

CERTIFICATE OF ANALYSIS

Work Order : **EW1700498**
Client : **WINGECARRIBEE SHIRE COUNCIL**
Contact : MR CHRIS MURPHY
Address : PO BOX 141
 MOSSVALE NSW
 AUSTRALIA
Telephone : ----
Project : RRC Quarterly
Order number : TBA
C-O-C number : ----
Sampler : Robert DaLio
Site : ----
Quote number : WO/067/12
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 4
Laboratory : Environmental Division NSW South Coast
Contact : Glenn Davies
Address : 1/19 Ralph Black Dr, North Wollongong 2500
 4/13 Geary Pl, North Nowra 2541
 Australia
Telephone : 02 42253125
Date Samples Received : 07-Feb-2017 16:00
Date Analysis Commenced : 07-Feb-2017
Issue Date : 15-Feb-2017 09:31



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> |
|--------------------|---------------------------------------|------------------------------------|
| Celine Conceicao | Senior Spectroscopist | Sydney Inorganics, Smithfield, NSW |
| Dian Dao | | Sydney Inorganics, Smithfield, NSW |
| Glenn Davies | Environmental Services Representative | Laboratory - Wollongong |



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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Ionic Balance out of acceptable limits for sample 1 due to analytes not quantified in this report.
- Sampling and sample data supplied by ALS Wollongong.
- Sampling completed as per FWI-EN001 Groundwater Sampling.
- Sampling completed as per FWI-EN002 Surface Water Sampling.
- Field tests completed on day of sampling/receipt.



Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | EPA 1 | EPA 2 | EPA 3 | EPA 5 | EPA 6 |
|--|-------------|------|---------|-------------------|-------------------|-------------------|-------------------|-------------------|-------|
| Client sampling date / time | | | | 07-Feb-2017 10:00 | 07-Feb-2017 08:50 | 07-Feb-2017 09:40 | 07-Feb-2017 09:20 | 07-Feb-2017 09:25 | |
| Compound | CAS Number | LOR | Unit | EW1700498-001 | EW1700498-002 | EW1700498-003 | EW1700498-004 | EW1700498-005 | |
| | | | | Result | Result | Result | Result | Result | |
| EA005FD: Field pH | | | | | | | | | |
| pH | ---- | 0.1 | pH Unit | 5.0 | 4.5 | 5.4 | 7.7 | 8.2 | |
| EA010FD: Field Conductivity | | | | | | | | | |
| Electrical Conductivity (Non Compensated) | ---- | 1 | µS/cm | 5060 | 548 | 3060 | 1460 | 511 | |
| EA015: Total Dissolved Solids | | | | | | | | | |
| Total Dissolved Solids @180°C | ---- | 10 | mg/L | 3410 | 310 | 1490 | 910 | 334 | |
| ED037P: Alkalinity by PC Titrator | | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | <1 | <1 | <1 | <1 | ---- | |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | <1 | <1 | <1 | <1 | ---- | |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | 2 | <1 | 20 | 305 | ---- | |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | 2 | <1 | 20 | 305 | ---- | |
| ED041G: Sulfate (Turbidimetric) as SO4 2- by DA | | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | 120 | <1 | <1 | 163 | ---- | |
| ED045G: Chloride by Discrete Analyser | | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | 938 | 158 | 885 | 176 | ---- | |
| ED093F: Dissolved Major Cations | | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | 171 | 2 | 18 | 85 | ---- | |
| Magnesium | 7439-95-4 | 1 | mg/L | 123 | 8 | 45 | 51 | ---- | |
| Sodium | 7440-23-5 | 1 | mg/L | 561 | 83 | 474 | 123 | ---- | |
| Potassium | 7440-09-7 | 1 | mg/L | 22 | <1 | 2 | 42 | ---- | |
| EK055G: Ammonia as N by Discrete Analyser | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | 0.23 | 0.14 | 0.02 | 0.36 | 0.19 | |
| EN055: Ionic Balance | | | | | | | | | |
| Total Anions | ---- | 0.01 | meq/L | 29.0 | 4.46 | 25.4 | 14.4 | ---- | |
| Total Cations | ---- | 0.01 | meq/L | 43.6 | 4.37 | 25.3 | 14.9 | ---- | |
| Ionic Balance | ---- | 0.01 | % | 20.1 | 1.00 | 0.18 | 1.40 | ---- | |
| EP005: Total Organic Carbon (TOC) | | | | | | | | | |
| Total Organic Carbon | ---- | 1 | mg/L | 16 | 20 | 5 | 16 | 32 | |
| EP030: Biochemical Oxygen Demand (BOD) | | | | | | | | | |
| Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | ---- | ---- | <2 | 5 | |
| FWI-EN/001: Groundwater Sampling - Depth | | | | | | | | | |
| Depth | ---- | 0.01 | m | 3.60 | 2.26 | 2.62 | ---- | ---- | |



Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | Client sample ID | | | EPA 7 | ---- | ---- | ---- | ---- |
|--|------------|-------------------|---------|---------------|-------|-------|-------|-------|------|
| Client sampling date / time | | 07-Feb-2017 09:35 | | | ---- | ---- | ---- | ---- | |
| Compound | CAS Number | LOR | Unit | EW1700498-006 | ----- | ----- | ----- | ----- | |
| | | | | Result | ---- | ---- | ---- | ---- | |
| EA005FD: Field pH | | | | | | | | | |
| pH | ---- | 0.1 | pH Unit | 7.8 | ---- | ---- | ---- | ---- | |
| EA010FD: Field Conductivity | | | | | | | | | |
| Electrical Conductivity (Non Compensated) | ---- | 1 | µS/cm | 2030 | ---- | ---- | ---- | ---- | |
| EA015: Total Dissolved Solids | | | | | | | | | |
| Total Dissolved Solids @180°C | ---- | 10 | mg/L | 1290 | ---- | ---- | ---- | ---- | |
| EK055G: Ammonia as N by Discrete Analyser | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | 4.99 | ---- | ---- | ---- | ---- | |
| EP005: Total Organic Carbon (TOC) | | | | | | | | | |
| Total Organic Carbon | ---- | 1 | mg/L | 96 | ---- | ---- | ---- | ---- | |
| EP030: Biochemical Oxygen Demand (BOD) | | | | | | | | | |
| Biochemical Oxygen Demand | ---- | 2 | mg/L | 12 | ---- | ---- | ---- | ---- | |