



CERTIFICATE OF ANALYSIS

<p>Work Order : EW1403736</p> <p>Client : WOLLONGONG CITY COUNCIL</p> <p>Contact : MR WAYDE PETERSON</p> <p>Address : 41 BURELLI STREET WOLLONGONG NSW, AUSTRALIA 2500</p> <p>E-mail : wpeterson@wollongong.nsw.gov.au</p> <p>Telephone : +61 02 4227 7111</p> <p>Facsimile : +61 02 4227 7277</p> <p>Project : Whytes Gully Storm Water Overflows</p> <p>Order number : 3030159</p> <p>C-O-C number : ----</p> <p>Sampler : Craig Wilson</p> <p>Site : ----</p> <p>Quote number : SY/454/14 Tender</p>	<p>Page : 1 of 4</p> <p>Laboratory : Environmental Division NSW South Coast</p> <p>Contact : Glenn Davies</p> <p>Address : 99 Kenny Street, Wollongong 2500 Unit 4 / 13 Geary Place, PO Box 3105, North Nowra 2541 AUSTRALIA</p> <p>E-mail : glenn.davies@alsglobal.com</p> <p>Telephone : 02 4225 3125</p> <p>Facsimile : 02 4225 3128</p> <p>QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement</p> <p>Date Samples Received : 05-DEC-2014</p> <p>Issue Date : 12-DEC-2014</p> <p>No. of samples received : 3</p> <p>No. of samples analysed : 3</p>
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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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong
Hoa Nguyen	Senior 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.

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

- **Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.**
- **Field tests completed on day of sampling/receipt.**
- **Sampling and sample data supplied by ALS Wollongong.**
- **Sampling completed as per FWI-EN002 Surface Water Sampling.**



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				Point 1	Point 4	Point 6	---	---
				05-DEC-2014 15:05	05-DEC-2014 14:45	05-DEC-2014 15:15	---	---
Compound	CAS Number	LOR	Unit	EW1403736-001	EW1403736-002	EW1403736-003	---	---
EA005FD: Field pH								
pH	---	0.1	pH Unit	7.1	7.5	8.0	---	---
EA010FD: Field Conductivity								
Electrical Conductivity (Non Compensated)	---	1	µS/cm	845	397	440	---	---
EA025: Suspended Solids								
Suspended Solids (SS)	---	5	mg/L	20	24	10	---	---
EA075FD: Field Redox Potential								
Redox Potential	---	0.1	mV	<0.1	<0.1	<0.1	---	---
EA116: Temperature								
Temperature	---	0.1	°C	25.5	23.5	23.9	---	---
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	229	128	130	---	---
Total Alkalinity as CaCO3	---	1	mg/L	229	128	130	---	---
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	33	20	26	---	---
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	119	51	52	---	---
ED093T: Total Major Cations								
Calcium	7440-70-2	1	mg/L	35	28	34	---	---
Magnesium	7439-95-4	1	mg/L	20	12	14	---	---
Sodium	7440-23-5	1	mg/L	118	35	35	---	---
Potassium	7440-09-7	1	mg/L	16	4	4	---	---
EG020F: Dissolved Metals by ICP-MS								
Iron	7439-89-6	0.05	mg/L	0.07	0.17	0.15	---	---
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.4	0.2	0.2	---	---
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.22	0.09	<0.01	---	---
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	---	0.01	mg/L	0.11	<0.01	<0.01	---	---
EK058G: Nitrate as N by Discrete Analyser								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				Point 1	Point 4	Point 6	----	----
				05-DEC-2014 15:05	05-DEC-2014 14:45	05-DEC-2014 15:15	----	----
				EW1403736-001	EW1403736-002	EW1403736-003	----	----
Compound	CAS Number	LOR	Unit					
EK058G: Nitrate as N by Discrete Analyser - Continued								
Nitrate as N	14797-55-8	0.01	mg/L	0.59	0.16	0.22	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.70	0.16	0.22	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	13	5	5	----	----
EP025FD: Field Dissolved Oxygen								
Dissolved Oxygen	----	0.01	mg/L	8.12	6.35	8.34	----	----
EP035G: Total Phenol by Discrete Analyser								
Phenols (Total)	----	0.05	mg/L	<0.05	<0.05	<0.05	----	----