



CERTIFICATE OF ANALYSIS

Work Order	: ES2317066	Page	: 1 of 11
Client	: DEPARTMENT OF PLANNING AND ENVIRONMENT (NSW-DPE)	Laboratory	: Environmental Division Sydney
Contact	: OEH	Contact	: Customer Services ES
Address	: [REDACTED] Lidcombe 2141	Address	: [REDACTED]
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Project	: 20230172	Date Samples Received	: 23-May-2023 13:10
Order number	: 4500806025	Date Analysis Commenced	: 23-May-2023
C-O-C number	: ----	Issue Date	: 26-May-2023 18:51
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 45		
No. of samples analysed	: 45		



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



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.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	233965	233966	233967	233968	233969
Sampling date / time			16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	ES2317066-001	ES2317066-002	ES2317066-003	ES2317066-004	ES2317066-005
				Result	Result	Result	Result	Result
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.01	----	----	0.03	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	0.02	<0.01
EK061F: Filtered Total Kjeldahl Nitrogen as N (TKN)								
Dissolved TKN as N	----	0.1	mg/L	----	0.7	----	----	0.9
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	1.1	----	----
EK062F: Filtered Total Nitrogen as N								
^ Filtered Total Nitrogen as N	----	0.1	mg/L	----	0.7	----	----	0.9
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	----	1.1	----	----
EK067FG: Filtered Total Phosphorus as P by Discrete Analyser								
Filtered Total Phosphorus as P	----	0.01	mg/L	----	0.02	----	----	0.10
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	----	0.09	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	0.08	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	233970	233971	233972	233973	233974
Sampling date / time			16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	ES2317066-006	ES2317066-007	ES2317066-008	ES2317066-009	ES2317066-010
				Result	Result	Result	Result	Result
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	0.02	----	----	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	<0.01	<0.01	<0.01
EK061F: Filtered Total Kjeldahl Nitrogen as N (TKN)								
Dissolved TKN as N	----	0.1	mg/L	----	----	0.8	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.2	----	----	1.1	----
EK062F: Filtered Total Nitrogen as N								
^ Filtered Total Nitrogen as N	----	0.1	mg/L	----	----	0.8	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.2	----	----	1.1	----
EK067FG: Filtered Total Phosphorus as P by Discrete Analyser								
Filtered Total Phosphorus as P	----	0.01	mg/L	----	----	0.09	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.18	----	----	0.17	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	0.07	----	----	0.24



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	233975	233976	233977	233978	233979
Sampling date / time			16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	ES2317066-011	ES2317066-012	ES2317066-013	ES2317066-014	ES2317066-015
				Result	Result	Result	Result	Result
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	0.01	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK061F: Filtered Total Kjeldahl Nitrogen as N (TKN)								
Dissolved TKN as N	----	0.1	mg/L	0.6	----	----	0.6	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	0.9	----	----	0.8
EK062F: Filtered Total Nitrogen as N								
^ Filtered Total Nitrogen as N	----	0.1	mg/L	0.6	----	----	0.6	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	0.9	----	----	0.8
EK067FG: Filtered Total Phosphorus as P by Discrete Analyser								
Filtered Total Phosphorus as P	----	0.01	mg/L	0.23	----	----	0.22	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	0.34	----	----	0.28
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	0.23	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	233980	233981	233982	233983	233984
Sampling date / time			16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	ES2317066-016	ES2317066-017	ES2317066-018	ES2317066-019	ES2317066-020
				Result	Result	Result	Result	Result
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	----	----	<0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.03	<0.01	<0.01	<0.01	<0.01
EK061F: Filtered Total Kjeldahl Nitrogen as N (TKN)								
Dissolved TKN as N	----	0.1	mg/L	----	0.7	----	----	0.8
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	1.2	----	----
EK062F: Filtered Total Nitrogen as N								
^ Filtered Total Nitrogen as N	----	0.1	mg/L	----	0.7	----	----	0.8
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	----	1.2	----	----
EK067FG: Filtered Total Phosphorus as P by Discrete Analyser								
Filtered Total Phosphorus as P	----	0.01	mg/L	----	0.10	----	----	0.10
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	----	0.16	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	----	----	0.06	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	233985	233986	233987	233988	233989
Sampling date / time			16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	ES2317066-021	ES2317066-022	ES2317066-023	ES2317066-024	ES2317066-025
				Result	Result	Result	Result	Result
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	<0.01	----	----	0.05
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
EK061F: Filtered Total Kjeldahl Nitrogen as N (TKN)								
Dissolved TKN as N	----	0.1	mg/L	----	----	0.7	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.3	----	----	1.0	----
EK062F: Filtered Total Nitrogen as N								
^ Filtered Total Nitrogen as N	----	0.1	mg/L	----	----	0.7	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.3	----	----	1.0	----
EK067FG: Filtered Total Phosphorus as P by Discrete Analyser								
Filtered Total Phosphorus as P	----	0.01	mg/L	----	----	0.09	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.18	----	----	0.17	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	0.07	----	----	0.08



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	233990	233991	233992	233993	233994
Sampling date / time			16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	ES2317066-026	ES2317066-027	ES2317066-028	ES2317066-029	ES2317066-030
				Result	Result	Result	Result	Result
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	0.05	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.01	0.02	0.02	0.03
EK061F: Filtered Total Kjeldahl Nitrogen as N (TKN)								
Dissolved TKN as N	----	0.1	mg/L	0.8	----	----	0.8	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	1.1	----	----	1.1
EK062F: Filtered Total Nitrogen as N								
^ Filtered Total Nitrogen as N	----	0.1	mg/L	0.8	----	----	0.8	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	1.1	----	----	1.1
EK067FG: Filtered Total Phosphorus as P by Discrete Analyser								
Filtered Total Phosphorus as P	----	0.01	mg/L	0.10	----	----	0.08	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	0.18	----	----	0.14
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	0.06	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	233995	233996	233997	233998	233999
Sampling date / time			16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	ES2317066-031	ES2317066-032	ES2317066-033	ES2317066-034	ES2317066-035
				Result	Result	Result	Result	Result
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.08	----	----	0.03	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.03	0.03	0.03
EK061F: Filtered Total Kjeldahl Nitrogen as N (TKN)								
Dissolved TKN as N	----	0.1	mg/L	----	0.8	----	----	0.8
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	1.1	----	----
EK062F: Filtered Total Nitrogen as N								
^ Filtered Total Nitrogen as N	----	0.1	mg/L	----	0.8	----	----	0.8
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	----	1.1	----	----
EK067FG: Filtered Total Phosphorus as P by Discrete Analyser								
Filtered Total Phosphorus as P	----	0.01	mg/L	----	0.07	----	----	0.06
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	----	0.15	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.06	----	----	0.04	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	234000	234001	234002	234003	234004
Sampling date / time			16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	ES2317066-036	ES2317066-037	ES2317066-038	ES2317066-039	ES2317066-040
				Result	Result	Result	Result	Result
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	0.06	----	----	0.02
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.03	0.03	0.03	0.03	0.03
EK061F: Filtered Total Kjeldahl Nitrogen as N (TKN)								
Dissolved TKN as N	----	0.1	mg/L	----	----	0.8	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.3	----	----	1.2	----
EK062F: Filtered Total Nitrogen as N								
^ Filtered Total Nitrogen as N	----	0.1	mg/L	----	----	0.8	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.3	----	----	1.2	----
EK067FG: Filtered Total Phosphorus as P by Discrete Analyser								
Filtered Total Phosphorus as P	----	0.01	mg/L	----	----	0.07	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.14	----	----	0.16	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	0.05	----	----	0.14



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	234005	234006	234007	234008	234009
Sampling date / time			16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	ES2317066-041	ES2317066-042	ES2317066-043	ES2317066-044	ES2317066-045
				Result	Result	Result	Result	Result
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	0.01	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.03	0.03	0.02
EK061F: Filtered Total Kjeldahl Nitrogen as N (TKN)								
Dissolved TKN as N	----	0.1	mg/L	0.7	----	----	0.7	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	0.8	----	----	1.0
EK062F: Filtered Total Nitrogen as N								
^ Filtered Total Nitrogen as N	----	0.1	mg/L	0.7	----	----	0.7	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	0.8	----	----	1.0
EK067FG: Filtered Total Phosphorus as P by Discrete Analyser								
Filtered Total Phosphorus as P	----	0.01	mg/L	0.16	----	----	0.17	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	0.19	----	----	0.28
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	0.13	----	----