

CERTIFICATE OF ANALYSIS

Work Order : **EW2205201**
Client : **HANSON CONSTRUCTION MATERIALS PTY LTD**
Contact : MR STEVE BUTCHER
Address : BOOLLWARROO PDE
 SHELLHARBOUR NSW, AUSTRALIA 2529
Telephone : +61 02 4295 1355
Project : Bass Point Quaterly Water Monitoring
Order number : 4503127629
C-O-C number : ----
Sampler : Robert DaLio
Site : ----
Quote number : WL/043/11 Bass Point Water Monitoring
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 5
Laboratory : Environmental Division NSW South Coast
Contact : Aneta Prosaroski
Address : 1/19 Ralph Black Dr, North Wollongong 2500 NSW Australia
Telephone : 02 42253125
Date Samples Received : 11-Nov-2022 14:10
Date Analysis Commenced : 11-Nov-2022
Issue Date : 18-Nov-2022 13:27



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Robert DaLio	Sampler	Laboratory - Wollongong, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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
∅ = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- **Analytical work for this work order will be conducted at ALS Sydney.**
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- Killalea Lagoon Depth taken from the red gauge.
- Sample collection of Ground Waters by in-house EN67 where the “surface layer of the aquifer was sampled”.
- pH performed by ALS Wollongong via in-house method EA005FD and EN67 PK.
- Electrical conductivity performed by ALS Wollongong via in-house method EA010FD and EN67 PK.
- Sampling and groundwater depth measurements completed by ALS Wollongong via inhouse sampling method EN/67.11 Groundwater Sampling Bailer Method.
- Temperature performed by ALS Wollongong via in-house method EA116 and EN67 PK.
- Dissolved oxygen (DO) performed by ALS Wollongong via in-house method EA025FD and EN67 PK.
- All field analysis performed by ALS Wollongong were completed at the time of sampling.
- Sampling completed by ALS Wollongong in accordance with in-house sampling method EN/67.4 Lakes and Reservoirs
- Salinity performed by ALS Wollongong via in-house method EA020FD and EN67 PK.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BT1201	BT1202	Killalea Lagoon	BT702	BT703
Sampling date / time				11-Nov-2022 00:00	11-Nov-2022 13:15	11-Nov-2022 12:48	11-Nov-2022 12:20	11-Nov-2022 11:55	
Compound	CAS Number	LOR	Unit	EW2205201-001	EW2205201-002	EW2205201-003	EW2205201-004	EW2205201-005	
				Result	Result	Result	Result	Result	
EA005FD: Field pH									
pH	----	0.1	pH Unit	----	7.7	7.9	7.0	5.9	
EA010FD: Field Conductivity									
Electrical Conductivity (Non Compensated)	----	1	µS/cm	----	1660	288	1130	1860	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	566	969	
EA020FD: Field Salinity									
Salinity	----	0.2	g/L	----	----	<0.2	----	----	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	----	----	28	----	----	
EA116: Temperature									
Temperature	----	0.5	°C	----	19.3	----	24.8	19.7	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	124	41	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	124	41	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	61	85	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	----	----	----	256	523	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	----	----	----	13	21	
Magnesium	7439-95-4	1	mg/L	----	----	----	18	30	
Sodium	7440-23-5	1	mg/L	----	----	----	180	278	
Potassium	7440-09-7	1	mg/L	----	----	----	5	4	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	<0.01	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	0.9	0.7	0.3	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	0.9	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BT1201	BT1202	Killalea Lagoon	BT702	BT703
Sampling date / time				11-Nov-2022 00:00	11-Nov-2022 13:15	11-Nov-2022 12:48	11-Nov-2022 12:20	11-Nov-2022 11:55	
Compound	CAS Number	LOR	Unit	EW2205201-001	EW2205201-002	EW2205201-003	EW2205201-004	EW2205201-005	
				Result	Result	Result	Result	Result	
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L	----	----	0.14	0.51	0.04	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	----	----	----	11.0	17.3	
∅ Total Cations	----	0.01	meq/L	----	----	----	10.1	15.7	
∅ Ionic Balance	----	0.01	%	----	----	----	4.19	4.93	
EN67 PK: Field Tests									
Field Observations	----	0.01	--	DESTROYED	----	----	----	----	
EP025FD: Field Dissolved Oxygen									
Dissolved Oxygen	----	0.01	mg/L	----	----	11.2	----	----	
Dissolved Oxygen - % Saturation	----	0.1	% saturation	----	----	135	----	----	
QWI-EN 67.11 Sampling of Groundwaters									
Depth	----	0.01	m	----	18.5	----	25.0	4.17	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	BH 1	----	----	----	----
			Sampling date / time	11-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EW2205201-006	-----	-----	-----	-----
				Result	----	----	----	----
EN67 PK: Field Tests								
Field Observations		----	0.01	--	DESTROYED	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

- (WATER) EK067G: Total Phosphorus as P by Discrete Analyser
- (WATER) EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser
- (WATER) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser
- (WATER) EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser
- (WATER) EA025: Total Suspended Solids dried at 104 ± 2°C
- (WATER) ED045G: Chloride by Discrete Analyser
- (WATER) ED041G: Sulfate (Turbidimetric) as SO4 2- by DA
- (WATER) ED037P: Alkalinity by PC Titrator
- (WATER) ED093F: Dissolved Major Cations
- (WATER) EA015: Total Dissolved Solids dried at 180 ± 5 °C
- (WATER) EN055: Ionic Balance