

CERTIFICATE OF ANALYSIS

Work Order : **ES1708584**
Client : **WARRUMBUNGLE SHIRE COUNCIL**
Contact :
Address : 59 Binnia Street
 COOLAH NSW 2843
Telephone : ----
Project : ----
Order number : ----
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : SYBQ-407-15
No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 3
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 11-Apr-2017 09:14
Date Analysis Commenced : 12-Apr-2017
Issue Date : 20-Apr-2017 11:35



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

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 Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ashesh Patel	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Dian Dao		Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Raymond Commodore	Instrument Chemist	Sydney Inorganics, Smithfield, NSW



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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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

∅ = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H⁺ + Al³⁺).



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID			NATIVE GROVE SITE 1	NATIVE GROVE SITE 2	NATIVE GROVE SITE 3	NATIVE GROVE SITE 4	----	
Client sampling date / time		10-Apr-2017 08:10			10-Apr-2017 08:15		10-Apr-2017 08:17		10-Apr-2017 08:20	----
Compound	CAS Number	LOR	Unit	ES1708584-001	ES1708584-002	ES1708584-003	ES1708584-004	-----	----	
				Result	Result	Result	Result	----	----	
EA002 : pH (Soils)										
pH Value	----	0.1	pH Unit	6.8	6.4	6.4	6.0	----	----	
EA010: Conductivity										
Electrical Conductivity @ 25°C	----	1	µS/cm	11	4	15	8	----	----	
EA055: Moisture Content										
Moisture Content (dried @ 103°C)	----	1	%	3.5	5.3	5.9	4.9	----	----	
ED007: Exchangeable Cations										
Exchangeable Calcium	----	0.1	meq/100g	0.4	0.1	0.8	0.1	----	----	
Exchangeable Magnesium	----	0.1	meq/100g	0.5	0.7	0.6	0.5	----	----	
Exchangeable Potassium	----	0.1	meq/100g	0.2	0.2	0.3	0.2	----	----	
Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.1	<0.1	----	----	
Cation Exchange Capacity	----	0.1	meq/100g	1.1	1.0	1.7	0.8	----	----	
Exchangeable Sodium Percent	----	0.1	%	1.0	1.7	5.9	2.8	----	----	
ED093S: Soluble Major Cations										
Calcium	7440-70-2	10	mg/kg	<10	<10	<10	<10	----	----	
Magnesium	7439-95-4	10	mg/kg	<10	10	20	<10	----	----	
Sodium	7440-23-5	10	mg/kg	<10	<10	<10	<10	----	----	
Potassium	7440-09-7	10	mg/kg	10	20	30	10	----	----	
EG005T: Total Metals by ICP-AES										
Aluminium	7429-90-5	50	mg/kg	5600	5910	5390	5500	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser										
Total Phosphorus as P	----	2	mg/kg	252	183	191	124	----	----	
EK072: Phosphate Sorption Capacity										
Phosphate Sorption Capacity	----	250	mg P sorbed/kg	662	676	483	544	----	----	
EP004: Organic Matter										
Total Organic Carbon	----	0.5	%	0.6	0.6	<0.5	<0.5	----	----	