



CERTIFICATE OF ANALYSIS

Work Order : **ES2320566**
Client : **WARRUMBUNGLE SHIRE COUNCIL**
Contact : COUNCIL .
Address : 59 Binnia Street
COOLAH NSW 2843
Telephone : +61 02 6849 2000
Project : Coonabarabran STP - EPL - 1744
Order number : ----
C-O-C number : ----
Sampler :
Site : ----
Quote number : EN/333
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 : 21-Jun-2023 19:40
Date Analysis Commenced : 23-Jun-2023
Issue Date : 29-Jun-2023 16:44



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Evie Sidarta	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract 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
ø = 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)				Sample ID	NATIVE GROVE - POINT 4	NATIVE GROVE - POINT 5	NATIVE GROVE - POINT 6	NATIVE GROVE - POINT 7	----
Sampling date / time				20-Jun-2023 14:30	20-Jun-2023 14:30	20-Jun-2023 14:30	20-Jun-2023 14:30	----	
Compound	CAS Number	LOR	Unit	ES2320566-001	ES2320566-002	ES2320566-003	ES2320566-004	-----	
				Result	Result	Result	Result	----	
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit	5.7	6.2	7.2	6.4	----	
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm	8	8	15	13	----	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	18.7	23.0	6.8	19.5	----	
ED007: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g	0.1	<0.1	<0.1	<0.1	----	
Exchangeable Magnesium	----	0.1	meq/100g	0.3	0.3	0.6	0.8	----	
Exchangeable Potassium	----	0.1	meq/100g	0.1	0.2	0.2	0.2	----	
Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	<0.1	<0.1	----	
Cation Exchange Capacity	----	0.1	meq/100g	0.5	0.5	0.9	1.2	----	
Exchangeable Sodium Percent	----	0.1	%	<0.1	6.9	3.0	7.0	----	
ED093S: Soluble Major Cations									
Calcium	7440-70-2	10	mg/kg	<10	<10	<10	<10	----	
Magnesium	7439-95-4	10	mg/kg	<10	<10	<10	<10	----	
Sodium	7440-23-5	10	mg/kg	<10	<10	<10	10	----	
Potassium	7440-09-7	10	mg/kg	<10	<10	<10	<10	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.3	0.4	0.4	0.4	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg	110	210	170	310	----	
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg	110	210	170	310	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	155	155	319	152	----	
EK072: Phosphate Sorption Capacity									
Phosphate Sorption Capacity	----	250	mg P sorbed/kg	812	793	648	702	----	
EP004: Organic Matter									
Organic Matter	----	0.5	%	<0.5	<0.5	<0.5	0.6	----	