



## CERTIFICATE OF ANALYSIS

Work Order	: ES2439050	Page	: 1 of 7
Client	: Department of Climate Change, Energy, the Environment and Water	Laboratory	: Environmental Division Sydney
Contact Address	: [REDACTED]	Contact Address	: Customer Services ES [REDACTED]
Telephone	: [REDACTED]	Telephone	: [REDACTED]
Project	: Darling Baaka River Health Program	Date Samples Received	: 29-Nov-2024 11:30
Order number	: ----	Date Analysis Commenced	: 29-Nov-2024
C-O-C number	: ----	Issue Date	: 03-Dec-2024 17:43
Sampler	: ----		
Site	: ----		
Quote number	: ES24DEPENWAT0001		
No. of samples received	: 25		
No. of samples analysed	: 25		



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

- EK267PA-F-CM: Poor spike recovery for Dissolved Total Phosphorus due to matrix interferences(confirmed by re-analysis).
- EK267PA-CM: Poor spike recovery for Total Phosphorus due to matrix interferences(confirmed by re-analysis).
- 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.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	S1	S2	S3	S4	S5
Sampling date / time					12-Nov-2024 00:00	12-Nov-2024 00:00	12-Nov-2024 00:00	14-Nov-2024 00:00	14-Nov-2024 00:00
Compound	CAS Number	LOR	Unit	ES2439050-001	ES2439050-002	ES2439050-003	ES2439050-004	ES2439050-005	
				Result	Result	Result	Result	Result	
ED040F: Dissolved Major Anions									
Sulfate as SO4 2-	14808-79-8	1	mg/L	32	35	35	29	28	
Sulfur as S	63705-05-5	1	mg/L	11	12	12	10	9	
Silicon as SiO2	14464-46-1	0.1	mg/L	0.6	0.4	0.6	0.9	1.1	
Silicon	7440-21-3	0.05	mg/L	0.29	0.21	0.26	0.41	0.51	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.005	<0.005	<0.005	<0.005	
EK257A: Nitrite									
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	
EK258A: Nitrate									
Nitrate as N	14797-55-8	0.002	mg/L	0.005	0.006	0.005	0.004	0.005	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	0.005	0.006	0.005	0.004	0.005	
EK261A: Total Kjeldahl Nitrogen									
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	0.76	1.19	1.10	0.63	0.60	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	0.52	0.54	0.54	0.50	0.55	
Total Nitrogen as N	----	0.01	mg/L	0.77	1.20	1.10	0.63	0.61	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	0.036	0.027	0.017	0.058	0.078	
Total Phosphorus as P	----	0.005	mg/L	0.096	0.138	0.084	0.136	0.129	
EK271A: Reactive Phosphorus									
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.018	0.009	0.010	0.039	0.047	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	S6	S7	S8	S9	S10
Sampling date / time					14-Nov-2024 00:00	14-Nov-2024 00:00	16-Nov-2024 00:00	10-Nov-2024 00:00	16-Nov-2024 00:00
Compound	CAS Number	LOR	Unit	ES2439050-006	ES2439050-007	ES2439050-008	ES2439050-009	ES2439050-010	
				Result	Result	Result	Result	Result	
ED040F: Dissolved Major Anions									
Sulfate as SO4 2-	14808-79-8	1	mg/L	26	23	25	34	31	
Sulfur as S	63705-05-5	1	mg/L	8	8	8	11	10	
Silicon as SiO2	14464-46-1	0.1	mg/L	2.6	2.3	7.0	4.0	5.8	
Silicon	7440-21-3	0.05	mg/L	1.20	1.06	3.26	1.85	2.70	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	0.023	0.024	0.005	<0.005	0.053	
EK257A: Nitrite									
Nitrite as N	14797-65-0	0.002	mg/L	0.039	0.014	0.030	0.007	0.002	
EK258A: Nitrate									
Nitrate as N	14797-55-8	0.002	mg/L	0.059	0.268	0.160	0.003	0.136	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	0.098	0.282	0.190	0.010	0.138	
EK261A: Total Kjeldahl Nitrogen									
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	0.68	0.64	1.23	0.82	1.25	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	0.67	0.88	0.98	0.64	1.13	
Total Nitrogen as N	----	0.01	mg/L	0.78	0.92	1.42	0.83	1.39	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	0.094	0.099	0.068	0.053	0.140	
Total Phosphorus as P	----	0.005	mg/L	0.165	0.181	0.171	0.126	0.191	
EK271A: Reactive Phosphorus									
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.079	0.092	0.038	0.035	0.083	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	S11	S12	S13	S14	S16
Sampling date / time					20-Nov-2024 00:00	15-Nov-2024 00:00	15-Nov-2024 00:00	17-Nov-2024 00:00	15-Nov-2024 00:00
Compound	CAS Number	LOR	Unit	ES2439050-011	ES2439050-012	ES2439050-013	ES2439050-014	ES2439050-015	
				Result	Result	Result	Result	Result	
ED040F: Dissolved Major Anions									
Sulfate as SO4 2-	14808-79-8	1	mg/L	27	32	32	24	31	
Sulfur as S	63705-05-5	1	mg/L	9	10	11	8	10	
Silicon as SiO2	14464-46-1	0.1	mg/L	6.6	5.7	5.9	6.8	6.7	
Silicon	7440-21-3	0.05	mg/L	3.10	2.67	2.75	3.16	3.11	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	0.007	0.023	0.028	0.016	0.020	
EK257A: Nitrite									
Nitrite as N	14797-65-0	0.002	mg/L	0.009	0.008	0.009	0.012	0.005	
EK258A: Nitrate									
Nitrate as N	14797-55-8	0.002	mg/L	0.147	0.183	0.183	0.135	0.049	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	0.156	0.191	0.192	0.147	0.054	
EK261A: Total Kjeldahl Nitrogen									
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	0.93	0.86	0.82	1.01	1.61	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	0.90	0.89	0.92	1.10	1.11	
Total Nitrogen as N	----	0.01	mg/L	1.09	1.05	1.01	1.16	1.66	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	0.111	0.105	0.105	0.125	0.085	
Total Phosphorus as P	----	0.005	mg/L	0.210	0.191	0.193	0.134	0.283	
EK271A: Reactive Phosphorus									
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.088	0.089	0.087	0.065	0.046	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	S17	S18	S19	S20	S29
Sampling date / time					13-Nov-2024 00:00	13-Nov-2024 00:00	13-Nov-2024 00:00	13-Nov-2024 00:00	11-Nov-2024 00:00
Compound	CAS Number	LOR	Unit	ES2439050-016	ES2439050-017	ES2439050-018	ES2439050-019	ES2439050-020	
				Result	Result	Result	Result	Result	
ED040F: Dissolved Major Anions									
Sulfate as SO4 2-	14808-79-8	1	mg/L	30	30	28	27	16	
Sulfur as S	63705-05-5	1	mg/L	10	10	9	9	5	
Silicon as SiO2	14464-46-1	0.1	mg/L	6.6	6.6	9.0	7.8	7.7	
Silicon	7440-21-3	0.05	mg/L	3.10	3.10	4.22	3.66	3.60	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	
EK257A: Nitrite									
Nitrite as N	14797-65-0	0.002	mg/L	0.003	0.002	<0.002	<0.002	<0.002	
EK258A: Nitrate									
Nitrate as N	14797-55-8	0.002	mg/L	0.006	0.002	0.011	0.007	0.009	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	0.009	0.004	0.011	0.007	0.009	
EK261A: Total Kjeldahl Nitrogen									
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	1.45	1.32	1.27	1.27	1.83	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	0.84	0.86	0.85	0.84	1.12	
Total Nitrogen as N	----	0.01	mg/L	1.46	1.32	1.28	1.28	1.84	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	0.119	0.097	0.103	0.096	0.157	
Total Phosphorus as P	----	0.005	mg/L	0.187	0.266	0.258	0.279	0.422	
EK271A: Reactive Phosphorus									
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.068	0.066	0.076	0.078	0.104	





Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	S30	S31	B1	B2	B3
Sampling date / time				11-Nov-2024 00:00		11-Nov-2024 00:00	18-Nov-2024 00:00	18-Nov-2024 00:00	18-Nov-2024 00:00
Compound	CAS Number	LOR	Unit	ES2439050-021	ES2439050-022	ES2439050-023	ES2439050-024	ES2439050-025	
				Result	Result	Result	Result	Result	
ED040F: Dissolved Major Anions									
Sulfate as SO4 2-	14808-79-8	1	mg/L	16	16	29	29	28	
Sulfur as S	63705-05-5	1	mg/L	5	5	10	10	9	
Silicon as SiO2	14464-46-1	0.1	mg/L	6.3	6.7	5.8	6.3	10.9	
Silicon	7440-21-3	0.05	mg/L	2.94	3.13	2.73	2.94	5.10	
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	<0.005	<0.005	0.025	0.007	
EK257A: Nitrite									
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.002	0.006	0.014	<0.002	
EK258A: Nitrate									
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	0.010	0.005	0.142	0.005	
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.012	0.011	0.156	0.005	
EK261A: Total Kjeldahl Nitrogen									
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	1.50	1.68	1.10	1.09	3.62	
EK262A: Total Nitrogen									
Dissolved Total Nitrogen as N	----	0.01	mg/L	1.06	1.13	0.66	0.89	1.40	
Total Nitrogen as N	----	0.01	mg/L	1.50	1.69	1.11	1.25	3.62	
EK267A: Total Phosphorus (Persulfate Digestion)									
Dissolved Total Phosphorus as P	----	0.005	mg/L	0.161	0.135	0.098	0.128	0.038	
Total Phosphorus as P	----	0.005	mg/L	0.242	0.221	0.191	0.218	0.465	
EK271A: Reactive Phosphorus									
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.085	0.039	0.057	0.077	0.009	