nickel (filtered)	0.001	mg/L	0.44	2.8	25	0.005
Zinc (filtered)	0.005	mg/L	540	2000	11000	0.027

Client Sample ID			GG8	MW119	MW127	MW134S
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S14-Jn13236	S14-Jn13237	S14-Jn13238	S14-Jn13239
Date Sampled			Jun 17, 2014	Jun 17, 2014	Jun 17, 2014	Jun 17, 2014
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.33	1.7	< 0.01	0.90
Chloride	1	mg/L	3800	3100	4500	3400
Nitrate (as N)	0.01	mg/L	0.01	0.14	0.08	0.86
Nitrite (as N)	0.01	mg/L	< 0.01	0.08	< 0.01	< 0.01
pH	0.1	units	6.9	7.1	6.8	6.5
Sulphate (as S)	2	mg/L	220	160	250	140
Total Kjeldahl Nitrogen (as N)	0.1	mg/L	0.6	2.9	0.1	1.2
Alkalinity						
Bicarbonate Alkalinity (as CaCO ₃)	5	mg/L	870	540	830	64
Carbonate Alkalinity (as CaCO ₃)	5	mg/L	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO ₃)	5	mg/L	870	540	830	64
Alkali Metals						
Calcium	0.5	mg/L	81	25	6.5	44
Magnesium	0.5	mg/L	210	75	160	180
Potassium	0.5	mg/L	15	15	9.3	11
Sodium	0.5	mg/L	1600	1500	2300	1400
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	0.0006	0.0001	0.0012
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	0.002
Lead (filtered)	0.001	mg/L	< 0.001	0.012	< 0.001	0.002
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	0.051	0.008	0.008
Zinc (filtered)	0.005	mg/L	0.027	29	0.082	1.1

Client Sample ID			MW134D	MW135	WS-MW5	WS-MW6
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S14-Jn13240	S14-Jn13241	S14-Jn13242	S14-Jn13243
Date Sampled			Jun 17, 2014	Jun 17, 2014	Jun 17, 2014	Jun 17, 2014
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	890	0.03	8.0	0.07
Chloride	1	mg/L	61000	6000	16000	3400
Nitrate (as N)	0.01	mg/L	0.13	< 0.01	< 0.01	0.64
Nitrite (as N)	0.01	mg/L	0.04	< 0.01	0.01	< 0.01
pH	0.1	units	3.8	6.2	5.6	6.8
Sulphate (as S)	2	mg/L	700	270	460	83
Total Kjeldahl Nitrogen (as N)	0.1	mg/L	1200	0.2	15	0.3
Alkalinity						
Bicarbonate Alkalinity (as CaCO ₃)	5	mg/L	< 5	21	120	300
Carbonate Alkalinity (as CaCO ₃)	5	mg/L	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO ₃)	5	mg/L	< 5	21	120	300
Alkali Metals						
Calcium	0.5	mg/L	4400	22	660	46
Magnesium	0.5	mg/L	4100	380	1600	200
Potassium	0.5	mg/L	190	R16 < 10	38	13
Sodium	0.5	mg/L	7700	3200	5800	1500

Client Sample ID			MW134D	MW135	WS-MW5	WS-MW6
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S14-Jn13240	S14-Jn13241	S14-Jn13242	S14-Jn13243
Date Sampled			Jun 17, 2014	Jun 17, 2014	Jun 17, 2014	Jun 17, 2014
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	^{R16} < 1	< 0.001	0.002	0.001
Cadmium (filtered)	0.0001	mg/L	1.7	0.0001	0.070	0.0001
Chromium (filtered)	0.001	mg/L	^{R16} < 2	< 0.001	0.001	< 0.001
Copper (filtered)	0.001	mg/L	11	< 0.001	< 0.001	0.002
Lead (filtered)	0.001	mg/L	84	< 0.001	0.009	< 0.001
Mercury (filtered)	0.0001	mg/L	^{R16} < 0.2	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	15	0.007	0.81	0.002
Zinc (filtered)	0.005	mg/L	8800	0.050	400	0.043

Client Sample ID			WS-MW7	WS-MW8	WS-MW9	QA01
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S14-Jn13244	S14-Jn13245	S14-Jn13246	S14-Jn13247
Date Sampled			Jun 17, 2014	Jun 17, 2014	Jun 17, 2014	Jun 17, 2014
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.51	41	0.57	890
Chloride	1	mg/L	6200	31000	8300	-
Nitrate (as N)	0.01	mg/L	< 0.01	< 0.01	0.02	-
Nitrite (as N)	0.01	mg/L	< 0.01	0.02	< 0.01	-
pH	0.1	units	6.9	4.9	6.9	-
Sulphate (as S)	2	mg/L	250	500	290	-
Total Kjeldahl Nitrogen (as N)	0.1	mg/L	0.6	52	0.6	-
Alkalinity						
Bicarbonate Alkalinity (as CaCO ₃)	5	mg/L	1100	23	90	-
Carbonate Alkalinity (as CaCO ₃)	5	mg/L	< 5	< 5	< 5	-
Total Alkalinity (as CaCO ₃)	5	mg/L	1100	23	90	-
Alkali Metals						
Calcium	0.5	mg/L	100	1400	110	-
Magnesium	0.5	mg/L	470	3000	570	-
Potassium	0.5	mg/L	15	59	13	-
Sodium	0.5	mg/L	3300	8000	4200	-
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	^{R16} < 1
Cadmium (filtered)	0.0001	mg/L	< 0.0001	0.30	< 0.0001	1.5
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	^{R16} < 2
Copper (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	10
Lead (filtered)	0.001	mg/L	< 0.001	0.96	< 0.001	75
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	^{R16} < 0.2
Nickel (filtered)	0.001	mg/L	< 0.001	2.7	< 0.001	14
Zinc (filtered)	0.005	mg/L	0.026	1800	0.050	8100

Client Sample ID			QA02
Sample Matrix			Water
Eurofins mgt Sample No.			S14-Jn13248
Date Sampled			Jun 17, 2014
Test/Reference	LOR	Unit	
Ammonia (as N)	0.01	mg/L	0.59
Heavy Metals			
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium (filtered)	0.0001	mg/L	< 0.0001
Chromium (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.005	mg/L	0.047

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite 11A			
Ammonia (as N) - Method: E036/E050 Ammonia as N	Sydney	Jun 17, 2014	28 Day
Chloride - Method: E033 /E045 /E047 Chloride	Sydney	Jun 20, 2014	28 Day
Nitrate (as N) - Method: E037 /E051 Nitrate as N	Sydney	Jun 18, 2014	28 Day
Sulphate (as S) - Method: E045 Sulphate	Sydney	Jun 20, 2014	28 Day
Alkalinity - Method: E035 Alkalinity	Sydney	Jun 23, 2014	0 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Jun 17, 2014	180 Day
Nitrite (as N) - Method: E037 /E051 Nitrite as N	Sydney	Jun 18, 2014	28 Day
pH - Method: E018 pH ** Samples analysed outside holding time. Analysis should be performed in situ. Results for reference only.	Sydney	Jun 18, 2014	1 Day
Total Kjeldahl Nitrogen (as N) - Method: E039/E053 Unfiltered Total Kjeldahl Nitrogen as N	Sydney	Jun 17, 2014	7 Day
Metals M8 filtered - Method: E020/E030 Filtered Metals in Water & E026 Mercury	Sydney	Jun 17, 2014	28 Day

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Client Job No.: YAGOONA 21-21890-01	Order No.: Report #: 422041 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jun 17, 2014 3:30 PM Due: Jun 24, 2014 Priority: 5 Day Contact Name: Andre Smit
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Eurofins | mgt Client Manager: Jean Heng

Sample Detail					Ammonia (as N)	Nitrite (as N)	pH	Total Kjeldahl Nitrogen (as N)	Metals M8 filtered	Eurofins mgt Suite 11A
Laboratory where analysis is conducted										
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217					X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
External Laboratory										
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
GG1	Jun 17, 2014		Water	S14-Jn13232		X	X	X	X	X
GG2	Jun 17, 2014		Water	S14-Jn13233		X	X	X	X	X
GG5	Jun 17, 2014		Water	S14-Jn13234		X	X	X	X	X
GG7	Jun 17, 2014		Water	S14-Jn13235		X	X	X	X	X
GG8	Jun 17, 2014		Water	S14-Jn13236		X	X	X	X	X
MW119	Jun 17, 2014		Water	S14-Jn13237		X	X	X	X	X
MW127	Jun 17, 2014		Water	S14-Jn13238		X	X	X	X	X
MW134S	Jun 17, 2014		Water	S14-Jn13239		X	X	X	X	X
MW134D	Jun 17, 2014		Water	S14-Jn13240		X	X	X	X	X
MW135	Jun 17, 2014		Water	S14-Jn13241		X	X	X	X	X

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Eurofins | mgt Client Manager: Jean Heng

Sample Detail					Ammonia (as N)	Nitrite (as N)	pH	Total Kjeldahl Nitrogen (as N)	Metals M8 filtered	Eurofins mgt Suite 11A
Laboratory where analysis is conducted										
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217					X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
External Laboratory										
WS-MW5	Jun 17, 2014		Water	S14-Jn13242		X	X	X	X	X
WS-MW6	Jun 17, 2014		Water	S14-Jn13243		X	X	X	X	X
WS-MW7	Jun 17, 2014		Water	S14-Jn13244		X	X	X	X	X
WS-MW8	Jun 17, 2014		Water	S14-Jn13245		X	X	X	X	X
WS-MW9	Jun 17, 2014		Water	S14-Jn13246		X	X	X	X	X
QA01	Jun 17, 2014		Water	S14-Jn13247	X				X	
QA02	Jun 17, 2014		Water	S14-Jn13248	X				X	

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgment.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate (as N)	mg/L	< 0.01			0.01	Pass	
Nitrite (as N)	mg/L	< 0.01			0.01	Pass	
Sulphate (as S)	mg/L	< 2			2	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.1			0.1	Pass	
Method Blank							
Alkalinity							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 5			5	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 5			5	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 5			5	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Ammonia (as N)	%	99			70-130	Pass	
Chloride	%	110			70-130	Pass	
Nitrate (as N)	%	102			70-130	Pass	
Nitrite (as N)	%	100			70-130	Pass	
Sulphate (as S)	%	104			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	100			70-130	Pass	
LCS - % Recovery							
Alkalinity							
Bicarbonate Alkalinity (as CaCO ₃)	%	101			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	101			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	94			70-130	Pass	
Magnesium	%	95			70-130	Pass	
Potassium	%	91			70-130	Pass	
Sodium	%	90			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	115			70-130	Pass	
Cadmium (filtered)	%	121			70-130	Pass	
Chromium (filtered)	%	125			70-130	Pass	
Copper (filtered)	%	119			70-130	Pass	
Lead (filtered)	%	124			70-130	Pass	

Test		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mercury (filtered)		%	123			70-130	Pass	
Nickel (filtered)		%	117			70-130	Pass	
Zinc (filtered)		%	125			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Nitrate (as N)	S14-Jn13090	NCP	%	98		70-130	Pass	
Nitrite (as N)	S14-Jn13090	NCP	%	93		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	S14-Jn10002	NCP	%	71		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								
Cadmium (filtered)	S14-Jn19856	NCP	%	111		70-130	Pass	
Lead (filtered)	S14-Jn19856	NCP	%	114		70-130	Pass	
Nickel (filtered)	S14-Jn19856	NCP	%	107		70-130	Pass	
Zinc (filtered)	S14-Jn19856	NCP	%	109		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								
Arsenic (filtered)	S14-Jn13233	CP	%	88		70-130	Pass	
Chromium (filtered)	S14-Jn13233	CP	%	76		70-130	Pass	
Copper (filtered)	S14-Jn13233	CP	%	122		70-130	Pass	
Mercury (filtered)	S14-Jn13233	CP	%	77		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkali Metals								
Calcium	S14-Jn13234	CP	%	704		70-130	Fail	Q05
Magnesium	S14-Jn13234	CP	%	157		70-130	Fail	Q05
Potassium	S14-Jn13234	CP	%	81		70-130	Pass	
Sodium	S14-Jn13234	CP	%	1300		70-130	Fail	Q05
Spike - % Recovery								
				Result 1				
Ammonia (as N)	S14-Jn13235	CP	%	85		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	S14-Jn13236	CP	%	105		70-130	Pass	
Sulphate (as S)	S14-Jn13236	CP	%	109		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkali Metals								
Calcium	S14-Jn13244	CP	%	48		70-130	Fail	Q05
Magnesium	S14-Jn13244	CP	%	33		70-130	Fail	Q05
Potassium	S14-Jn13244	CP	%	77		70-130	Pass	
Sodium	S14-Jn13244	CP	%	579.00000 00		70-130	Fail	Q05
Spike - % Recovery								
				Result 1				
Alkalinity								
Bicarbonate Alkalinity (as CaCO3)	S14-Jn13245	CP	%	100		70-130	Pass	
Total Alkalinity (as CaCO3)	S14-Jn13245	CP	%	100		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								
Arsenic (filtered)	S14-Jn13245	CP	%	90		70-130	Pass	
Chromium (filtered)	S14-Jn13245	CP	%	77		70-130	Pass	
Copper (filtered)	S14-Jn13245	CP	%	78		70-130	Pass	
Mercury (filtered)	S14-Jn13245	CP	%	111		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S14-Jn13232	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S14-Jn13232	CP	mg/L	0.20	0.19	4.0	30%	Pass	
Chromium (filtered)	S14-Jn13232	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S14-Jn13232	CP	mg/L	0.010	0.009	6.0	30%	Pass	
Lead (filtered)	S14-Jn13232	CP	mg/L	0.097	0.092	5.0	30%	Pass	
Mercury (filtered)	S14-Jn13232	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S14-Jn13232	CP	mg/L	0.44	0.41	6.0	30%	Pass	
Zinc (filtered)	S14-Jn13232	CP	mg/L	540	530	3.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	S14-Jn13233	CP	mg/L	930	990	6.0	30%	Pass	
Magnesium	S14-Jn13233	CP	mg/L	1300	1300	2.0	30%	Pass	
Potassium	S14-Jn13233	CP	mg/L	55	57	3.0	30%	Pass	
Sodium	S14-Jn13233	CP	mg/L	3700	3800	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	S14-Jn13235	CP	mg/L	0.12	0.12	<1	30%	Pass	
Duplicate									
Alkalinity				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	S14-Jn13235	CP	mg/L	540	630	15	30%	Pass	
Carbonate Alkalinity (as CaCO3)	S14-Jn13235	CP	mg/L	< 5	< 5	<1	30%	Pass	
Total Alkalinity (as CaCO3)	S14-Jn13235	CP	mg/L	540	630	15	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	S14-Jn13236	CP	mg/L	3800	4000	6.0	30%	Pass	
Sulphate (as S)	S14-Jn13236	CP	mg/L	220	240	7.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	S14-Jn13239	CP	mg/L	1.2	1.2	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrate (as N)	S14-Jn13243	CP	mg/L	0.64	0.65	2.0	30%	Pass	
Nitrite (as N)	S14-Jn13243	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	S14-Jn13243	CP	mg/L	46	51	12	30%	Pass	
Magnesium	S14-Jn13243	CP	mg/L	200	230	13	30%	Pass	
Potassium	S14-Jn13243	CP	mg/L	13	14	10	30%	Pass	
Sodium	S14-Jn13243	CP	mg/L	1500	1600	11	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S14-Jn13244	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S14-Jn13244	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium (filtered)	S14-Jn13244	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S14-Jn13244	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	S14-Jn13244	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S14-Jn13244	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S14-Jn13244	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S14-Jn13244	CP	mg/L	0.026	0.021	21	30%	Pass	

Duplicate								
Alkalinity				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	S14-Jn13245	CP	mg/L	23	22	4.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	S14-Jn13245	CP	mg/L	< 5	< 5	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	S14-Jn13245	CP	mg/L	23	22	4.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q05	The matrix spike concentration is less than five times the background concentration in the sample - therefore the spike recovery cannot be determined
R16	The LORs have been raised due to the high concentration of one or more analytes

Authorised By

Jean Heng	Client Services
Bob Symons	Senior Analyst-Inorganic (NSW)
James Norford	Senior Analyst-Metal (NSW)


Dr. Bob Symons
Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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