

## Certificate of Analysis

Wentworth Shire Council  
26-28 Adelaide St  
Wentworth  
NSW 2648



NATA Accredited  
Accreditation Number 1261  
Site Number 18217

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

**Report** 537596-W  
Project name BURONGA LANDFILL  
Received Date Mar 10, 2017

Client Sample ID			BH2 Water	BH3 Water	BH4 Water
Sample Matrix			S17-Ma12232	S17-Ma12233	S17-Ma12234
Eurofins   mgt Sample No.			Mar 09, 2017	Mar 09, 2017	Mar 09, 2017
Date Sampled					
Test/Reference	LOR	Unit			
<b>BTEX</b>					
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Ammonia (as N)	0.01	mg/L	0.22	0.39	0.58
Chloride	1	mg/L	25000	22000	17000
Conductivity (at 25°C)	1	uS/cm	61000	56000	47000
Fluoride	0.5	mg/L	< 0.5	< 0.5	< 0.5
Nitrate (as N)	0.02	mg/L	0.27	< 0.02	34
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	6.6	5.6	3.6
Phenolics (total)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	3600	3300	3500
Total Organic Carbon	5	mg/L	< 5	12	< 5
<b>Alkalinity (speciated)</b>					
Total Alkalinity (as CaCO3)	20	mg/L	230	32	< 20
<b>Heavy Metals</b>					
Arsenic	0.001	mg/L	0.027	0.18	< 0.005
Lead	0.001	mg/L	0.12	0.13	0.035
Manganese	0.005	mg/L	2.2	3.1	1.1
<b>Alkali Metals</b>					
Calcium	0.5	mg/L	490	310	200
Magnesium	0.5	mg/L	1900	1500	1100
Potassium	0.5	mg/L	220	190	170
Sodium	0.5	mg/L	12000	11000	8300

### 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
<b>BTEX</b> - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Mar 14, 2017	14 Day
<b>Ammonia (as N)</b> - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Mar 14, 2017	28 Day
<b>Chloride</b> - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Mar 14, 2017	28 Day
<b>Conductivity (at 25°C)</b> - Method: LTM-INO-4030	Melbourne	Mar 14, 2017	28 Day
<b>Fluoride</b> - Method: LM-LTM-INO-4300 (Fluoride by Ion Chromatography)	Melbourne	Mar 15, 2017	28 Day
<b>Nitrate (as N)</b> - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Mar 14, 2017	7 Day
<b>Nitrite (as N)</b> - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	Mar 14, 2017	2 Day
<b>pH</b> - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 14, 2017	0 Hours
<b>Phenolics (total)</b> - Method: APHA 5530B & D Phenols	Melbourne	Mar 14, 2017	7 Day
<b>Sulphate (as SO4)</b> - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Mar 14, 2017	28 Day
<b>Total Organic Carbon</b> - Method: APHA 5310B Total Organic Carbon	Melbourne	Mar 14, 2017	28 Day
<b>Alkalinity (speciated)</b> - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 14, 2017	14 Day
<b>Heavy Metals</b> - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 14, 2017	180 Day
<b>Alkali Metals</b> - Method: USEPA 6010 Alkali Metals	Melbourne	Mar 14, 2017	180 Day

<b>Company Name:</b> Wentworth Shire Council	<b>Order No.:</b>	<b>Received:</b> Mar 10, 2017 9:27 AM
<b>Address:</b> 26-28 Adelaide St Wentworth NSW 2648	<b>Report #:</b> 537596	<b>Due:</b> Mar 17, 2017
	<b>Phone:</b> 03 5027 5027	<b>Priority:</b> 5 Day
<b>Project Name:</b> BURONGA LANDFILL	<b>Fax:</b> 03 5027 5000	
<b>Eurofins   mgt Analytical Services Manager : Andrew Black</b>		

Sample Detail						Ammonia (as N)	Arsenic	Benzene	Calcium	Chloride	Conductivity (at 25°C)	Fluoride	Lead	Magnesium	Manganese	Nitrate (as N)	Nitrite (as N)	pH	Phenolics (total)	Potassium	Sodium	Sulphate (as SO4)	Total Alkalinity (as CaCO3)	Total Organic Carbon		
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
<b>Sydney Laboratory - NATA Site # 18217</b>																										
<b>Brisbane Laboratory - NATA Site # 20794</b>																										
<b>Perth Laboratory - NATA Site # 18217</b>																										
<b>External Laboratory</b>																										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																					
1	BH2	Mar 09, 2017		Water	S17-Ma12232	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2	BH3	Mar 09, 2017		Water	S17-Ma12233	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3	BH4	Mar 09, 2017		Water	S17-Ma12234	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
<b>Test Counts</b>						3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

## 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 LORs are matrix dependant. Quoted LORs 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 Advice.

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:** Nephelometric Turbidity Units

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

### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery
<b>CRM</b>	Certified Reference Material - reported as percent recovery
<b>Method Blank</b>	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.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>Batch Duplicate</b>	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
<b>Batch SPIKE</b>	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	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
<b>TEQ</b>	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 & PFASs 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, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene 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 Aroclor 1260 in Matrix Spikes and LCS.
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 RPDs 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
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/L	< 0.001			0.001	Pass	
<b>Method Blank</b>							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Fluoride	mg/L	< 0.5			0.5	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phenolics (total)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO4)	mg/L	< 5			5	Pass	
Total Organic Carbon	mg/L	< 5			5	Pass	
<b>Method Blank</b>							
<b>Alkalinity (speciated)</b>							
Total Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Arsenic	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
<b>Method Blank</b>							
<b>Alkali Metals</b>							
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	
<b>LCS - % Recovery</b>							
<b>BTEX</b>							
Benzene	%	111			70-130	Pass	
<b>LCS - % Recovery</b>							
Ammonia (as N)	%	83			70-130	Pass	
Chloride	%	119			70-130	Pass	
Fluoride	%	105			70-130	Pass	
Nitrate (as N)	%	84			70-130	Pass	
Nitrite (as N)	%	95			70-130	Pass	
Phenolics (total)	%	105			70-130	Pass	
Sulphate (as SO4)	%	126			70-130	Pass	
Total Organic Carbon	%	98			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Alkalinity (speciated)</b>							
Total Alkalinity (as CaCO3)	%	77			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Heavy Metals</b>							
Arsenic	%	98			80-120	Pass	
Lead	%	96			80-120	Pass	
Manganese	%	98			80-120	Pass	
<b>LCS - % Recovery</b>							
<b>Alkali Metals</b>							
Calcium	%	102			70-130	Pass	
Magnesium	%	110			70-130	Pass	
Potassium	%	99			70-130	Pass	
Sodium	%	94			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>									
				Result 1					
Ammonia (as N)	M17-Ma11020	NCP	%	84			70-130	Pass	
Chloride	M17-Ma11707	NCP	%	101			70-130	Pass	
Fluoride	M17-Ma10688	NCP	%	99			70-130	Pass	
Nitrate (as N)	M17-Ma11020	NCP	%	78			70-130	Pass	
Nitrite (as N)	M17-Ma11020	NCP	%	77			70-130	Pass	
Phenolics (total)	S17-Ma12232	CP	%	37			70-130	Fail	Q09
Sulphate (as SO4)	M17-Ma11167	NCP	%	89			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkalinity (speciated)</b>				Result 1					
Total Alkalinity (as CaCO3)	B17-Ma10844	NCP	%	99			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Arsenic	P17-Ma13049	NCP	%	96			75-125	Pass	
Lead	P17-Ma13049	NCP	%	94			75-125	Pass	
Manganese	P17-Ma13049	NCP	%	95			75-125	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Calcium	M17-Ma13160	NCP	%	104			70-130	Pass	
Magnesium	M17-Ma13160	NCP	%	105			70-130	Pass	
Potassium	M17-Ma13160	NCP	%	99			70-130	Pass	
Sodium	M17-Ma11020	NCP	%	87			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-Ma11020	NCP	mg/L	0.41	0.36	11	30%	Pass	
Chloride	B17-Ma10439	NCP	mg/L	740	720	2.6	30%	Pass	
Conductivity (at 25°C)	B17-Ma10843	NCP	uS/cm	470	460	2.0	30%	Pass	
Fluoride	M17-Ma10406	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Nitrate (as N)	M17-Ma11020	NCP	mg/L	0.03	0.03	5.0	30%	Pass	
Nitrite (as N)	M17-Ma11020	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH	B17-Ma10843	NCP	pH Units	7.5	7.4	pass	30%	Pass	
Phenolics (total)	S17-Ma12232	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as SO4)	B17-Ma10439	NCP	mg/L	920	890	2.9	30%	Pass	
Total Organic Carbon	M17-Ma14118	NCP	mg/L	33	33	<1	30%	Pass	
<b>Duplicate</b>									
<b>Alkalinity (speciated)</b>				Result 1	Result 2	RPD			
Total Alkalinity (as CaCO3)	B17-Ma10843	NCP	mg/L	94	95	1.0	30%	Pass	
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Arsenic	P17-Ma13049	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	P17-Ma13049	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	P17-Ma13049	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
<b>Duplicate</b>									
<b>Alkali Metals</b>				Result 1	Result 2	RPD			
Calcium	M17-Ma13160	NCP	mg/L	130	130	<1	30%	Pass	
Magnesium	M17-Ma13160	NCP	mg/L	130	130	<1	30%	Pass	
Potassium	M17-Ma13160	NCP	mg/L	31	31	1.0	30%	Pass	

## Comments

### Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	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
Q09	The Surrogate recovery is outside of the recommended acceptance criteria due to matrix interference. Acceptance criteria were met for all other QC

## Authorised By

Andrew Black	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)



### Glenn Jackson

#### National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please [click here](#).

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