

## CERTIFICATE OF ANALYSIS

**Work Order** : **EM2215130**  
**Client** : **Dept for Environment & Water**  
**Contact** : DARCY MORRIS  
**Address** : GPO BOX 2834  
ADELAIDE SA, AUSTRALIA 5001  
**Telephone** : ----  
**Project** : HCHB Monitoring Program  
**Order number** : -  
**C-O-C number** : 40925  
**Sampler** : Bryce Drechsler, DARCY MORRIS  
**Site** : HCHB Boat run 8/9th August  
**Quote number** : AD/052/20 V2  
**No. of samples received** : 10  
**No. of samples analysed** : 10

**Page** : 1 of 6  
**Laboratory** : Environmental Division Melbourne  
**Contact** : Kieren Burns  
**Address** : 4 Westall Rd Springvale VIC Australia 3171  
**Telephone** : +61881625130  
**Date Samples Received** : 10-Aug-2022 11:05  
**Date Analysis Commenced** : 10-Aug-2022  
**Issue Date** : 17-Aug-2022 16:48



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.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Arenie Vijayaratnam	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



## 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  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP005:EP002:It is recognised that total organic carbon is less than dissolved organic carbon for samples EM2215130 #1. However, the difference is within experimental variation of the methods.
- EK067G: EM2215130 #2 Sample required dilution for total phosphorus due to sample matrix. LOR has been raised accordingly.
- EP008, Chlorophyll-a standard does not contain Pheophytin-a standard.
- EP008, LOR raised for Chlorophyll-b for various samples due to sample matrix.
- EA015H: EM2215130 #8, #10: TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- Total Algae Count (MB010) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.



## Analytical Results

Sub-Matrix: MARINE WATER  
 (Matrix: WATER)

Sample ID

				Murray Mouth	Mark Point	Parnka Point	Villa De Yumpa	Stoney Well
Sampling date / time				08-Aug-2022 12:28	08-Aug-2022 14:25	09-Aug-2022 10:49	09-Aug-2022 10:13	09-Aug-2022 09:50
Compound	CAS Number	LOR	Unit	EM2215130-001	EM2215130-002	EM2215130-003	EM2215130-004	EM2215130-005
				Result	Result	Result	Result	Result
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	4430	2350	44600	49700	49100
<b>EA045: Turbidity</b>								
Turbidity	----	0.1	NTU	31.5	36.8	7.1	8.0	7.7
<b>ED037P: Alkalinity by PC Titrator</b>								
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	89	85	173	178	177
Total Alkalinity as CaCO3	----	1	mg/L	89	85	173	178	177
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	2610	1230	24100	25400	25200
<b>EG052G: Silica by Discrete Analyser</b>								
Reactive Silica	----	0.05	mg/L	4.67	4.97	1.00	1.27	1.29
<b>EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water</b>								
Ammonia as N	7664-41-7	0.02	mg/L	0.42	0.29	<0.02	<0.02	<0.02
<b>EK057G: Nitrite as N by Discrete Analyser</b>								
Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.03	<0.01	<0.01	<0.01
<b>EK058G: Nitrate as N by Discrete Analyser</b>								
Nitrate as N	14797-55-8	0.01	mg/L	0.14	0.12	0.02	<0.01	<0.01
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	0.19	0.15	0.02	<0.01	<0.01
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	1.3	1.5	1.4	2.1
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>								
^ Total Nitrogen as N	----	0.1	mg/L	1.8	1.4	1.5	1.4	2.1
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
Total Phosphorus as P	----	0.01	mg/L	0.12	<0.10	0.14	0.22	0.29
<b>EP002: Dissolved Organic Carbon (DOC)</b>								
Dissolved Organic Carbon	----	1	mg/L	10	10	22	23	22
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	----	1	mg/L	9	10	23	24	24
<b>EP008: Chlorophyll</b>								
Chlorophyll a	----	1	mg/m³	4	8	10	9	17
Chlorophyll b	----	1	mg/m³	<2	<1	<1	<1	<2



## Analytical Results

Sub-Matrix: MARINE WATER  
 (Matrix: WATER)

Sample ID

				Murray Mouth	Mark Point	Parnka Point	Villa De Yumpa	Stoney Well
Sampling date / time				08-Aug-2022 12:28	08-Aug-2022 14:25	09-Aug-2022 10:49	09-Aug-2022 10:13	09-Aug-2022 09:50
Compound	CAS Number	LOR	Unit	EM2215130-001	EM2215130-002	EM2215130-003	EM2215130-004	EM2215130-005
				Result	Result	Result	Result	Result
EP008: Chlorophyll - Continued								
Pheophytin a	----	1	mg/m <sup>3</sup>	5	2	2	4	5



## Analytical Results

Sub-Matrix: MARINE WATER  
 (Matrix: WATER)

Sample ID

				North Jacks Point	South Policeman Point	Snipe Point	Salt Creek Outlet	1.8km west of Salt Creek
Sampling date / time				09-Aug-2022 09:20	09-Aug-2022 09:01	09-Aug-2022 08:46	09-Aug-2022 08:24	09-Aug-2022 08:34
Compound	CAS Number	LOR	Unit	EM2215130-006	EM2215130-007	EM2215130-008	EM2215130-009	EM2215130-010
				Result	Result	Result	Result	Result
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	54600	57500	67900	52400	67300
<b>EA045: Turbidity</b>								
Turbidity	----	0.1	NTU	8.7	9.5	17.5	13.8	16.7
<b>ED037P: Alkalinity by PC Titrator</b>								
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	171	184	188	237	194
Total Alkalinity as CaCO3	----	1	mg/L	171	184	188	237	194
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	26700	29500	30800	27000	31800
<b>EG052G: Silica by Discrete Analyser</b>								
Reactive Silica	----	0.05	mg/L	1.40	1.71	1.84	4.48	2.03
<b>EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water</b>								
Ammonia as N	7664-41-7	0.02	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EK057G: Nitrite as N by Discrete Analyser</b>								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EK058G: Nitrate as N by Discrete Analyser</b>								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.03
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.03
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	2.9	2.9	2.8	2.2
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>								
^ Total Nitrogen as N	----	0.1	mg/L	1.4	2.9	2.9	2.8	2.2
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
Total Phosphorus as P	----	0.01	mg/L	0.29	0.26	0.16	0.64	0.21
<b>EP002: Dissolved Organic Carbon (DOC)</b>								
Dissolved Organic Carbon	----	1	mg/L	24	29	28	23	28
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	----	1	mg/L	27	30	32	29	34
<b>EP008: Chlorophyll</b>								
Chlorophyll a	----	1	mg/m³	5	15	18	28	19
Chlorophyll b	----	1	mg/m³	<1	1	1	<2	2



## Analytical Results

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

Sample ID

				North Jacks Point	South Policeman Point	Snipe Point	Salt Creek Outlet	1.8km west of Salt Creek
Sampling date / time				09-Aug-2022 09:20	09-Aug-2022 09:01	09-Aug-2022 08:46	09-Aug-2022 08:24	09-Aug-2022 08:34
Compound	CAS Number	LOR	Unit	EM2215130-006	EM2215130-007	EM2215130-008	EM2215130-009	EM2215130-010
				Result	Result	Result	Result	Result
<b>EP008: Chlorophyll - Continued</b>								
Pheophytin a	----	1	mg/m <sup>3</sup>	10	3	3	2	4

## Inter-Laboratory Testing

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

(WATER) EP008: Chlorophyll