

QUALITY CONTROL REPORT

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ES1827443 WARRUMBUNGLE SHIRE COUNCIL Mr Andrew Milford Andrew Park BLANKET QUOTE	Page Laboratory Contact Address Telephone Date Samples Received Date Analysis Commenced Issue Date	: Environmental Division Sydney : Customer Services ES	NATA
: 8 : 8			Accreditation No. 825 ed for compliance with ISO/IEC 17025 - Testing
	WARRUMBUNGLE SHIRE COUNCIL Mr Andrew Milford Mndrew Park BLANKET QUOTE 	WARRUMBUNGLE SHIRE COUNCIL Laboratory Mr Andrew Milford Contact Address Date Samples Received Date Analysis Commenced Issue Date Andrew Park BLANKET QUOTE 8	WARRUMBUNGLE SHIRE COUNCIL Laboratory : Environmental Division Sydney Mr Andrew Milford Contact : Customer Services ES Address : 277-289 Woodpark Road Smithfield NSW Australia Telephone : +61-2-8784 8555 Date Samples Received : 17-Sep-2018 Issue Date : 18-Sep-2018 Issue Date : 21-Sep-2018 E Issue Date : 21-Sep-2018 BLANKET QUOTE : . 8 . .

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full. This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
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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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

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

RPD = Relative Percentage Difference

= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL						Laboratory	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%
EA002: pH 1:5 (Soils	s) (QC Lot: 1936505)								
ES1826044-014	Anonymous	EA002: pH Value		0.1	pH Unit	6.3	6.2	0.00	0% - 20%
ES1827443-001	NATIVE GROVE CEMETERY POINT 1 150MM	EA002: pH Value		0.1	pH Unit	5.9	5.8	0.00	0% - 20%
EA010: Conductivity	y (1:5) (QC Lot: 1936506)								
ES1827452-003	Anonymous	EA010: Electrical Conductivity @ 25°C		1	µS/cm	226	226	0.00	0% - 20%
ES1827443-001	NATIVE GROVE CEMETERY POINT 1 150MM	EA010: Electrical Conductivity @ 25°C		1	µS/cm	30	25	19.8	0% - 20%
EA055: Moisture Co	ontent (Dried @ 105-110°C) (C	QC Lot: 1937913)							
ES1827252-003	03 Anonymous EA055: Moisture Content			0.1	%	2.7	3.1	12.5	No Limit
ES1827443-008	NATIVE GROVE CEMETERY POINT 4 300MM	EA055: Moisture Content		0.1	%	3.4	2.9	16.7	No Limit
ED005: Exchange A	cidity (QC Lot: 1941869)								
ES1827443-001	NATIVE GROVE CEMETERY POINT 1 150MM	ED005: Exchangeable Aluminium		0.1	meq/100g	0.6	0.6	0.00	No Limit
ED007: Exchangeab	ole Cations (QC Lot: 1941868)							
ES1826044-014	Anonymous	ED007: Exchangeable Sodium Percent		0.1	%	5.7	5.7	0.00	0% - 20%
		ED007: Exchangeable Calcium		0.1	meq/100g	4.6	4.5	0.00	0% - 20%
		ED007: Exchangeable Magnesium		0.1	meq/100g	2.7	2.6	0.00	0% - 20%
		ED007: Exchangeable Potassium		0.1	meq/100g	0.2	0.2	0.00	No Limit
		ED007: Exchangeable Sodium		0.1	meq/100g	0.4	0.4	0.00	No Limit
		ED007: Cation Exchange Capacity		0.1	meq/100g	7.9	7.8	0.00	0% - 20%
		ED007: Exchangeable Aluminium		0.1	meq/100g	<0.1	<0.1	0.00	No Limit
ES1827443-004	NATIVE GROVE CEMETERY POINT 2 300MM	ED007: Exchangeable Sodium Percent		0.1	%	5.7	5.4	5.40	0% - 20%



ub-Matrix: SOIL						Laboratory I	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED007: Exchangeal	ole Cations (QC Lot: 1941868)- continued							
ES1827443-004	NATIVE GROVE	ED007: Exchangeable Calcium		0.1	meq/100g	<0.1	<0.1	0.00	No Limit
	CEMETERY POINT 2 300MM								
		ED007: Exchangeable Magnesium		0.1	meq/100g	0.8	0.8	0.00	No Limit
		ED007: Exchangeable Potassium		0.1	meq/100g	0.2	0.2	0.00	No Limit
		ED007: Exchangeable Sodium		0.1	meq/100g	<0.1	<0.1	0.00	No Limit
		ED007: Cation Exchange Capacity		0.1	meq/100g	1.0	1.0	0.00	0% - 50%
		ED007: Exchangeable Aluminium		0.1	meq/100g	<0.1	<0.1	0.00	No Limit
EK059G: Nitrite plu	is Nitrate as N (NOx) by Disc	rete Analyser (QC Lot: 1936507)							
ES1827443-001	NATIVE GROVE	EK059G: Nitrite + Nitrate as N (Sol.)		0.1	mg/kg	1.5	1.5	0.00	No Limit
	CEMETERY POINT 1 150MM								
EK061G: Total Kjelo	dahl Nitrogen By Discrete Ana	alyser (QC Lot: 1941121)							
ES1827443-008	NATIVE GROVE	EK061G: Total Kjeldahl Nitrogen as N		20	mg/kg	180	160	9.14	No Limit
	CEMETERY POINT 4 300MM								
ES1827443-001	NATIVE GROVE	EK061G: Total Kjeldahl Nitrogen as N		20	mg/kg	530	590	11.4	0% - 20%
	CEMETERY POINT 1 150MM								
EK067G: Total Pho	sphorus as P by Discrete Ana	lyser (QC Lot: 1941120)							
ES1827443-001	NATIVE GROVE	EK067G: Total Phosphorus as P		2	mg/kg	270	312	14.4	0% - 20%
	CEMETERY POINT 1 150MM								
EK072: Phosphate	Sorption Capacity (QC Lot: 1	936514)							
ES1827443-001	NATIVE GROVE	EK072: Phosphate Sorption Capacity		250	mg P sorbed/kg	780	868	10.7	No Limit
	CEMETERY POINT 1 150MM								
EP004: Organi <u>c Ma</u>	tter (QC Lot: 1938595)								
ES1827187-008	Anonymous	EP004: Total Organic Carbon		0.5	%	1.2	1.3	0.00	No Limit
ES1827187-017	Anonymous	EP004: Total Organic Carbon		0.5	%	0.6	0.6	0.00	No Limit
EP004: Organi <u>c Ma</u>	tter (QC Lot: 1938596)								
ES1827616-001	Anonymous	EP004: Total Organic Carbon		0.5	%	<0.5	<0.5	0.00	No Limit
				0.0	,,,	0.0	0.0	0.00	



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL				Method Blank (MB)	Laboratory Control Spike (LCS) Report					
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)		
Method: Compound CAS I	Number	LOR	Unit	Result	Concentration	LCS	Low	High		
EA010: Conductivity (1:5) (QCLot: 1936506)										
EA010: Electrical Conductivity @ 25°C		1	μS/cm	<1	1412 µS/cm	98.4	92	108		
ED005: Exchange Acidity (QCLot: 1941869)										
ED005: Exchangeable Aluminium		0.1	meq/100g	<1.6						
ED007: Exchangeable Cations (QCLot: 1941868)										
ED007: Exchangeable Calcium		0.1	meq/100g	<0.1	1 meq/100g	93.0	76	120		
ED007: Exchangeable Magnesium		0.1	meq/100g	<0.1	1.67 meq/100g	94.0	75	115		
ED007: Exchangeable Potassium		0.1	meq/100g	<0.1	0.51 meq/100g	94.7	80	120		
ED007: Exchangeable Sodium		0.1	meq/100g	<0.1	0.87 meq/100g	92.0	80	120		
ED007: Cation Exchange Capacity		0.1	meq/100g	<0.1						
ED007: Exchangeable Aluminium		0.1	meq/100g	<0.1						
ED007: Exchangeable Sodium Percent		0.1	%	<0.1						
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser(QC	CLot: 193	6507)								
EK059G: Nitrite + Nitrate as N (Sol.)		0.1	mg/kg	<0.1	2.5 mg/kg	104	88	118		
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 19	41121)									
EK061G: Total Kjeldahl Nitrogen as N		20	mg/kg	<20	1000 mg/kg	94.9	72	106		
				<20	100 mg/kg	113	70	122		
				<20	500 mg/kg	102	74	118		
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 194	41120)									
EK067G: Total Phosphorus as P		2	mg/kg	<2	442 mg/kg	96.7	76	108		
				<2	44.2 mg/kg	96.5	70	118		
				<2	100 mg/kg	99.4	78	116		
EP004: Organic Matter (QCLot: 1938595)										
EP004: Total Organic Carbon		0.5	%	<0.5	1.363 %	91.7	81	99		
EP004: Organic Matter (QCLot: 1938596)										
EP004: Total Organic Carbon		0.5	%	<0.5	1.363 %	96.8	81	99		

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Ма	trix Spike (MS) Repor	t	
			Spike	SpikeRecovery(%)	Recovery L	imits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High

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Project	:



Sub-Matrix: SOIL	ub-Matrix: SOIL					Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery L	imits (%)			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High			
EK059G: Nitrite p	lus Nitrate as N (NOx) by Discrete Analyser (QCLot: 19	36507)								
ES1827443-001	NATIVE GROVE CEMETERY POINT 1 150MM	EK059G: Nitrite + Nitrate as N (Sol.) -		12.5 mg/kg	109	70	130			
EK061G: Total Kje	Idahl Nitrogen By Discrete Analyser (QCLot: 1941121)									
ES1827443-001	NATIVE GROVE CEMETERY POINT 1 150MM	EK061G: Total Kjeldahl Nitrogen as N -		500 mg/kg	89.1	70	130			
EK067G: Total Ph	osphorus as P by Discrete Analyser (QCLot: 1941120)									
ES1827443-001	NATIVE GROVE CEMETERY POINT 1 150MM	EK067G: Total Phosphorus as P -		100 mg/kg	79.4	70	130			
EP004: Organic M	atter (QCLot: 1938595)									
ES1827187-008	Anonymous	EP004: Total Organic Carbon -		0.36 %	83.1	70	130			
EP004: Organic M	atter (QCLot: 1938596)									
ES1827616-001	Anonymous	EP004: Total Organic Carbon -		0.28 %	83.2	70	130			