

Environmental Division

## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>EW1203487</b></p> <p><b>Client</b> : <b>SHOALHAVEN CITY COUNCIL</b></p> <p><b>Contact</b> : D HOJEM</p> <p><b>Address</b> :</p> <p><b>E-mail</b> : hojem@shoalhaven.nsw.gov.au</p> <p><b>Telephone</b> : ----</p> <p><b>Facsimile</b> : ----</p> <p><b>Project</b> : Huskisson Landfill Quarterly</p> <p><b>Order number</b> : 1543516780</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : Craig Wilson</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : ----</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : Environmental Division NSW South Coast</p> <p><b>Contact</b> : Aneta Prosaroski</p> <p><b>Address</b> : 99 Kenny Street, Wollongong 2500 Unit 4 / 13 Geary Place, PO Box 3105, North Nowra 2541 AUSTRALIA</p> <p><b>E-mail</b> : aneta.prosaroski@alsglobal.com</p> <p><b>Telephone</b> : 02 4225 3125</p> <p><b>Facsimile</b> : 02 4225 3128</p> <p><b>QC Level</b> : NEPM 1999 Schedule B(3) and ALS QCS3 requirement</p> <p><b>Date Samples Received</b> : 14-DEC-2012</p> <p><b>Issue Date</b> : 11-JAN-2013</p> <p><b>No. of samples received</b> : 15</p> <p><b>No. of samples analysed</b> : 15</p>
--	---

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
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong
Raymond Commodor	Instrument Chemist	Sydney Inorganics
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

Address: 99 Kenny Street, Wollongong 2500

Environmental Division NSW South Coast, PO Box 3105, North Nowra 2541 An ALS Limited Company



---

## 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

- **Sampling data supplied by ALS Wollongong. NATA Accreditation No. 992**
-



## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

Client sampling date / time

				S1	S2	GA 1	GA 2	GA 4
				14-DEC-2012 08:02	14-DEC-2012 07:25	14-DEC-2012 07:20	14-DEC-2012 08:00	14-DEC-2012 08:30
Compound	CAS Number	LOR	Unit	EW1203487-001	EW1203487-002	EW1203487-003	EW1203487-004	EW1203487-005
<b>EA015: Total Dissolved Solids</b>								
Total Dissolved Solids @180°C	GIS-210-010	10	mg/L	----	----	----	4430	1100
<b>ED037P: Alkalinity by PC Titrator</b>								
Total Alkalinity as CaCO3	ALK_TOTAL	1	mg/L	----	----	----	82	54
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	423	108
<b>ED045G: Chloride Discrete analyser</b>								
Chloride	16887-00-6	1	mg/L	----	----	----	2450	568
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	----	----	----	48	24
Magnesium	7439-95-4	1	mg/L	----	----	----	208	49
Sodium	7440-23-5	1	mg/L	----	----	----	1280	312
Potassium	7440-09-7	1	mg/L	----	----	----	8	7
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	0.34	<0.01
<b>EN055: Ionic Balance</b>								
Total Anions	TOT_ANIONS	0.01	meq/L	----	----	----	79.6	19.4
Total Cations	TOT_CATIONS	0.01	meq/L	----	----	----	75.4	19.0
Ionic Balance	ION_BALANCE	0.01	%	----	----	----	2.70	0.98
<b>EN67 PK: Field Tests</b>								
pH	PH_LAB	0.1	pH Unit	----	----	----	5.4	5.2
Field Observations	----	0.01	--	dry	dry	dry	----	----
Standing Water Level	----	0.01	m AHD	----	----	----	<0.01	<0.01
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	7440-44-0	1	mg/L	----	----	----	5	<1



## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

Client sampling date / time

				GA 5	GA 6	GA 7a	GA 8	GA 9
				14-DEC-2012 09:15	14-DEC-2012 08:20	14-DEC-2012 08:10	14-DEC-2012 07:45	14-DEC-2012 07:35
Compound	CAS Number	LOR	Unit	EW1203487-006	EW1203487-007	EW1203487-008	EW1203487-009	EW1203487-010
<b>EA015: Total Dissolved Solids</b>								
Total Dissolved Solids @180°C	GIS-210-010	10	mg/L	3780	568	474	----	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Total Alkalinity as CaCO3	ALK_TOTAL	1	mg/L	166	14	1	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	313	184	72	----	----
<b>ED045G: Chloride Discrete analyser</b>								
Chloride	16887-00-6	1	mg/L	2150	185	153	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	68	2	<1	----	----
Magnesium	7439-95-4	1	mg/L	205	20	8	----	----
Sodium	7440-23-5	1	mg/L	1060	166	121	----	----
Potassium	7440-09-7	1	mg/L	13	<1	<1	----	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.07	<0.01	----	----
<b>EN055: Ionic Balance</b>								
Total Anions	TOT_ANIONS	0.01	meq/L	70.5	9.33	5.83	----	----
Total Cations	TOT_CATIONS	0.01	meq/L	66.7	8.97	5.92	----	----
Ionic Balance	ION_BALANCE	0.01	%	2.77	----	0.71	----	----
Ionic Balance	ION_BALANCE	0.01	%	----	2.00	----	----	----
<b>EN67 PK: Field Tests</b>								
pH	PH_LAB	0.1	pH Unit	5.6	4.8	3.9	----	----
Field Observations	----	0.01	--	----	----	----	0	dry
Standing Water Level	----	0.01	m AHD	<0.01	<0.01	<0.01	----	----
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	7440-44-0	1	mg/L	7	8	2	----	----



## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

Client sampling date / time

				GA 10	GA 11	GA 12	DUP	BLANK
				14-DEC-2012 08:45	14-DEC-2012 09:05	14-DEC-2012 08:55	14-DEC-2012 08:00	14-DEC-2012 08:05
				EW1203487-011	EW1203487-012	EW1203487-013	EW1203487-014	EW1203487-015
Compound	CAS Number	LOR	Unit					
<b>EA015: Total Dissolved Solids</b>								
Total Dissolved Solids @180°C	GIS-210-010	10	mg/L	582	358	3450	4420	<10
<b>ED037P: Alkalinity by PC Titrator</b>								
Total Alkalinity as CaCO3	ALK_TOTAL	1	mg/L	106	<1	<1	83	<1
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	110	66	241	422	<1
<b>ED045G: Chloride Discrete analyser</b>								
Chloride	16887-00-6	1	mg/L	155	138	2000	2470	<1
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	26	<1	2	50	<1
Magnesium	7439-95-4	1	mg/L	17	5	149	223	<1
Sodium	7440-23-5	1	mg/L	135	108	1030	1300	<1
Potassium	7440-09-7	1	mg/L	4	<1	2	8	<1
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	0.18	<0.01	<0.01	0.31	<0.01
<b>EN055: Ionic Balance</b>								
Total Anions	TOT_ANIONS	0.01	meq/L	8.78	5.27	61.4	80.1	<0.01
Total Cations	TOT_CATIONS	0.01	meq/L	8.67	5.11	57.2	77.6	<0.01
Ionic Balance	ION_BALANCE	0.01	%	0.64	1.55	3.57	1.61	----
<b>EN67 PK: Field Tests</b>								
pH	PH_LAB	0.1	pH Unit	5.7	3.8	3.4	5.4	6.2
Standing Water Level	----	0.01	m AHD	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	7440-44-0	1	mg/L	24	2	6	6	<1