



Environmental

CERTIFICATE OF ANALYSIS

Work Order	: EW1303692	Page	: 1 of 5
Client	: SHOALHAVEN CITY COUNCIL	Laboratory	: Environmental Division NSW South Coast
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Project	: Huskisson Landfill	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 1543516780	Date Samples Received	: 18-DEC-2013
C-O-C number	: ----	Issue Date	: 02-JAN-2014
Sampler	: ----	No. of samples received	: 15
Site	: ----	No. of samples analysed	: 15
Quote number	: ----		

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
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong
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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

- **EW1303692 / 1,2,3,9 & 10 - A sample was not able to be taken for analysis due to the well/pond being dry**



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				S1	S2	GA 1	GA 2	GA 4
				18-DEC-2013 10:30	18-DEC-2013 10:05	18-DEC-2013 10:10	18-DEC-2013 10:15	18-DEC-2013 12:00
Compound	CAS Number	LOR	Unit	EW1303692-001	EW1303692-002	EW1303692-003	EW1303692-004	EW1303692-005
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	1	mg/L	----	----	----	1280	1120
ED037P: Alkalinity by PC Titrator								
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	70	57
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	235	121
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	581	553
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	33	24
Magnesium	7439-95-4	1	mg/L	----	----	----	59	51
Sodium	7440-23-5	1	mg/L	----	----	----	366	307
Potassium	7440-09-7	1	mg/L	----	----	----	7	13
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	0.07	0.02
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	----	----	----	22.7	19.3
Total Cations	----	0.01	meq/L	----	----	----	22.6	19.1
Ionic Balance	----	0.01	%	----	----	----	0.19	0.47
EN67 PK: Field Tests								
pH	----	0.1	pH Unit	----	----	----	6.4	6.4
Field Observations	----	0.01	--	Dry	Dry	Dry	----	----
Standing Water Level	----	0.01	m AHD	----	----	----	2.17	7.86
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	----	----	----	11	3



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				GA 5	GA 6	GA 7a	GA 8	GA 9
				18-DEC-2013 11:10	18-DEC-2013 11:45	18-DEC-2013 11:30	18-DEC-2013 09:45	18-DEC-2013 10:00
				EW1303692-006	EW1303692-007	EW1303692-008	EW1303692-009	EW1303692-010
Compound	CAS Number	LOR	Unit					
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	1	mg/L	3750	587	263	----	----
ED037P: Alkalinity by PC Titrator								
Total Alkalinity as CaCO3	----	1	mg/L	92	9	11	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	282	178	83	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	1830	193	75	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	56	2	12	----	----
Magnesium	7439-95-4	1	mg/L	167	18	10	----	----
Sodium	7440-23-5	1	mg/L	996	147	58	----	----
Potassium	7440-09-7	1	mg/L	14	<1	5	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.30	0.11	0.03	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	59.3	9.33	4.06	----	----
Total Cations	----	0.01	meq/L	60.2	----	4.07	----	----
Total Cations	----	0.01	meq/L	----	9.37	----	----	----
Ionic Balance	----	0.01	%	0.73	----	0.10	----	----
Ionic Balance	----	0.01	%	----	0.19	----	----	----
EN67 PK: Field Tests								
pH	----	0.1	pH Unit	6.6	6.3	6.2	----	----
Field Observations	----	0.01	--	----	----	----	Dry	Dry
Standing Water Level	----	0.01	m AHD	4.12	7.32	7.21	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	7	8	7	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				GA 10	GA 11	GA 12	DUP	BLANK
				18-DEC-2013 11:20	18-DEC-2013 10:55	18-DEC-2013 10:45	18-DEC-2013 10:15	18-DEC-2013 10:20
Compound	CAS Number	LOR	Unit	EW1303692-011	EW1303692-012	EW1303692-013	EW1303692-014	EW1303692-015
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	1	mg/L	609	395	2620	1290	----
Total Dissolved Solids @180°C	----	1	mg/L	----	----	----	----	<1
ED037P: Alkalinity by PC Titrator								
Total Alkalinity as CaCO3	----	1	mg/L	54	<1	<1	67	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	170	60	260	230	<1
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	183	145	1290	586	<1
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	28	<1	2	33	<1
Magnesium	7439-95-4	1	mg/L	17	5	103	59	<1
Sodium	7440-23-5	1	mg/L	148	107	798	364	<1
Potassium	7440-09-7	1	mg/L	7	2	6	7	<1
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.02	0.02	0.06	<0.01
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	9.78	5.34	41.8	22.7	<0.01
Total Cations	----	0.01	meq/L	9.41	----	43.4	22.5	<0.01
Total Cations	----	0.01	meq/L	----	5.17	----	----	----
Ionic Balance	----	0.01	%	1.93	----	1.90	0.33	----
Ionic Balance	----	0.01	%	----	1.59	----	----	----
EN67 PK: Field Tests								
pH	----	0.1	pH Unit	6.4	5.9	5.7	6.5	6.0
Standing Water Level	----	0.01	m AHD	9.16	7.88	9.50	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	13	3	2	10	<1