

**Certificate of Analysis**

**Wentworth Shire Council**  
**26-28 Adelaide St**  
**Wentworth**  
**NSW 2648**



**NATA Accredited**  
**Accreditation Number 1261**  
**Site Number 1254**

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** **592026-W**  
 Project name **BURONGA LANDFILL BORE HOLE TESTS**  
 Project ID **MARCH 2018**  
 Received Date **Mar 29, 2018**

Client Sample ID			<b>BORE 2</b>	<b>BORE 3</b>	<b>BORE 4</b>	<b>DAM</b>
Sample Matrix			<b>Water</b>	<b>Water</b>	<b>Water</b>	<b>Water</b>
Eurofins   mgt Sample No.			<b>M18-Ap00641</b>	<b>M18-Ap00642</b>	<b>M18-Ap00643</b>	<b>M18-Ap00644</b>
Date Sampled			<b>Mar 28, 2018</b>	<b>Mar 28, 2018</b>	<b>Mar 28, 2018</b>	<b>Mar 28, 2018</b>
Test/Reference	LOR	Unit				
<b>BTEX</b>						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ammonia (as N)	0.01	mg/L	0.35	0.62	0.74	< 0.01
Chloride	1	mg/L	19000	15000	12000	240
Conductivity (at 25°C)	1	uS/cm	54000	47000	39000	2000
Fluoride	0.5	mg/L	1.2	< 0.5	< 0.5	2.0
Nitrate (as N)	0.02	mg/L	1.4	0.32	47	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH (at 25°C)	0.1	pH Units	7.2	5.8	4.2	9.0
Phenolics (total)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	3100	2600	2800	210
Total Organic Carbon	5	mg/L	10	8.2	9.4	54
<b>Alkalinity (speciated)</b>						
Total Alkalinity (as CaCO3)	20	mg/L	160	< 20	< 20	560
<b>Heavy Metals</b>						
Arsenic	0.001	mg/L	< 0.01	0.014	< 0.01	< 0.01
Lead	0.001	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Manganese	0.005	mg/L	< 0.05	0.34	0.12	< 0.05
<b>Alkali Metals</b>						
Calcium	0.5	mg/L	460	320	210	18
Magnesium	0.5	mg/L	1700	1400	1000	26
Potassium	0.5	mg/L	200	160	140	25
Sodium	0.5	mg/L	15000	13000	10000	480

### 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	Apr 05, 2018	14 Day
<b>Ammonia (as N)</b> - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Apr 05, 2018	28 Day
<b>Chloride</b> - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Apr 05, 2018	28 Day
<b>Conductivity (at 25°C)</b> - Method: LTM-INO-4030 Conductivity	Melbourne	Apr 05, 2018	28 Day
<b>Fluoride</b> - Method: APHA-F-C	Melbourne	Apr 05, 2018	28 Day
<b>Nitrate (as N)</b> - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Apr 05, 2018	28 Day
<b>Nitrite (as N)</b> - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	Apr 05, 2018	2 Day
<b>pH (at 25°C)</b> - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Apr 05, 2018	0 Hours
<b>Phenolics (total)</b> - Method: APHA 5530B & D Phenols	Melbourne	Apr 05, 2018	7 Day
<b>Sulphate (as SO<sub>4</sub>)</b> - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Apr 05, 2018	28 Day
<b>Total Organic Carbon</b> - Method: APHA 5310B Total Organic Carbon	Melbourne	Apr 05, 2018	28 Day
<b>Alkalinity (speciated)</b> - Method: APHA 2320 Alkalinity by Titration	Melbourne	Apr 05, 2018	14 Day
<b>Heavy Metals</b> - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 05, 2018	180 Day
<b>Alkali Metals</b> - Method: USEPA 6010 Alkali Metals	Melbourne	Apr 09, 2018	180 Day

**Company Name:** Wentworth Shire Council  
**Address:** 26-28 Adelaide St  
Wentworth  
NSW 2648

**Order No.:**  
**Report #:** 592026  
**Phone:** 03 5027 5027  
**Fax:** 03 5027 5000

**Received:** Mar 29, 2018 11:50 AM  
**Due:** Apr 9, 2018  
**Priority:** 5 Day

**Project Name:** BURONGA LANDFILL BORE HOLE TESTS  
**Project ID:** MARCH 2018

**Eurofins | mgt Analytical Services Manager : Andrew Black**

Sample Detail						Ammonia (as N)	Arsenic	Benzene	Calcium	Chloride	Conductivity (at 25°C)	Fluoride	Lead	Magnesium	Manganese	Nitrate (as N)	Nitrite (as N)	pH (at 25°C)	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 # 23736</b>																									
<b>External Laboratory</b>																									
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																				
1	BORE 2	Mar 28, 2018		Water	M18-Ap00641	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2	BORE 3	Mar 28, 2018		Water	M18-Ap00642	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3	BORE 4	Mar 28, 2018		Water	M18-Ap00643	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	DAM	Mar 28, 2018		Water	M18-Ap00644	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
<b>Test Counts</b>						4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

## Internal Quality Control Review and Glossary

### General

- 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.
- All soil results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- 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 SRA.

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.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*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 and 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>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>QSM</b>	Quality Systems Manual ver 5.1 US Department of Defense
<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

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

### QC Data General Comments

- 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.
- 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.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- 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.
- 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.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- 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 SO <sub>4</sub> )	mg/L	< 5		5	Pass	
Total Organic Carbon	mg/L	< 5		5	Pass	
<b>Method Blank</b>						
<b>Alkalinity (speciated)</b>						
Total Alkalinity (as CaCO <sub>3</sub> )	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	%	108		70-130	Pass	
<b>LCS - % Recovery</b>						
Ammonia (as N)	%	101		70-130	Pass	
Chloride	%	113		70-130	Pass	
Fluoride	%	113		70-130	Pass	
Nitrate (as N)	%	102		70-130	Pass	
Nitrite (as N)	%	107		70-130	Pass	
Phenolics (total)	%	107		70-130	Pass	
Sulphate (as SO <sub>4</sub> )	%	100		70-130	Pass	
Total Organic Carbon	%	107		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Alkalinity (speciated)</b>						
Total Alkalinity (as CaCO <sub>3</sub> )	%	97		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Heavy Metals</b>						
Arsenic	%	93		80-120	Pass	
Lead	%	99		80-120	Pass	
Manganese	%	99		80-120	Pass	
<b>LCS - % Recovery</b>						
<b>Alkali Metals</b>						
Calcium	%	116		70-130	Pass	
Magnesium	%	113		70-130	Pass	
Potassium	%	101		70-130	Pass	
Sodium	%	108		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>									
<b>BTEX</b>				Result 1					
Benzene	M18-Ap02756	NCP	%	109			70-130	Pass	
<b>Spike - % Recovery</b>									
				Result 1					
Ammonia (as N)	M18-Ap01425	NCP	%	96			70-130	Pass	
Chloride	M18-Ap03601	NCP	%	72			70-130	Pass	
Nitrate (as N)	M18-Ap01425	NCP	%	101			70-130	Pass	
Nitrite (as N)	M18-Ap01425	NCP	%	104			70-130	Pass	
Phenolics (total)	M18-Ap00641	CP	%	84			70-130	Pass	
Sulphate (as SO4)	P18-Ap02696	NCP	%	96			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Arsenic	S18-Ma35265	NCP	%	93			75-125	Pass	
Lead	M18-Ap02580	NCP	%	98			75-125	Pass	
Manganese	M18-Ap02580	NCP	%	131			75-125	Fail	Q08
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Calcium	M18-Ma34222	NCP	%	123			70-130	Pass	
Magnesium	M18-Ma34222	NCP	%	113			70-130	Pass	
Potassium	M18-Ma34222	NCP	%	113			70-130	Pass	
Sodium	M18-Ma34222	NCP	%	108			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>BTEX</b>				Result 1	Result 2	RPD			
Benzene	M18-Ap02755	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Ammonia (as N)	M18-Ap01425	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Chloride	M18-Ap03439	NCP	mg/L	2800	2900	1.0	30%	Pass	
Conductivity (at 25°C)	M18-Ap02586	NCP	uS/cm	270	270	2.0	30%	Pass	
Fluoride	M18-Ap00455	NCP	mg/L	0.5	0.6	7.8	30%	Pass	
Nitrate (as N)	M18-Ap01425	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M18-Ap01425	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH (at 25°C)	M18-Ap02586	NCP	pH Units	8.2	8.2	pass	30%	Pass	
Phenolics (total)	M18-Ap00641	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as SO4)	M18-Ap03439	NCP	mg/L	470	500	6.0	30%	Pass	
<b>Duplicate</b>									
<b>Alkalinity (speciated)</b>				Result 1	Result 2	RPD			
Total Alkalinity (as CaCO3)	M18-Ap02586	NCP	mg/L	26	23	9.0	30%	Pass	
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Arsenic	S18-Ma35265	NCP	mg/L	0.001	0.001	<1	30%	Pass	
Lead	M18-Ap02580	NCP	mg/L	0.004	0.005	5.0	30%	Pass	
Manganese	M18-Ap02580	NCP	mg/L	0.97	0.96	2.0	30%	Pass	
<b>Duplicate</b>									
<b>Alkali Metals</b>				Result 1	Result 2	RPD			
Calcium	Z18-Ap00062	NCP	mg/L	25	25	<1	30%	Pass	
Magnesium	Z18-Ap00062	NCP	mg/L	15	15	1.0	30%	Pass	
Potassium	Z18-Ap00062	NCP	mg/L	1.7	1.7	1.0	30%	Pass	
Sodium	Z18-Ap00062	NCP	mg/L	3.6	3.6	2.0	30%	Pass	
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Total Organic Carbon	M18-Ap00643	CP	mg/L	9.4	9.8	4.0	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
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

## Authorised By

Andrew Black	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacallis	Senior Analyst-Volatile (VIC)
Michael Brancati	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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