

CERTIFICATE OF ANALYSIS

| | | | |
|---------------------|---|--------------------------------|---|
| Work Order | : EW1501173 | Page | : 1 of 4 |
| Amendment | : 1 | | |
| Client | : WOLLONGONG CITY COUNCIL | Laboratory | : Environmental Division NSW South Coast |
| Contact | : MR WAYDE PETERSON | Contact | : Glenn Davies |
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| Project | : Whytes Gully Storm Water Overflow | QC Level | : NEPM 2013 Schedule B(3) and ALS QCS3 requirement |
| Order number | : 3032573 | | |
| C-O-C number | : ---- | Date Samples Received | : 08-APR-2015 |
| Sampler | : ---- | Issue Date | : 20-APR-2015 |
| Site | : ---- | | |
| Quote number | : SY/454/14 Tender | No. of samples received | : 3 |
| | | No. of samples analysed | : 3 |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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 |
| Glenn Davies | Environmental Services Representative | Laboratory - Wollongong |
| 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.

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

- **Field tests completed on day of sampling/receipt.**
 - **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.**
 - **This report has been amended as a result of misinterpretation of project (IDs). All analysis results are as per the previous report**
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Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | Point 1 (Point 1) | Point 4 (Point 33) | Point 6 (Point 34) | --- | --- |
|--|-------------|------|---------|------------------|-------------------|--------------------|--------------------|-----|-----|
| Client sampling date / time | | | | | 08-APR-2015 14:20 | 08-APR-2015 15:20 | 08-APR-2015 14:40 | --- | --- |
| Compound | CAS Number | LOR | Unit | EW1501173-001 | EW1501173-002 | EW1501173-003 | --- | --- | |
| EA005FD: Field pH | | | | | | | | | |
| pH | --- | 0.1 | pH Unit | 8.0 | 7.4 | 7.7 | --- | --- | |
| EA010FD: Field Conductivity | | | | | | | | | |
| Electrical Conductivity (Non Compensated) | --- | 1 | µS/cm | 732 | 368 | 389 | --- | --- | |
| EA015: Total Dissolved Solids | | | | | | | | | |
| Total Dissolved Solids @180°C | --- | 10 | mg/L | 436 | 229 | 206 | --- | --- | |
| EA025: Suspended Solids | | | | | | | | | |
| Suspended Solids (SS) | --- | 5 | mg/L | 39 | 12 | 6 | --- | --- | |
| EA075FD: Field Redox Potential | | | | | | | | | |
| Redox Potential | --- | 0.1 | mV | <0.1 | <0.1 | <0.1 | --- | --- | |
| EA116: Temperature | | | | | | | | | |
| Temperature | --- | 0.1 | °C | 18.4 | 15.9 | 16.7 | --- | --- | |
| 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 | <1 | <1 | --- | --- | |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | 193 | 97 | 110 | --- | --- | |
| Total Alkalinity as CaCO3 | --- | 1 | mg/L | 193 | 97 | 110 | --- | --- | |
| ED041G: Sulfate (Turbidimetric) as SO4 2- by DA | | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | 24 | 16 | 20 | --- | --- | |
| ED045G: Chloride Discrete analyser | | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | 94 | 36 | 46 | --- | --- | |
| ED093T: Total Major Cations | | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | 23 | 19 | 26 | --- | --- | |
| Magnesium | 7439-95-4 | 1 | mg/L | 16 | 10 | 13 | --- | --- | |
| Sodium | 7440-23-5 | 1 | mg/L | 88 | 35 | 28 | --- | --- | |
| Potassium | 7440-09-7 | 1 | mg/L | 15 | 5 | 3 | --- | --- | |
| EG020F: Dissolved Metals by ICP-MS | | | | | | | | | |
| Iron | 7439-89-6 | 0.05 | mg/L | 0.14 | 0.38 | 0.24 | --- | --- | |
| EK040P: Fluoride by PC Titrator | | | | | | | | | |
| Fluoride | 16984-48-8 | 0.1 | mg/L | 0.5 | 0.1 | <0.1 | --- | --- | |
| EK055G: Ammonia as N by Discrete Analyser | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | 0.46 | 0.07 | 0.02 | --- | --- | |
| EK057G: Nitrite as N by Discrete Analyser | | | | | | | | | |



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

| | | | | Point 1 (Point 1) | Point 4 (Point 33) | Point 6 (Point 34) | ---- | ---- |
|---|------------|------|------|-------------------|--------------------|--------------------|------|------|
| | | | | 08-APR-2015 14:20 | 08-APR-2015 15:20 | 08-APR-2015 14:40 | ---- | ---- |
| | | | | EW1501173-001 | EW1501173-002 | EW1501173-003 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | | | | |
| EK057G: Nitrite as N by Discrete Analyser - Continued | | | | | | | | |
| Nitrite as N | ---- | 0.01 | mg/L | 0.32 | 0.02 | <0.01 | ---- | ---- |
| EK058G: Nitrate as N by Discrete Analyser | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | 1.30 | 0.40 | 0.26 | ---- | ---- |
| EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | 1.62 | 0.42 | 0.26 | ---- | ---- |
| EP005: Total Organic Carbon (TOC) | | | | | | | | |
| Total Organic Carbon | ---- | 1 | mg/L | 12 | 8 | 4 | ---- | ---- |
| EP025FD: Field Dissolved Oxygen | | | | | | | | |
| Dissolved Oxygen | ---- | 0.01 | mg/L | 7.53 | 8.04 | 9.01 | ---- | ---- |
| EP035G: Total Phenol by Discrete Analyser | | | | | | | | |
| Phenols (Total) | ---- | 0.05 | mg/L | <0.05 | <0.05 | <0.05 | ---- | ---- |