



CERTIFICATE OF ANALYSIS

Work Order	: ES2418014	Page	: 1 of 6
Client	: Department of Climate Change, Energy, the Environment and Water	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: Customer Services ES
Address	: [REDACTED]	Address	: [REDACTED]
Telephone	: [REDACTED]	Telephone	: [REDACTED]
Project	: Darling Baaka River Health Program	Date Samples Received	: 31-May-2024 14:48
Order number	: [REDACTED]	Date Analysis Commenced	: 31-May-2024
C-O-C number	: [REDACTED]	Issue Date	: 04-Jun-2024 18:22
Sampler	: [REDACTED]		
Site	: [REDACTED]		
Quote number	: ES24DEPENWAT0001		
No. of samples received	: 20		
No. of samples analysed	: 20		



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
[REDACTED]	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW

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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

∅ = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EK271A-CM: Samples for Ultra-Trace Reactive Phosphorus by FIA should be frozen upon sampling. If not, low-level results (below 0.01 mg/L) may bias low.

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Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DBRH-Z-10	DBRH-Z-11	DBRH-Z-12	DBRH-Z-13	DBRH-Z-14
Sampling date / time				23-May-2024 00:00	23-May-2024 00:00	23-May-2024 00:00	22-May-2024 00:00	22-May-2024 00:00	
Compound	CAS Number	LOR	Unit	ES2418014-001	ES2418014-002	ES2418014-003	ES2418014-004	ES2418014-005	
				Result	Result	Result	Result	Result	
ED040F: Dissolved Major Anions									
Sulfate as SO ₄ 2-	14808-79-8	1	mg/L	25	22	24	26	35	
Sulfur as S	63705-05-5	1	mg/L	8	7	8	9	12	
Silicon as SiO ₂	14464-46-1	0.1	mg/L	15.4	17.8	16.2	11.8	10.0	
Silicon	7440-21-3	0.05	mg/L	7.16	8.31	7.57	5.52	4.69	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	0.051	0.046	0.032	0.090	0.044	
EK259A: Nitrite and Nitrate (NO_x)									
Nitrite + Nitrate as N	----	0.002	mg/L	0.588	0.776	1.36	0.754	0.082	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	1.19	1.26	1.49	1.45	1.33	
Total Nitrogen as N	----	0.01	mg/L	1.49	1.50	2.42	2.62	1.84	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	0.151	0.215	0.207	0.139	0.081	
Total Phosphorus as P	----	0.005	mg/L	0.385	0.356	0.472	0.275	0.224	
EK271A: Reactive Phosphorus									
Reactive Phosphate	14625-44-2	0.001	mg/L	0.463	0.591	0.614	0.421	0.169	

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Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DBRH-Z-15	DBRH-Z-16	DBRH-Z-17	DBRH-Z-18	DBRH-Z-19
Sampling date / time				22-May-2024 00:00	21-May-2024 00:00	27-May-2024 00:00	21-May-2024 00:00	27-May-2024 00:00	
Compound	CAS Number	LOR	Unit	ES2418014-006	ES2418014-007	ES2418014-008	ES2418014-009	ES2418014-010	
				Result	Result	Result	Result	Result	
ED040F: Dissolved Major Anions									
Sulfate as SO4 2-	14808-79-8	1	mg/L	35	47	42	39	50	
Sulfur as S	63705-05-5	1	mg/L	12	16	14	13	17	
Silicon as SiO2	14464-46-1	0.1	mg/L	8.1	9.2	8.9	8.1	8.8	
Silicon	7440-21-3	0.05	mg/L	3.76	4.31	4.17	3.77	4.12	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	0.027	0.012	0.012	0.060	<0.005	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	0.018	<0.002	0.003	0.023	0.009	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	0.86	0.76	1.06	0.92	0.70	
Total Nitrogen as N	----	0.01	mg/L	1.62	0.79	1.67	1.72	1.69	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	0.064	0.048	0.063	0.049	0.044	
Total Phosphorus as P	----	0.005	mg/L	0.192	0.063	0.188	0.184	0.191	
EK271A: Reactive Phosphorus									
Reactive Phosphate	14625-44-2	0.001	mg/L	0.094	0.091	0.056	0.074	0.047	

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Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DBRH-Z-20	DBRH-Z-21	DBRH-Z-22	DBRH-Z-23	DBRH-Z-24
Sampling date / time				21-May-2024 00:00	20-May-2024 00:00	29-May-2024 00:00	27-May-2024 00:00	29-May-2024 00:00	
Compound	CAS Number	LOR	Unit	ES2418014-011	ES2418014-012	ES2418014-013	ES2418014-014	ES2418014-015	
				Result	Result	Result	Result	Result	
ED040F: Dissolved Major Anions									
Sulfate as SO4 2-	14808-79-8	1	mg/L	36	29	57	40	26	
Sulfur as S	63705-05-5	1	mg/L	12	10	19	13	8	
Silicon as SiO2	14464-46-1	0.1	mg/L	7.5	8.2	9.3	8.0	0.7	
Silicon	7440-21-3	0.05	mg/L	3.51	3.82	4.36	3.72	0.32	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	0.008	0.012	0.056	0.046	0.046	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.380	0.044	0.058	0.006	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	1.00	1.12	0.62	0.80	1.00	
Total Nitrogen as N	----	0.01	mg/L	1.74	1.68	1.66	1.77	1.86	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	0.036	0.027	0.051	0.054	0.032	
Total Phosphorus as P	----	0.005	mg/L	0.191	0.169	0.179	0.164	0.129	
EK271A: Reactive Phosphorus									
Reactive Phosphate	14625-44-2	0.001	mg/L	0.061	0.052	0.108	0.127	0.016	

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Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DBRH-Z-25	DBRH-Z-26	DBRH-Z-29	DBRH-Z-30	DBRH-Z-31
Sampling date / time				21-May-2024 00:00	29-May-2024 00:00	20-May-2024 00:00	20-May-2024 00:00	20-May-2024 00:00	
Compound	CAS Number	LOR	Unit	ES2418014-016	ES2418014-017	ES2418014-018	ES2418014-019	ES2418014-020	
				Result	Result	Result	Result	Result	
ED040F: Dissolved Major Anions									
Sulfate as SO4 2-	14808-79-8	1	mg/L	29	24	24	30	24	
Sulfur as S	63705-05-5	1	mg/L	10	8	8	10	8	
Silicon as SiO2	14464-46-1	0.1	mg/L	2.0	2.0	8.8	9.6	5.2	
Silicon	7440-21-3	0.05	mg/L	0.95	0.94	4.13	4.50	2.42	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	0.007	<0.005	0.010	0.066	<0.005	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	0.009	0.005	<0.002	0.051	0.012	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	1.11	0.80	0.82	1.07	0.88	
Total Nitrogen as N	----	0.01	mg/L	1.68	1.44	1.27	1.26	1.25	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	0.023	0.017	0.016	0.075	0.021	
Total Phosphorus as P	----	0.005	mg/L	0.139	0.110	0.187	0.181	0.101	
EK271A: Reactive Phosphorus									
Reactive Phosphate	14625-44-2	0.001	mg/L	0.007	0.006	0.045	0.055	0.011	