

## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	<b>: EM2213882</b>	<b>Page</b>	<b>: 1 of 6</b>
<b>Amendment</b>	<b>: (Preliminary Report)</b>		
<b>Client</b>	<b>: Dept for Environment &amp; Water</b>	<b>Laboratory</b>	<b>: Environmental Division Melbourne</b>
<b>Contact</b>	<b>: DARCY MORRIS</b>	<b>Contact</b>	<b>: Kieren Burns</b>
<b>Address</b>	<b>: GPO BOX 2834 ADELAIDE SA, AUSTRALIA 5001</b>	<b>Address</b>	<b>: 4 Westall Rd Springvale VIC Australia 3171</b>
<b>Telephone</b>	<b>: ----</b>	<b>Telephone</b>	<b>: +61881625130</b>
<b>Project</b>	<b>: HCHB Monitoring Program</b>	<b>Date Samples Received</b>	<b>: 22-Jul-2022 11:25</b>
<b>Order number</b>	<b>: -</b>	<b>Date Analysis Commenced</b>	<b>: 22-Jul-2022</b>
<b>C-O-C number</b>	<b>: 40285</b>	<b>Issue Date</b>	<b>: 29-Jul-2022 18:54</b>
<b>Sampler</b>	<b>: DARCY MORRIS, ROWLAND BOXALL</b>		
<b>Site</b>	<b>: 20.07.22 - HCHB Boat</b>		
<b>Quote number</b>	<b>: AD/052/20 V2</b>		
<b>No. of samples received</b>	<b>: 10</b>		
<b>No. of samples analysed</b>	<b>: 10</b>		



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>
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

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### 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.

This report contains preliminary authorised results. The report may contain semi-quantitative results. Any result presented in this preliminary report may be subject to change in the final report.

- EP002:EP005:It is recognised that total organic carbon is less than dissolved organic carbon for samples EM2213882 #2. However, the difference is within experimental variation of the methods.
- 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.

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### Analytical Results

Sub-Matrix: MARINE WATER  
(Matrix: WATER)

Sample ID

				Murray Mouth	Mark Point	Parnka Point	Villa De Yumpa	Stoney Well
Sampling date / time				20-Jul-2022 12:42	20-Jul-2022 15:07	21-Jul-2022 11:26	21-Jul-2022 10:41	21-Jul-2022 10:21
Compound	CAS Number	LOR	Unit	EM2213882-001	EM2213882-002	EM2213882-003	EM2213882-004	EM2213882-005
				Result	Result	Result	Result	Result
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	547	11400	60900	63000	67900
<b>EA045: Turbidity</b>								
Turbidity	----	0.1	NTU	83.6	6.1	10.9	15.1	11.3
<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	85	109	176	182	185
Total Alkalinity as CaCO3	----	1	mg/L	85	109	176	182	185
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	250	5960	29200	29500	31100
<b>EG052G: Silica by Discrete Analyser</b>								
Reactive Silica	----	0.05	mg/L	3.84	5.01	1.85	2.02	2.19
<b>EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water</b>								
Ammonia as N	7664-41-7	0.02	mg/L	0.49	0.41	<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	0.02	0.13	<0.01	<0.01	<0.01
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.13	<0.01	<0.01	<0.01
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.9	2.2	4.9	4.0	4.4
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>								
^ Total Nitrogen as N	----	0.1	mg/L	1.9	2.3	4.9	4.0	4.4
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
Total Phosphorus as P	----	0.01	mg/L	0.13	0.16	0.21	0.24	0.21
<b>EP002: Dissolved Organic Carbon (DOC)</b>								
Dissolved Organic Carbon	----	1	mg/L	12	13	28	27	27
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	----	1	mg/L	18	12	32	32	33
<b>EP008: Chlorophyll</b>								
Chlorophyll a	----	-	mg/m <sup>3</sup>	Not Authorised	Not Authorised	Not Authorised	Not Authorised	Not Authorised
Chlorophyll b	----	-	mg/m <sup>3</sup>	Not Authorised	Not Authorised	Not Authorised	Not Authorised	Not Authorised

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Analytical Results

Sub-Matrix: MARINE WATER (Matrix: WATER)				Sample ID	Murray Mouth	Mark Point	Parnka Point	Villa De Yumpa	Stoney Well
Sampling date / time					20-Jul-2022 12:42	20-Jul-2022 15:07	21-Jul-2022 11:26	21-Jul-2022 10:41	21-Jul-2022 10:21
Compound	CAS Number	LOR	Unit		EM2213882-001	EM2213882-002	EM2213882-003	EM2213882-004	EM2213882-005
					Result	Result	Result	Result	Result
EP008: Chlorophyll - Continued									
Pheophytin a	----	-	mg/m³		Not Authorised	Not Authorised	Not Authorised	Not Authorised	Not Authorised

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### Analytical Results

Sub-Matrix: MARINE WATER  
(Matrix: WATER)

Sample ID

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				21-Jul-2022 09:38	21-Jul-2022 09:14	21-Jul-2022 09:00	21-Jul-2022 08:32	21-Jul-2022 08:46	
Compound	CAS Number	LOR	Unit	EM2213882-006	EM2213882-007	EM2213882-008	EM2213882-009	EM2213882-010	
				Result	Result	Result	Result	Result	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	69100	75500	77000	78300	77600	
EA045: Turbidity									
Turbidity	----	0.1	NTU	10.0	11.0	12.2	12.2	9.4	
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	187	185	186	181	187	
Total Alkalinity as CaCO3	----	1	mg/L	187	185	186	181	187	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	32200	34000	34700	34700	35500	
EG052G: Silica by Discrete Analyser									
Reactive Silica	----	0.05	mg/L	2.54	3.15	3.27	3.20	3.24	
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water									
Ammonia as N	7664-41-7	0.02	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.02	<0.01	<0.01	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.02	<0.01	<0.01	<0.01	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.4	5.3	5.0	5.4	5.7	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	4.4	5.3	5.0	5.4	5.7	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.23	0.16	0.17	0.27	0.29	
EP002: Dissolved Organic Carbon (DOC)									
Dissolved Organic Carbon	----	1	mg/L	29	30	31	30	32	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	34	37	36	36	36	
EP008: Chlorophyll									
Chlorophyll a	----	-	mg/m³	Not Authorised	Not Authorised	Not Authorised	Not Authorised	Not Authorised	
Chlorophyll b	----	-	mg/m³	Not Authorised	Not Authorised	Not Authorised	Not Authorised	Not Authorised	

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### 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				21-Jul-2022 09:38	21-Jul-2022 09:14	21-Jul-2022 09:00	21-Jul-2022 08:32	21-Jul-2022 08:46
Compound	CAS Number	LOR	Unit	EM2213882-006	EM2213882-007	EM2213882-008	EM2213882-009	EM2213882-010
				Result	Result	Result	Result	Result
EP008: Chlorophyll - Continued								
Pheophytin a	----	-	mg/m <sup>3</sup>	Not Authorised	Not Authorised	Not Authorised	Not Authorised	Not Authorised

### Inter-Laboratory Testing

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

(WATER) EP008: Chlorophyll