



CERTIFICATE OF ANALYSIS

Work Order	: EW1403541	Page	: 1 of 4
Client	: WOLLONGONG CITY COUNCIL	Laboratory	: Environmental Division NSW South Coast
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Project	: Whytes Gully Stage 3 Surfacewaters Quarterly	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 3030159	Date Samples Received	: 24-NOV-2014
C-O-C number	: ----	Issue Date	: 28-NOV-2014
Sampler	: Craig Wilson	No. of samples received	: 6
Site	: ----	No. of samples analysed	: 6
Quote number	: SY/454/14 Tender		

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
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

- **ED041G: LOR raised for Sulfate analysis on sample ID: SW5, due to matrix interferences.**
- **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

				SW1 Point 5	SW2 Point 35	SW3 Point 36	SW4 Point 33	SW5 Point 37
				24-NOV-2014 08:05	24-NOV-2014 07:50	24-NOV-2014 07:45	24-NOV-2014 07:35	24-NOV-2014 07:30
				EW1403541-001	EW1403541-002	EW1403541-003	EW1403541-004	EW1403541-005
Compound	CAS Number	LOR	Unit	Client sampling date / time				
EA005FD: Field pH								
pH	----	0.1	pH Unit	7.4	8.0	7.9	7.1	7.1
EA010FD: Field Conductivity								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	2760	1120	573	836	719
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	10	mg/L	1620	670	263	468	420
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	44	21	5	16	34
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	437	374	197	270	256
Total Alkalinity as CaCO3	----	1	mg/L	437	374	197	270	256
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	198	<1	9	1	<10
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	620	166	67	110	82
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	169	52	54	61	60
Magnesium	7439-95-4	1	mg/L	83	29	20	25	24
Sodium	7440-23-5	1	mg/L	294	140	44	74	54
Potassium	7440-09-7	1	mg/L	12	17	3	5	6
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.20	0.32	0.03	0.42	1.16
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	30.3	12.2	6.01	8.52	7.43
Total Cations	----	0.01	meq/L	28.4	11.5	6.33	8.45	7.47
Ionic Balance	----	0.01	%	3.38	2.76	2.58	0.42	0.29
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	6	20	3	4	9



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				SW6	---	---	---	---
				Point 34	---	---	---	---
				24-NOV-2014 09:25	---	---	---	---
				EW1403541-006	---	---	---	---
Compound	CAS Number	LOR	Unit					
EA005FD: Field pH								
pH	----	0.1	pH Unit	7.7	---	---	---	---
EA010FD: Field Conductivity								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	596	---	---	---	---
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	10	mg/L	370	---	---	---	---
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	<5	---	---	---	---
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	---	---	---	---
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	---	---	---	---
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	193	---	---	---	---
Total Alkalinity as CaCO3	----	1	mg/L	193	---	---	---	---
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	37	---	---	---	---
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	66	---	---	---	---
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	62	---	---	---	---
Magnesium	7439-95-4	1	mg/L	20	---	---	---	---
Sodium	7440-23-5	1	mg/L	38	---	---	---	---
Potassium	7440-09-7	1	mg/L	3	---	---	---	---
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.07	---	---	---	---
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	6.49	---	---	---	---
Total Cations	----	0.01	meq/L	6.47	---	---	---	---
Ionic Balance	----	0.01	%	0.13	---	---	---	---
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	1	---	---	---	---