# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES1521479** | Page | : 1 of 4 |
| Client | : **LOW ECOLOGICAL SERVICES** | Laboratory | : Environmental Division Sydney |
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| Project | : SPINIFEX BORE | QC Level | : NEPM 2013 Schedule B(3) and ALS QCS3 requirement |
| Order number | : ---- | Date Samples Received | : 08-May-2015 09:00 |
| C-O-C number | : ---- | Date Analysis Commenced | : 09-May-2015 |
| Sampler | : ---- | Issue Date | : 18-May-2015 17:06 |
| Site | : ---- | | |
| | | No. of samples received | : 3 |
| Quote number | : ---- | No. of samples analysed | : 3 |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

## *Signatories*

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

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Ankit Joshi | Inorganic Chemist | Sydney Inorganics |
| Shobhna Chandra | Metals Coordinator | Sydney Inorganics |

## 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 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.

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.

- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | 1 2015 | 3 2015 | 5 2015 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | [28-Apr-2015] | [25-Apr-2015] | [27-Apr-2015] | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | ES1521479-001 | ES1521479-002 | ES1521479-003 | -------- | -------- |
| | | | | | Result | Result | Result | Result | Result |
| **EA005P: pH by PC Titrator** | | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | | 8.12 | 8.39 | 8.55 | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | | 2680 | 2170 | 1210 | ---- | ---- |
| **EA016: Calculated TDS (from Electrical Conductivity)** | | | | | | | | | |
| ^ Total Dissolved Solids (Calc.) | ---- | 1 | mg/L | | 1740 | 1410 | 786 | ---- | ---- |
| **EA065: Total Hardness as CaCO3** | | | | | | | | | |
| ^ Total Hardness as CaCO3 | ---- | 1 | mg/L | | 213 | 472 | 74 | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | | <1 | <1 | <1 | ---- | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | | <1 | 6 | 18 | ---- | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | | 68 | 173 | 164 | ---- | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | | 68 | 179 | 182 | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | | 387 | 275 | 136 | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | | 569 | 421 | 176 | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | | 67 | 48 | 37 | ---- | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | | 25 | 55 | 31 | ---- | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | | 455 | 330 | 164 | ---- | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | | 9 | 12 | 10 | ---- | ---- |
| **EG051G: Ferrous Iron by Discrete Analyser** | | | | | | | | | |
| Ferrous Iron | ---- | 0.05 | mg/L | | <0.05 | 0.20 | <0.05 | ---- | ---- |
| **EK040P: Fluoride by PC Titrator** | | | | | | | | | |
| Fluoride | 16984-48-8 | 0.1 | mg/L | | 1.6 | 2.4 | 2.1 | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | | |
| Nitrite as N | ---- | 0.01 | mg/L | | <0.01 | 0.01 | <0.01 | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | | |
| ^ Nitrate as N | 14797-55-8 | 0.01 | mg/L | | 0.05 | 2.45 | 4.33 | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | 0.05 | 2.46 | 4.33 | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | | |
| ^ Total Anions | ---- | 0.01 | meq/L | | 25.5 | 21.2 | 11.4 | ---- | ---- |
| ^ Total Cations | ---- | 0.01 | meq/L | | 25.4 | 21.6 | 11.8 | ---- | ---- |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **1 2015** | **3 2015** | **5 2015** | **----** | **----** |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | [28-Apr-2015] | [25-Apr-2015] | [27-Apr-2015] | ---- | ---- |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **ES1521479-001** | **ES1521479-002** | **ES1521479-003** | **--------** | **--------** |
| | | | | | Result | Result | Result | Result | Result |
| **EN055: Ionic Balance - Continued** | | | | | | | | | |
| ^ **Ionic Balance** | ---- | 0.01 | % | | **0.10** | **0.93** | **1.51** | **----** | **----** |