ATTACHMENT C

CERTIFICATE OF ANALYSIS

Work Order	: **EB2511642**	Page	: 1 of 10
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quaterly	Date Samples Received	: 08-Apr-2025 11:50
Order number	: ----	Date Analysis Commenced	: 08-Apr-2025
C-O-C number	: ----	Issue Date	: 14-Apr-2025 17:18
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001 V2		
No. of samples received	: 12		
No. of samples analysed	: 12		

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
- Surrogate Control Limits

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Timothy Creagh	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- 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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND04	LIND05
			Sampling date / time	03-Apr-2025 13:50	03-Apr-2025 13:30	03-Apr-2025 15:20	03-Apr-2025 15:00	03-Apr-2025 16:15
Compound	CAS Number	LOR	Unit	EB2511642-001	EB2511642-002	EB2511642-003	EB2511642-004	EB2511642-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	98	281	261	268	319
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	12	8	40	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.04	<0.01	0.03	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	0.01	0.02	<0.01	0.02
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	0.02	<0.01	0.02
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.8	1.1	0.9	0.7
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.7	0.8	1.1	0.9	0.7
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.04	0.11	0.10	0.16	0.08
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND04	LIND05
			Sampling date / time	03-Apr-2025 13:50	03-Apr-2025 13:30	03-Apr-2025 15:20	03-Apr-2025 15:00	03-Apr-2025 16:15
Compound	CAS Number	LOR	Unit	EB2511642-001	EB2511642-002	EB2511642-003	EB2511642-004	EB2511642-005
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**67.6**	**79.0**	**76.4**	**74.5**	**67.7**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**73.1**	**85.8**	**81.9**	**80.8**	**69.5**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND06	DW14	WQ1	WQ2	WQ3
			Sampling date / time	03-Apr-2025 15:45	03-Apr-2025 00:00	03-Apr-2025 15:20	03-Apr-2025 16:00	03-Apr-2025 16:45
Compound	CAS Number	LOR	Unit	EB2511642-006	EB2511642-007	EB2511642-008	EB2511642-009	EB2511642-010
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	448	99	39000	39800	38700
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	5	<5	<5	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.02	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl 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	0.8	0.8	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	0.12	0.04	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	----	0.006	0.014	0.010
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	----	<0.002	<0.002	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	----	0.011	0.005	0.005
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	----	----	0.011	0.005	0.005
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.025	mg/L	----	----	0.042	0.045	0.123
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND06	DW14	WQ1	WQ2	WQ3
			Sampling date / time	03-Apr-2025 15:45	03-Apr-2025 00:00	03-Apr-2025 15:20	03-Apr-2025 16:00	03-Apr-2025 16:45
Compound	CAS Number	LOR	Unit	EB2511642-006	EB2511642-007	EB2511642-008	EB2511642-009	EB2511642-010
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	----	**0.053**	**0.050**	**0.128**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	----	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	----	<0.001	<0.001	<0.001
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**82.9**	**89.9**	**75.7**	**92.5**	**84.3**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND06	DW14	WQ1	WQ2	WQ3
			Sampling date / time	03-Apr-2025 15:45	03-Apr-2025 00:00	03-Apr-2025 15:20	03-Apr-2025 16:00	03-Apr-2025 16:45
Compound	CAS Number	LOR	Unit	EB2511642-006	EB2511642-007	EB2511642-008	EB2511642-009	EB2511642-010
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**84.6**	**92.6**	**80.3**	**94.9**	**82.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ4	WQ5	----	----	----
			Sampling date / time	03-Apr-2025 16:30	03-Apr-2025 15:10	----	----	----
Compound	CAS Number	LOR	Unit	EB2511642-011	EB2511642-012	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**39800**	**40700**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.012**	**0.014**	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	**0.004**	<0.002	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	**0.004**	<0.002	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.068**	**0.074**	----	----	----
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.025	mg/L	**0.072**	**0.074**	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ4	WQ5	----	----	----
			Sampling date / time	03-Apr-2025 16:30	03-Apr-2025 15:10	----	----	----
Compound	CAS Number	LOR	Unit	EB2511642-011	EB2511642-012	--------	--------	--------
				Result	Result	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**78.0**	**81.3**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**76.9**	**81.6**	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	45	139
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	45	139

QUALITY CONTROL REPORT

Work Order	: **EB2414126**	Page	: 1 of 9
Amendment	: **1**		
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Marine and Aquatic sampling	Date Samples Received	: 30-Apr-2024
Order number	: ----	Date Analysis Commenced	: 30-Apr-2024
C-O-C number	: ----	Issue Date	: 15-May-2024
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Timothy Creagh	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD
Vincent Muller	Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5757989)									
EB2413918-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6010	6090	1.3	0% - 20%
EB2414223-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	166000	161000	3.3	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5759545)									
EB2413139-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	3270	3240	0.8	0% - 20%
ET2401455-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2700	2780	3.0	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5760291)									
EB2414126-007	LIND01	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	91	81	11.6	No Limit
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5757988)									
EB2413262-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	28	35	21.2	No Limit
EB2413742-010	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	56	51	9.8	0% - 50%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5759546)									
EB2413139-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	17	15	14.2	No Limit
ET2401455-005	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	11	8	35.6	No Limit
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5760292)									
EB2414126-007	LIND01	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5759815)									
EB2414329-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	1.30	1.29	0.0	0% - 20%
EB2414150-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5761806)									
EB2414450-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5761806) - continued									
EB2414390-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5759176)									
EB2414122-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<10 µg/L	<0.01	0.0	No Limit
EB2414122-010	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<10 µg/L	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5760686)									
EB2414126-007	LIND01	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5759817)									
EB2414329-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2414150-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5761809)									
EB2414450-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	18.6	19.2	3.3	0% - 20%
EB2414390-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.18	0.18	0.0	0% - 50%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5765997)									
EB2413139-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	0.8	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5765996)									
EB2414118-006	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2413139-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.05	0.05	0.0	No Limit
EK255A: Ammonia (QC Lot: 5758515)									
EB2414126-001	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	0.035	0.024	37.1	No Limit
EK257A: Nitrite (QC Lot: 5758513)									
EB2414126-001	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 5758512)									
EB2414126-001	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.004	59.4	No Limit
EK262A: Total Nitrogen (QC Lot: 5758524)									
EB2414126-001	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.107	0.095	11.4	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 5758523)									
EB2414126-001	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK271A: Reactive Phosphorus (QC Lot: 5758514)									
EB2414126-001	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.008	153	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 5759696)									
EB2414033-001	Anonymous	EP068: Dichlorvos	62-73-7	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Diazinon	333-41-5	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Malathion	121-75-5	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 5759696) - continued									
EB2414033-001	Anonymous	EP068: Fenthion	55-38-9	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Ethion	563-12-2	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.5 (0.7)*	µg/L	<0.7	<0.7	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP068: Parathion	56-38-2	2	µg/L	<2.0	<2.0	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5757989)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	113	70.0	130
				<10	2000 mg/L	95.1	80.9	118
				<10	2320 mg/L	108	80.6	119
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5759545)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	116	70.0	130
				<10	2000 mg/L	96.0	80.9	118
				<10	2320 mg/L	97.4	80.6	119
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5760291)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	108	70.0	130
				<10	2000 mg/L	95.0	80.9	118
				<10	2320 mg/L	106	80.6	119
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5757988)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	98.9	88.0	112
				<5	1000 mg/L	94.0	88.0	112
				<5	875 mg/L	112	85.0	115
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5759546)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	106	88.0	112
				<5	1000 mg/L	96.4	88.0	112
				<5	875 mg/L	114	85.0	115
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5760292)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	94.1	88.0	112
				<5	1000 mg/L	93.6	88.0	112
				<5	875 mg/L	107	85.0	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5759815)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	101	83.5	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5761806)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	98.9	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5759176)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	95.5	90.0	110
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5760686)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.4	90.0	110

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5759817)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	93.2	85.7	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5761809)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	95.8	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5765997)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	99.7	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5765996)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.442 mg/L	104	84.7	106
EK255A: Ammonia (QCLot: 5758515)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	101	80.0	120
EK257A: Nitrite (QCLot: 5758513)								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	100.0	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 5758512)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	90.3	80.0	120
EK262A: Total Nitrogen (QCLot: 5758524)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	102	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 5758523)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	114	80.0	120
EK271A: Reactive Phosphorus (QCLot: 5758514)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	106	84.0	120
EP068B: Organophosphorus Pesticides (OP) (QCLot: 5759696)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	81.6	53.2	133
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	76.6	44.2	158
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	10.7	10.0	32.6
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	62.4	27.6	153
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	71.8	53.6	128
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	70.8	51.6	122
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	80.0	45.2	139
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	72.9	47.5	135
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	74.4	53.4	133
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	67.5	56.3	125
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	73.6	37.1	144
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	68.2	49.8	131
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	76.9	37.0	131
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	56.6	47.3	127

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 5759696) - continued								
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	71.2	16.0	150
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	61.8	45.5	128
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	53.6	39.1	129
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	51.9	38.4	134
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	# 229	27.5	146
EP068B: Organophosphorus Pesticides (OP) (QCLot: 5761803)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	72.4	53.2	133
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	81.2	44.2	158
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	11.4	10.0	32.6
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	77.7	27.6	153
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	74.8	53.6	128
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	75.2	51.6	122
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	72.9	45.2	139
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	71.6	47.5	135
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	78.1	53.4	133
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	69.8	56.3	125
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	74.1	37.1	144
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	70.8	49.8	131
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	69.8	37.0	131
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	70.0	47.3	127
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	75.2	16.0	150
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	68.4	45.5	128
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	60.8	39.1	129
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	63.0	38.4	134
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	80.1	27.5	146
EP068B: Organophosphorus Pesticides (OP) (QCLot: 5783165)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	90.9	53.2	133
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	85.6	44.2	158
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	25.4	10.0	32.6
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	77.0	27.6	153
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	86.4	53.6	128
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	89.1	51.6	122
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	88.5	45.2	139
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	82.4	47.5	135

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 5783165) - continued								
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	90.6	53.4	133
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	87.5	56.3	125
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	86.0	37.1	144
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	86.5	49.8	131
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	81.1	37.0	131
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	87.7	47.3	127
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	71.2	16.0	150
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	88.6	45.5	128
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	74.7	39.1	129
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	74.6	38.4	134
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	93.9	27.5	146

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5759815)							
EB2414329-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	# Not Determined	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5761806)							
EB2414356-007	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	# Not Determined	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5759176)							
EB2414122-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	98.7	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5759817)							
EB2414329-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	94.1	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5761809)							
EB2414356-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	106	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5765997)							
EB2413139-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	89.9	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5765996)							
EB2413139-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	96.3	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK255A: Ammonia (QCLot: 5758515)							
EB2414126-002	WQ2	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	112	70.0	130
EK257A: Nitrite (QCLot: 5758513)							
EB2414126-002	WQ2	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	93.4	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 5758512)							
EB2414126-002	WQ2	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	88.6	70.0	130
EK262A: Total Nitrogen (QCLot: 5758524)							
EB2414126-002	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	126	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 5758523)							
EB2414126-002	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	115	70.0	130
EK271A: Reactive Phosphorus (QCLot: 5758514)							
EB2414126-002	WQ2	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	105	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2414126**	Page	: 1 of 9
Amendment	: **1**		
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Telephone	: +61-7-3243 7222
Project	: Marine and Aquatic sampling	Date Samples Received	: 30-Apr-2024
Site	: ----	Issue Date	: 15-May-2024
Sampler	: BEN PEARCE	No. of samples received	: 7
Order number	: ----	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068B: Organophosphorus Pesticides (OP)	QC-5759696-002	----	**Azinphos Methyl**	86-50-0	229 %	27.5-146%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	EB2414329--004	Anonymous	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK055G: Ammonia as N by Discrete Analyser	EB2414356--007	Anonymous	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural LIND01	----	----	----	01-May-2024	26-Apr-2024	**5**
Clear Plastic Bottle - Natural DW1	----	----	----	30-Apr-2024	26-Apr-2024	**4**
EK255A: Ammonia						
Clear Plastic Bottle - Filtered and Frozen WQ1, WQ2, WQ3, WQ4, WQ5	----	----	----	30-Apr-2024	25-Apr-2024	**5**
EK257A: Nitrite						
Clear Plastic Bottle - Filtered and Frozen WQ1, WQ2, WQ3, WQ4, WQ5	----	----	----	30-Apr-2024	28-Apr-2024	**2**
EK259A: Nitrite and Nitrate (NOx)						
Clear Plastic Bottle - Filtered and Frozen WQ1, WQ2, WQ3, WQ4, WQ5	----	----	----	30-Apr-2024	25-Apr-2024	**5**
EK271A: Reactive Phosphorus						
Clear Plastic Bottle - Filtered and Frozen WQ1, WQ2, WQ3, WQ4, WQ5	----	----	----	30-Apr-2024	25-Apr-2024	**5**

Matrix: **WATER**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved							
WQ1, WQ3, WQ5	WQ2, WQ4,	10-May-2024	01-May-2024	**9**	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Analytical Methods	Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Matrix Spikes (MS)						
Pesticides by GCMS	EP068	0	10	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H)								
DW1,	LIND01	**24-Apr-2024**	**----**	----	----	**01-May-2024**	01-May-2024	✓
Clear Plastic Bottle - Natural (EA015H)								
WQ1, WQ3, WQ5	WQ2, WQ4,	**24-Apr-2024**	**----**	----	----	**30-Apr-2024**	01-May-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C								
Clear Plastic Bottle - Natural (EA025H)								
DW1,	LIND01	**24-Apr-2024**	**----**	----	----	**01-May-2024**	01-May-2024	✓
Clear Plastic Bottle - Natural (EA025H)								
WQ1, WQ3, WQ5	WQ2, WQ4,	**24-Apr-2024**	**----**	----	----	**30-Apr-2024**	01-May-2024	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G)								
DW1,	LIND01	**24-Apr-2024**	**----**	----	----	**01-May-2024**	22-May-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) LIND01	**24-Apr-2024**	**----**	----	----	**01-May-2024**	26-Apr-2024	×
Clear Plastic Bottle - Natural (EK057G) DW1	**24-Apr-2024**	**----**	----	----	**30-Apr-2024**	26-Apr-2024	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) DW1, LIND01	**24-Apr-2024**	**----**	----	----	**01-May-2024**	22-May-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) DW1, LIND01	**24-Apr-2024**	**03-May-2024**	22-May-2024	✓	**03-May-2024**	22-May-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) DW1, LIND01	**24-Apr-2024**	**03-May-2024**	22-May-2024	✓	**03-May-2024**	22-May-2024	✓
EK255A: Ammonia							
Clear Plastic Bottle - Filtered and Frozen (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Apr-2024**	**----**	----	----	**30-Apr-2024**	25-Apr-2024	×
EK257A: Nitrite							
Clear Plastic Bottle - Filtered and Frozen (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Apr-2024**	**----**	----	----	**30-Apr-2024**	28-Apr-2024	×
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic Bottle - Filtered and Frozen (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Apr-2024**	**----**	----	----	**30-Apr-2024**	25-Apr-2024	×
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Apr-2024**	**30-Apr-2024**	22-May-2024	✓	**30-Apr-2024**	22-May-2024	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Apr-2024**	**30-Apr-2024**	22-May-2024	✓	**30-Apr-2024**	22-May-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK271A: Reactive Phosphorus							
Clear Plastic Bottle - Filtered and Frozen (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Apr-2024**	**----**	----	----	**30-Apr-2024**	25-Apr-2024	×
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) DW1	**24-Apr-2024**	**01-May-2024**	01-May-2024	✓	**03-May-2024**	10-Jun-2024	✓
Amber Glass Bottle - Unpreserved (EP068) LIND01	**24-Apr-2024**	**01-May-2024**	01-May-2024	✓	**05-May-2024**	10-Jun-2024	✓
Amber Glass Bottle - Unpreserved (EP068) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Apr-2024**	**10-May-2024**	01-May-2024	×	**13-May-2024**	19-Jun-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	33	**12.12**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	39	**10.26**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	14	**21.43**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	43	**11.63**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	38	**13.16**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	33	**6.06**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	14	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	3	10	**30.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	9	43	**20.93**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	9	38	**23.68**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	33	**6.06**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	14	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Pesticides by GCMS	EP068	3	10	**30.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	43	**6.98**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	38	**7.89**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	33	**6.06**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	10	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☒BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mor@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9250 7555 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions
OFFICE: Mackay
ORDER NUMBER:
PROJECT MANAGER: Ben Pearce — CONTACT PH: 0488 765 106
SAMPLER: Ben Pearce — SAMPLER MOBILE: 0488 765 106
COC emailed to ALS? (YES) — EDD FORMAT (or default):
Email Reports to: bpearce@catchmentsolutions.com.au
Email Invoice to: accounts@catchmentsolutions.com.au

TURNAROUND REQUIREMENTS : x Standard TAT (List due date):
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) Non Standard or urgent TAT (List due date):
ALS QUOTE NO.: EB24CATSOL0001

COC SEQUENCE NUMBER (Circle)
COC: (1) 2 3 4 5 6 7
OF: (1) 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
	E. Hirsch		
DATE/TIME: 26/4/24	DATE/TIME: 26/4/24 10:00	DATE/TIME: 29/4/24	DATE/TIME: 30/4 7:45

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	OP Pesticides	TDS, TSS	Nutrients NT-08	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
SUB	LIND01	24/04/2024	Water			x	x	x						
	~~LIND02~~	~~24/04/2024~~	~~Water~~			~~x~~	~~x~~	~~x~~						
	~~LIND03~~	~~24/04/2024~~	~~Water~~			~~x~~	~~x~~	~~x~~						
	~~LIND04~~	~~24/04/2024~~	~~Water~~			~~x~~	~~x~~	~~x~~						
	~~LIND05~~	~~24/04/2024~~	~~Water~~			~~x~~	~~x~~	~~x~~						
	~~LIND06~~	~~24/04/2024~~	~~Water~~			~~x~~	~~x~~	~~x~~						
1	WQ1	24/04/2024 11:30	Water				x		x					
2	WQ2	24/04/2024 13:20	Water				x		x					
3	WQ3	24/04/2024 13:45	Water				x		x					
4	WQ4	24/04/2024 13:00	Water				x		x					
5	WQ5	24/04/2024 12:00	Water				x		x					
6	DW1	24/04/2024	Water											

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division Brisbane
Work Order Reference
EB2414126

Telephone : + 61-7-3243 7222

MRC Laboratory
89 Connors Road, Paget QLD 4740
07 4961 9042
ABN: 56 240 712 069

ANALYTICAL REPORT

Job Description: **Lindeman Island J1228**

Job Number: 24-1485
Revision No.: 00
Date: 29/04/2024
This report supercedes any previous revisions

Client: Catchment Solutions Pty Ltd
Ben Pearce
Suite 4, 85 Gordon Street

Sampled By:	Client#
Sampling Method:	Grab Sample#
Sample Matrix:	Water
No. of Samples Received:	8
Date Sample(s) Received:	26/04/2024
Analysis Date:	26/04/2024

Notes:

- Analysis is performed in accordance with APHA, AS, ASTM and USEPA Standard Methods or NATA approved in-house methods, except where stated otherwise.
- Key: * Result is derived from calculation, # Client supplied data, ^ Analysis not covered by NATA scope of accreditation, NA- Not Analysed, ∅ outsourced to external laboratory.
- This report is not to be reproduced except in full.
- Results relate to samples as received, unless sampled by MRC Laboratory.

Field Observations (if applicable):

Samples were received outside the recommended holding times.
Analysis has continued at customers request, note sample integrity may affect the validity of results.

Report Comments:

Signatories

James Petrass B.Sc.

ACCREDITED FOR TECHNICAL COMPETENCE

Accreditation No. 17048
Accredited for compliance with ISO/IEC 17025 - Testing

24-1485
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND01 24/04/2024 10:45 24-1485-1	Method
Total Coliforms	MPN/100 mL	2,420	APHA 9223 B
E.Coli	MPN/100 mL	***9***	APHA 9223 B
Thermotolerant Coliforms	MPN/100 mL	93	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	20	APHA 9215 D

24-1485
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ1 24/04/2024 11:30 24-1485-2	Method
Total Coliforms	MPN/100 mL	488	APHA 9223 B
E.Coli	MPN/100 mL	***214***	APHA 9223 B
Thermotolerant Coliforms	MPN/100 mL	<1	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	20	APHA 9215 D

24-1485
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ2 24/04/2024 13:20 24-1485-3	Method
Total Coliforms	MPN/100 mL	649	APHA 9223 B
E.Coli	MPN/100 mL	***291***	APHA 9223 B
Thermotolerant Coliforms	MPN/100 mL	<1	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	20	APHA 9215 D

24-1485
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ3 24/04/2024 13:45 24-1485-4	Method
Total Coliforms	MPN/100 mL	1,300	APHA 9223 B
E.Coli	MPN/100 mL	***411***	APHA 9223 B
Thermotolerant Coliforms	MPN/100 mL	<1	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	10	APHA 9215 D

24-1485
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ4 24/04/2024 13:00 24-1485-5	Method
Total Coliforms	MPN/100 mL	687	APHA 9223 B
E.Coli	MPN/100 mL	***308***	APHA 9223 B
Thermotolerant Coliforms	MPN/100 mL	<1	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	3	APHA 9215 D

24-1485
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ5 24/04/2024 12:00 24-1485-6	Method
Total Coliforms	MPN/100 mL	435	APHA 9223 B
E.Coli	MPN/100 mL	***276***	APHA 9223 B
Thermotolerant Coliforms	MPN/100 mL	<1	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	10	APHA 9215 D

24-1485
Lindeman Island J1228

Date Sampled Time Sampled	Units	DW1 24/04/2024 10:45 24-1485-7	Method
Total Coliforms	MPN/100 mL	2,790	APHA 9223 B
E.Coli	MPN/100 mL	***9***	APHA 9223 B
Thermotolerant Coliforms	MPN/100 mL	108	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	300	APHA 9215 D

24-1485
Lindeman Island J1228

Date Sampled Time Sampled	Units	TW1 24/04/2024 10:45 24-1485-8	Method
Total Coliforms	MPN/100 mL	5,830	APHA 9223 B
E.Coli	MPN/100 mL	***10***	APHA 9223 B
Thermotolerant Coliforms	MPN/100 mL	88	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	400	APHA 9215 D

CERTIFICATE OF ANALYSIS

Work Order	: **EB2418183**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Lindeman Island Monthly	Date Samples Received	: 30-May-2024 08:00
Order number	: ----	Date Analysis Commenced	: 30-May-2024
C-O-C number	: ----	Issue Date	: 05-Jun-2024 11:06
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	28-May-2024 11:00	28-May-2024 11:30	28-May-2024 13:45	28-May-2024 14:10	28-May-2024 13:15
Compound	CAS Number	LOR	Unit	EB2418183-001	EB2418183-002	EB2418183-003	EB2418183-004	EB2418183-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**516**	**36200**	**34200**	**33800**	**33300**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.75**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.3**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.3**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.02**	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	**0.027**	**0.021**	**0.019**	**0.047**
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	**0.083**	**0.148**	**0.080**	**0.094**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	28-May-2024 11:00	28-May-2024 11:30	28-May-2024 13:45	28-May-2024 14:10	28-May-2024 13:15
Compound	CAS Number	LOR	Unit	EB2418183-001	EB2418183-002	EB2418183-003	EB2418183-004	EB2418183-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	**0.083**	**0.148**	**0.080**	**0.094**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	28-May-2024 13:00	28-May-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2418183-006	EB2418183-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**35700**	**80**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**5**	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	**0.79**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**1.2**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**1.2**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	**0.02**	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.027**	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.084**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	28-May-2024 13:00	28-May-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2418183-006	EB2418183-007	--------	--------	--------
				Result	Result	----	----	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.084**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EB2418183**	Page	: 1 of 6
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Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Lindeman Island Monthly	Date Samples Received	: 30-May-2024 08:00
Order number	: ----	Date Analysis Commenced	: 30-May-2024
C-O-C number	: ----	Issue Date	: 05-Jun-2024 11:06
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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Signatories

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Signatories	*Position*	*Accreditation Category*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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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	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	28-May-2024 11:00	28-May-2024 11:30	28-May-2024 13:45	28-May-2024 14:10	28-May-2024 13:15
Compound	CAS Number	LOR	Unit	EB2418183-001	EB2418183-002	EB2418183-003	EB2418183-004	EB2418183-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**516**	**36200**	**34200**	**33800**	**33300**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.75**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.3**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.3**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.02**	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	**0.027**	**0.021**	**0.019**	**0.047**
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	**0.083**	**0.148**	**0.080**	**0.094**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	28-May-2024 11:00	28-May-2024 11:30	28-May-2024 13:45	28-May-2024 14:10	28-May-2024 13:15
Compound	CAS Number	LOR	Unit	EB2418183-001	EB2418183-002	EB2418183-003	EB2418183-004	EB2418183-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	**0.083**	**0.148**	**0.080**	**0.094**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	28-May-2024 13:00	28-May-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2418183-006	EB2418183-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**35700**	**80**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**5**	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	**0.79**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**1.2**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**1.2**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	**0.02**	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.027**	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.084**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	28-May-2024 13:00	28-May-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2418183-006	EB2418183-007	--------	--------	--------
				Result	Result	----	----	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.084**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **EB2418183**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Lindeman Island Monthly	Date Samples Received	: 30-May-2024
Order number	: ----	Date Analysis Commenced	: 30-May-2024
C-O-C number	: ----	Issue Date	: 05-Jun-2024
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5831968)									
EB2418183-004	WQ3	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	33800	35300	4.3	0% - 20%
EB2417839-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	3130	2970	5.3	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5831969)									
EB2417839-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5827016)									
EB2418417-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.44	0.46	3.3	0% - 20%
EB2418200-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.66	0.67	0.0	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5826821)									
EB2418307-007	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2418427-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5827012)									
EB2418417-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	3.15	3.18	0.8	0% - 20%
EB2418200-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	32.9	33.2	0.9	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5831094)									
EB2417978-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.3	0.0	No Limit
EB2418312-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.5)*	mg/L	7.8	6.6	16.0	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5831093)									
EB2417978-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.06	0.05	0.0	No Limit
EB2418312-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.05)*	mg/L	0.19	0.16	13.5	No Limit
EK255A: Ammonia (QC Lot: 5827574)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK255A: Ammonia (QC Lot: 5827574) - continued									
EB2418183-002	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	0.027	0.023	12.8	No Limit
EK257A: Nitrite (QC Lot: 5827572)									
EB2418183-002	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 5827571)									
EB2418183-002	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK262A: Total Nitrogen (QC Lot: 5827578)									
EB2418183-002	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.083	0.102	21.0	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 5827577)									
EB2418183-002	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK271A: Reactive Phosphorus (QC Lot: 5827573)									
EB2418183-002	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.002	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5831968)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	97.1	70.0	130
				<10	2000 mg/L	95.6	80.9	118
				<10	2320 mg/L	110	80.6	119
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5831969)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	97.9	88.0	112
				<5	1000 mg/L	94.1	88.0	112
				<5	875 mg/L	109	85.0	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5827016)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	100	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5826821)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	100	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5827012)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	95.6	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5831094)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	98.8	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5831093)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	99.1	84.7	106
EK255A: Ammonia (QCLot: 5827574)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	103	80.0	120
EK257A: Nitrite (QCLot: 5827572)								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	105	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 5827571)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	97.5	80.0	120
EK262A: Total Nitrogen (QCLot: 5827578)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	95.7	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 5827577)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	119	80.0	120
EK271A: Reactive Phosphorus (QCLot: 5827573)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	109	84.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5827016)							
EB2418417-001	Anonymous	EK055G: Ammonia as N	7664-41-7	5 mg/L	# Not Determined	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5826821)							
EB2418307-012	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	92.2	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5827012)							
EB2418417-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	5 mg/L	96.8	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5831094)							
EB2417978-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	92.3	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5831093)							
EB2417978-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	97.2	70.0	130
EK255A: Ammonia (QCLot: 5827574)							
EB2418183-003	WQ2	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	100	70.0	130
EK257A: Nitrite (QCLot: 5827572)							
EB2418183-004	WQ3	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	102	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 5827571)							
EB2418183-003	WQ2	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	93.6	70.0	130
EK262A: Total Nitrogen (QCLot: 5827578)							
EB2418183-003	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	98.6	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 5827577)							
EB2418183-003	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	113	70.0	130
EK271A: Reactive Phosphorus (QCLot: 5827573)							
EB2418183-003	WQ2	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	114	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2418183**	Page	: 1 of 7
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Telephone	: +61-7-3243 7222
Project	: Lindeman Island Monthly	Date Samples Received	: 30-May-2024
Site	: ----	Issue Date	: 05-Jun-2024
Sampler	: BEN PEARCE	No. of samples received	: 7
Order number	: ----	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	EB2418417--001	Anonymous	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW1	**28-May-2024**	**----**	----	----	**03-Jun-2024**	04-Jun-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW1	**28-May-2024**	**----**	----	----	**03-Jun-2024**	04-Jun-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) LIND01, DW1	**28-May-2024**	**----**	----	----	**30-May-2024**	25-Jun-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) LIND01, DW1	**28-May-2024**	**----**	----	----	**30-May-2024**	30-May-2024	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND01, DW1	**28-May-2024**	**----**	----	----	**30-May-2024**	25-Jun-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) LIND01, DW1	**28-May-2024**	**03-Jun-2024**	25-Jun-2024	✓	**03-Jun-2024**	25-Jun-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) LIND01, DW1	**28-May-2024**	**03-Jun-2024**	25-Jun-2024	✓	**03-Jun-2024**	25-Jun-2024	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**28-May-2024**	**----**	----	----	**31-May-2024**	25-Jun-2024	✓
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**28-May-2024**	**----**	----	----	**31-May-2024**	01-Jun-2024	✓
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**28-May-2024**	**----**	----	----	**31-May-2024**	25-Jun-2024	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**28-May-2024**	**31-May-2024**	25-Jun-2024	✓	**31-May-2024**	25-Jun-2024	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**28-May-2024**	**31-May-2024**	25-Jun-2024	✓	**31-May-2024**	25-Jun-2024	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**28-May-2024**	**----**	----	----	**31-May-2024**	25-Jun-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	10	30.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
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WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions
OFFICE: Mackay
Lindeman Island Monthly
ORDER NUMBER:
PROJECT MANAGER: Ben Pearce — CONTACT PH: 0488 765 106
SAMPLER: Ben Pearce — SAMPLER MOBILE: 0488 765 106
COC emailed to ALS? (YES) — EDD FORMAT (or default):
Email Reports to: bpearce@catchmentsolutions.com.au
Email Invoice to: accounts@catchmentsolutions.com.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
x Standard TAT (List due date):
Non Standard or urgent TAT (List due date):
ALS QUOTE NO.: EB24CATSOL0001

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
4 Lagh	E. Hirsch	E. Hirsch	
DATE/TIME: 29/5/24 9:30	DATE/TIME: 29/5/24 9:30	DATE/TIME: 29/5/24 16.00	DATE/TIME: 30/5/24 8:00

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		TDS, TSS	Nutrients NT-06	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	LIND01	28-05-24 11:00	Water				x	x						
	WQ1	28-05-24 1:30	Water				x		x					
	WQ2	28-05-24 1:45	Water				x		x					
	WQ3	28-05-24 2:10	Water				x		x					
	WQ4	28-05-24 1:15	Water				x		x					
	WQ5	28-05-24 1:00	Water				x		x					
	DW1	28-05-24	Water				x		x					

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division
Brisbane
Work Order Reference
EB2418183

Telephone : +61-7-3243 7222

CERTIFICATE OF ANALYSIS

Work Order	: **EB2421515**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Lindeman Island Monthly	Date Samples Received	: 25-Jun-2024 07:50
Order number	: ----	Date Analysis Commenced	: 25-Jun-2024
C-O-C number	: ----	Issue Date	: 28-Jun-2024 22:40
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

- TDS by method EA-015 may bias high for sample 7(DW3) due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	20-Jun-2024 08:30	20-Jun-2024 12:05	20-Jun-2024 12:20	20-Jun-2024 12:45	20-Jun-2024 11:45
Compound	CAS Number	LOR	Unit	EB2421515-001	EB2421515-002	EB2421515-003	EB2421515-004	EB2421515-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**72**	**37900**	**36800**	**38900**	**36100**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**11**	<5	<5	<5	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.02**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.03**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.03**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.2**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.2**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	**0.042**	**0.042**	**0.035**	**0.045**
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	**0.080**	**0.084**	**0.088**	**0.084**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	20-Jun-2024 08:30	20-Jun-2024 12:05	20-Jun-2024 12:20	20-Jun-2024 12:45	20-Jun-2024 11:45
Compound	CAS Number	LOR	Unit	EB2421515-001	EB2421515-002	EB2421515-003	EB2421515-004	EB2421515-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	**0.080**	**0.084**	**0.088**	**0.084**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	<0.001	<0.001	**0.003**	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW3	----	----	----
			Sampling date / time	20-Jun-2024 10:00	20-Jun-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2421515-006	EB2421515-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**35800**	**187**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**8**	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	**0.19**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**0.6**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**0.6**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	<0.01	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.044**	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.090**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW3	----	----	----
			Sampling date / time	20-Jun-2024 10:00	20-Jun-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2421515-006	EB2421515-007	--------	--------	--------
				Result	Result	----	----	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.090**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EB2421515**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Lindeman Island Monthly	Date Samples Received	: 25-Jun-2024 07:50
Order number	: ----	Date Analysis Commenced	: 25-Jun-2024
C-O-C number	: ----	Issue Date	: 28-Jun-2024 22:40
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

- TDS by method EA-015 may bias high for sample 7(DW3) due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	20-Jun-2024 08:30	20-Jun-2024 12:05	20-Jun-2024 12:20	20-Jun-2024 12:45	20-Jun-2024 11:45
Compound	CAS Number	LOR	Unit	EB2421515-001	EB2421515-002	EB2421515-003	EB2421515-004	EB2421515-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**72**	**37900**	**36800**	**38900**	**36100**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**11**	<5	<5	<5	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.02**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.03**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.03**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.2**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.2**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	**0.042**	**0.042**	**0.035**	**0.045**
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	**0.080**	**0.084**	**0.088**	**0.084**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	20-Jun-2024 08:30	20-Jun-2024 12:05	20-Jun-2024 12:20	20-Jun-2024 12:45	20-Jun-2024 11:45
Compound	CAS Number	LOR	Unit	EB2421515-001	EB2421515-002	EB2421515-003	EB2421515-004	EB2421515-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	**0.080**	**0.084**	**0.088**	**0.084**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	<0.001	<0.001	**0.003**	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW3	----	----	----
			Sampling date / time	20-Jun-2024 10:00	20-Jun-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2421515-006	EB2421515-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**35800**	**187**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**8**	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	**0.19**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**0.6**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**0.6**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	<0.01	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.044**	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.090**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW3	----	----	----
			Sampling date / time	20-Jun-2024 10:00	20-Jun-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2421515-006	EB2421515-007	--------	--------	--------
				Result	Result	----	----	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.090**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **EB2421515**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Lindeman Island Monthly	Date Samples Received	: 25-Jun-2024
Order number	: ----	Date Analysis Commenced	: 25-Jun-2024
C-O-C number	: ----	Issue Date	: 28-Jun-2024
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5885555)									
EB2420579-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	326	326	0.0	0% - 20%
EB2421515-002	WQ1	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	37900	38800	2.3	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5885556)									
EB2421538-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	54	56	5.0	0% - 50%
EB2421515-002	WQ1	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5881777)									
EB2421641-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	1.50	1.50	0.0	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5882146)									
EB2421548-015	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2421580-005	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5881773)									
EB2421641-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	3.60	3.58	0.7	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5887928)									
EB2420681-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EB2421538-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.2)*	mg/L	2.8	2.8	0.0	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5887927)									
EB2420681-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2421538-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.02)*	mg/L	10.6	10.6	0.2	0% - 20%
EK255A: Ammonia (QC Lot: 5881207)									
EB2421515-002	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	0.042	0.038	9.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK257A: Nitrite (QC Lot: 5881205)									
EB2421515-002	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 5881204)									
EB2421515-002	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK262A: Total Nitrogen (QC Lot: 5881217)									
EB2421515-002	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.080	0.094	16.2	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 5881216)									
EB2421515-002	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK271A: Reactive Phosphorus (QC Lot: 5881206)									
EB2421515-002	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5885555)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	100	70.0	130
				<10	2000 mg/L	95.0	80.9	118
				<10	2320 mg/L	105	80.6	119
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5885556)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	95.2	88.0	112
				<5	1000 mg/L	93.8	88.0	112
				<5	875 mg/L	110	85.0	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5881777)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	97.3	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5882146)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	100	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5881773)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.8	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5887928)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	90.9	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5887927)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	99.8	84.7	106
EK255A: Ammonia (QCLot: 5881207)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	105	80.0	120
EK257A: Nitrite (QCLot: 5881205)								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	84.5	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 5881204)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	100	80.0	120
EK262A: Total Nitrogen (QCLot: 5881217)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	93.6	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 5881216)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	113	80.0	120
EK271A: Reactive Phosphorus (QCLot: 5881206)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	99.0	84.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5881777)							
EB2421454-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	109	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5882146)							
EB2421548-016	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	95.3	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5881773)							
EB2421454-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	90.8	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5887928)							
EB2420681-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	96.6	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5887927)							
EB2420681-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	93.6	70.0	130
EK255A: Ammonia (QCLot: 5881207)							
EB2421515-003	WQ2	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	123	70.0	130
EK257A: Nitrite (QCLot: 5881205)							
EB2421515-003	WQ2	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	95.1	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 5881204)							
EB2421515-003	WQ2	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	99.5	70.0	130
EK262A: Total Nitrogen (QCLot: 5881217)							
EB2421515-003	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	101	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 5881216)							
EB2421515-003	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	103	70.0	130
EK271A: Reactive Phosphorus (QCLot: 5881206)							
EB2421515-003	WQ2	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	97.5	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2421515**	Page	: 1 of 7
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Telephone	: +61-7-3243 7222
Project	: Lindeman Island Monthly	Date Samples Received	: 25-Jun-2024
Site	: ----	Issue Date	: 28-Jun-2024
Sampler	: BEN PEARCE	No. of samples received	: 7
Order number	: ----	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
LIND01, DW3	----	----	----	25-Jun-2024	22-Jun-2024	**3**
EK257A: Nitrite						
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu						
WQ1, WQ2, WQ3, WQ4, WQ5	----	----	----	25-Jun-2024	24-Jun-2024	**1**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW3	**20-Jun-2024**	**----**	----	**----**	**27-Jun-2024**	27-Jun-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW3	**20-Jun-2024**	**----**	----	**----**	**27-Jun-2024**	27-Jun-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
LIND01, DW3	**20-Jun-2024**	**----**	----	**----**	**25-Jun-2024**	18-Jul-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
LIND01, DW3	**20-Jun-2024**	**----**	----	**----**	**25-Jun-2024**	22-Jun-2024	✗

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND01, DW3	**20-Jun-2024**	**----**	----	----	**25-Jun-2024**	18-Jul-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) LIND01, DW3	**20-Jun-2024**	**27-Jun-2024**	18-Jul-2024	✓	**27-Jun-2024**	18-Jul-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) LIND01, DW3	**20-Jun-2024**	**27-Jun-2024**	18-Jul-2024	✓	**27-Jun-2024**	18-Jul-2024	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**20-Jun-2024**	**----**	----	----	**25-Jun-2024**	18-Jul-2024	✓
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**20-Jun-2024**	**----**	----	----	**25-Jun-2024**	24-Jun-2024	✗
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**20-Jun-2024**	**----**	----	----	**25-Jun-2024**	18-Jul-2024	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**20-Jun-2024**	**25-Jun-2024**	18-Jul-2024	✓	**25-Jun-2024**	18-Jul-2024	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**20-Jun-2024**	**25-Jun-2024**	18-Jul-2024	✓	**25-Jun-2024**	18-Jul-2024	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**20-Jun-2024**	**----**	----	----	**25-Jun-2024**	18-Jul-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	17	17.65	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0290 E: adelaide@alsglobal.com
☒BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Graty Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
☐PERTH 16 Rod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	x Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mackay		Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
Lindeman Island Monthly	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7	Other comment:

SAMPLER: Ben Pearce	SAMPLER MOBILE: 0488 765 106	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
COC emailed to ALS? (YES)	EDD FORMAT (or default):			E. Hirsch	
Email Reports to: bpearce@catchmentsolutions.com.au		DATE/TIME:	DATE/TIME: 24/6/24	DATE/TIME: 24/6/24 16:00	DATE/TIME: 25/6/24 7:50
Email Invoice to: accounts@catchmentsolutions.com.au					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		TDS, TSS	Nutrients NT-08	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	LIND01	20/6/24 8:30	Water		2		x	x						
	WQ1	20/6/24 12:05	Water		3		x		x					
	WQ2	20/6/24 12:20	Water		3		x		x					
	WQ3	20/6/24 12:45	Water		3		x		x					
	WQ4	20/6/24 11:45	Water		3		x		x					
	WQ5	20/6/24 10:00	Water		3		x		x					
	~~DUP~~ 2 D03	20/6/24	Water		2		x	x						
					19									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Forma
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division
Brisbane
Work Order Reference
EB2421515

Telephone : - 61-7-3243 7222

CERTIFICATE OF ANALYSIS

Work Order	: **EB2425998**	Page	: 1 of 9
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Lindeman Island Quarterly	Date Samples Received	: 01-Aug-2024 10:00
Order number	: ----	Date Analysis Commenced	: 01-Aug-2024
C-O-C number	: ----	Issue Date	: 07-Aug-2024 15:49
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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
- Surrogate Control Limits

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kirsty Watson	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- Unless otherwise stated, analytical work for this work order will be conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	30-Jul-2024 14:05	30-Jul-2024 11:15	30-Jul-2024 11:45	30-Jul-2024 09:45	30-Jul-2024 11:00
Compound	CAS Number	LOR	Unit	EB2425998-001	EB2425998-002	EB2425998-003	EB2425998-004	EB2425998-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**80**	**38800**	**39500**	**38000**	**39500**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	<5	<5	<5	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	**1.0**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	**1.0**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	<0.01	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	<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
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.025	mg/L	----	**0.079**	**0.066**	**0.063**	**0.074**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	30-Jul-2024 14:05	30-Jul-2024 11:15	30-Jul-2024 11:45	30-Jul-2024 09:45	30-Jul-2024 11:00
Compound	CAS Number	LOR	Unit	EB2425998-001	EB2425998-002	EB2425998-003	EB2425998-004	EB2425998-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	**0.079**	**0.066**	**0.063**	**0.074**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	**0.002**	**0.002**	<0.001	<0.001
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**90.7**	**104**	**67.5**	**89.5**	**90.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	30-Jul-2024 14:05	30-Jul-2024 11:15	30-Jul-2024 11:45	30-Jul-2024 09:45	30-Jul-2024 11:00
Compound	CAS Number	LOR	Unit	EB2425998-001	EB2425998-002	EB2425998-003	EB2425998-004	EB2425998-005
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**92.3**	**102**	**68.3**	**88.3**	**82.2**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW4	----	----	----
			Sampling date / time	30-Jul-2024 10:15	30-Jul-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2425998-006	EB2425998-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**41200**	**128**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	<5	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	**0.10**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	----	**1.1**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	----	**1.1**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	----	<0.01	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.025	mg/L	**0.193**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW4	----	----	----
			Sampling date / time	30-Jul-2024 10:15	30-Jul-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2425998-006	EB2425998-007	--------	--------	--------
				Result	Result	----	----	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.193**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	**0.047**	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	**0.008**	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**86.3**	**83.4**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW4	----	----	----
			Sampling date / time	30-Jul-2024 10:15	30-Jul-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2425998-006	EB2425998-007	--------	--------	--------
				Result	Result	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**81.7**	**80.7**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	45	139
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	45	139

CERTIFICATE OF ANALYSIS

Work Order	: **EB2425998**	Page	: 1 of 9
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Lindeman Island Quarterly	Date Samples Received	: 01-Aug-2024 10:00
Order number	: ----	Date Analysis Commenced	: 01-Aug-2024
C-O-C number	: ----	Issue Date	: 07-Aug-2024 15:49
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

Accreditation No. 825
Accredited for compliance with
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Signatories

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Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kirsty Watson	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- Unless otherwise stated, analytical work for this work order will be conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	30-Jul-2024 14:05	30-Jul-2024 11:15	30-Jul-2024 11:45	30-Jul-2024 09:45	30-Jul-2024 11:00
Compound	CAS Number	LOR	Unit	EB2425998-001	EB2425998-002	EB2425998-003	EB2425998-004	EB2425998-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**80**	**38800**	**39500**	**38000**	**39500**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.0**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.0**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	<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
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	**0.079**	**0.066**	**0.063**	**0.074**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	30-Jul-2024 14:05	30-Jul-2024 11:15	30-Jul-2024 11:45	30-Jul-2024 09:45	30-Jul-2024 11:00
Compound	CAS Number	LOR	Unit	EB2425998-001	EB2425998-002	EB2425998-003	EB2425998-004	EB2425998-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	**0.079**	**0.066**	**0.063**	**0.074**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	**0.002**	**0.002**	<0.001	<0.001
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**90.7**	**104**	**67.5**	**89.5**	**90.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	30-Jul-2024 14:05	30-Jul-2024 11:15	30-Jul-2024 11:45	30-Jul-2024 09:45	30-Jul-2024 11:00
Compound	CAS Number	LOR	Unit	EB2425998-001	EB2425998-002	EB2425998-003	EB2425998-004	EB2425998-005
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**92.3**	**102**	**68.3**	**88.3**	**82.2**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW4	----	----	----
			Sampling date / time	30-Jul-2024 10:15	30-Jul-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2425998-006	EB2425998-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**41200**	**128**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	**0.10**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**1.1**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**1.1**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	<0.01	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.193**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW4	----	----	----
			Sampling date / time	30-Jul-2024 10:15	30-Jul-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2425998-006	EB2425998-007	--------	--------	--------
				Result	Result	----	----	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.193**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	**0.047**	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	**0.008**	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**86.3**	**83.4**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW4	----	----	----
			Sampling date / time	30-Jul-2024 10:15	30-Jul-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2425998-006	EB2425998-007	--------	--------	--------
				Result	Result	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**81.7**	**80.7**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	45	139
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	45	139

QUALITY CONTROL REPORT

Work Order	: **EB2425998**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Lindeman Island Quarterly	Date Samples Received	: 01-Aug-2024
Order number	: ----	Date Analysis Commenced	: 01-Aug-2024
C-O-C number	: ----	Issue Date	: 07-Aug-2024
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kirsty Watson	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5964443)									
EB2425724-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	4660	4610	1.1	0% - 20%
EB2426042-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	240	253	5.3	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5964442)									
EB2425998-001	LIND01	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EB2425724-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5963859)									
EB2426089-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.14	0.15	6.8	0% - 50%
EB2425973-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01 (0.20)*	mg/L	0.50	0.43	14.4	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5963319)									
EB2426094-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2426111-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5963855)									
EB2426089-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2425973-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01 (0.20)*	mg/L	<0.20	<0.20	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5964049)									
EB2425980-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	38.8	39.5	1.7	0% - 20%
EB2426178-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.5)*	mg/L	1.6	1.4	12.9	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5964048)									
EB2425980-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	2.94	2.98	1.4	0% - 20%
EB2426178-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.05)*	mg/L	3.94	3.86	1.9	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK255A: Ammonia (QC Lot: 5964259)									
EB2425998-002	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK257A: Nitrite (QC Lot: 5964257)									
EB2425998-002	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 5964256)									
EB2425998-002	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK262A: Total Nitrogen (QC Lot: 5964736)									
EB2425998-002	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.079	0.066	17.5	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 5964735)									
EB2425998-002	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK271A: Reactive Phosphorus (QC Lot: 5964258)									
EB2425998-002	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.002	<0.001	85.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5964443)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	106	70.0	130
				<10	2000 mg/L	96.4	80.9	118
				<10	2320 mg/L	109	80.6	119
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5964442)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	97.6	88.0	112
				<5	1000 mg/L	94.7	88.0	112
				<5	875 mg/L	108	85.0	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5963859)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	101	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5963319)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	101	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5963855)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	96.9	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5964049)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	98.9	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5964048)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	104	84.7	106
EK255A: Ammonia (QCLot: 5964259)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	116	80.0	120
EK257A: Nitrite (QCLot: 5964257)								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	98.1	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 5964256)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	99.4	80.0	120
EK262A: Total Nitrogen (QCLot: 5964736)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	92.1	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 5964735)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	114	80.0	120
EK271A: Reactive Phosphorus (QCLot: 5964258)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	100	84.0	120
EP068B: Organophosphorus Pesticides (OP) (QCLot: 5965438)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 5965438) - continued								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	78.3	53.2	133
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	58.4	44.2	158
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	# 2.4	10.0	32.6
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	50.7	27.6	153
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	94.0	53.6	128
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	95.9	51.6	122
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	80.2	45.2	139
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	102	47.5	135
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	105	53.4	133
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	80.9	56.3	125
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	104	37.1	144
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	104	49.8	131
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	82.0	37.0	131
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	88.3	47.3	127
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	69.2	16.0	150
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	90.6	45.5	128
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	76.8	39.1	129
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	90.6	38.4	134
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	75.9	27.5	146

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5963859)							
EB2426089-008	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	85.4	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5963319)							
EB2426094-004	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	102	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5963855)							
EB2426089-008	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	97.6	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5964049)							
EB2425980-002	Anonymous						

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5964049) - continued							
EB2425980-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	# Not Determined	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5964048)							
EB2425980-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	# Not Determined	70.0	130
EK255A: Ammonia (QCLot: 5964259)							
EB2425998-004	WQ3	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	105	70.0	130
EK257A: Nitrite (QCLot: 5964257)							
EB2425998-003	WQ2	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	96.9	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 5964256)							
EB2425998-004	WQ3	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	98.0	70.0	130
EK262A: Total Nitrogen (QCLot: 5964736)							
EB2425998-003	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	97.3	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 5964735)							
EB2425998-003	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	101	70.0	130
EK271A: Reactive Phosphorus (QCLot: 5964258)							
EB2425998-004	WQ3	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	83.4	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2425998**	Page	: 1 of 8
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Telephone	: +61-7-3243 7222
Project	: Lindeman Island Quarterly	Date Samples Received	: 01-Aug-2024
Site	: ----	Issue Date	: 07-Aug-2024
Sampler	: FIONA LOFT	No. of samples received	: 7
Order number	: ----	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068B: Organophosphorus Pesticides (OP)	QC-5965438-002	----	**Monocrotophos**	6923-22-4	2.4 %	10.0-32.6%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	EB2425980--002	Anonymous	**Total Kjeldahl Nitrogen as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK067G: Total Phosphorus as P by Discrete Analyser	EB2425980--002	Anonymous	**Total Phosphorus as P**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Pesticides by GCMS	EP068	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Pesticides by GCMS	EP068	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H)								
LIND01,	WQ1,	**30-Jul-2024**	**----**	----	**----**	**02-Aug-2024**	06-Aug-2024	✓
WQ2,	WQ3,							
WQ4,	WQ5,							
DW4								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW4	**30-Jul-2024**	**----**	----	----	**02-Aug-2024**	06-Aug-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) LIND01, DW4	**30-Jul-2024**	**----**	----	----	**01-Aug-2024**	27-Aug-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) LIND01, DW4	**30-Jul-2024**	**----**	----	----	**01-Aug-2024**	01-Aug-2024	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND01, DW4	**30-Jul-2024**	**----**	----	----	**01-Aug-2024**	27-Aug-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) LIND01, DW4	**30-Jul-2024**	**02-Aug-2024**	27-Aug-2024	✓	**02-Aug-2024**	27-Aug-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) LIND01, DW4	**30-Jul-2024**	**02-Aug-2024**	27-Aug-2024	✓	**02-Aug-2024**	27-Aug-2024	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**30-Jul-2024**	**----**	----	----	**02-Aug-2024**	27-Aug-2024	✓
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**30-Jul-2024**	**----**	----	----	**02-Aug-2024**	03-Aug-2024	✓
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**30-Jul-2024**	**----**	----	----	**02-Aug-2024**	27-Aug-2024	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**30-Jul-2024**	**02-Aug-2024**	27-Aug-2024	✓	**02-Aug-2024**	27-Aug-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**30-Jul-2024**	**02-Aug-2024**	27-Aug-2024	✓	**02-Aug-2024**	27-Aug-2024	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**30-Jul-2024**	**----**	----	----	**02-Aug-2024**	27-Aug-2024	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) LIND01	**30-Jul-2024**	**05-Aug-2024**	06-Aug-2024	✓	**05-Aug-2024**	14-Sep-2024	✓
Amber Glass Bottle - Unpreserved (EP068) WQ1, WQ2, WQ3, WQ4, WQ5, DW4	**30-Jul-2024**	**05-Aug-2024**	06-Aug-2024	✓	**06-Aug-2024**	14-Sep-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	20	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Pesticides by GCMS	EP068	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	20	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5800 E: gladstone@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions
OFFICE: Mackay
Lindeman Island Quarterly
ORDER NUMBER:
PROJECT MANAGER: Ben Pearce — CONTACT PH: 0488 765 106
SAMPLER: Fiona Loft — SAMPLER MOBILE: 0487 060 276
COC emailed to ALS? (YES) — EDD FORMAT (or default):
Email Reports to: bpearce@catchmentsolutions.com.au
Email Invoice to: accounts@catchmentsolutions.com.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
x Standard TAT (List due date):
Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: EB24CATSOL0001

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 30/7/24 9 [illegible]	DATE/TIME: N. SUTTON 31.7.24 11:30	DATE/TIME: N. SUTTON 31.7.24 16:00	DATE/TIME: 1/8/24 [illegible]

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	OP Pesticides	TDS, TSS	Nutrients NT-08	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LIND01	30.7.24 11:05	Water			x	x	x						
2	WQ1	30.7.24 11:15	Water			x	x		x					
3	WQ2	30.7.24 11:45	Water			x	x		x					
4	WQ3	30.7.24 9:45	Water			x	x		x					
5	WQ4	30.7.24 11:00	Water			x	x		x					
6	WQ5	30.7.24 10:15	Water			x	x		x					
7	DW14	30.7.24	Water			x	x		x					

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = F
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division Brisbane
Work Order Reference
EB2425998

Telephone : + 61-7-3243 7222

MRC Laboratory
89 Connors Road, Paget QLD 4740
07 4961 9042
ABN: 56 240 712 069

ANALYTICAL REPORT

Job Description: **Lindeman Island (J1228)**

Job Number: 24-2889
Revision No.: 00
Date: 11/09/2024
This report supercedes any previous revisions

Client: Catchment Solutions Pty Ltd
Fiona Loft
Suite 4, 85 Gordon Street

Sampled By: Client#
Sampling Method: Grab Sample#
Sample Matrix: Aqueous
No. of Samples Received: 6
Date Sample(s) Received: 31/07/2024
Analysis Date: 31/07/2024

Notes:

- Analysis is performed in accordance with APHA, AS, ASTM and USEPA Standard Methods or NATA approved in-house methods, except where stated otherwise.
- Key: * Result is derived from calculation, # Client supplied data, ^ Analysis not covered by NATA scope of accreditation, NA- Not Analysed, ∅ outsourced to external laboratory.
- This report is not to be reproduced except in full.
- Results relate to samples as received, unless sampled by MRC Laboratory.

Field Observations (if applicable):

Report Comments:

Signatories

Kimberly Gyles B.Biomed.Sc.
Laboratory Scientist

ACCREDITED FOR TECHNICAL COMPETENCE

Accreditation No. 17048
Accredited for compliance with ISO/IEC 17025 - Testing

24-2889
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	WQ5 30/07/2024 10:15 24-2889-1	WQ1 30/07/2024 11:15 24-2889-2	WQ2 30/07/2024 11:45 24-2889-3	Method
Thermotolerant Coliforms	MPN/100mL	<1	<1	<1	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	2,050	<1	50	APHA 9215 D
Total Coliforms	MPN/100mL	2,420	299	687	APHA 9223 B
E.Coli	MPN/100mL	1,733	108	219	APHA 9223 B

Date Sampled Time Sampled	Units	WQ3 30/07/2024 09:45 24-2889-4	WQ4 30/07/2024 11:00 24-2889-5	Lind 01 30/07/2024 14:05 24-2889-6	Method
Thermotolerant Coliforms	MPN/100mL	<1	<1	770	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	720	110	310	APHA 9215 D
Total Coliforms	MPN/100mL	1,414	1,733	5,475	APHA 9223 B
E.Coli	MPN/100mL	261	435	770	APHA 9223 B

CERTIFICATE OF ANALYSIS

Work Order	: **ET2404604**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Monthly	Date Samples Received	: 22-Aug-2024 11:15
Order number	: P2852	Date Analysis Commenced	: 22-Aug-2024
C-O-C number	: ----	Issue Date	: 28-Aug-2024 16:21
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD
Vincent Muller	Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD

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.

- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	20-Aug-2024 00:00	20-Aug-2024 00:00	20-Aug-2024 00:00	20-Aug-2024 00:00	20-Aug-2024 00:00
Compound	CAS Number	LOR	Unit	ET2404604-001	ET2404604-002	ET2404604-003	ET2404604-004	ET2404604-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**78**	**37700**	**36800**	**35900**	**38200**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	**5**	<5	**8**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.08**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.08**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.5**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.6**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.10**	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	<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
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	**0.086**	**0.108**	**0.085**	**0.113**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	20-Aug-2024 00:00	20-Aug-2024 00:00	20-Aug-2024 00:00	20-Aug-2024 00:00	20-Aug-2024 00:00
Compound	CAS Number	LOR	Unit	ET2404604-001	ET2404604-002	ET2404604-003	ET2404604-004	ET2404604-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**----**	**0.086**	**0.108**	**0.085**	**0.113**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	**----**	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	**----**	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW5	----	----	----
			Sampling date / time	20-Aug-2024 00:00	20-Aug-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2404604-006	ET2404604-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**37900**	**90**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	<5	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	**0.01**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	**0.04**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	-----	0.01	mg/L	----	**0.04**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	----	**0.5**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	----	**0.5**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	----	**0.02**	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.025	mg/L	**0.110**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW5	----	----	----
			Sampling date / time	20-Aug-2024 00:00	20-Aug-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2404604-006	ET2404604-007	--------	--------	--------
				Result	Result	----	----	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	-----	0.025	mg/L	**0.110**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	-----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser
(WATER) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser
(WATER) EK067G: Total Phosphorus as P by Discrete Analyser
(WATER) EK255A: Ammonia
(WATER) EK257A: Nitrite
(WATER) EK258A: Nitrate
(WATER) EK261A: Total Kjeldahl Nitrogen
(WATER) EK262A: Total Nitrogen
(WATER) EK267A: Total Phosphorus (Persulfate Digestion)
(WATER) EK271A: Reactive Phosphorus
(WATER) EK259A: Nitrite and Nitrate (NOx)

CERTIFICATE OF ANALYSIS

Work Order	: **ET2404604**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Monthly	Date Samples Received	: 22-Aug-2024 11:15
Order number	: P2852	Date Analysis Commenced	: 22-Aug-2024
C-O-C number	: ----	Issue Date	: 28-Aug-2024 16:21
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD
Vincent Muller	Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD

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.

- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	20-Aug-2024 00:00	20-Aug-2024 00:00	20-Aug-2024 00:00	20-Aug-2024 00:00	20-Aug-2024 00:00
Compound	CAS Number	LOR	Unit	ET2404604-001	ET2404604-002	ET2404604-003	ET2404604-004	ET2404604-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**78**	**37700**	**36800**	**35900**	**38200**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	**5**	<5	**8**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.08**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.08**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.5**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.6**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.10**	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	<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
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	**0.086**	**0.108**	**0.085**	**0.113**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	20-Aug-2024 00:00	20-Aug-2024 00:00	20-Aug-2024 00:00	20-Aug-2024 00:00	20-Aug-2024 00:00
Compound	CAS Number	LOR	Unit	ET2404604-001	ET2404604-002	ET2404604-003	ET2404604-004	ET2404604-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**----**	**0.086**	**0.108**	**0.085**	**0.113**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	**----**	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	**----**	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW5	----	----	----
			Sampling date / time	20-Aug-2024 00:00	20-Aug-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2404604-006	ET2404604-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**37900**	**90**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	**0.01**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	**0.04**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	**0.04**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**0.5**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**0.5**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	**0.02**	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.110**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW5	----	----	----
			Sampling date / time	20-Aug-2024 00:00	20-Aug-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2404604-006	ET2404604-007	--------	--------	--------
				Result	Result	----	----	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.110**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser
(WATER) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser
(WATER) EK067G: Total Phosphorus as P by Discrete Analyser
(WATER) EK255A: Ammonia
(WATER) EK257A: Nitrite
(WATER) EK258A: Nitrate
(WATER) EK261A: Total Kjeldahl Nitrogen
(WATER) EK262A: Total Nitrogen
(WATER) EK267A: Total Phosphorus (Persulfate Digestion)
(WATER) EK271A: Reactive Phosphorus
(WATER) EK259A: Nitrite and Nitrate (NOx)

QUALITY CONTROL REPORT

Work Order	: **ET2404604**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Monthly	Date Samples Received	: 22-Aug-2024
Order number	: P2852	Date Analysis Commenced	: 22-Aug-2024
C-O-C number	: ----	Issue Date	: 28-Aug-2024
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD
Vincent Muller	Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD

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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.

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Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6011611)									
ET2403736-004	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2040	2140	4.8	0% - 20%
ET2404604-005	WQ4	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	38200	38200	0.0	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6011612)									
ET2403736-004	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	12	10	18.2	No Limit
ET2404604-005	WQ4	EA025H: Suspended Solids (SS)	----	5	mg/L	8	<5	46.2	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6013422)									
ET2403548-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.12	0.12	0.0	0% - 50%
ET2403736-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.54	0.58	8.6	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6007489)									
ET2404604-001	LIND01	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6013423)									
ET2403548-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	16.4	16.1	1.8	0% - 20%
ET2403736-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.59	0.50	16.2	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6014149)									
EB2428836-005	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.5)*	mg/L	<0.5	<0.5	0.0	No Limit
ET2404634-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.1	1.2	9.5	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6014148)									
EB2428836-005	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.05)*	mg/L	0.24	0.34	33.0	No Limit
ET2404634-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.11	0.15	26.4	0% - 50%
EK255A: Ammonia (QC Lot: 6008048)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK255A: Ammonia (QC Lot: 6008048) - continued									
ET2404604-002	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	<0.005	0.0	No Limit
ET2404636-006	Anonymous	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	0.014	0.009	43.4	No Limit
EK257A: Nitrite (QC Lot: 6008046)									
ET2404604-002	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
ET2404636-006	Anonymous	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 6008045)									
ET2404604-002	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	<0.002	0.0	No Limit
ET2404636-006	Anonymous	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	0.002	<0.002	0.0	No Limit
EK262A: Total Nitrogen (QC Lot: 6008061)									
ET2404604-002	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.086	0.082	5.5	No Limit
ET2404636-006	Anonymous	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.283	0.354	22.3	0% - 50%
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 6008060)									
ET2404604-002	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
ET2404636-006	Anonymous	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	0.015	0.025	46.4	No Limit
EK271A: Reactive Phosphorus (QC Lot: 6008047)									
ET2404604-002	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
ET2404636-006	Anonymous	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6011611)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	91.5	88.0	112
				<10	2000 mg/L	99.5	88.0	112
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6011612)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	94.7	83.0	120
				<5	1000 mg/L	102	83.0	120
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6013422)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	102	80.0	120
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6007489)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	105	80.0	120
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6013423)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.4	89.0	115
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6014149)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	89.1	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6014148)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.442 mg/L	104	84.7	106
EK255A: Ammonia (QCLot: 6008048)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	110	80.0	120
EK257A: Nitrite (QCLot: 6008046)								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	83.2	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6008045)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	112	80.0	120
EK262A: Total Nitrogen (QCLot: 6008061)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	108	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6008060)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	112	80.0	120
EK271A: Reactive Phosphorus (QCLot: 6008047)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	96.7	84.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6013422)							
ET2403687-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	96.5	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6007489)							
ET2404604-007	DW5	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	98.3	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6013423)							
ET2403687-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	102	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6014149)							
EB2428836-006	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	25 mg/L	86.6	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6014148)							
EB2428836-006	Anonymous	EK067G: Total Phosphorus as P	----	5 mg/L	104	70.0	130
EK255A: Ammonia (QCLot: 6008048)							
ET2404604-004	WQ3	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	89.4	70.0	130
EK257A: Nitrite (QCLot: 6008046)							
ET2404604-003	WQ2	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	102	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6008045)							
ET2404604-004	WQ3	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	109	70.0	130
EK262A: Total Nitrogen (QCLot: 6008061)							
ET2404604-003	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	89.2	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6008060)							
ET2404604-003	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	126	70.0	130
EK271A: Reactive Phosphorus (QCLot: 6008047)							
ET2404604-004	WQ3	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	98.2	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ET2404604**	Page	: 1 of 7
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Monthly	Date Samples Received	: 22-Aug-2024
Site	: ----	Issue Date	: 28-Aug-2024
Sampler	: BEN PEARCE	No. of samples received	: 7
Order number	: P2852	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW5	**20-Aug-2024**	**----**	----	----	**26-Aug-2024**	27-Aug-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW5	**20-Aug-2024**	**----**	----	----	**26-Aug-2024**	27-Aug-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) LIND01, DW5	**20-Aug-2024**	**----**	----	----	**26-Aug-2024**	17-Sep-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) LIND01, DW5	**20-Aug-2024**	**----**	----	----	**22-Aug-2024**	22-Aug-2024	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND01, DW5	**20-Aug-2024**	**----**	----	----	**26-Aug-2024**	17-Sep-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) LIND01, DW5	**20-Aug-2024**	**27-Aug-2024**	17-Sep-2024	✓	**27-Aug-2024**	17-Sep-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) LIND01, DW5	**20-Aug-2024**	**27-Aug-2024**	17-Sep-2024	✓	**27-Aug-2024**	17-Sep-2024	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**20-Aug-2024**	**----**	----	----	**23-Aug-2024**	17-Sep-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**20-Aug-2024**	**----**	----	----	**23-Aug-2024**	24-Aug-2024	✓
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**20-Aug-2024**	**----**	----	----	**23-Aug-2024**	17-Sep-2024	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**20-Aug-2024**	**23-Aug-2024**	17-Sep-2024	✓	**23-Aug-2024**	17-Sep-2024	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**20-Aug-2024**	**23-Aug-2024**	17-Sep-2024	✓	**23-Aug-2024**	17-Sep-2024	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**20-Aug-2024**	**----**	----	----	**23-Aug-2024**	17-Sep-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Dissolved Solids (High Level)	EA015H	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

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CLIENT: Catchment Solutions
OFFICE: Mackay
Lindeman Island Monthly
ORDER NUMBER: P2852
PROJECT MANAGER: Ben Pearce — CONTACT PH: 0488 765 106
SAMPLER: Ben Pearce — SAMPLER MOBILE: 0488 765 106
COC emailed to ALS? (YES) — EDD FORMAT (or default):
Email Reports to: bpearce@catchmentsolutions.com.au
Email Invoice to: accounts@catchmentsolutions.com.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
x Standard TAT (List due date):
Non Standard or urgent TAT (List due date):
ALS QUOTE NO.: EB24CATSOL0001

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
M Sutton	N. Sutton	N. Sutton	V. Duffy
DATE/TIME: 21.8.24 9:45	DATE/TIME: 21.8.24 9:45	DATE/TIME: 21.8.24 16:00	DATE/TIME: 22/8/24 11:25

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE — SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) — CONTAINER INFORMATION — ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). — Additional Information

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		TDS, TSS	Nutrients NT-08	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P					Additional Information
1	LIND01	20/08/2024	Water		2		x	x						
2	WQ1	20/08/2024	Water	Frozen	3		x		x					
3	WQ2	20/08/2024	Water	Frozen	3		x		x					
4	WQ3	20/08/2024	Water	Frozen	3		x		x					
5	WQ4	20/08/2024	Water	Frozen	3		x		x					
6	WQ5	20/08/2024	Water	Frozen	3		x		x					
7	DW5	20/08/2024	Water		2		x	x						
					18									

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved P
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division Townsville
Work Order Reference
ET2404604

Telephone : +61 7 4773 0000

CERTIFICATE OF ANALYSIS

Work Order	: **ET2405276**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Monthly	Date Samples Received	: 26-Sep-2024 10:00
Order number	: ----	Date Analysis Commenced	: 26-Sep-2024
C-O-C number	: ----	Issue Date	: 03-Oct-2024 09:43
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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-SW (Total Phosphrous as P): Sample WQ2 "ET2405276-003," matrix spike failed due to matrix interference. This was confirmed by extraction and re-analysis.
- TSS by EA-025 may bias low due to fine particulate matter passing through the prescribed filter.
- 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.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	24-Sep-2024 12:15	24-Sep-2024 09:00	24-Sep-2024 09:20	24-Sep-2024 09:40	24-Sep-2024 10:00
Compound	CAS Number	LOR	Unit	ET2405276-001	ET2405276-002	ET2405276-003	ET2405276-004	ET2405276-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**95**	**41500**	**40000**	**41200**	**39100**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	**19**	**8**	**13**	<5	**11**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.03**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	**0.6**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	**0.6**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	**0.04**	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	<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
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	**0.007**	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	----	<0.002	<0.002	**0.007**	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.025	mg/L	----	**0.103**	**0.110**	**0.100**	**0.091**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	24-Sep-2024 12:15	24-Sep-2024 09:00	24-Sep-2024 09:20	24-Sep-2024 09:40	24-Sep-2024 10:00
Compound	CAS Number	LOR	Unit	ET2405276-001	ET2405276-002	ET2405276-003	ET2405276-004	ET2405276-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	0.103	0.110	0.107	0.091
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	0.002	0.002	0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	24-Sep-2024 11:00	24-Sep-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2405276-006	ET2405276-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**38900**	**77**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	**11**	<5	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	**0.02**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	----	**0.4**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	----	**0.4**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	----	**0.02**	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.025	mg/L	**0.107**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	24-Sep-2024 11:00	24-Sep-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2405276-006	ET2405276-007	--------	--------	--------
				Result	Result	----	----	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	-----	0.025	mg/L	**0.107**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	-----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	**0.001**	----	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser
(WATER) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser
(WATER) EK067G: Total Phosphorus as P by Discrete Analyser
(WATER) EK255A: Ammonia
(WATER) EK257A: Nitrite
(WATER) EK258A: Nitrate
(WATER) EK261A: Total Kjeldahl Nitrogen
(WATER) EK262A: Total Nitrogen
(WATER) EK267A: Total Phosphorus (Persulfate Digestion)
(WATER) EK271A: Reactive Phosphorus
(WATER) EK259A: Nitrite and Nitrate (NOx)

CERTIFICATE OF ANALYSIS

Work Order	: **ET2405276**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Monthly	Date Samples Received	: 26-Sep-2024 10:00
Order number	: ----	Date Analysis Commenced	: 26-Sep-2024
C-O-C number	: ----	Issue Date	: 03-Oct-2024 09:43
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

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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-SW (Total Phosphrous as P): Sample WQ2 "ET2405276-003," matrix spike failed due to matrix interference. This was confirmed by extraction and re-analysis.
- TSS by EA-025 may bias low due to fine particulate matter passing through the prescribed filter.
- 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.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	24-Sep-2024 12:15	24-Sep-2024 09:00	24-Sep-2024 09:20	24-Sep-2024 09:40	24-Sep-2024 10:00
Compound	CAS Number	LOR	Unit	ET2405276-001	ET2405276-002	ET2405276-003	ET2405276-004	ET2405276-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**95**	**41500**	**40000**	**41200**	**39100**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**19**	**8**	**13**	<5	**11**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.03**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.6**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.6**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.04**	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	<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
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	**0.007**	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	<0.002	**0.007**	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	**0.103**	**0.110**	**0.100**	**0.091**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	24-Sep-2024 12:15	24-Sep-2024 09:00	24-Sep-2024 09:20	24-Sep-2024 09:40	24-Sep-2024 10:00
Compound	CAS Number	LOR	Unit	ET2405276-001	ET2405276-002	ET2405276-003	ET2405276-004	ET2405276-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	0.103	0.110	0.107	0.091
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	0.002	0.002	0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	24-Sep-2024 11:00	24-Sep-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2405276-006	ET2405276-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**38900**	**77**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**11**	<5	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	**0.02**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**0.4**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**0.4**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	**0.02**	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.107**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	24-Sep-2024 11:00	24-Sep-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2405276-006	ET2405276-007	--------	--------	--------
				Result	Result	----	----	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.107**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	**0.001**	----	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser

(WATER) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser

(WATER) EK067G: Total Phosphorus as P by Discrete Analyser

(WATER) EK255A: Ammonia

(WATER) EK257A: Nitrite

(WATER) EK258A: Nitrate

(WATER) EK261A: Total Kjeldahl Nitrogen

(WATER) EK262A: Total Nitrogen

(WATER) EK267A: Total Phosphorus (Persulfate Digestion)

(WATER) EK271A: Reactive Phosphorus

(WATER) EK259A: Nitrite and Nitrate (NOx)

QUALITY CONTROL REPORT

Work Order	: **ET2405276**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Monthly	Date Samples Received	: 26-Sep-2024
Order number	: ----	Date Analysis Commenced	: 26-Sep-2024
C-O-C number	: ----	Issue Date	: 03-Oct-2024
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6087037)									
ET2404211-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	496	492	0.8	0% - 20%
ET2405363-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1050	1040	1.0	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6087038)									
ET2404211-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ET2405363-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6089691)									
ET2404256-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01 (1.00)*	mg/L	101	99.2	1.5	0% - 20%
ET2405324-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	28.8	29.9	3.9	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6082176)									
ET2405276-007	DW1	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ET2405237-014	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.04	0.04	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6089690)									
ET2404256-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.0	No Limit
ET2405324-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.09	0.08	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6092364)									
EB2433794-004	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EB2433280-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.3	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6092365)									
ET2405312-004	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.05	20.6	No Limit
EB2433280-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.02	53.1	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK255A: Ammonia (QC Lot: 6084153)									
ET2405276-002	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK257A: Nitrite (QC Lot: 6084151)									
ET2405276-002	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 6084150)									
ET2405276-002	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK262A: Total Nitrogen (QC Lot: 6084343)									
ET2405276-002	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.103	0.105	1.9	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 6084342)									
ET2405276-002	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK271A: Reactive Phosphorus (QC Lot: 6084152)									
ET2405276-002	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.002	0.001	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6087037)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	94.9	88.0	112
				<10	2000 mg/L	97.0	88.0	112
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6087038)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	92.0	83.0	120
				<5	1000 mg/L	96.2	83.0	120
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6089691)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	99.5	80.0	120
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6082176)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	114	80.0	120
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6089690)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	100	89.0	115
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6092364)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	99.6	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6092365)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.442 mg/L	102	84.7	106
EK255A: Ammonia (QCLot: 6084153)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	101	80.0	120
EK257A: Nitrite (QCLot: 6084151)								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	96.6	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6084150)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	97.4	80.0	120
EK262A: Total Nitrogen (QCLot: 6084343)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	92.1	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6084342)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	109	80.0	120
EK271A: Reactive Phosphorus (QCLot: 6084152)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	102	84.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6089691)							
ET2404397-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	# Not Determined	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6082176)							
ET2405237-015	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	117	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6089690)							
ET2404397-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	96.0	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6092364)							
EB2433280-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	97.3	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6092365)							
EB2433280-003	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	103	70.0	130
EK255A: Ammonia (QCLot: 6084153)							
ET2405276-004	WQ3	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	92.3	70.0	130
EK257A: Nitrite (QCLot: 6084151)							
ET2405276-003	WQ2	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	93.3	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6084150)							
ET2405276-004	WQ3	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	97.1	70.0	130
EK262A: Total Nitrogen (QCLot: 6084343)							
ET2405276-003	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	92.6	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6084342)							
ET2405276-003	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	# 44.0	70.0	130
EK271A: Reactive Phosphorus (QCLot: 6084152)							
ET2405276-004	WQ3	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	92.9	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ET2405276**	Page	: 1 of 7
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Monthly	Date Samples Received	: 26-Sep-2024
Site	: ----	Issue Date	: 03-Oct-2024
Sampler	: FIONA LOFT	No. of samples received	: 7
Order number	: ----	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	ET2404397--003	Anonymous	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK267A: Total Phosphorus (Persulfate Digestion)	ET2405276--003	WQ2	**Total Phosphorus as P**	----	44.0 %	70.0-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW1	**24-Sep-2024**	**----**	----	**----**	**30-Sep-2024**	01-Oct-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW1	**24-Sep-2024**	**----**	----	**----**	**30-Sep-2024**	01-Oct-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) LIND01, DW1	**24-Sep-2024**	**----**	----	**----**	**01-Oct-2024**	22-Oct-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) LIND01, DW1	**24-Sep-2024**	**----**	----	**----**	**26-Sep-2024**	26-Sep-2024	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND01, DW1	**24-Sep-2024**	**----**	----	**----**	**01-Oct-2024**	22-Oct-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) LIND01, DW1	**24-Sep-2024**	**02-Oct-2024**	22-Oct-2024	✓	**02-Oct-2024**	22-Oct-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) LIND01, DW1	**24-Sep-2024**	**02-Oct-2024**	22-Oct-2024	✓	**02-Oct-2024**	22-Oct-2024	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Sep-2024**	**----**	----	----	**27-Sep-2024**	22-Oct-2024	✓
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Sep-2024**	**----**	----	----	**27-Sep-2024**	28-Sep-2024	✓
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Sep-2024**	**----**	----	----	**27-Sep-2024**	22-Oct-2024	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Sep-2024**	**27-Sep-2024**	22-Oct-2024	✓	**27-Sep-2024**	22-Oct-2024	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Sep-2024**	**27-Sep-2024**	22-Oct-2024	✓	**27-Sep-2024**	22-Oct-2024	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**24-Sep-2024**	**----**	----	----	**27-Sep-2024**	22-Oct-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Dissolved Solids (High Level)	EA015H	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)

Chain of Custody

Environmental Division Townsville
13 Carlton Street, Kirwan
Townsville QLD Australia 4815

157287

Destination Lab:	**Brisbane**	Due Date: 03/10/2024	Relinquished By
Address:	2 Byth Street Stafford QLD Australia 4053	HT Expiry:	Date/Time
Client:	CATCHMENT SOLUTIONS	Consignment company and Number	Received By
Work Order Number:	**ET2405276**		Date/Time 26/9/24
Original Receipt Date/Time	Instructions Received		Receipt Temp
26/09/2024 11:00			

ALS Lab ID	Bottle Code	Matrix	Submatrix	Container Type	Test Codes	Task Remarks
ET2405276	001-AB	WATER	WATER	Clear Plastic Bottle - Sulfuric Acid	EK062G, EK061G, EK067G, EK061/EK067	
ET2405276	002-AB	WATER	WATER	Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu	EK255A-SW, EK257A-SW, EK258A-SW, EK271A-SW, EK259A-SW, FIA-UT-SW-DP	
ET2405276	002-AC	WATER	WATER	Clear Plastic Bottle - Frozen (AS)	EK261PA-SW, EK262PA-SW, EK267PA-SW, EK262/267PA-SW Prep	
ET2405276	003-AB	WATER	WATER	Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu	EK255A-SW, EK257A-SW, EK258A-SW, EK271A-SW, EK259A-SW, FIA-UT-SW-DP	
ET2405276	003-AC	WATER	WATER	Clear Plastic Bottle - Frozen (AS)	EK261PA-SW, EK262PA-SW, EK267PA-SW, EK262/267PA-SW Prep	
ET2405276	004-AB	WATER	WATER	Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu	EK255A-SW, EK257A-SW, EK258A-SW, EK271A-SW, EK259A-SW, FIA-UT-SW-DP	
ET2405276	004-AC	WATER	WATER	Clear Plastic Bottle - Frozen (AS)	EK261PA-SW, EK262PA-SW, EK267PA-SW, EK262/267PA-SW Prep	
ET2405276	005-AB	WATER	WATER	Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu	EK255A-SW, EK257A-SW, EK258A-SW, EK271A-SW, EK259A-SW, FIA-UT-SW-DP	
ET2405276	005-AC	WATER	WATER	Clear Plastic Bottle - Frozen (AS)	EK261PA-SW, EK262PA-SW, EK267PA-SW, EK262/267PA-SW Prep	
ET2405276	006-AB	WATER	WATER	Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu	EK255A-SW, EK257A-SW, EK258A-SW, EK271A-SW, EK259A-SW, FIA-UT-SW-DP	
ET2405276	006-AC	WATER	WATER	Clear Plastic Bottle - Frozen (AS)	EK261PA-SW, EK262PA-SW, EK267PA-SW, EK262/267PA-SW Prep	
ET2405276	007-AB	WATER	WATER	Clear Plastic Bottle - Sulfuric Acid	EK062G, EK061G, EK067G, EK061/EK067	

Environmental Division
Townsville
Work Order Reference
ET2405276

4773-P
194-FW

Telephone : - 61 7 4773 0000

CERTIFICATE OF ANALYSIS

Work Order	: **ET2405763**	Page	: 1 of 9
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Quarterly	Date Samples Received	: 24-Oct-2024 10:45
Order number	: ----	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: ----	Issue Date	: 31-Oct-2024 16:43
Sampler	: F LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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
- Surrogate Control Limits

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*
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD
Tatijana Markoska	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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.

- TSS by EA-025 may bias low due to fine particulate matter passing through the prescribed filter.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- 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.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	22-Oct-2024 13:45	22-Oct-2024 08:45	22-Oct-2024 10:10	22-Oct-2024 09:30	22-Oct-2024 09:15
Compound	CAS Number	LOR	Unit	ET2405763-001	ET2405763-002	ET2405763-003	ET2405763-004	ET2405763-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**80**	**40700**	**41000**	**23500**	**40300**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	**7**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.03**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.4**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	<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
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	**0.075**	**0.095**	**0.055**	**0.054**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	22-Oct-2024 13:45	22-Oct-2024 08:45	22-Oct-2024 10:10	22-Oct-2024 09:30	22-Oct-2024 09:15
Compound	CAS Number	LOR	Unit	ET2405763-001	ET2405763-002	ET2405763-003	ET2405763-004	ET2405763-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	**0.075**	**0.095**	**0.055**	**0.054**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	<0.001	<0.001	<0.001	<0.001
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**84.4**	**88.7**	**81.0**	**91.0**	**94.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	22-Oct-2024 13:45	22-Oct-2024 08:45	22-Oct-2024 10:10	22-Oct-2024 09:30	22-Oct-2024 09:15
Compound	CAS Number	LOR	Unit	ET2405763-001	ET2405763-002	ET2405763-003	ET2405763-004	ET2405763-005
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**100**	**103**	**92.0**	**104**	**108**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	22-Oct-2024 11:15	22-Oct-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2405763-006	ET2405763-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**41700**	**86**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	<5	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	<0.01	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	----	**0.4**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	----	**0.4**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	----	**0.01**	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.025	mg/L	**0.078**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	22-Oct-2024 11:15	22-Oct-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2405763-006	ET2405763-007	--------	--------	--------
				Result	Result	----	----	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.078**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**88.4**	**88.6**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	22-Oct-2024 11:15	22-Oct-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2405763-006	ET2405763-007	--------	--------	--------
				Result	Result	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**102**	**101**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	45	139
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	45	139

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser
(WATER) EK067G: Total Phosphorus as P by Discrete Analyser
(WATER) EP068B: Organophosphorus Pesticides (OP)
(WATER) EP068T: Organophosphorus Pesticide Surrogate
(WATER) EP068S: Organochlorine Pesticide Surrogate
(WATER) EK255A: Ammonia
(WATER) EK257A: Nitrite
(WATER) EK258A: Nitrate
(WATER) EK261A: Total Kjeldahl Nitrogen
(WATER) EK262A: Total Nitrogen
(WATER) EK267A: Total Phosphorus (Persulfate Digestion)
(WATER) EK271A: Reactive Phosphorus
(WATER) EK259A: Nitrite and Nitrate (NOx)
(WATER) EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser

CERTIFICATE OF ANALYSIS

Work Order	: **ET2405763**	Page	: 1 of 9
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Quarterly	Date Samples Received	: 24-Oct-2024 10:45
Order number	: ----	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: ----	Issue Date	: 31-Oct-2024 16:43
Sampler	: F LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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
- Surrogate Control Limits

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*
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD
Tatijana Markoska	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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.

- TSS by EA-025 may bias low due to fine particulate matter passing through the prescribed filter.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- 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.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	22-Oct-2024 13:45	22-Oct-2024 08:45	22-Oct-2024 10:10	22-Oct-2024 09:30	22-Oct-2024 09:15
Compound	CAS Number	LOR	Unit	ET2405763-001	ET2405763-002	ET2405763-003	ET2405763-004	ET2405763-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**80**	**40700**	**41000**	**23500**	**40300**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	**7**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.03**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.4**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	<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
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	**0.075**	**0.095**	**0.055**	**0.054**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	22-Oct-2024 13:45	22-Oct-2024 08:45	22-Oct-2024 10:10	22-Oct-2024 09:30	22-Oct-2024 09:15
Compound	CAS Number	LOR	Unit	ET2405763-001	ET2405763-002	ET2405763-003	ET2405763-004	ET2405763-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	**0.075**	**0.095**	**0.055**	**0.054**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	<0.001	<0.001	<0.001	<0.001
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**84.4**	**88.7**	**81.0**	**91.0**	**94.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	22-Oct-2024 13:45	22-Oct-2024 08:45	22-Oct-2024 10:10	22-Oct-2024 09:30	22-Oct-2024 09:15
Compound	CAS Number	LOR	Unit	ET2405763-001	ET2405763-002	ET2405763-003	ET2405763-004	ET2405763-005
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**100**	**103**	**92.0**	**104**	**108**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	22-Oct-2024 11:15	22-Oct-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2405763-006	ET2405763-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**41700**	**86**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	<0.01	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**0.4**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**0.4**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	**0.01**	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.078**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	22-Oct-2024 11:15	22-Oct-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2405763-006	ET2405763-007	--------	--------	--------
				Result	Result	----	----	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.078**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**88.4**	**88.6**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW1	----	----	----
			Sampling date / time	22-Oct-2024 11:15	22-Oct-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2405763-006	ET2405763-007	--------	--------	--------
				Result	Result	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**102**	**101**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	45	139
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	45	139

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser
(WATER) EK067G: Total Phosphorus as P by Discrete Analyser
(WATER) EP068B: Organophosphorus Pesticides (OP)
(WATER) EP068T: Organophosphorus Pesticide Surrogate
(WATER) EP068S: Organochlorine Pesticide Surrogate
(WATER) EK255A: Ammonia
(WATER) EK257A: Nitrite
(WATER) EK258A: Nitrate
(WATER) EK261A: Total Kjeldahl Nitrogen
(WATER) EK262A: Total Nitrogen
(WATER) EK267A: Total Phosphorus (Persulfate Digestion)
(WATER) EK271A: Reactive Phosphorus
(WATER) EK259A: Nitrite and Nitrate (NOx)
(WATER) EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser

QUALITY CONTROL REPORT

Work Order	: **ET2405763**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Quarterly	Date Samples Received	: 24-Oct-2024
Order number	: ----	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: ----	Issue Date	: 31-Oct-2024
Sampler	: F LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 7		
No. of samples analysed	: 7		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD
Tatijana Markoska	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6150387)									
ET2405655-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2320	2260	3.1	0% - 20%
ET2405809-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	7020	7060	0.6	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6150388)									
ET2405655-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	5	5	0.0	No Limit
ET2405809-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6154206)									
ET2405769-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	<0.01	70.9	No Limit
ET2404810-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	3.22	3.21	0.4	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6143697)									
ET2405763-001	LIND01	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6154205)									
ET2405763-007	DW1	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ET2404810-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01 (1.00)*	mg/L	113	107	5.1	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6150786)									
EB2436742-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.5)*	mg/L	1.3	1.1	14.9	No Limit
EB2436775-009	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.5)*	mg/L	<0.5	<0.5	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6150785)									
EB2436742-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.05)*	mg/L	<0.05	<0.05	0.0	No Limit
EB2436775-009	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.05)*	mg/L	0.06	<0.05	0.0	No Limit
EK255A: Ammonia (QC Lot: 6145020)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK255A: Ammonia (QC Lot: 6145020) - continued									
ET2405763-002	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK257A: Nitrite (QC Lot: 6145018)									
ET2405763-002	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 6145017)									
ET2405763-002	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK262A: Total Nitrogen (QC Lot: 6145028)									
ET2405763-002	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.075	0.079	5.1	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 6145027)									
ET2405763-002	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK271A: Reactive Phosphorus (QC Lot: 6145019)									
ET2405763-002	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.003	103	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 6150998)									
EB2436761-001	Anonymous	EP068: Dichlorvos	62-73-7	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.5 (6.2)*	µg/L	<6.2	<6.2	0.0	No Limit
		EP068: Diazinon	333-41-5	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Malathion	121-75-5	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Fenthion	55-38-9	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Ethion	563-12-2	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.5 (1.5)*	µg/L	<1.5	<1.5	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP068: Parathion	56-38-2	2	µg/L	<2.0	<2.0	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6150387)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	93.5	88.0	112
				<10	2000 mg/L	102	88.0	112
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6150388)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	92.0	83.0	120
				<5	1000 mg/L	98.6	83.0	120
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6154206)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	101	80.0	120
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6143697)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	105	80.0	120
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6154205)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	103	89.0	115
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6150786)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	91.2	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6150785)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.442 mg/L	102	84.7	106
EK255A: Ammonia (QCLot: 6145020)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	97.6	80.0	120
EK257A: Nitrite (QCLot: 6145018)								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	99.8	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6145017)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	98.9	80.0	120
EK262A: Total Nitrogen (QCLot: 6145028)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	93.5	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6145027)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	101	80.0	120
EK271A: Reactive Phosphorus (QCLot: 6145019)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	96.5	84.0	120
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6150998)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	72.1	53.2	133
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	# 37.9	44.2	158

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6150998) - continued								
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	# 2.5	10.0	32.6
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	55.6	27.6	153
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	102	53.6	128
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	97.3	51.6	122
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	100.0	45.2	139
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	80.6	47.5	135
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	98.5	53.4	133
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	96.2	56.3	125
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	104	37.1	144
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	94.3	49.8	131
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	46.3	37.0	131
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	96.3	47.3	127
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	70.8	16.0	150
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	95.0	45.5	128
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	94.5	39.1	129
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	92.2	38.4	134
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	57.4	27.5	146

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6154206)							
ET2404810-002	Anonymous	EK055G: Ammonia as N	7664-41-7	50 mg/L	# Not Determined	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6143697)							
ET2405763-007	DW1	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	121	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6154205)							
ET2404810-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	111	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6150786)							
EB2436742-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	25 mg/L	93.5	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6150785)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6150785) - continued							
EB2436742-002	Anonymous	EK067G: Total Phosphorus as P	----	5 mg/L	106	70.0	130
EK255A: Ammonia (QCLot: 6145020)							
ET2405763-004	WQ3	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	77.8	70.0	130
EK257A: Nitrite (QCLot: 6145018)							
ET2405763-003	WQ2	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	87.4	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6145017)							
ET2405763-004	WQ3	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	93.2	70.0	130
EK262A: Total Nitrogen (QCLot: 6145028)							
ET2405763-003	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	87.8	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6145027)							
ET2405763-003	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	86.6	70.0	130
EK271A: Reactive Phosphorus (QCLot: 6145019)							
ET2405763-004	WQ3	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	88.3	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6150998)							
EB2436828-002	Anonymous	EP068: Diazinon	333-41-5	10 µg/L	88.5	55.6	141
		EP068: Chlorpyrifos-methyl	5598-13-0	10 µg/L	72.2	58.4	130
		EP068: Pirimphos-ethyl	23505-41-1	10 µg/L	73.9	49.8	131
		EP068: Bromophos-ethyl	4824-78-6	10 µg/L	76.8	47.3	127
		EP068: Prothiofos	34643-46-4	10 µg/L	77.9	45.5	128

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ET2405763**	Page	: 1 of 8
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Quarterly	Date Samples Received	: 24-Oct-2024
Site	: ----	Issue Date	: 31-Oct-2024
Sampler	: F LOFT	No. of samples received	: 7
Order number	: ----	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068B: Organophosphorus Pesticides (OP)	QC-6150998-002	----	**Demeton-S-methyl**	919-86-8	37.9 %	44.2-158%	**Recovery less than lower control limit**
EP068B: Organophosphorus Pesticides (OP)	QC-6150998-002	----	**Monocrotophos**	6923-22-4	2.5 %	10.0-32.6%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	ET2404810--002	Anonymous	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Pesticides by GCMS	EP068	1	14	7.14	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H)								
LIND01,	WQ1,	**22-Oct-2024**	**----**	----	----	**29-Oct-2024**	29-Oct-2024	✓
WQ2,	WQ3,							
WQ4,	WQ5,							
DW1								
EA025: Total Suspended Solids dried at 104 ± 2°C								
Clear Plastic Bottle - Natural (EA025H)								
LIND01,	WQ1,	**22-Oct-2024**	**----**	----	----	**29-Oct-2024**	29-Oct-2024	✓
WQ2,	WQ3,							
WQ4,	WQ5,							
DW1								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) LIND01, DW1	22-Oct-2024	----	----	----	30-Oct-2024	19-Nov-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) LIND01, DW1	22-Oct-2024	----	----	----	24-Oct-2024	24-Oct-2024	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND01, DW1	22-Oct-2024	----	----	----	30-Oct-2024	19-Nov-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) LIND01, DW1	22-Oct-2024	29-Oct-2024	19-Nov-2024	✓	29-Oct-2024	19-Nov-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) LIND01, DW1	22-Oct-2024	29-Oct-2024	19-Nov-2024	✓	29-Oct-2024	19-Nov-2024	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	22-Oct-2024	----	----	----	25-Oct-2024	19-Nov-2024	✓
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	22-Oct-2024	----	----	----	25-Oct-2024	26-Oct-2024	✓
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	22-Oct-2024	----	----	----	25-Oct-2024	19-Nov-2024	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	22-Oct-2024	25-Oct-2024	19-Nov-2024	✓	25-Oct-2024	19-Nov-2024	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	22-Oct-2024	25-Oct-2024	19-Nov-2024	✓	25-Oct-2024	19-Nov-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**22-Oct-2024**	**----**	----	----	**25-Oct-2024**	19-Nov-2024	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW1	**22-Oct-2024**	**29-Oct-2024**	29-Oct-2024	✓	**30-Oct-2024**	08-Dec-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	14	7.14	10.00	×	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Pesticides by GCMS	EP068	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ CAIRNS 21 Draper Street Portsmith QLD 4870 Ph 07 4035 5690 E: cairns@alsglobal.com
☐ MACKAY 78 Harbour Road Mackay QLD 4740 Ph 07 4944 0177 E: mackay@alsglobal.com
☐ NEWCASTLE 5 Sarah Madand Rd Hunter Valley NSW 2330 Ph 02 4014 2500 E: samples.newcastle@alsglobal.com
☐ SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph 02 8784 8555 E: samples.sydney@alsglobal.com
☐ BRISBANE 32 Shand Street Stafford QLD 4053 Ph 07 3243 7222 E: samples.brisbane@alsglobal.com
☐ TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph 07 4796 0699 E: townsville@alsglobal.com
☐ GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph 07 4971 9600 E: gladstone@alsglobal.com
☐ WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph 02 4225 3125 E: wollongong@alsglobal.com
☐ BURNIE 2 Spitfire Road Margate NSW 2530 Ph 02 6372 6275 E: burnie@alsglobal.com
☐ PERTH 10 Hod Way Malaga WA 6090 Ph 08 6250 7555 E: samples.perth@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	× Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mackay		Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
Lindeman Island Quarterly	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0486 765 106	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Fiona Loft	SAMPLER MOBILE: 0487 060 276	RELINQUISHED BY: [signature] DATE/TIME: 23·10·24 12:00	RECEIVED BY: N. SUTTON DATE/TIME: 23·10·24 12:00
COC emailed to ALS? (YES)	EDD FORMAT (or default):		RELINQUISHED BY: N. SUTTON DATE/TIME: 23·10·24 15:00
Email Reports to: bpearce@catchmentsolutions.com.au			RECEIVED BY: [signature] DATE/TIME: 24/10/24 1045
Email Invoice to: accounts@catchmentsolutions.com.au			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	OP Pesticides	TDS, TSS	Nutrients NT-08	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LIND01	22.10.24 13:45	Water			×	×	×						
2	WQ1	22.10.24 08:45	Water			×	×		×					
3	WQ2	22.10.24 10:10	Water			×	×		×					
4	WQ3	22.10.24 09:30	Water			×	×		×					
5	WQ4	22.10.24 09:15	Water			×	×		×					
6	WQ5	22.10.24 11:15	Water			×	×		×					
7	DW1	22.10.24	Water			×	×	×						

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

Environmental Division
Townsville
Work Order Reference
ET2405763

Telephone : 61 7 4723 0000

MRC Laboratory
89 Connors Road, Paget QLD 4740
07 4961 9042
ABN: 56 240 712 069

ANALYTICAL REPORT

Job Description: **Lineman Island - J1228**

Job Number: 24-4119
Revision No.: 00
Date: 13/11/2024
This report supercedes any previous revision

Client: Catchment Solutions Pty Ltd
Fiona Loft
Suite 4, 85 Gordon Street

Sampled By:	Client#
Sampling Method:	Grab Sample#
Sample Matrix:	Water
No. of Samples Received:	8
Date Sample(s) Received:	23/10/2024
Analysis Date	23/10/2024

Notes:

- Analysis is performed in accordance with APHA, AS, ASTM and USEPA Standard Methods or NATA approved in-house methods, except where stated otherwise.
- Key: * Result is derived from calculation, # Client supplied data, ^ Analysis not covered by NATA scope of accreditation, NA- Not Analysed, ∅ outsourced to external laboratory.
- This report is not to be reproduced except in full.
- Results relate to samples as received, unless sampled by MRC Laboratory.

Field Observations (if applicable):

Report Comments:

Signatories

Kimberly Gyles B.Biomed.Sc.
Laboratory Scientist

ACCREDITED FOR TECHNICAL COMPETENCE

Accreditation No. 17048
Accredited for compliance with ISO/IEC 17025 - Testing

24-4119
Lineman Island - J1228

Date Sampled Time Sampled	Units	WQ1 22/10/2024 08:45 24-4119-1	WQ2 22/10/2024 10:10 24-4119-2	Method
Total Coliforms	MPN/100mL	204	10	APHA 9223 B
E.Coli	MPN/100mL	***86***	<1	APHA 9223 B
Thermotolerant Coliforms	MPN/100mL	<1	<1	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	<1	<1	APHA 9215 D

Date Sampled Time Sampled	Units	WQ3 22/10/2024 09:30 24-4119-3	WQ4 22/10/2024 09:15 24-4119-4	Method
Total Coliforms	MPN/100mL	52	233	APHA 9223 B
E.Coli	MPN/100mL	<1	<1	APHA 9223 B
Thermotolerant Coliforms	MPN/100mL	<1	86	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	<1	<1	APHA 9215 D

Date Sampled Time Sampled	Units	WQ5 22/10/2024 11:15 24-4119-5	DW1 22/10/2024 24-4119-6	Method
Total Coliforms	MPN/100mL	31	6,488	APHA 9223 B
E.Coli	MPN/100mL	***10***	***41***	APHA 9223 B
Thermotolerant Coliforms	MPN/100mL	<1	121	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	<1	750	APHA 9215 D

Date Sampled Time Sampled	Units	TW1 22/10/2024 24-4119-7	Lind01 22/10/2024 13:00 24-4119-8	Method
Total Coliforms	MPN/100mL	5,475	4,106	APHA 9223 B
E.Coli	MPN/100mL	***211***	***75***	APHA 9223 B
Thermotolerant Coliforms	MPN/100mL	31	75	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,160	620	APHA 9215 D

CERTIFICATE OF ANALYSIS

Work Order	: **EB2442137**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: ----	Date Samples Received	: 03-Dec-2024 08:45
Order number	: ----	Date Analysis Commenced	: 03-Dec-2024
C-O-C number	: ----	Issue Date	: 09-Dec-2024 08:54
Sampler	: MS		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

- EK271A-CM (Reactive Phosphorous as P) was found to be higher than EK267PA-CM (Total Phosphrous as P) for sample WQ2 "EB2442137-003". This was confirmed by re-digestion and 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	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	29-Nov-2024 00:00	29-Nov-2024 00:00	29-Nov-2024 00:00	29-Nov-2024 00:00	29-Nov-2024 00:00
Compound	CAS Number	LOR	Unit	EB2442137-001	EB2442137-002	EB2442137-003	EB2442137-004	EB2442137-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	91	35400	32600	37700	36800
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	9	<5	<5	12
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.01	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	0.3	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	0.3	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	0.01	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	0.025	0.041	0.030	0.023
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	0.007	0.003	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	----	<0.002	0.007	0.003	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.01	mg/L	----	0.07	0.13	0.14	0.07
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	29-Nov-2024 00:00	29-Nov-2024 00:00	29-Nov-2024 00:00	29-Nov-2024 00:00	29-Nov-2024 00:00
Compound	CAS Number	LOR	Unit	EB2442137-001	EB2442137-002	EB2442137-003	EB2442137-004	EB2442137-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	-----	0.01	mg/L	**----**	**0.07**	**0.14**	**0.14**	**0.07**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	-----	0.005	mg/L	**----**	<0.005	**0.022**	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	**----**	**0.002**	**0.029**	**0.004**	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DWI	----	----	----
			Sampling date / time	29-Nov-2024 00:00	29-Nov-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2442137-006	EB2442137-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**36100**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	**0.02**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	-----	0.01	mg/L	----	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	----	**0.5**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	----	**0.5**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	----	**0.03**	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.020**	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.01	mg/L	**0.07**	----	----	----	----
EK262A: Total Nitrogen								
Total Nitrogen as N	-----	0.01	mg/L	**0.07**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	-----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DWI	----	----	----
			Sampling date / time	29-Nov-2024 00:00	29-Nov-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2442137-006	EB2442137-007	--------	--------	--------
				Result	Result	----	----	----
EK271A: Reactive Phosphorus - Continued								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EB2442137**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: ----	Date Samples Received	: 03-Dec-2024 08:45
Order number	: ----	Date Analysis Commenced	: 03-Dec-2024
C-O-C number	: ----	Issue Date	: 09-Dec-2024 08:54
Sampler	: MS		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

- EK271A-CM (Reactive Phosphorous as P) was found to be higher than EK267PA-CM (Total Phosphrous as P) for sample WQ2 "EB2442137-003". This was confirmed by re-digestion and 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	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	29-Nov-2024 00:00	29-Nov-2024 00:00	29-Nov-2024 00:00	29-Nov-2024 00:00	29-Nov-2024 00:00
Compound	CAS Number	LOR	Unit	EB2442137-001	EB2442137-002	EB2442137-003	EB2442137-004	EB2442137-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**91**	**35400**	**32600**	**37700**	**36800**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**9**	<5	<5	**12**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.01**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.3**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.3**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.01**	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	**0.025**	**0.041**	**0.030**	**0.023**
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	**0.007**	**0.003**	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	**0.007**	**0.003**	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	----	**0.07**	**0.13**	**0.14**	**0.07**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	29-Nov-2024 00:00	29-Nov-2024 00:00	29-Nov-2024 00:00	29-Nov-2024 00:00	29-Nov-2024 00:00
Compound	CAS Number	LOR	Unit	EB2442137-001	EB2442137-002	EB2442137-003	EB2442137-004	EB2442137-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.01	mg/L	----	0.07	0.14	0.14	0.07
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.005	0.022	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	0.002	0.029	0.004	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DWI	----	----	----
			Sampling date / time	29-Nov-2024 00:00	29-Nov-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2442137-006	EB2442137-007	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**36100**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	**0.02**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**0.5**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**0.5**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	**0.03**	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.020**	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	**0.07**	----	----	----	----
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.01	mg/L	**0.07**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DWI	----	----	----
			Sampling date / time	29-Nov-2024 00:00	29-Nov-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2442137-006	EB2442137-007	--------	--------	--------
				Result	Result	----	----	----
EK271A: Reactive Phosphorus - Continued								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **EB2442137**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: ----	Date Samples Received	: 03-Dec-2024
Order number	: ----	Date Analysis Commenced	: 03-Dec-2024
C-O-C number	: ----	Issue Date	: 09-Dec-2024
Sampler	: MS		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 7		
No. of samples analysed	: 7		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6233743)									
EB2442137-001	LIND01	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	91	96	4.8	No Limit
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6233742)									
EB2441762-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	21	21	0.0	No Limit
EB2442137-001	LIND01	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6234536)									
EB2442135-008	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.04	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6231195)									
EB2442129-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6234533)									
EB2442135-008	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.36	0.37	0.0	0% - 20%
EB2441833-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	1.08	1.08	0.0	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6240889)									
EB2442137-001	LIND01	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.3	0.0	No Limit
EB2442096-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	0.9	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6240888)									
EB2442137-001	LIND01	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.01	0.01	0.0	No Limit
EB2442096-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK255A: Ammonia (QC Lot: 6234302)									
EB2441860-001	Anonymous	EK255A-CM: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK257A: Nitrite (QC Lot: 6234301)									
ET2406559-002	Anonymous	EK257A-CM: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK257A: Nitrite (QC Lot: 6234301) - continued									
EB2441860-001	Anonymous	EK257A-CM: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 6234300)									
ET2406559-002	Anonymous	EK259A-CM: Nitrite + Nitrate as N	----	0.002	mg/L	0.068	0.068	0.0	0% - 20%
EB2441860-001	Anonymous	EK259A-CM: Nitrite + Nitrate as N	----	0.002	mg/L	0.585	0.588	0.5	0% - 20%
EK262A: Total Nitrogen (QC Lot: 6234305)									
EB2441860-001	Anonymous	EK262PA-CM: Total Nitrogen as N	----	0.01	mg/L	0.45	0.46	0.0	0% - 20%
EB2442114-001	Anonymous	EK262PA-CM: Total Nitrogen as N	----	0.01	mg/L	0.47	0.50	5.9	0% - 20%
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 6234304)									
EB2441860-001	Anonymous	EK267PA-CM: Total Phosphorus as P	----	0.005	mg/L	0.006	0.006	0.0	No Limit
EB2442114-001	Anonymous	EK267PA-CM: Total Phosphorus as P	----	0.005	mg/L	0.037	0.061	48.1	0% - 50%
EK271A: Reactive Phosphorus (QC Lot: 6234303)									
EB2441860-001	Anonymous	EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6233743)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	122	70.0	130
				<10	2000 mg/L	93.8	80.9	118
				<10	2320 mg/L	90.9	80.6	119
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6233742)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	104	88.0	112
				<5	1000 mg/L	102	88.0	112
				<5	875 mg/L	87.5	85.0	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6234536)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	97.9	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6231195)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	90.8	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6234533)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	98.6	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6240889)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	92.1	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6240888)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	105	84.7	106
EK255A: Ammonia (QCLot: 6234302)								
EK255A-CM: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	103	80.0	120
EK257A: Nitrite (QCLot: 6234301)								
EK257A-CM: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	97.6	84.0	119
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6234300)								
EK259A-CM: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	110	80.0	120
EK262A: Total Nitrogen (QCLot: 6234305)								
EK262PA-CM: Total Nitrogen as N	----	0.01	mg/L	<0.01	1 mg/L	95.5	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6234304)								
EK267PA-CM: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	110	80.0	120
EK271A: Reactive Phosphorus (QCLot: 6234303)								
EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	99.1	81.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6234536)							
EB2442135-004	Anonymous	EK055G: Ammonia as N	7664-41-7	10 mg/L	90.9	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6231195)							
EB2442010-005	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	110	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6234533)							
EB2442135-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	106	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6240889)							
EB2442096-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	86.7	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6240888)							
EB2442096-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	91.3	70.0	130
EK255A: Ammonia (QCLot: 6234302)							
EB2441898-002	Anonymous	EK255A-CM: Ammonia as N	7664-41-7	0.1 mg/L	105	70.0	130
EK257A: Nitrite (QCLot: 6234301)							
EB2441865-001	Anonymous	EK257A-CM: Nitrite as N	14797-65-0	0.4 mg/L	89.9	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6234300)							
EB2441898-002	Anonymous	EK259A-CM: Nitrite + Nitrate as N	----	0.1 mg/L	102	70.0	130
EK262A: Total Nitrogen (QCLot: 6234305)							
EB2441865-001	Anonymous	EK262PA-CM: Total Nitrogen as N	----	0.5 mg/L	89.2	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6234304)							
EB2441865-001	Anonymous	EK267PA-CM: Total Phosphorus as P	----	0.5 mg/L	106	70.0	130
EK271A: Reactive Phosphorus (QCLot: 6234303)							
EB2441898-002	Anonymous	EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	96.8	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2442137**	Page	: 1 of 7
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Telephone	: +61-7-3552-8685
Project	: ----	Date Samples Received	: 03-Dec-2024
Site	: ----	Issue Date	: 09-Dec-2024
Sampler	: MS	No. of samples received	: 7
Order number	: ----	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural LIND01	----	----	----	03-Dec-2024	01-Dec-2024	**2**
EK257A: Nitrite						
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu WQ1, WQ2, WQ3, WQ4, WQ5	----	----	----	04-Dec-2024	03-Dec-2024	**1**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5	**29-Nov-2024**	**----**	----	**----**	**04-Dec-2024**	06-Dec-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5	**29-Nov-2024**	**----**	----	**----**	**04-Dec-2024**	06-Dec-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) LIND01, DWI	**29-Nov-2024**	**----**	----	**----**	**04-Dec-2024**	27-Dec-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) LIND01	**29-Nov-2024**	**----**	----	**----**	**03-Dec-2024**	01-Dec-2024	×

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND01, DWI	**29-Nov-2024**	**----**	----	----	**04-Dec-2024**	27-Dec-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) LIND01, DWI	**29-Nov-2024**	**06-Dec-2024**	27-Dec-2024	✓	**06-Dec-2024**	27-Dec-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) LIND01, DWI	**29-Nov-2024**	**06-Dec-2024**	27-Dec-2024	✓	**06-Dec-2024**	27-Dec-2024	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-CM) WQ1, WQ2, WQ3, WQ4, WQ5	**29-Nov-2024**	**----**	----	----	**04-Dec-2024**	27-Dec-2024	✓
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-CM) WQ1, WQ2, WQ3, WQ4, WQ5	**29-Nov-2024**	**----**	----	----	**04-Dec-2024**	03-Dec-2024	×
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-CM) WQ1, WQ2, WQ3, WQ4, WQ5	**29-Nov-2024**	**----**	----	----	**04-Dec-2024**	27-Dec-2024	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-CM) WQ1, WQ2, WQ3, WQ4, WQ5	**29-Nov-2024**	**04-Dec-2024**	27-Dec-2024	✓	**04-Dec-2024**	27-Dec-2024	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-CM) WQ1, WQ2, WQ3, WQ4, WQ5	**29-Nov-2024**	**04-Dec-2024**	27-Dec-2024	✓	**04-Dec-2024**	27-Dec-2024	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-CM) WQ1, WQ2, WQ3, WQ4, WQ5	**29-Nov-2024**	**----**	----	----	**04-Dec-2024**	27-Dec-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) - Ultra-Trace for Catchment M	EK259A-CM	2	9	**22.22**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	7	**28.57**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) - Ultra-Trace for Catchment M	EK259A-CM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	7	**42.86**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) - Ultra-Trace for Catchment M	EK259A-CM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) - Ultra-Trace for Catchment M	EK259A-CM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace for Catchment Monitoring	EK258A-CM	WATER	In house: Referenced to APHA 4500-NO3- I Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N (NOx) - Ultra-Trace for Catchment M	EK259A-CM	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) for Catchment Monitoring	EK261PA-CM	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT TN and TP for FIA finish.	EK262/267-PA Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0390 E: adelaide@alsglobal.com
☒BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 24 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/19 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: CS - Catchment Solutions
OFFICE:
ORDER NUMBER:
PROJECT MANAGER: Ben ~~Pearce~~ Pearce CONTACT PH: 0488 765 106
SAMPLER: MJ SAMPLER MOBILE:
COC emailed to ALS? (YES) EDD FORMAT (or default):
Email Reports to: bpearce@catchmentsolutions.com.au
Email Invoice to: bpearce@catchmentsolutions.com.au

TURNAROUND REQUIREMENTS : x Standard TAT (List due date):
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) Non Standard or urgent TAT (List due date):
ALS QUOTE NO.: BNBQ/064/16

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
MJ	M		LP
DATE/TIME: ~~14/03/2022~~ 2/12/24	DATE/TIME: 2/12/24	DATE/TIME:	DATE/TIME: 3/12/24 0845

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).				Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	TDS, TSS	NT-08	Ultratrace Nutrients		
1	LIND01	29.11			2	x	x			
	~~LIN~~	~~29.11~~								
2	WQ01	29.11		Frozen	3	x		x		
3	WQ02	29.11		Frozen	3	x		x		
4	WQ3	29.11		Frozen	3	x		x		
5	WQ4	29.11		Frozen	3	x		x		
6	WQ5	29.11		Frozen	3	x		x		
SNR	WQ6	29.11		Frozen						
7	DW1	29.11			1		x			
				TOTAL						

Environmental Division Brisbane
Work Order Reference
EB2442137

Telephone : + 61-7-3552-8685

HT

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CERTIFICATE OF ANALYSIS

Work Order	: **ET2406915**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Monthly	Date Samples Received	: 18-Dec-2024 10:00
Order number	: ----	Date Analysis Commenced	: 19-Dec-2024
C-O-C number	: ----	Issue Date	: 09-Jan-2025 11:18
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 9		
No. of samples analysed	: 9		

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD

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.

- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	12-Dec-2024 10:30	12-Dec-2024 08:50	12-Dec-2024 09:15	12-Dec-2024 09:30	12-Dec-2024 09:45
Compound	CAS Number	LOR	Unit	ET2406915-001	ET2406915-002	ET2406915-003	ET2406915-004	ET2406915-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**76**	**29400**	**26700**	**26000**	**24000**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	**56**	**11**	**24**	**13**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.03**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	**0.6**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	**0.6**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	**0.04**	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	<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
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.025	mg/L	----	**0.092**	**0.175**	**0.155**	**0.141**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	12-Dec-2024 10:30	12-Dec-2024 08:50	12-Dec-2024 09:15	12-Dec-2024 09:30	12-Dec-2024 09:45
Compound	CAS Number	LOR	Unit	ET2406915-001	ET2406915-002	ET2406915-003	ET2406915-004	ET2406915-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**----**	**0.092**	**0.175**	**0.155**	**0.141**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	**----**	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	**----**	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW9	LINDO 3	LINDO 5	----
			Sampling date / time	12-Dec-2024 08:40	12-Dec-2024 00:00	12-Dec-2024 13:15	12-Dec-2024 11:30	----
Compound	CAS Number	LOR	Unit	ET2406915-006	ET2406915-007	ET2406915-008	ET2406915-009	--------
				Result	Result	Result	Result	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**26200**	**214**	**292**	**370**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**23**	<5	<5	**13**	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	<0.01	**0.09**	**0.04**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	**0.02**	<0.01	**0.01**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	**0.02**	<0.01	**0.01**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**0.7**	**0.5**	**6.8**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**0.7**	**0.5**	**6.8**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	**0.04**	**0.03**	**0.46**	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.122**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW9	LINDO 3	LINDO 5	----
			Sampling date / time	12-Dec-2024 08:40	12-Dec-2024 00:00	12-Dec-2024 13:15	12-Dec-2024 11:30	----
Compound	CAS Number	LOR	Unit	ET2406915-006	ET2406915-007	ET2406915-008	ET2406915-009	--------
				Result	Result	Result	Result	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	-----	0.025	mg/L	**0.122**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	-----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser
(WATER) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser
(WATER) EK067G: Total Phosphorus as P by Discrete Analyser
(WATER) EK255A: Ammonia
(WATER) EK257A: Nitrite
(WATER) EK258A: Nitrate
(WATER) EK261A: Total Kjeldahl Nitrogen
(WATER) EK262A: Total Nitrogen
(WATER) EK267A: Total Phosphorus (Persulfate Digestion)
(WATER) EK271A: Reactive Phosphorus
(WATER) EK259A: Nitrite and Nitrate (NOx)

CERTIFICATE OF ANALYSIS

Work Order	: **ET2406915**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Monthly	Date Samples Received	: 18-Dec-2024 10:00
Order number	: ----	Date Analysis Commenced	: 19-Dec-2024
C-O-C number	: ----	Issue Date	: 09-Jan-2025 11:18
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 9		
No. of samples analysed	: 9		

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD

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.

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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.

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Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	12-Dec-2024 10:30	12-Dec-2024 08:50	12-Dec-2024 09:15	12-Dec-2024 09:30	12-Dec-2024 09:45
Compound	CAS Number	LOR	Unit	ET2406915-001	ET2406915-002	ET2406915-003	ET2406915-004	ET2406915-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**76**	**29400**	**26700**	**26000**	**24000**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**56**	**11**	**24**	**13**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.03**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.6**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.6**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.04**	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	<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
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	**0.092**	**0.175**	**0.155**	**0.141**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	12-Dec-2024 10:30	12-Dec-2024 08:50	12-Dec-2024 09:15	12-Dec-2024 09:30	12-Dec-2024 09:45
Compound	CAS Number	LOR	Unit	ET2406915-001	ET2406915-002	ET2406915-003	ET2406915-004	ET2406915-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	**0.092**	**0.175**	**0.155**	**0.141**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW9	LINDO 3	LINDO 5	----
			Sampling date / time	12-Dec-2024 08:40	12-Dec-2024 00:00	12-Dec-2024 13:15	12-Dec-2024 11:30	----
Compound	CAS Number	LOR	Unit	ET2406915-006	ET2406915-007	ET2406915-008	ET2406915-009	--------
				Result	Result	Result	Result	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**26200**	**214**	**292**	**370**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**23**	<5	<5	**13**	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	<0.01	**0.09**	**0.04**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<0.01	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	**0.02**	<0.01	**0.01**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	**0.02**	<0.01	**0.01**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**0.7**	**0.5**	**6.8**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**0.7**	**0.5**	**6.8**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	**0.04**	**0.03**	**0.46**	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.122**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW9	LINDO 3	LINDO 5	----
			Sampling date / time	12-Dec-2024 08:40	12-Dec-2024 00:00	12-Dec-2024 13:15	12-Dec-2024 11:30	----
Compound	CAS Number	LOR	Unit	ET2406915-006	ET2406915-007	ET2406915-008	ET2406915-009	--------
				Result	Result	Result	Result	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.122**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser
(WATER) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser
(WATER) EK067G: Total Phosphorus as P by Discrete Analyser
(WATER) EK255A: Ammonia
(WATER) EK257A: Nitrite
(WATER) EK258A: Nitrate
(WATER) EK261A: Total Kjeldahl Nitrogen
(WATER) EK262A: Total Nitrogen
(WATER) EK267A: Total Phosphorus (Persulfate Digestion)
(WATER) EK271A: Reactive Phosphorus
(WATER) EK259A: Nitrite and Nitrate (NOx)

QUALITY CONTROL REPORT

Work Order	: **ET2406915**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Monthly	Date Samples Received	: 18-Dec-2024
Order number	: ----	Date Analysis Commenced	: 19-Dec-2024
C-O-C number	: ----	Issue Date	: 09-Jan-2025
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 9		
No. of samples analysed	: 9		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6293506)									
ET2406957-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	114	112	1.8	0% - 50%
ET2406957-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	3470	4000	14.2	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6293507)									
ET2406957-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	7	<5	33.3	No Limit
ET2406957-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	1040	1140	9.6	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6292759)									
ET2405834-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01 (1.00)*	mg/L	229	234	2.2	0% - 20%
ET2406935-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01 (1.00)*	mg/L	90.0	90.3	0.3	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6291256)									
ET2406955-004	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.66	0.66	0.0	0% - 20%
ET2406678-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6292758)									
ET2405834-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.04	<0.01	116	No Limit
ET2406935-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.17	0.16	9.6	0% - 50%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6296652)									
EB2441925-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (20.0)*	mg/L	210	201	4.7	0% - 50%
EB2444770-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.5)*	mg/L	4.9	4.6	5.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6296653)									
EB2441925-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (2.00)*	mg/L	46.4	41.8	10.5	0% - 20%
EB2444770-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	6.99	6.93	0.9	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK255A: Ammonia (QC Lot: 6271516)									
ET2406915-002	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK257A: Nitrite (QC Lot: 6271514)									
ET2406915-002	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 6271513)									
ET2406915-002	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK262A: Total Nitrogen (QC Lot: 6271520)									
ET2406915-002	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.092	0.089	3.3	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 6271519)									
ET2406915-002	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK271A: Reactive Phosphorus (QC Lot: 6271515)									
ET2406915-002	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6293506)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	88.7	88.0	112
				<10	2000 mg/L	100	88.0	112
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6293507)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	96.0	83.0	120
				<5	1000 mg/L	94.8	83.0	120
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6292759)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	101	80.0	120
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6291256)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	80.0	120
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6292758)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	105	89.0	115
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6296652)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	106	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6296653)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	102	84.7	106
EK255A: Ammonia (QCLot: 6271516)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	100	80.0	120
EK257A: Nitrite (QCLot: 6271514)								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	96.9	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6271513)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	99.1	80.0	120
EK262A: Total Nitrogen (QCLot: 6271520)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	99.0	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6271519)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	117	80.0	120
EK271A: Reactive Phosphorus (QCLot: 6271515)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	104	84.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6292759)							
ET2406396-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	# Not Determined	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6291256)							
ET2406678-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	109	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6292758)							
ET2406396-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6296652)							
EB2441925-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	1000 mg/L	94.2	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6296653)							
EB2441925-002	Anonymous	EK067G: Total Phosphorus as P	----	200 mg/L	102	70.0	130
EK255A: Ammonia (QCLot: 6271516)							
ET2406915-004	WQ3	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	91.6	70.0	130
EK257A: Nitrite (QCLot: 6271514)							
ET2406915-003	WQ2	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	100	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6271513)							
ET2406915-004	WQ3	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	98.8	70.0	130
EK262A: Total Nitrogen (QCLot: 6271520)							
ET2406915-003	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	120	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6271519)							
ET2406915-003	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	118	70.0	130
EK271A: Reactive Phosphorus (QCLot: 6271515)							
ET2406915-004	WQ3	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	96.1	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ET2406915**	Page	: 1 of 8
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Townsville
Contact	: BEN PEARCE	Telephone	: +61 7 4773 0000
Project	: Lindeman Island Monthly	Date Samples Received	: 18-Dec-2024
Site	: ----	Issue Date	: 09-Jan-2025
Sampler	: FIONA LOFT	No. of samples received	: 9
Order number	: ----	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	ET2406396--001	Anonymous	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	ET2406396--001	Anonymous	**Nitrite + Nitrate as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / **Container** / Client Sample ID(s)		*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural							
LIND01,	WQ1,	----	----	----	03-Jan-2025	19-Dec-2024	**15**
WQ2,	WQ3,						
WQ4,	WQ5,						
DW9,	LINDO 3,						
LINDO 5							
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural							
LIND01,	WQ1,	----	----	----	03-Jan-2025	19-Dec-2024	**15**
WQ2,	WQ3,						
WQ4,	WQ5,						
DW9,	LINDO 3,						
LINDO 5							
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
LIND01,	DW9,	----	----	----	02-Jan-2025	14-Dec-2024	**19**
LINDO 3,	LINDO 5						
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu							
WQ1,	WQ2,	----	----	----	19-Dec-2024	16-Dec-2024	**3**
WQ3,	WQ4,						
WQ5							

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW9, LINDO 3, LINDO 5	**12-Dec-2024**	**----**	----	----	**03-Jan-2025**	19-Dec-2024	×
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW9, LINDO 3, LINDO 5	**12-Dec-2024**	**----**	----	----	**03-Jan-2025**	19-Dec-2024	×
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) LIND01, DW9, LINDO 3, LINDO 5	**12-Dec-2024**	**----**	----	----	**03-Jan-2025**	09-Jan-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) LIND01, DW9, LINDO 3, LINDO 5	**12-Dec-2024**	**----**	----	----	**02-Jan-2025**	14-Dec-2024	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND01, DW9, LINDO 3, LINDO 5	**12-Dec-2024**	**----**	----	----	**03-Jan-2025**	09-Jan-2025	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) LIND01, DW9, LINDO 3, LINDO 5	**12-Dec-2024**	**07-Jan-2025**	09-Jan-2025	✓	**07-Jan-2025**	09-Jan-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) LIND01, DW9, LINDO 3, LINDO 5	**12-Dec-2024**	**07-Jan-2025**	09-Jan-2025	✓	**07-Jan-2025**	09-Jan-2025	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**12-Dec-2024**	**----**	----	----	**19-Dec-2024**	09-Jan-2025	✓
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**12-Dec-2024**	**----**	----	----	**19-Dec-2024**	16-Dec-2024	✗
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**12-Dec-2024**	**----**	----	----	**19-Dec-2024**	09-Jan-2025	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**12-Dec-2024**	**19-Dec-2024**	09-Jan-2025	✓	**19-Dec-2024**	09-Jan-2025	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**12-Dec-2024**	**19-Dec-2024**	09-Jan-2025	✓	**19-Dec-2024**	09-Jan-2025	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**12-Dec-2024**	**----**	----	----	**19-Dec-2024**	09-Jan-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

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☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
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CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	x Standard TAT (List due date):
OFFICE: Mackay		Non Standard or urgent TAT (List due date):
Lindeman island Monthly	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)
ORDER NUMBER:		COC: 1 2 3 4 5 6 7
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7
SAMPLER: Fiona Loft	SAMPLER MOBILE: 0487 060 276	
COC emailed to ALS? (YES)	EDD FORMAT (or default):	
Email Reports to: bpearce@catchmentsolutions.com.au		
Email Invoice to: accounts@catchmentsolutions.com.au		

FOR LABORATORY USE ONLY (Circle)			
Custody Seal Intact?	Yes	No	N/A
Free Ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 13/12/24	DATE/TIME: 17.12.24	DATE/TIME: 17.12.24 15:00	DATE/TIME: 18/12/24 1000

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		TDS, TSS	Nutrients NT-08	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LIND01	12.12.24 10:30	Water		2		x	x						
2	WQ1	12.12.24 8:50	Water		3		x		x					
3	WQ2	12.12.24 9:15	Water		3		x		x					
4	WQ3	12.12.24 9:30	Water		3		x		x					
5	WQ4	12.12.24 9.45	Water		3		x		x					
6	WQ5	12.12.24 8:40	Water		3		x		x					
7	DW01	12.12.24	Water		2		x	x						
8	Lindo3	12.12.24 13:15	W		2		x	x						
9	Lindo5	12.12.24 11:30	W		2		x	x						
					48									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Fi
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division
Townsville
Work Order Reference
ET2406915

Telephone : + 61 7 4773 0000

CERTIFICATE OF ANALYSIS

Work Order	: **EB2503108**	Page	: 1 of 9
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quarterly - J1228	Date Samples Received	: 30-Jan-2025 10:00
Order number	: ----	Date Analysis Commenced	: 30-Jan-2025
C-O-C number	: ----	Issue Date	: 05-Feb-2025 14:43
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 10		
No. of samples analysed	: 10		

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
- Surrogate Control Limits

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kirsty Watson	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- TDS by method EA-015 may bias high for sample 10(DW10) due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND05	WQ1
			Sampling date / time	28-Jan-2025 13:20	28-Jan-2025 13:45	28-Jan-2025 11:20	28-Jan-2025 12:10	28-Jan-2025 10:23
Compound	CAS Number	LOR	Unit	EB2503108-001	EB2503108-002	EB2503108-003	EB2503108-004	EB2503108-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**80**	**162**	**194**	**361**	**37000**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**8**	**48**	<5	**28**	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	**0.48**	<0.01	<0.01	----
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	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	**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	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.7**	**4.0**	**0.2**	**0.7**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.7**	**4.0**	**0.2**	**0.7**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.04**	**0.33**	**0.02**	**0.11**	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	----	----	----	**0.014**
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	----	----	----	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	----	----	----	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	----	----	----	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	----	----	----	**0.057**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND05	WQ1
			Sampling date / time	28-Jan-2025 13:20	28-Jan-2025 13:45	28-Jan-2025 11:20	28-Jan-2025 12:10	28-Jan-2025 10:23
Compound	CAS Number	LOR	Unit	EB2503108-001	EB2503108-002	EB2503108-003	EB2503108-004	EB2503108-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	----	----	----	**0.057**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	----	----	----	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	----	----	----	**0.001**
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**72.2**	**76.8**	**64.3**	**73.0**	**69.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND05	WQ1
			Sampling date / time	28-Jan-2025 13:20	28-Jan-2025 13:45	28-Jan-2025 11:20	28-Jan-2025 12:10	28-Jan-2025 10:23
Compound	CAS Number	LOR	Unit	EB2503108-001	EB2503108-002	EB2503108-003	EB2503108-004	EB2503108-005
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**63.9**	**71.7**	**57.1**	**66.5**	**63.5**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ2	WQ3	WQ4	WQ5	DW10
			Sampling date / time	28-Jan-2025 10:35	28-Jan-2025 09:40	28-Jan-2025 10:05	28-Jan-2025 11:30	28-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	EB2503108-006	EB2503108-007	EB2503108-008	EB2503108-009	EB2503108-010
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**38400**	**40200**	**39300**	**37900**	**118**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	**5**	<5	<5	<5	**5**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	----	<0.01
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	----	----	----	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl 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	----	----	----	----	**0.7**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	----	----	----	----	**0.03**
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	**0.007**	**0.008**	<0.005	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	<0.002	<0.002	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	<0.002	<0.002	<0.002	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	<0.002	<0.002	<0.002	<0.002	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.025	mg/L	**0.034**	**0.047**	**0.026**	**0.037**	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ2	WQ3	WQ4	WQ5	DW10
			Sampling date / time	28-Jan-2025 10:35	28-Jan-2025 09:40	28-Jan-2025 10:05	28-Jan-2025 11:30	28-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	EB2503108-006	EB2503108-007	EB2503108-008	EB2503108-009	EB2503108-010
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.034**	**0.047**	**0.026**	**0.037**	**----**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	**----**
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	**0.001**	<0.001	<0.001	**----**
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**71.2**	**73.8**	**79.4**	**69.7**	**75.2**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ2	WQ3	WQ4	WQ5	DW10
			Sampling date / time	28-Jan-2025 10:35	28-Jan-2025 09:40	28-Jan-2025 10:05	28-Jan-2025 11:30	28-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	EB2503108-006	EB2503108-007	EB2503108-008	EB2503108-009	EB2503108-010
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**63.8**	**63.1**	**66.7**	**57.6**	**66.6**

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	45	139
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	45	139

CERTIFICATE OF ANALYSIS

Work Order	: **EB2503108**	Page	: 1 of 9
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quarterly - J1228	Date Samples Received	: 30-Jan-2025 10:00
Order number	: ----	Date Analysis Commenced	: 30-Jan-2025
C-O-C number	: ----	Issue Date	: 05-Feb-2025 14:43
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 10		
No. of samples analysed	: 10		

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
- Surrogate Control Limits

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kirsty Watson	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- TDS by method EA-015 may bias high for sample 10(DW10) due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND05	WQ1
			Sampling date / time	28-Jan-2025 13:20	28-Jan-2025 13:45	28-Jan-2025 11:20	28-Jan-2025 12:10	28-Jan-2025 10:23
Compound	CAS Number	LOR	Unit	EB2503108-001	EB2503108-002	EB2503108-003	EB2503108-004	EB2503108-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**80**	**162**	**194**	**361**	**37000**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**8**	**48**	<5	**28**	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	**0.48**	<0.01	<0.01	----
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	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	**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	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.7**	**4.0**	**0.2**	**0.7**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.7**	**4.0**	**0.2**	**0.7**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.04**	**0.33**	**0.02**	**0.11**	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	----	----	----	**0.014**
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	----	----	----	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	----	----	----	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	----	----	----	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	----	----	----	**0.057**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND05	WQ1
			Sampling date / time	28-Jan-2025 13:20	28-Jan-2025 13:45	28-Jan-2025 11:20	28-Jan-2025 12:10	28-Jan-2025 10:23
Compound	CAS Number	LOR	Unit	EB2503108-001	EB2503108-002	EB2503108-003	EB2503108-004	EB2503108-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	----	----	----	**0.057**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	----	----	----	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	----	----	----	**0.001**
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**72.2**	**76.8**	**64.3**	**73.0**	**69.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND05	WQ1
			Sampling date / time	28-Jan-2025 13:20	28-Jan-2025 13:45	28-Jan-2025 11:20	28-Jan-2025 12:10	28-Jan-2025 10:23
Compound	CAS Number	LOR	Unit	EB2503108-001	EB2503108-002	EB2503108-003	EB2503108-004	EB2503108-005
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**63.9**	**71.7**	**57.1**	**66.5**	**63.5**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ2	WQ3	WQ4	WQ5	DW10
			Sampling date / time	28-Jan-2025 10:35	28-Jan-2025 09:40	28-Jan-2025 10:05	28-Jan-2025 11:30	28-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	EB2503108-006	EB2503108-007	EB2503108-008	EB2503108-009	EB2503108-010
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**38400**	**40200**	**39300**	**37900**	**118**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**5**	<5	<5	<5	**5**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	----	<0.01
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	----	----	----	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl 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	----	----	----	----	**0.7**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	----	----	----	**0.03**
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	**0.007**	**0.008**	<0.005	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	<0.002	<0.002	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	<0.002	<0.002	<0.002	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	<0.002	<0.002	<0.002	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.034**	**0.047**	**0.026**	**0.037**	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ2	WQ3	WQ4	WQ5	DW10
			Sampling date / time	28-Jan-2025 10:35	28-Jan-2025 09:40	28-Jan-2025 10:05	28-Jan-2025 11:30	28-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	EB2503108-006	EB2503108-007	EB2503108-008	EB2503108-009	EB2503108-010
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.034**	**0.047**	**0.026**	**0.037**	**----**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	**----**
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	**0.001**	<0.001	<0.001	**----**
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**71.2**	**73.8**	**79.4**	**69.7**	**75.2**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ2	WQ3	WQ4	WQ5	DW10
			Sampling date / time	28-Jan-2025 10:35	28-Jan-2025 09:40	28-Jan-2025 10:05	28-Jan-2025 11:30	28-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	EB2503108-006	EB2503108-007	EB2503108-008	EB2503108-009	EB2503108-010
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**63.8**	**63.1**	**66.7**	**57.6**	**66.6**

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	45	139
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	45	139

QUALITY CONTROL REPORT

Work Order	: **EB2503108**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quarterly - J1228	Date Samples Received	: 30-Jan-2025
Order number	: ----	Date Analysis Commenced	: 30-Jan-2025
C-O-C number	: ----	Issue Date	: 05-Feb-2025
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 10		
No. of samples analysed	: 10		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kirsty Watson	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6349011)									
EB2502873-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2710	2650	2.5	0% - 20%
EB2503053-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1650	1680	1.6	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6349013)									
EB2503108-005	WQ1	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	37000	38700	4.6	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6349012)									
EB2503053-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EB2503108-005	WQ1	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6346501)									
EB2503092-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01 (0.50)*	mg/L	20.9	21.4	2.1	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6349000)									
EB2503108-002	LIND02	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.48	0.49	2.2	0% - 20%
EB2503214-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6344157)									
EB2503092-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2503093-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6344338)									
EB2503111-011	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2503190-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6346505)									
EB2503092-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6348996)									
EB2503108-002	LIND02	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.0	No Limit
EB2503214-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6346362)									
EB2503106-004	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.2	0.0	No Limit
EB2503179-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.5)*	mg/L	1.5	1.3	16.8	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6346361)									
EB2503106-004	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.04	0.0	No Limit
EB2503179-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.05)*	mg/L	<0.05	<0.05	0.0	No Limit
EK255A: Ammonia (QC Lot: 6344552)									
EB2503108-005	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	0.014	0.009	43.2	No Limit
EK257A: Nitrite (QC Lot: 6344550)									
EB2503108-005	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 6344549)									
EB2503108-005	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK262A: Total Nitrogen (QC Lot: 6344556)									
EB2503108-005	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.057	0.042	31.2	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 6344555)									
EB2503108-005	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK271A: Reactive Phosphorus (QC Lot: 6344551)									
EB2503108-005	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.001	0.004	83.9	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6349011)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	104	70.0	130
				<10	2000 mg/L	95.4	80.9	118
				<10	2320 mg/L	104	80.6	119
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6349013)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	110	70.0	130
				<10	2000 mg/L	95.1	80.9	118
				<10	2320 mg/L	105	80.6	119
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6349012)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	105	88.0	112
				<5	1000 mg/L	95.2	88.0	112
				<5	875 mg/L	93.4	85.0	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6346501)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	106	83.5	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6349000)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	96.9	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6344157)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	102	90.0	110
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6344338)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	101	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6346505)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	95.1	85.7	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6348996)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	97.2	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6346362)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	89.3	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6346361)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.442 mg/L	103	84.7	106
EK255A: Ammonia (QCLot: 6344552)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	114	80.0	120
EK257A: Nitrite (QCLot: 6344550)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EK257A: Nitrite (QCLot: 6344550) - continued								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	99.6	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6344549)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	106	80.0	120
EK262A: Total Nitrogen (QCLot: 6344556)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	91.6	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6344555)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	113	80.0	120
EK271A: Reactive Phosphorus (QCLot: 6344551)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	92.1	84.0	120
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6349624)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	64.4	53.2	133
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	58.4	44.2	158
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	# 0.5	10.0	32.6
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	44.8	27.6	153
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	69.1	53.6	128
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	68.5	51.6	122
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	58.5	45.2	139
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	60.2	47.5	135
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	69.7	53.4	133
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	65.6	56.3	125
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	68.0	37.1	144
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	69.2	49.8	131
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	55.4	37.0	131
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	69.5	47.3	127
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	37.9	16.0	150
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	65.7	45.5	128
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	54.9	39.1	129
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	63.0	38.4	134
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	43.7	27.5	146

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Matrix Spike (MS) Report

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6346501)							
EB2503092-005	Anonymous	EK055G: Ammonia as N	7664-41-7	25 mg/L	99.7	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6349000)							
EB2503108-003	LIND03	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	99.0	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6344157)							
EB2503092-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	95.3	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6344338)							
EB2503111-006	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	103	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6346505)							
EB2503092-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	86.3	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6348996)							
EB2503108-003	LIND03	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	98.0	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6346362)							
EB2503106-007	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	25 mg/L	89.1	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6346361)							
EB2503106-007	Anonymous	EK067G: Total Phosphorus as P	----	5 mg/L	96.5	70.0	130
EK255A: Ammonia (QCLot: 6344552)							
EB2503108-007	WQ3	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	91.9	70.0	130
EK257A: Nitrite (QCLot: 6344550)							
EB2503108-006	WQ2	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	89.5	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6344549)							
EB2503108-007	WQ3	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	111	70.0	130
EK262A: Total Nitrogen (QCLot: 6344556)							
EB2503108-006	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	95.1	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6344555)							
EB2503108-006	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	115	70.0	130
EK271A: Reactive Phosphorus (QCLot: 6344551)							
EB2503108-007	WQ3	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.05 mg/L	76.6	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2503108**	Page	: 1 of 8
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quarterly - J1228	Date Samples Received	: 30-Jan-2025
Site	: ----	Issue Date	: 05-Feb-2025
Sampler	: FIONA LOFT	No. of samples received	: 10
Order number	: ----	No. of samples analysed	: 10

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068B: Organophosphorus Pesticides (OP)	QC-6349624-002	----	**Monocrotophos**	6923-22-4	0.5 %	10.0-32.6%	**Recovery less than lower control limit**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
LIND02	----	----	----	04-Feb-2025	30-Jan-2025	**5**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Analytical Methods	Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)						
Pesticides by GCMS	EP068	0	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Pesticides by GCMS	EP068	0	13	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
LIND01, LIND02, LIND03, LIND05, WQ1, WQ2, WQ3, WQ4, WQ5, DW10	**28-Jan-2025**	**----**	----	**----**	**03-Feb-2025**	04-Feb-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) LIND01, LIND02, LIND03, LIND05, WQ1, WQ2, WQ3, WQ4, WQ5, DW10	**28-Jan-2025**	----	----	----	**03-Feb-2025**	04-Feb-2025	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) LIND02, LIND03, LIND05, DW10	**28-Jan-2025**	----	----	----	**03-Feb-2025**	25-Feb-2025	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) LIND01	**28-Jan-2025**	----	----	----	**31-Jan-2025**	25-Feb-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) LIND01	**28-Jan-2025**	----	----	----	**30-Jan-2025**	30-Jan-2025	✓
Clear Plastic Bottle - Natural (EK057G) LIND02	**28-Jan-2025**	----	----	----	**04-Feb-2025**	30-Jan-2025	×
Clear Plastic Bottle - Natural (EK057G) LIND03, LIND05, DW10	**28-Jan-2025**	----	----	----	**30-Jan-2025**	30-Jan-2025	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND02, LIND03, LIND05, DW10	**28-Jan-2025**	----	----	----	**03-Feb-2025**	25-Feb-2025	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND01	**28-Jan-2025**	----	----	----	**31-Jan-2025**	25-Feb-2025	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) LIND01, LIND02, LIND03, LIND05, DW10	**28-Jan-2025**	**31-Jan-2025**	25-Feb-2025	✓	**31-Jan-2025**	25-Feb-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) LIND01, LIND02, LIND03, LIND05, DW10	**28-Jan-2025**	**31-Jan-2025**	25-Feb-2025	✓	**31-Jan-2025**	25-Feb-2025	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**28-Jan-2025**	----	----	----	**31-Jan-2025**	25-Feb-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**28-Jan-2025**	**----**	----	----	**31-Jan-2025**	01-Feb-2025	✓
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**28-Jan-2025**	**----**	----	----	**31-Jan-2025**	25-Feb-2025	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**28-Jan-2025**	**31-Jan-2025**	25-Feb-2025	✓	**31-Jan-2025**	25-Feb-2025	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**28-Jan-2025**	**31-Jan-2025**	25-Feb-2025	✓	**31-Jan-2025**	25-Feb-2025	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**28-Jan-2025**	**----**	----	----	**31-Jan-2025**	25-Feb-2025	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) LIND01, LIND02, LIND03, LIND05, WQ1, WQ2, WQ3, WQ4, WQ5, DW10	**28-Jan-2025**	**03-Feb-2025**	04-Feb-2025	✓	**04-Feb-2025**	15-Mar-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	3	23	**13.04**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	3	24	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	13	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	29	**10.34**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	24	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	29	**20.69**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	24	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Pesticides by GCMS	EP068	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	29	**6.90**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	24	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	13	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0690 E: adelaide@alsglobal.com
☒BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5800 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	x Standard TAT (List due date): Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mackay			Custody Seal Intact? Yes No N/A
Lindeman Island Quarterly - J1228	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Fiona Loft	SAMPLER MOBILE: 0487 060 276		
COC emailed to ALS? (YES)	EDD FORMAT (or default):		
Email Reports to: bpearce@catchmentsolutions.com.au			
Email Invoice to: accounts@catchmentsolutions.com.au			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Megan Skelton	E. Hirsch	E Hirsch	am
DATE/TIME: 29/01/2025	DATE/TIME: 29/1/25 1430	DATE/TIME: 29/1/25 1500	DATE/TIME: 30/01 1005

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	OP Pesticides	TDS, TSS	Nutrients NT-08	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LIND01	28/1 - 13:20	Water			x	x	x						
2	LIND02	28/1 - 13:45	W			x	x	x						
3	LIND03	28/1 - 11:20	W			x	x	x						
4	LIND05	28/1 - 12:10	W			x	x	x						
5	WQ1	28/1 - 10:25	Water			x	x		x					
6	WQ2	28/1 - 10:35	Water			x	x		x					
7	WQ3	28/1 - 9:40	Water			x	x		x					
8	WQ4	28/1 - 10:05	Water			x	x		x					
9	WQ5	28/1 - 11:30	Water			x	x		x					
9NC	DW1	28/1 - 13:20	Water			x	x		x					

Environmental Division
Brisbane
Work Order Reference
EB2503108

Telephone : + 61-7-3552-8685

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

MRC Laboratory
89 Connors Road, Paget QLD 4740
07 4961 9042
ABN: 56 240 712 069

ANALYTICAL REPORT

Job Description: **Lineman Island J1228**

Job Number: 25-0428
Revision No.: 00
Date: 1/02/2025
This report supercedes any previous revisions

Client: Catchment Solutions Pty Ltd
Fiona Loft
Suite 4, 85 Gordon Street

Sampled By:	Client#
Sampling Method:	Grab Sample#
Sample Matrix:	Water
No. of Samples Received:	10
Date Sample(s) Received:	29/01/2025
Analysis Date:	29/01/2025

Notes:

- Analysis is performed in accordance with APHA, AS, ASTM and USEPA Standard Methods or NATA approved in-house methods, except where stated otherwise.
- Key: * Result is derived from calculation, # Client supplied data, ^ Analysis not covered by NATA scope of accreditation, NA- Not Analysed, ∅ outsourced to external laboratory.
- This report is not to be reproduced except in full.
- Results relate to samples as received, unless sampled by MRC Laboratory.

Field Observations (if applicable):

Report Comments:

Signatories

Eva Jovanovic BASc with Honours in Microbiology and Ecology (Marine Biology)
Scientific Service Manager

ACCREDITED FOR TECHNICAL COMPETENCE

Accreditation No. 17048
Accredited for compliance with ISO/IEC 17025 - Testing

25-0428
Lineman Island J1228

Date Sampled Time Sampled	Units	LIND01 28/01/2025 13:20 25-0428-1	Method
Total Coliforms	MPN/100 mL	6,131	APHA 9223 B
E.Coli	MPN/100 mL	***20***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,320	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	309	APHA 9223 B

25-0428
Lineman Island J1228

Date Sampled Time Sampled	Units	LIND02 28/01/2025 13:45 25-0428-2	Method
Total Coliforms	MPN/100 mL	1,785	APHA 9223 B
E.Coli	MPN/100 mL	***52***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	4,280	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	20	APHA 9223 B

25-0428
Lineman Island J1228

Date Sampled Time Sampled	Units	LIND03 28/01/2025 11:20 25-0428-3	Method
Total Coliforms	MPN/100 mL	12,997	APHA 9223 B
E.Coli	MPN/100 mL	***243***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,090	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	259	APHA 9223 B

25-0428
Lineman Island J1228

Date Sampled Time Sampled	Units	LIND05 28/01/2025 12:10 25-0428-4	Method
Total Coliforms	MPN/100 mL	>24,196	APHA 9223 B
E.Coli	MPN/100 mL	***309***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	4,890	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	75	APHA 9223 B

25-0428
Lineman Island J1228

Date Sampled Time Sampled	Units	WQ1 28/01/2025 10:25 25-0428-5	Method
Total Coliforms	MPN/100 mL	63	APHA 9223 B
E.Coli	MPN/100 mL	<1	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	<10	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<10	APHA 9223 B

25-0428
Lineman Island J1228

Date Sampled Time Sampled	Units	WQ2 28/01/2025 10:35 25-0428-6	Method
Total Coliforms	MPN/100 mL	31	APHA 9223 B
E.Coli	MPN/100 mL	<1	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	20	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<10	APHA 9223 B

25-0428
Lineman Island J1228

Date Sampled Time Sampled	Units	WQ3 28/01/2025 09:40 25-0428-7	Method
Total Coliforms	MPN/100 mL	20	APHA 9223 B
E.Coli	MPN/100 mL	***10***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	<10	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<10	APHA 9223 B

25-0428
Lineman Island J1228

Date Sampled Time Sampled	Units	WQ4 28/01/2025 10:05 25-0428-8	Method
Total Coliforms	MPN/100 mL	20	APHA 9223 B
E.Coli	MPN/100 mL	<10	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	<10	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<10	APHA 9223 B

25-0428
Lineman Island J1228

Date Sampled Time Sampled	Units	WQ5 28/01/2025 11:30 25-0428-9	Method
Total Coliforms	MPN/100 mL	201	APHA 9223 B
E.Coli	MPN/100 mL	<10	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	<10	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<10	APHA 9223 B

25-0428
Lineman Island J1228

Date Sampled Time Sampled	Units	DW1 28/01/2025 13:20 25-0428-10	Method
Total Coliforms	MPN/100 mL	15,531	APHA 9223 B
E.Coli	MPN/100 mL	***63***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	980	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	156	APHA 9223 B

MRC Laboratory
89 Connors Road, Paget QLD 4740
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ABN: 56 240 712 069

ANALYTICAL REPORT

Job Description: **Lindeman Island J1228**

Job Number: 25-0609
Revision No.: 00
Date: 21/02/2025
This report supercedes any previous revisions

Client: Catchment Solutions Pty Ltd
Fiona Loft
Suite 4, 85 Gordon Street

Sampled By:	Client#
Sampling Method:	Grab Sample#
Sample Matrix:	Water
No. of Samples Received:	13
Date Sample(s) Received:	11/02/2025
Analysis Date:	21/02/2025

Notes:

- Analysis is performed in accordance with APHA, AS, ASTM and USEPA Standard Methods or NATA approved in-house methods, except where stated otherwise.
- Key: * Result is derived from calculation, # Client supplied data, ^ Analysis not covered by NATA scope of accreditation, NA- Not Analysed, ∅ outsourced to external laboratory.
- This report is not to be reproduced except in full.
- Results relate to samples as received, unless sampled by MRC Laboratory.

Field Observations (if applicable):

11-02-2025 Client confirmed sample TW11 does not need to be tested. GP

Report Comments:

Signatories

Eva Jovanovic BASc with Honours in Microbiology and Ecology (Marine Biology)
Scientific Service Manager

ACCREDITED FOR TECHNICAL COMPETENCE

Accreditation No. 17048
Accredited for compliance with ISO/IEC 17025 - Testing

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ1 10/02/2025 12:30 25-0609-1	Method
Total Coliforms	MPN/100 mL	411	APHA 9223 B
E.Coli	MPN/100 mL	***238***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	150	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<1	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ2 10/02/2025 11:00 25-0609-2	Method
Total Coliforms	MPN/100 mL	365	APHA 9223 B
E.Coli	MPN/100 mL	***153***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	180	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	8	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ3 10/02/2025 10:10 25-0609-3	Method
Total Coliforms	MPN/100 mL	1,120	APHA 9223 B
E.Coli	MPN/100 mL	***272***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	280	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	50	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ4 10/02/2025 10:40 25-0609-4	Method
Total Coliforms	MPN/100 mL	2,420	APHA 9223 B
E.Coli	MPN/100 mL	***727***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	100	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	233	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ5 10/02/2025 12:45 25-0609-5	Method
Total Coliforms	MPN/100 mL	548	APHA 9223 B
E.Coli	MPN/100 mL	***345***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	10	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<1	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	DW11 10/02/2025 14:00 25-0609-6	Method
Total Coliforms	MPN/100 mL	9,208	APHA 9223 B
E.Coli	MPN/100 mL	***63***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,380	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	110	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND01 10/02/2025 14:00 25-0609-8	Method
Total Coliforms	MPN/100 mL	8,164	APHA 9223 B
E.Coli	MPN/100 mL	***74***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,380	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	63	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND02 10/02/2025 14:30 25-0609-9	Method
Total Coliforms	MPN/100 mL	24,196	APHA 9223 B
E.Coli	MPN/100 mL	***41***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	880	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	63	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND03 10/02/2025 12:10 25-0609-10	Method
Total Coliforms	MPN/100 mL	24,196	APHA 9223 B
E.Coli	MPN/100 mL	***86***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,350	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	368	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND04 10/02/2025 13:25 25-0609-11	Method
Total Coliforms	MPN/100 mL	19,863	APHA 9223 B
E.Coli	MPN/100 mL	***31***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,070	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	75	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND05 10/02/2025 15:00 25-0609-12	Method
Total Coliforms	MPN/100 mL	24,196	APHA 9223 B
E.Coli	MPN/100 mL	***74***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,960	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	98	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND06 10/02/2025 11:35 25-0609-13	Method
Total Coliforms	MPN/100 mL	17,329	APHA 9223 B
E.Coli	MPN/100 mL	***73***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,500	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	63	APHA 9223 B

CERTIFICATE OF ANALYSIS

Work Order	: **EB2504769**	Page	: 1 of 11
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quarterly	Date Samples Received	: 12-Feb-2025 12:00
Order number	: P3119	Date Analysis Commenced	: 12-Feb-2025
C-O-C number	: ----	Issue Date	: 21-Feb-2025 08:15
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 12		
No. of samples analysed	: 12		

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*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

- Analysis EP234A OP Pesticides will be conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences and high matrix spike recovery has been noted for particular compounds due to ion enhancement.
- 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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ1	WQ2	WQ3	WQ4	WQ5
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	EB2504769-001	EB2504769-002	EB2504769-003	EB2504769-004	EB2504769-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**35200**	**35300**	**36500**	**36300**	**36100**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	<5
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.018**	**0.022**	**0.017**	**0.019**	**0.023**
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	**0.008**	**0.010**	**0.010**	**0.010**	**0.010**
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	**0.008**	**0.010**	**0.010**	**0.010**	**0.010**
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.073**	**0.066**	**0.060**	**0.076**	**0.063**
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.025	mg/L	**0.081**	**0.076**	**0.070**	**0.086**	**0.073**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	**0.003**	**0.001**	**0.002**	**0.002**	**0.002**
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ1	WQ2	WQ3	WQ4	WQ5
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	EB2504769-001	EB2504769-002	EB2504769-003	EB2504769-004	EB2504769-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ1	WQ2	WQ3	WQ4	WQ5
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	EB2504769-001	EB2504769-002	EB2504769-003	EB2504769-004	EB2504769-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	DW11	LIND01	LIND02	LIND03	LIND 04
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	EB2504769-006	EB2504769-007	EB2504769-008	EB2504769-009	EB2504769-010
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**110**	**101**	**164**	**134**	**207**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**8**	<5	**8**	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.02**	**0.03**	**0.02**	<0.01	**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	<0.01	**0.03**	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	**0.03**	<0.01	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.6**	**0.8**	**0.5**	**0.6**	**0.4**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.6**	**0.8**	**0.5**	**0.6**	**0.4**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.04**	**0.04**	**0.06**	**0.05**	**0.07**
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	DW11	LIND01	LIND02	LIND03	LIND 04
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	EB2504769-006	EB2504769-007	EB2504769-008	EB2504769-009	EB2504769-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	DW11	LIND01	LIND02	LIND03	LIND 04
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	EB2504769-006	EB2504769-007	EB2504769-008	EB2504769-009	EB2504769-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND05	LIND06	----	----	----
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2504769-011	EB2504769-012	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**226**	**240**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	**14**	<5	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.04**	**0.03**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	**0.6**	**0.8**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	**0.6**	**0.8**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	**0.04**	**0.10**	----	----	----
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	----	----	----
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	----	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	----	----	----
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	----	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	----	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	----	----	----
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	----	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND05	LIND06	----	----	----
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2504769-011	EB2504769-012	--------	--------	--------
				Result	Result	----	----	----
EP234A: OP Pesticides - Continued								
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	----	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	----	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	----	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	----	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	----	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	----	----	----
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	----	----	----
Fenitrothion	122-14-5	2	µg/L	<2	<2	----	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	----	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	----	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	----	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	----	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	----	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	----	----	----
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	----	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND05	LIND06	----	----	----
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2504769-011	EB2504769-012	--------	--------	--------
				Result	Result	----	----	----
EP234A: OP Pesticides - Continued								
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	----	----	----
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	----	----	----
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	----	----	----
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	----	----	----
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	----	----	----

Inter-Laboratory Testing

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

(WATER) EP234A: OP Pesticides

CERTIFICATE OF ANALYSIS

Work Order	: **EB2504769**	Page	: 1 of 11
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quarterly	Date Samples Received	: 12-Feb-2025 12:00
Order number	: P3119	Date Analysis Commenced	: 12-Feb-2025
C-O-C number	: ----	Issue Date	: 21-Feb-2025 08:15
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 12		
No. of samples analysed	: 12		

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*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

- Analysis EP234A OP Pesticides will be conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences and high matrix spike recovery has been noted for particular compounds due to ion enhancement.
- 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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ1	WQ2	WQ3	WQ4	WQ5
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	EB2504769-001	EB2504769-002	EB2504769-003	EB2504769-004	EB2504769-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**35200**	**35300**	**36500**	**36300**	**36100**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	<5
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.018**	**0.022**	**0.017**	**0.019**	**0.023**
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	**0.008**	**0.010**	**0.010**	**0.010**	**0.010**
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	**0.008**	**0.010**	**0.010**	**0.010**	**0.010**
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.073**	**0.066**	**0.060**	**0.076**	**0.063**
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.025	mg/L	**0.081**	**0.076**	**0.070**	**0.086**	**0.073**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	**0.003**	**0.001**	**0.002**	**0.002**	**0.002**
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ1	WQ2	WQ3	WQ4	WQ5
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	EB2504769-001	EB2504769-002	EB2504769-003	EB2504769-004	EB2504769-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ1	WQ2	WQ3	WQ4	WQ5
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	EB2504769-001	EB2504769-002	EB2504769-003	EB2504769-004	EB2504769-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	DW11	LIND01	LIND02	LIND03	LIND 04
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	EB2504769-006	EB2504769-007	EB2504769-008	EB2504769-009	EB2504769-010
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**110**	**101**	**164**	**134**	**207**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**8**	<5	**8**	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.02**	**0.03**	**0.02**	<0.01	**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	<0.01	**0.03**	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	**0.03**	<0.01	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.6**	**0.8**	**0.5**	**0.6**	**0.4**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.6**	**0.8**	**0.5**	**0.6**	**0.4**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.04**	**0.04**	**0.06**	**0.05**	**0.07**
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	DW11	LIND01	LIND02	LIND03	LIND 04
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	EB2504769-006	EB2504769-007	EB2504769-008	EB2504769-009	EB2504769-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	DW11	LIND01	LIND02	LIND03	LIND 04
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00	10-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	EB2504769-006	EB2504769-007	EB2504769-008	EB2504769-009	EB2504769-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND05	LIND06	----	----	----
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2504769-011	EB2504769-012	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**226**	**240**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**14**	<5	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.04**	**0.03**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.6**	**0.8**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.6**	**0.8**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.04**	**0.10**	----	----	----
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	----	----	----
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	----	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	----	----	----
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	----	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	----	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	----	----	----
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	----	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND05	LIND06	----	----	----
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2504769-011	EB2504769-012	--------	--------	--------
				Result	Result	----	----	----
EP234A: OP Pesticides - Continued								
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	----	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	----	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	----	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	----	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	----	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	----	----	----
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	----	----	----
Fenitrothion	122-14-5	2	µg/L	<2	<2	----	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	----	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	----	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	----	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	----	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	----	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	----	----	----
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	----	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND05	LIND06	----	----	----
			Sampling date / time	10-Feb-2025 00:00	10-Feb-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2504769-011	EB2504769-012	--------	--------	--------
				Result	Result	----	----	----
EP234A: OP Pesticides - Continued								
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	----	----	----
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	----	----	----
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	----	----	----
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	----	----	----
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	----	----	----

Inter-Laboratory Testing

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

(WATER) EP234A: OP Pesticides

QUALITY CONTROL REPORT

Work Order	: **EB2504769**	Page	: 1 of 11
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quarterly	Date Samples Received	: 12-Feb-2025
Order number	: P3119	Date Analysis Commenced	: 12-Feb-2025
C-O-C number	: ----	Issue Date	: 21-Feb-2025
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 12		
No. of samples analysed	: 12		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6375413)									
EB2504508-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	269	268	0.5	0% - 20%
EB2504769-005	WQ5	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	36100	37600	4.1	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6375414)									
EB2504508-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	49	46	6.3	No Limit
EB2504769-005	WQ5	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6374700)									
ET2500753-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.11	0.11	0.0	0% - 50%
EB2504774-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.78	0.78	0.0	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6374702)									
EB2504753-023	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.12	0.11	0.0	0% - 50%
EB2504769-009	LIND03	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6372153)									
EB2504769-012	LIND06	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6372267)									
EB2504769-009	LIND03	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6374703)									
ET2500753-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	1.68	1.70	1.1	0% - 20%
EB2504774-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.39	0.38	0.0	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6374705)									
EB2504753-023	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.17	0.17	0.0	0% - 50%

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6374705) - continued									
EB2504769-009	LIND03	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6373610)									
EB2504507-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EB2504682-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.1	<0.1	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6373611)									
EB2504892-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.1	0.1	0.0	No Limit
EB2504782-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.5)*	mg/L	<0.5	<0.5	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6373609)									
EB2504507-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.03	0.0	No Limit
EB2504682-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK255A: Ammonia (QC Lot: 6371275)									
EB2504769-001	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	0.018	0.020	10.9	No Limit
EK257A: Nitrite (QC Lot: 6371273)									
EB2504769-001	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 6371272)									
EB2504769-001	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	0.008	0.008	0.0	No Limit
EK262A: Total Nitrogen (QC Lot: 6371686)									
EB2504769-001	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.081	0.078	3.8	No Limit
EB2504812-001	Anonymous	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.096	0.073	27.9	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 6371685)									
EB2504769-001	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EB2504812-001	Anonymous	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK271A: Reactive Phosphorus (QC Lot: 6371274)									
EB2504769-001	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.003	0.002	50.3	No Limit
EP234A: OP Pesticides (QC Lot: 6374272)									
EB2504769-006	DW11	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 6374272) - continued									
EB2504769-006	DW11	EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.0	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.0	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	0.0	No Limit
		EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.0	No Limit
EB2504687-001	Anonymous	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 6374272) - continued									
EB2504687-001	Anonymous	EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.0	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.0	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5 (2.0)*	µg/L	<2.0	<2.0	0.0	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP234A: OP Pesticides (QC Lot: 6374272) - continued									
EB2504687-001	Anonymous	EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6375413)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	114	70.0	130
				<10	2000 mg/L	98.2	80.9	118
				<10	2410 mg/L	106	81.3	119
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6375414)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	104	88.0	112
				<5	1000 mg/L	94.9	88.0	112
				<5	842 mg/L	104	84.9	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6374700)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	103	83.5	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6374702)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	101	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6372153)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	91.8	90.0	110
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6372267)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	94.3	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6374703)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	98.8	85.7	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6374705)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	96.4	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6373610)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	95.7	70.1	108
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6373611)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	94.0	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6373609)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	100	84.7	106
EK255A: Ammonia (QCLot: 6371275)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	84.4	80.0	120
EK257A: Nitrite (QCLot: 6371273)								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	95.5	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6371272)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6371272) - continued								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	106	80.0	120
EK262A: Total Nitrogen (QCLot: 6371686)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	100	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6371685)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	110	80.0	120
EK271A: Reactive Phosphorus (QCLot: 6371274)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	97.6	84.0	120
EP234A: OP Pesticides (QCLot: 6374272)								
EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	0.2 µg/L	106	77.0	129
EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	0.2 µg/L	95.4	75.0	135
EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	1 µg/L	90.4	70.0	130
EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	0.2 µg/L	99.2	70.0	130
EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	0.2 µg/L	98.0	74.0	134
EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	0.2 µg/L	105	70.0	130
EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	2 µg/L	104	70.0	130
EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	0.1 µg/L	103	70.0	130
EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	0.05 µg/L	97.2	64.0	134
EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	0.1 µg/L	100	79.0	127
EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	0.05 µg/L	104	63.0	135
EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	0.2 µg/L	102	70.0	128
EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	0.1 µg/L	98.7	68.0	138
EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	2 µg/L	97.3	76.0	128
EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	0.2 µg/L	112	75.0	127
EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	0.5 µg/L	109	72.0	134
EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	0.5 µg/L	114	70.0	130
EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	0.2 µg/L	97.6	70.0	130
EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	0.1 µg/L	110	78.0	128
EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	0.1 µg/L	100	71.0	135
EP234-1: Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	100 µg/L	120	70.0	130
EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	20 µg/L	135	64.0	136
EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	0.1 µg/L	94.6	79.0	125
EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	0.5 µg/L	98.9	70.0	130
EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	0.2 µg/L	97.5	70.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP234A: OP Pesticides (QCLot: 6374272) - continued								
EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	0.2 µg/L	101	77.0	123
EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	0.2 µg/L	94.4	75.0	129
EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	0.1 µg/L	97.6	74.0	130
EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	2 µg/L	115	69.0	139
EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	20 µg/L	137	66.0	140
EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	1 µg/L	100	68.0	136
EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	0.1 µg/L	97.1	70.0	130
EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	0.1 µg/L	99.1	71.0	137
EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	0.1 µg/L	99.0	70.0	130
EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	1 µg/L	101	70.0	130
EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	0.05 µg/L	101	71.0	137
EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	0.5 µg/L	103	70.0	130
EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	0.2 µg/L	105	70.0	130
EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	0.1 µg/L	99.1	70.0	130
EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	0.1 µg/L	101	74.0	128
EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	0.05 µg/L	84.8	77.0	131
EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	0.2 µg/L	110	70.0	130
EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	5 µg/L	102	63.0	139

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6374700)							
ET2500753-008	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	99.5	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6374702)							
EB2504753-019	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	101	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6372267)							
EB2504769-010	LIND 04	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	95.2	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6374703)							
ET2500753-008	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	95.6	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6374705)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6374705) - continued							
EB2504753-019	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	96.9	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6373610)							
EB2504507-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	94.9	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6373611)							
EB2504890-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	25 mg/L	85.3	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6373609)							
EB2504507-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	102	70.0	130
EK255A: Ammonia (QCLot: 6371275)							
EB2504769-002	WQ2	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	75.9	70.0	130
EK257A: Nitrite (QCLot: 6371273)							
EB2504769-003	WQ3	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	126	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6371272)							
EB2504769-002	WQ2	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	106	70.0	130
EK262A: Total Nitrogen (QCLot: 6371686)							
EB2504769-002	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	100	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6371685)							
EB2504769-002	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	108	70.0	130
EK271A: Reactive Phosphorus (QCLot: 6371274)							
EB2504769-002	WQ2	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	92.4	70.0	130
EP234A: OP Pesticides (QCLot: 6374272)							
EB2504687-001	Anonymous	EP234-1: Azinphos-methyl	86-50-0	0.2 µg/L	112	70.0	130
		EP234-1: Azinphos-ethyl	2642-71-9	0.2 µg/L	117	70.0	130
		EP234-1: Bromophos-ethyl	4824-78-6	1 µg/L	# 3.2	70.0	130
		EP234-1: Carbofenothion	786-19-6	0.2 µg/L	# Not Determined	70.0	130
		EP234-1: Chlorfenvinphos	470-90-6	0.2 µg/L	115	70.0	130
		EP234-1: Chlorpyrifos	2921-88-2	0.2 µg/L	# 22.7	70.0	130
		EP234-1: Chlorpyrifos-methyl	5598-13-0	2 µg/L	# 11.4	58.0	136
		EP234-1: Coumaphos	56-72-4	0.1 µg/L	113	70.0	130
		EP234-1: Demeton-O	298-03-3	0.05 µg/L	114	70.0	130
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.1 µg/L	113	69.0	129
		EP234-1: Demeton-S	126-75-0	0.05 µg/L	116	70.0	130
		EP234-1: Demeton-S-methyl	919-86-8	0.2 µg/L	113	70.0	130
		EP234-1: Diazinon	333-41-5	0.1 µg/L	98.4	70.0	130
		EP234-1: Dichlorvos	62-73-7	2 µg/L	119	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP234A: OP Pesticides (QCLot: 6374272) - continued							
EB2504687-001	Anonymous	EP234-1: Dimethoate	60-51-5	0.2 µg/L	114	69.0	131
		EP234-1: Disulfoton	298-04-4	0.5 µg/L	90.0	70.0	130
		EP234-1: EPN	2104-64-5	0.5 µg/L	# 17.2	70.0	130
		EP234-1: Ethion	563-12-2	0.2 µg/L	# 37.0	70.0	130
		EP234-1: Ethoprophos	13194-48-4	0.1 µg/L	# 49.5	70.0	132
		EP234-1: Fenamiphos	22224-92-6	0.1 µg/L	117	70.0	130
		EP234-1: Fenchlorphos (Ronnel)	299-84-3	100 µg/L	# 1.8	71.0	133
		EP234-1: Fenitrothion	122-14-5	20 µg/L	# 53.8	64.0	136
		EP234-1: Fensulfothion	115-90-2	0.1 µg/L	# 133	83.0	123
		EP234-1: Fenthion	55-38-9	0.5 µg/L	85.5	70.0	130
		EP234-1: Malathion	121-75-5	0.2 µg/L	120	70.0	130
		EP234-1: Mevinphos	7786-34-7	0.2 µg/L	117	69.0	125
		EP234-1: Monocrotophos	6923-22-4	0.2 µg/L	115	70.0	128
		EP234-1: Omethoate	1113-02-6	0.1 µg/L	106	70.0	130
		EP234-1: Parathion	56-38-2	2 µg/L	# 33.4	70.0	130
		EP234-1: Parathion-methyl	298-00-0	20 µg/L	89.2	70.0	140
		EP234-1: Phorate	298-02-2	1 µg/L	80.9	70.0	130
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.1 µg/L	# 53.9	70.0	130
		EP234-1: Pirimiphos-methyl	29232-93-7	0.1 µg/L	103	70.0	130
		EP234-1: Profenofos	41198-08-7	0.1 µg/L	93.2	70.0	130
		EP234-1: Prothiofos	34643-46-4	1 µg/L	# Not Determined	70.0	130
		EP234-1: Sulfotep	3689-24-5	0.05 µg/L	104	63.0	135
		EP234-1: Sulprofos	35400-43-2	0.5 µg/L	# 11.5	70.0	130
		EP234-1: Temephos	3383-96-8	0.2 µg/L	# 16.0	70.0	130
		EP234-1: Terbufos	13071-79-9	0.1 µg/L	# 49.2	70.0	130
		EP234-1: Tetrachlorvinphos	22248-79-9	0.1 µg/L	123	77.0	125
		EP234-1: Triazophos	24017-47-8	0.05 µg/L	108	74.0	132
		EP234-1: Trichlorfon	52-68-6	0.2 µg/L	# 47.3	70.0	130
		EP234-1: Trichloronate	327-98-0	5 µg/L	# 0.5	63.0	139

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2504769**	Page	: 1 of 9
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quarterly	Date Samples Received	: 12-Feb-2025
Site	: ----	Issue Date	: 21-Feb-2025
Sampler	: FIONA LOFT	No. of samples received	: 12
Order number	: P3119	No. of samples analysed	: 12

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Bromophos-ethyl**	4824-78-6	3.2 %	70.0-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Chlorpyrifos**	2921-88-2	22.7 %	70.0-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Chlorpyrifos-methyl**	5598-13-0	11.4 %	58.0-136%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**EPN**	2104-64-5	17.2 %	70.0-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Ethion**	563-12-2	37.0 %	70.0-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Ethoprophos**	13194-48-4	49.5 %	70.0-132%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Fenchlorphos (Ronnel)**	299-84-3	1.8 %	71.0-133%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Fenitrothion**	122-14-5	53.8 %	64.0-136%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Fensulfothion**	115-90-2	133 %	83.0-123%	**Recovery greater than upper data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Parathion**	56-38-2	33.4 %	70.0-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Pirimiphos-ethyl**	23505-41-1	53.9 %	70.0-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Sulprofos**	35400-43-2	11.5 %	70.0-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Temephos**	3383-96-8	16.0 %	70.0-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Terbufos**	13071-79-9	49.2 %	70.0-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Trichlorfon**	52-68-6	47.3 %	70.0-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2504687--001	Anonymous	**Trichloronate**	327-98-0	0.5 %	63.0-139%	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)	*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EK057G: Nitrite as N by Discrete Analyser						

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser - Analysis Holding Time Compliance						
Clear Plastic Bottle - Natural						
DW11, LIND01, LIND02, LIND03, LIND 04, LIND05, LIND06	----	----	----	13-Feb-2025	12-Feb-2025	**1**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
WQ1, WQ2, WQ3, WQ4, WQ5, DW11, LIND01, LIND02, LIND03, LIND 04, LIND05, LIND06	**10-Feb-2025**	**----**	----	**----**	**14-Feb-2025**	17-Feb-2025	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
WQ1, WQ2, WQ3, WQ4, WQ5, DW11, LIND01, LIND02, LIND03, LIND 04, LIND05, LIND06	**10-Feb-2025**	**----**	----	**----**	**14-Feb-2025**	17-Feb-2025	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
DW11, LIND01, LIND02, LIND03, LIND 04, LIND05, LIND06	**10-Feb-2025**	**----**	----	**----**	**13-Feb-2025**	10-Mar-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) DW11, LIND01, LIND02, LIND03, LIND 04, LIND05, LIND06	**10-Feb-2025**	**----**	----	----	**13-Feb-2025**	12-Feb-2025	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) DW11, LIND01, LIND02, LIND03, LIND 04, LIND05, LIND06	**10-Feb-2025**	**----**	----	----	**13-Feb-2025**	10-Mar-2025	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) DW11, LIND01, LIND02, LIND03, LIND 04, LIND05, LIND06	**10-Feb-2025**	**13-Feb-2025**	10-Mar-2025	✓	**13-Feb-2025**	10-Mar-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) DW11, LIND01, LIND02, LIND03, LIND 04, LIND05, LIND06	**10-Feb-2025**	**13-Feb-2025**	10-Mar-2025	✓	**13-Feb-2025**	10-Mar-2025	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**10-Feb-2025**	**----**	----	----	**12-Feb-2025**	10-Mar-2025	✓
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**10-Feb-2025**	**----**	----	----	**12-Feb-2025**	14-Feb-2025	✓
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**10-Feb-2025**	**----**	----	----	**12-Feb-2025**	10-Mar-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**10-Feb-2025**	**13-Feb-2025**	10-Mar-2025	✓	**13-Feb-2025**	10-Mar-2025	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**10-Feb-2025**	**13-Feb-2025**	10-Mar-2025	✓	**13-Feb-2025**	10-Mar-2025	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**10-Feb-2025**	**----**	----	----	**12-Feb-2025**	10-Mar-2025	✓
EP234A: OP Pesticides							
Amber Glass Bottle - Unpreserved (EP234-1) WQ1, WQ2, WQ3, WQ4, WQ5, DW11, LIND01, LIND02, LIND03, LIND 04, LIND05, LIND06	**10-Feb-2025**	**----**	----	----	**14-Feb-2025**	17-Feb-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	31	12.90	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	8	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	8	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	8	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	31	**6.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
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MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
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NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
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TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	x Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mackay		Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
Lindeman Island Quarterly	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: P3119		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Fiona Loft	SAMPLER MOBILE: 0487 060 276	RELINQUISHED BY:	RECEIVED BY:
COC emailed to ALS? (YES)	EDD FORMAT (or default):	DATE/TIME: 11/2/25	DATE/TIME: 11/2/25
Email Reports to: bpearce@catchmentsolutions.com.au		RELINQUISHED BY:	RECEIVED BY:
Email Invoice to: accounts@catchmentsolutions.com.au		DATE/TIME: 11/2/25	DATE/TIME: 12/2 1200

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).				Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	OP Pesticides	TDS, TSS	Nutrients NT-08	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P	
1	WQ1		Water			x	x		x	
2	WQ2		Water			x	x		x	
3	WQ3		Water			x	x		x	
4	WQ4		Water			x	x		x	
5	WQ5		Water			x	x		x	
6	DW1		Water			x	x	x		
7	LIND01					x	x	x		
8	LIND02					x	x	x		
9	LIND03					x	x	x		

Environmental Division Brisbane
Work Order Reference
EB2504769

Telephone : +61-7-3552-8686

...ents on likely contaminant levels, ...ns, or samples requiring specific QC ...sis etc.

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
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☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	x Standard TAT (List due date): Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mackay			Custody Seal Intact? Yes No N/A
Lindeman Island Quarterly	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Fiona Loft	SAMPLER MOBILE: 0487 060 276		
COC emailed to ALS? (YES)	EDD FORMAT (or default):		
Email Reports to: bpearce@catchmentsolutions.com.au			
Email Invoice to: accounts@catchmentsolutions.com.au			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 11/2/25	DATE/TIME: 11/2/25	DATE/TIME: 11/2/25	DATE/TIME: 12/2 1200

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	OP Pesticides	TDS, TSS	Nutrients NT-08	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
10	LIND 04		Water			x	x	x						
11	LIND05		Water			x	x	x						
12	LIND06		Water			x	x	x						

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

MRC Laboratory
89 Connors Road, Paget QLD 4740
07 4961 9042
ABN: 56 240 712 069

ANALYTICAL REPORT

Job Description: **Lindeman Island J1228**

Job Number: 25-0609
Revision No.: 00
Date: 21/02/2025
This report supercedes any previous revisions

Client: Catchment Solutions Pty Ltd
Fiona Loft
Suite 4, 85 Gordon Street

Sampled By:	Client#
Sampling Method:	Grab Sample#
Sample Matrix:	Water
No. of Samples Received:	13
Date Sample(s) Received:	11/02/2025
Analysis Date:	21/02/2025

Notes:

- Analysis is performed in accordance with APHA, AS, ASTM and USEPA Standard Methods or NATA approved in-house methods, except where stated otherwise.
- Key: * Result is derived from calculation, # Client supplied data, ^ Analysis not covered by NATA scope of accreditation, NA- Not Analysed, ∅ outsourced to external laboratory.
- This report is not to be reproduced except in full.
- Results relate to samples as received, unless sampled by MRC Laboratory.

Field Observations (if applicable):

11-02-2025 Client confirmed sample TW11 does not need to be tested. GP

Report Comments:

Signatories

Eva Jovanovic BASc with Honours in Microbiology and Ecology (Marine Biology)
Scientific Service Manager

ACCREDITED FOR TECHNICAL COMPETENCE

Accreditation No. 17048
Accredited for compliance with ISO/IEC 17025 - Testing

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ1 10/02/2025 12:30 25-0609-1	Method
Total Coliforms	MPN/100 mL	411	APHA 9223 B
E.Coli	MPN/100 mL	***238***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	150	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<1	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ2 10/02/2025 11:00 25-0609-2	Method
Total Coliforms	MPN/100 mL	365	APHA 9223 B
E.Coli	MPN/100 mL	***153***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	180	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	8	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ3 10/02/2025 10:10 25-0609-3	Method
Total Coliforms	MPN/100 mL	1,120	APHA 9223 B
E.Coli	MPN/100 mL	***272***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	280	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	50	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ4 10/02/2025 10:40 25-0609-4	Method
Total Coliforms	MPN/100 mL	2,420	APHA 9223 B
E.Coli	MPN/100 mL	***727***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	100	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	233	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	WQ5 10/02/2025 12:45 25-0609-5	Method
Total Coliforms	MPN/100 mL	548	APHA 9223 B
E.Coli	MPN/100 mL	***345***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	10	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<1	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	DW11 10/02/2025 14:00 25-0609-6	Method
Total Coliforms	MPN/100 mL	9,208	APHA 9223 B
E.Coli	MPN/100 mL	***63***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,380	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	110	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND01 10/02/2025 14:00 25-0609-8	Method
Total Coliforms	MPN/100 mL	8,164	APHA 9223 B
E.Coli	MPN/100 mL	***74***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,380	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	63	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND02 10/02/2025 14:30 25-0609-9	Method
Total Coliforms	MPN/100 mL	24,196	APHA 9223 B
E.Coli	MPN/100 mL	***41***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	880	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	63	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND03 10/02/2025 12:10 25-0609-10	Method
Total Coliforms	MPN/100 mL	24,196	APHA 9223 B
E.Coli	MPN/100 mL	***86***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,350	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	368	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND04 10/02/2025 13:25 25-0609-11	Method
Total Coliforms	MPN/100 mL	19,863	APHA 9223 B
E.Coli	MPN/100 mL	***31***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,070	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	75	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND05 10/02/2025 15:00 25-0609-12	Method
Total Coliforms	MPN/100 mL	24,196	APHA 9223 B
E.Coli	MPN/100 mL	***74***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,960	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	98	APHA 9223 B

25-0609
Lindeman Island J1228

Date Sampled Time Sampled	Units	LIND06 10/02/2025 11:35 25-0609-13	Method
Total Coliforms	MPN/100 mL	17,329	APHA 9223 B
E.Coli	MPN/100 mL	***73***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,500	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	63	APHA 9223 B

CERTIFICATE OF ANALYSIS

Work Order	: **EB2508289**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Monthly	Date Samples Received	: 13-Mar-2025 11:55
Order number	: P3169	Date Analysis Commenced	: 13-Mar-2025
C-O-C number	: ----	Issue Date	: 20-Mar-2025 19:34
Sampler	: EMILY GRAY		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 9		
No. of samples analysed	: 9		

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

- TDS by method EA-015 may bias high for some samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	EB2508289-001	EB2508289-002	EB2508289-003	EB2508289-004	EB2508289-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**161**	**38600**	**38300**	**39100**	**38500**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	**33**	<5	<5	<5	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	**1.1**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	**1.1**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	**0.09**	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	**0.015**	<0.005	**0.009**	**0.006**
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.025	mg/L	----	**0.150**	**0.140**	**0.137**	**0.164**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	EB2508289-001	EB2508289-002	EB2508289-003	EB2508289-004	EB2508289-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**----**	**0.150**	**0.140**	**0.137**	**0.164**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	**----**	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	**----**	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW12	LIND03	LIND05	----
			Sampling date / time	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	----
Compound	CAS Number	LOR	Unit	EB2508289-006	EB2508289-007	EB2508289-008	EB2508289-009	--------
				Result	Result	Result	Result	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**38700**	**153**	**247**	**355**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**14**	**42**	**22**	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	<0.01	**0.06**	<0.01	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<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	**0.04**	**0.01**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	<0.01	**0.04**	**0.01**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**1.0**	**0.5**	**0.4**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**1.0**	**0.5**	**0.4**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	**0.04**	**0.04**	**0.02**	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.009**	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.193**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW12	LIND03	LIND05	----
			Sampling date / time	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	----
Compound	CAS Number	LOR	Unit	EB2508289-006	EB2508289-007	EB2508289-008	EB2508289-009	--------
				Result	Result	Result	Result	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	-----	0.025	mg/L	**0.193**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	-----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EB2508289**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Monthly	Date Samples Received	: 13-Mar-2025 11:55
Order number	: P3169	Date Analysis Commenced	: 13-Mar-2025
C-O-C number	: ----	Issue Date	: 20-Mar-2025 19:34
Sampler	: EMILY GRAY		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 9		
No. of samples analysed	: 9		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- 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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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Where moisture determination has been performed, results are reported on a dry weight basis.

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~ = Indicates an estimated value.

- TDS by method EA-015 may bias high for some samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	EB2508289-001	EB2508289-002	EB2508289-003	EB2508289-004	EB2508289-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**161**	**38600**	**38300**	**39100**	**38500**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**33**	<5	<5	<5	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.1**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.1**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.09**	----	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	**0.015**	<0.005	**0.009**	**0.006**
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	<0.002	<0.002	<0.002	<0.002
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	**0.150**	**0.140**	**0.137**	**0.164**
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	WQ1	WQ2	WQ3	WQ4
			Sampling date / time	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	EB2508289-001	EB2508289-002	EB2508289-003	EB2508289-004	EB2508289-005
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**----**	**0.150**	**0.140**	**0.137**	**0.164**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	**----**	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	**----**	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW12	LIND03	LIND05	----
			Sampling date / time	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	----
Compound	CAS Number	LOR	Unit	EB2508289-006	EB2508289-007	EB2508289-008	EB2508289-009	--------
				Result	Result	Result	Result	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**38700**	**153**	**247**	**355**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**14**	**42**	**22**	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	<0.01	**0.06**	<0.01	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	<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	**0.04**	**0.01**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	<0.01	**0.04**	**0.01**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**1.0**	**0.5**	**0.4**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**1.0**	**0.5**	**0.4**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	**0.04**	**0.04**	**0.02**	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.009**	----	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	----	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	----	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.193**	----	----	----	----
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ5	DW12	LIND03	LIND05	----
			Sampling date / time	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	11-Mar-2025 00:00	----
Compound	CAS Number	LOR	Unit	EB2508289-006	EB2508289-007	EB2508289-008	EB2508289-009	--------
				Result	Result	Result	Result	----
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	**0.193**	----	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	----	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **EB2508289**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Monthly	Date Samples Received	: 13-Mar-2025
Order number	: P3169	Date Analysis Commenced	: 13-Mar-2025
C-O-C number	: ----	Issue Date	: 20-Mar-2025
Sampler	: EMILY GRAY		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 9		
No. of samples analysed	: 9		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6442613)									
EB2508282-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	312	310	0.5	0% - 20%
EB2508289-006	WQ5	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	38700	39100	1.0	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6442614)									
EB2508282-005	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	30	27	8.8	No Limit
EB2508289-006	WQ5	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6443826)									
EB2507903-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2508361-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01 (0.05)*	mg/L	0.10	0.10	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6437445)									
EB2507725-004	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2508241-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.90	0.90	0.0	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6439399)									
EB2508289-008	LIND03	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2508361-004	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6443823)									
EB2507903-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.06	0.06	0.0	No Limit
EB2508361-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	18.6	18.3	1.3	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6444911)									
EB2507140-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.5)*	mg/L	238	239	0.6	0% - 20%
EB2508287-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.8	1.7	0.0	0% - 50%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6444912)									
EB2507140-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.05)*	mg/L	46.2	46.8	1.4	0% - 20%
EB2508287-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.26	0.25	0.0	0% - 20%
EK255A: Ammonia (QC Lot: 6438641)									
EB2508289-002	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	0.015	0.014	7.5	No Limit
EK257A: Nitrite (QC Lot: 6438639)									
EB2508289-002	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 6438638)									
EB2508289-002	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK262A: Total Nitrogen (QC Lot: 6438643)									
EB2508289-002	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.150	0.138	8.3	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 6438642)									
EB2508289-002	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK271A: Reactive Phosphorus (QC Lot: 6438640)									
EB2508289-002	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6442613)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	110	70.0	130
				<10	2000 mg/L	97.9	80.9	118
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6442614)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	107	88.0	112
				<5	1000 mg/L	108	88.0	112
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6443826)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	92.1	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6437445)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.8	90.0	110
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6439399)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	98.0	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6443823)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	98.8	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6444911)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	107	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6444912)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.442 mg/L	97.0	84.7	106
EK255A: Ammonia (QCLot: 6438641)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	96.8	80.0	120
EK257A: Nitrite (QCLot: 6438639)								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	94.9	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6438638)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	92.4	80.0	120
EK262A: Total Nitrogen (QCLot: 6438643)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	109	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6438642)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	116	80.0	120
EK271A: Reactive Phosphorus (QCLot: 6438640)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	89.7	84.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6443826)							
EB2508361-009	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	89.7	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6437445)							
EB2508306-004	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	94.0	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6439399)							
EB2508289-009	LIND05	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	91.0	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6443823)							
EB2508361-009	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	93.8	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6444911)							
EB2507140-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	25 mg/L	# Not Determined	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6444912)							
EB2507140-002	Anonymous	EK067G: Total Phosphorus as P	----	5 mg/L	# Not Determined	70.0	130
EK255A: Ammonia (QCLot: 6438641)							
EB2508289-004	WQ3	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	88.1	70.0	130
EK257A: Nitrite (QCLot: 6438639)							
EB2508289-003	WQ2	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	97.8	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6438638)							
EB2508289-004	WQ3	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	105	70.0	130
EK262A: Total Nitrogen (QCLot: 6438643)							
EB2508289-003	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	127	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6438642)							
EB2508289-003	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	110	70.0	130
EK271A: Reactive Phosphorus (QCLot: 6438640)							
EB2508289-004	WQ3	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	91.6	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2508289**	Page	: 1 of 8
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Monthly	Date Samples Received	: 13-Mar-2025
Site	: ----	Issue Date	: 20-Mar-2025
Sampler	: EMILY GRAY	No. of samples received	: 9
Order number	: P3169	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	EB2507140--002	Anonymous	**Total Kjeldahl Nitrogen as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK067G: Total Phosphorus as P by Discrete Analyser	EB2507140--002	Anonymous	**Total Phosphorus as P**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
LIND03, LIND05	----	----	----	14-Mar-2025	13-Mar-2025	**1**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Control Samples (LCS)						
Suspended Solids (High Level)	EA025H	2	20	10.00	15.00	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	15.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW12, LIND03, LIND05	**11-Mar-2025**	**----**	----	----	**17-Mar-2025**	18-Mar-2025	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) LIND01, WQ1, WQ2, WQ3, WQ4, WQ5, DW12, LIND03, LIND05	**11-Mar-2025**	**----**	----	----	**17-Mar-2025**	18-Mar-2025	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) DW12, LIND05	**11-Mar-2025**	**----**	----	----	**17-Mar-2025**	08-Apr-2025	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) LIND01, LIND03	**11-Mar-2025**	**----**	----	----	**19-Mar-2025**	08-Apr-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) LIND01, DW12	**11-Mar-2025**	**----**	----	----	**13-Mar-2025**	13-Mar-2025	✓
Clear Plastic Bottle - Natural (EK057G) LIND03, LIND05	**11-Mar-2025**	**----**	----	----	**14-Mar-2025**	13-Mar-2025	✗
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND01, DW12, LIND03, LIND05	**11-Mar-2025**	**----**	----	----	**19-Mar-2025**	08-Apr-2025	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) LIND01, DW12, LIND03, LIND05	**11-Mar-2025**	**18-Mar-2025**	08-Apr-2025	✓	**18-Mar-2025**	08-Apr-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) LIND01, DW12, LIND03, LIND05	**11-Mar-2025**	**18-Mar-2025**	08-Apr-2025	✓	**18-Mar-2025**	08-Apr-2025	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**11-Mar-2025**	**----**	----	----	**14-Mar-2025**	08-Apr-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**11-Mar-2025**	**----**	----	----	**14-Mar-2025**	15-Mar-2025	✓
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**11-Mar-2025**	**----**	----	----	**14-Mar-2025**	08-Apr-2025	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**11-Mar-2025**	**14-Mar-2025**	08-Apr-2025	✓	**14-Mar-2025**	08-Apr-2025	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**11-Mar-2025**	**14-Mar-2025**	08-Apr-2025	✓	**14-Mar-2025**	08-Apr-2025	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**11-Mar-2025**	**----**	----	----	**14-Mar-2025**	08-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	4	31	12.90	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	15.00	×	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	15.00	×	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	31	**6.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

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☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 4971 6600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	x Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mackay		Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
Lindeman Island Monthly	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: P3169		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7	Other comment:

SAMPLER: Emily Gray	SAMPLER MOBILE: 0491 216 318	RELINQUISHED BY: Emily Gray	RECEIVED BY: N. SUTTON	RELINQUISHED BY: N. SUTTON	RECEIVED BY:
COC emailed to ALS? (YES)	EDD FORMAT (or default):	DATE/TIME: 12.3.25 14:50	DATE/TIME: 12.3.25 14:50	DATE/TIME: 12.3.25 15:00	DATE/TIME:
Email Reports to: bpearce@catchmentsolutions.com.au					
Email Invoice to: accounts@catchmentsolutions.com.au					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		TDS, TSS	Nutrients NT-08	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LIND01	11/03/2025	Water		2		x	x						
2	WQ1	11/03/2025	Water		3		x		x					
3	WQ2	11/03/2025	Water		3		x		x					
4	WQ3	11/03/2025	Water		3		x		x					
5	WQ4	11/03/2025	Water		3		x		x					
6	WQ5	11/03/2025	Water		3		x		x					
7	DW12	11/03/2025	Water		2		x	x						
8	LIND03	11/03/2025	Water		2		x	x						
9	LIND05	11/03/2025	Water		2		x	x						
					23									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserv
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

Environmental Division Brisbane
Work Order Reference
EB2508289

Telephone : – 61-7-3552-8666

CERTIFICATE OF ANALYSIS

Work Order	: **EB2510076**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Monthly	Date Samples Received	: 26-Mar-2025 13:20
Order number	: ----	Date Analysis Commenced	: 26-Mar-2025
C-O-C number	: ----	Issue Date	: 01-Apr-2025 21:26
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001 V2		
No. of samples received	: 11		
No. of samples analysed	: 11		

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

- TDS by method EA-015 may bias high for some samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND04	LIND05
			Sampling date / time	25-Mar-2025 07:20	25-Mar-2025 07:45	25-Mar-2025 09:35	25-Mar-2025 11:00	25-Mar-2025 11:30
Compound	CAS Number	LOR	Unit	EB2510076-001	EB2510076-002	EB2510076-003	EB2510076-004	EB2510076-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	82	314	203	216	333
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	<5	11	128	10
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.06	0.10	0.02	0.03
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	0.03	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.02	0.04	0.92	0.02
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	-----	0.01	mg/L	<0.01	0.02	0.04	0.95	0.02
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	0.6	0.9	0.4	0.6	0.2
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	0.6	0.9	0.4	1.6	0.2
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	0.08	0.13	0.11	0.34	0.04

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ1	WQ2	WQ3	WQ4	WQ5
			Sampling date / time	25-Mar-2025 09:10	25-Mar-2025 09:20	25-Mar-2025 10:20	25-Mar-2025 10:45	25-Mar-2025 08:50
Compound	CAS Number	LOR	Unit	EB2510076-006	EB2510076-007	EB2510076-008	EB2510076-009	EB2510076-010
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**38200**	**37100**	**38100**	**38200**	**35600**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	<5	<5	<5	<5
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	**0.007**	**0.008**	**0.010**	**0.007**	**0.008**
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	**0.007**	**0.008**	**0.010**	**0.007**	**0.008**
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.025	mg/L	**0.100**	**0.066**	**0.077**	**0.088**	**0.085**
EK262A: Total Nitrogen								
Total Nitrogen as N	-----	0.025	mg/L	**0.107**	**0.074**	**0.087**	**0.095**	**0.093**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	-----	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	DW13	----	----	----	----
			Sampling date / time	25-Mar-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2510076-011	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**109**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.08**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl 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	**0.7**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	**0.03**	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EB2510076**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Monthly	Date Samples Received	: 26-Mar-2025 13:20
Order number	: ----	Date Analysis Commenced	: 26-Mar-2025
C-O-C number	: ----	Issue Date	: 01-Apr-2025 21:26
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001 V2		
No. of samples received	: 11		
No. of samples analysed	: 11		

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

- TDS by method EA-015 may bias high for some samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND04	LIND05
			Sampling date / time	25-Mar-2025 07:20	25-Mar-2025 07:45	25-Mar-2025 09:35	25-Mar-2025 11:00	25-Mar-2025 11:30
Compound	CAS Number	LOR	Unit	EB2510076-001	EB2510076-002	EB2510076-003	EB2510076-004	EB2510076-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	82	314	203	216	333
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	11	128	10
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.06	0.10	0.02	0.03
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	0.03	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.02	0.04	0.92	0.02
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.02	0.04	0.95	0.02
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.9	0.4	0.6	0.2
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.6	0.9	0.4	1.6	0.2
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.08	0.13	0.11	0.34	0.04

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ1	WQ2	WQ3	WQ4	WQ5
			Sampling date / time	25-Mar-2025 09:10	25-Mar-2025 09:20	25-Mar-2025 10:20	25-Mar-2025 10:45	25-Mar-2025 08:50
Compound	CAS Number	LOR	Unit	EB2510076-006	EB2510076-007	EB2510076-008	EB2510076-009	EB2510076-010
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**38200**	**37100**	**38100**	**38200**	**35600**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	<5
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	**0.007**	**0.008**	**0.010**	**0.007**	**0.008**
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	**0.007**	**0.008**	**0.010**	**0.007**	**0.008**
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.100**	**0.066**	**0.077**	**0.088**	**0.085**
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.025	mg/L	**0.107**	**0.074**	**0.087**	**0.095**	**0.093**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	DW13	----	----	----	----
			Sampling date / time	25-Mar-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2510076-011	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**109**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.08**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl 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	**0.7**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.03**	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **EB2510076**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Monthly	Date Samples Received	: 26-Mar-2025
Order number	: ----	Date Analysis Commenced	: 26-Mar-2025
C-O-C number	: ----	Issue Date	: 01-Apr-2025
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001 V2		
No. of samples received	: 11		
No. of samples analysed	: 11		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6473591)									
EB2509964-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	3960	4000	0.9	0% - 20%
EB2510076-005	LIND05	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	333	333	0.0	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6473590)									
EB2509964-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EB2510076-005	LIND05	EA025H: Suspended Solids (SS)	----	5	mg/L	10	8	11.1	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6472741)									
EB2509952-009	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2509952-011	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6468065)									
EB2510030-020	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.15	0.15	0.0	0% - 50%
EB2509928-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6472738)									
EB2509952-009	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2509952-011	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6467743)									
EB2506868-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	5.6	5.0	12.0	0% - 20%
EB2508699-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.2)*	mg/L	238	235	1.3	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6467745)									
EB2510076-005	LIND05	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.0	No Limit
EB2510185-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.1	4.3	5.3	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6467744)									
EB2510076-005	LIND05	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.03	53.6	No Limit
EB2510185-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.51	0.51	0.0	0% - 20%
EK255A: Ammonia (QC Lot: 6467733)									
EB2510076-006	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	0.005	<0.005	0.0	No Limit
EK257A: Nitrite (QC Lot: 6467731)									
EB2510076-006	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 6467730)									
EB2510076-006	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	0.007	0.008	0.0	No Limit
EK262A: Total Nitrogen (QC Lot: 6467047)									
EB2510076-006	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.107	0.082	26.8	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 6467046)									
EB2510076-006	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK271A: Reactive Phosphorus (QC Lot: 6467732)									
EB2510076-006	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6473591)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	118	70.0	130
				<10	2000 mg/L	99.3	80.9	118
				<10	2380 mg/L	99.5	81.1	118
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6473590)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	108	88.0	112
				<5	1000 mg/L	103	88.0	112
				<5	828 mg/L	99.2	84.9	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6472741)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	92.0	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6468065)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	95.8	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6472738)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	97.0	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6467743)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	98.3	70.1	108
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6467745)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1 mg/L	104	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6467744)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.442 mg/L	103	84.7	106
EK255A: Ammonia (QCLot: 6467733)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	99.3	80.0	120
EK257A: Nitrite (QCLot: 6467731)								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	103	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6467730)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	103	80.0	120
EK262A: Total Nitrogen (QCLot: 6467047)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	99.9	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6467046)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	117	80.0	120
EK271A: Reactive Phosphorus (QCLot: 6467732)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EK271A: Reactive Phosphorus (QCLot: 6467732) - continued								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	97.4	84.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6472741)							
EB2510076-004	LIND04	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	100	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6468065)							
EB2510030-021	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	89.6	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6472738)							
EB2510076-004	LIND04	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	95.0	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6467743)							
EB2506868-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	81.4	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6467745)							
EB2510076-011	DW13	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	95.2	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6467744)							
EB2510076-011	DW13	EK067G: Total Phosphorus as P	----	1 mg/L	96.9	70.0	130
EK255A: Ammonia (QCLot: 6467733)							
EB2510076-008	WQ3	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	97.3	70.0	130
EK257A: Nitrite (QCLot: 6467731)							
EB2510076-007	WQ2	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	97.6	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6467730)							
EB2510076-008	WQ3	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	113	70.0	130
EK262A: Total Nitrogen (QCLot: 6467047)							
EB2510076-007	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	98.2	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6467046)							
EB2510076-007	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	107	70.0	130
EK271A: Reactive Phosphorus (QCLot: 6467732)							
EB2510076-008	WQ3	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	98.3	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2510076**	Page	: 1 of 7
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Monthly	Date Samples Received	: 26-Mar-2025
Site	: ----	Issue Date	: 01-Apr-2025
Sampler	: FIONA LOFT	No. of samples received	: 11
Order number	: ----	No. of samples analysed	: 11

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) LIND01, LIND02, LIND03, LIND04, LIND05, WQ1, WQ2, WQ3, WQ4, WQ5, DW13	**25-Mar-2025**	**----**	----	----	**28-Mar-2025**	01-Apr-2025	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) LIND01, LIND02, LIND03, LIND04, LIND05, WQ1, WQ2, WQ3, WQ4, WQ5, DW13	**25-Mar-2025**	**----**	----	----	**28-Mar-2025**	01-Apr-2025	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) LIND01, LIND02, LIND03, LIND04, LIND05, DW13	**25-Mar-2025**	**----**	----	----	**01-Apr-2025**	22-Apr-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) LIND01, LIND02, LIND03, LIND04, LIND05, DW13	**25-Mar-2025**	**----**	----	----	**27-Mar-2025**	27-Mar-2025	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND01, LIND02, LIND03, LIND04, LIND05, DW13	**25-Mar-2025**	**----**	----	----	**01-Apr-2025**	22-Apr-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) LIND01, LIND02, LIND03, LIND04, LIND05, DW13	**25-Mar-2025**	**27-Mar-2025**	22-Apr-2025	✓	**27-Mar-2025**	22-Apr-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) LIND01, LIND02, LIND03, LIND04, LIND05, DW13	**25-Mar-2025**	**27-Mar-2025**	22-Apr-2025	✓	**27-Mar-2025**	22-Apr-2025	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**25-Mar-2025**	**----**	----	----	**27-Mar-2025**	22-Apr-2025	✓
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**25-Mar-2025**	**----**	----	----	**27-Mar-2025**	29-Mar-2025	✓
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**25-Mar-2025**	**----**	----	----	**27-Mar-2025**	22-Apr-2025	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**25-Mar-2025**	**26-Mar-2025**	22-Apr-2025	✓	**26-Mar-2025**	22-Apr-2025	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**25-Mar-2025**	**26-Mar-2025**	22-Apr-2025	✓	**26-Mar-2025**	22-Apr-2025	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**25-Mar-2025**	**----**	----	----	**27-Mar-2025**	22-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	4	34	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	34	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	34	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	34	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8350 0690 E: adelaide@alsglobal.com
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☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	x Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mackay		Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
Lindeman Island Monthly	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: C
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Fiona Loft	SAMPLER MOBILE: 0487 060 276		
COC emailed to ALS? (YES)	EDD FORMAT (or default):		
Email Reports to: bpearce@catchmentsolutions.com.au			
Email Invoice to: accounts@catchmentsolutions.com.au			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
F Loft	N.SUTTON	N.SUTTON	
DATE/TIME: 25/3/25 2.45	DATE/TIME: 25.3.25 14:45	DATE/TIME: 25.3.25 15:00	DATE/TIME: 26/3/25 @ 13:20

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		TDS, TSS	Nutrients NT-08	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	LIND01	25/3/25 7.20	Water		2		x	x						
2	LIND02	25/3/25 ~~[illegible]~~	Water	7.45	2		x	x						
3	LIND03	25/3/25 ~~10.35~~ 9.35	Water	9.35	2		x	x						
4	LIND04	25/3/25 11.00	Water		2		x	x						
5	LIND05	25/3/25 11.30	Water		2		x	x						
~~[illegible]~~	~~LIND06~~		~~Water~~		~~2~~		~~x~~	~~x~~						
6	WQ1	25/3/25 9.10	Water		3		x		x					
7	WQ2	25/3/25 9.20	Water		3		x		x					
8	WQ3	25/3/25 10.20	Water		3		x		x					
9	WQ4	25/3/25 10.45	Water		3		x		x					
10	WQ5	25/3/25 8.50	Water		3		x		x					
11	DW13	25/3/25	Water		2		x	x						

Environmental Division Brisbane
Work Order Reference
EB2510076

Telephone : + 61-7-3552-8685

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CERTIFICATE OF ANALYSIS

Work Order	: **EB2511642**	Page	: 1 of 10
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quaterly	Date Samples Received	: 08-Apr-2025 11:50
Order number	: ----	Date Analysis Commenced	: 08-Apr-2025
C-O-C number	: ----	Issue Date	: 14-Apr-2025 17:18
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001 V2		
No. of samples received	: 12		
No. of samples analysed	: 12		

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
- Surrogate Control Limits

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Timothy Creagh	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- 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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND04	LIND05
			Sampling date / time	03-Apr-2025 13:50	03-Apr-2025 13:30	03-Apr-2025 15:20	03-Apr-2025 15:00	03-Apr-2025 16:15
Compound	CAS Number	LOR	Unit	EB2511642-001	EB2511642-002	EB2511642-003	EB2511642-004	EB2511642-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	98	281	261	268	319
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	12	8	40	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.04	<0.01	0.03	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	0.01	0.02	<0.01	0.02
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	0.02	<0.01	0.02
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.8	1.1	0.9	0.7
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.7	0.8	1.1	0.9	0.7
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.04	0.11	0.10	0.16	0.08
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND04	LIND05
			Sampling date / time	03-Apr-2025 13:50	03-Apr-2025 13:30	03-Apr-2025 15:20	03-Apr-2025 15:00	03-Apr-2025 16:15
Compound	CAS Number	LOR	Unit	EB2511642-001	EB2511642-002	EB2511642-003	EB2511642-004	EB2511642-005
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**67.6**	**79.0**	**76.4**	**74.5**	**67.7**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**73.1**	**85.8**	**81.9**	**80.8**	**69.5**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND06	DW14	WQ1	WQ2	WQ3
			Sampling date / time	03-Apr-2025 15:45	03-Apr-2025 00:00	03-Apr-2025 15:20	03-Apr-2025 16:00	03-Apr-2025 16:45
Compound	CAS Number	LOR	Unit	EB2511642-006	EB2511642-007	EB2511642-008	EB2511642-009	EB2511642-010
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	448	99	39000	39800	38700
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	5	<5	<5	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.02	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl 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	0.8	0.8	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	0.12	0.04	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	----	0.006	0.014	0.010
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	----	<0.002	<0.002	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	----	0.011	0.005	0.005
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	-----	0.002	mg/L	----	----	0.011	0.005	0.005
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	-----	0.025	mg/L	----	----	0.042	0.045	0.123
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND06	DW14	WQ1	WQ2	WQ3
			Sampling date / time	03-Apr-2025 15:45	03-Apr-2025 00:00	03-Apr-2025 15:20	03-Apr-2025 16:00	03-Apr-2025 16:45
Compound	CAS Number	LOR	Unit	EB2511642-006	EB2511642-007	EB2511642-008	EB2511642-009	EB2511642-010
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	----	**0.053**	**0.050**	**0.128**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	----	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	----	<0.001	<0.001	<0.001
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**82.9**	**89.9**	**75.7**	**92.5**	**84.3**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND06	DW14	WQ1	WQ2	WQ3
			Sampling date / time	03-Apr-2025 15:45	03-Apr-2025 00:00	03-Apr-2025 15:20	03-Apr-2025 16:00	03-Apr-2025 16:45
Compound	CAS Number	LOR	Unit	EB2511642-006	EB2511642-007	EB2511642-008	EB2511642-009	EB2511642-010
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**84.6**	**92.6**	**80.3**	**94.9**	**82.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ4	WQ5	----	----	----
			Sampling date / time	03-Apr-2025 16:30	03-Apr-2025 15:10	----	----	----
Compound	CAS Number	LOR	Unit	EB2511642-011	EB2511642-012	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**39800**	**40700**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.012**	**0.014**	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	**0.004**	<0.002	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	**0.004**	<0.002	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.068**	**0.074**	----	----	----
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.025	mg/L	**0.072**	**0.074**	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ4	WQ5	----	----	----
			Sampling date / time	03-Apr-2025 16:30	03-Apr-2025 15:10	----	----	----
Compound	CAS Number	LOR	Unit	EB2511642-011	EB2511642-012	--------	--------	--------
				Result	Result	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**78.0**	**81.3**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**76.9**	**81.6**	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	45	139
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	45	139

CERTIFICATE OF ANALYSIS

Work Order	: **EB2511642**	Page	: 1 of 10
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quaterly	Date Samples Received	: 08-Apr-2025 11:50
Order number	: ----	Date Analysis Commenced	: 08-Apr-2025
C-O-C number	: ----	Issue Date	: 14-Apr-2025 17:18
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001 V2		
No. of samples received	: 12		
No. of samples analysed	: 12		

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
- Surrogate Control Limits

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Timothy Creagh	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- 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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND04	LIND05
			Sampling date / time	03-Apr-2025 13:50	03-Apr-2025 13:30	03-Apr-2025 15:20	03-Apr-2025 15:00	03-Apr-2025 16:15
Compound	CAS Number	LOR	Unit	EB2511642-001	EB2511642-002	EB2511642-003	EB2511642-004	EB2511642-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	98	281	261	268	319
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	12	8	40	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.04	<0.01	0.03	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	0.01	0.02	<0.01	0.02
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	0.02	<0.01	0.02
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.8	1.1	0.9	0.7
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.7	0.8	1.1	0.9	0.7
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.04	0.11	0.10	0.16	0.08
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND01	LIND02	LIND03	LIND04	LIND05
			Sampling date / time	03-Apr-2025 13:50	03-Apr-2025 13:30	03-Apr-2025 15:20	03-Apr-2025 15:00	03-Apr-2025 16:15
Compound	CAS Number	LOR	Unit	EB2511642-001	EB2511642-002	EB2511642-003	EB2511642-004	EB2511642-005
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**67.6**	**79.0**	**76.4**	**74.5**	**67.7**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**73.1**	**85.8**	**81.9**	**80.8**	**69.5**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND06	DW14	WQ1	WQ2	WQ3
			Sampling date / time	03-Apr-2025 15:45	03-Apr-2025 00:00	03-Apr-2025 15:20	03-Apr-2025 16:00	03-Apr-2025 16:45
Compound	CAS Number	LOR	Unit	EB2511642-006	EB2511642-007	EB2511642-008	EB2511642-009	EB2511642-010
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	448	99	39000	39800	38700
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	5	<5	<5	<5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.02	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl 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	0.8	0.8	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.12	0.04	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	----	0.006	0.014	0.010
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	----	----	<0.002	<0.002	<0.002
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	----	----	0.011	0.005	0.005
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	----	----	0.011	0.005	0.005
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	----	----	0.042	0.045	0.123
EK262A: Total Nitrogen								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND06	DW14	WQ1	WQ2	WQ3
			Sampling date / time	03-Apr-2025 15:45	03-Apr-2025 00:00	03-Apr-2025 15:20	03-Apr-2025 16:00	03-Apr-2025 16:45
Compound	CAS Number	LOR	Unit	EB2511642-006	EB2511642-007	EB2511642-008	EB2511642-009	EB2511642-010
				Result	Result	Result	Result	Result
EK262A: Total Nitrogen - Continued								
Total Nitrogen as N	----	0.025	mg/L	----	----	**0.053**	**0.050**	**0.128**
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	----	<0.005	<0.005	<0.005
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	----	----	<0.001	<0.001	<0.001
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**82.9**	**89.9**	**75.7**	**92.5**	**84.3**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	LIND06	DW14	WQ1	WQ2	WQ3
			Sampling date / time	03-Apr-2025 15:45	03-Apr-2025 00:00	03-Apr-2025 15:20	03-Apr-2025 16:00	03-Apr-2025 16:45
Compound	CAS Number	LOR	Unit	EB2511642-006	EB2511642-007	EB2511642-008	EB2511642-009	EB2511642-010
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**84.6**	**92.6**	**80.3**	**94.9**	**82.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ4	WQ5	----	----	----
			Sampling date / time	03-Apr-2025 16:30	03-Apr-2025 15:10	----	----	----
Compound	CAS Number	LOR	Unit	EB2511642-011	EB2511642-012	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**39800**	**40700**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	----	----	----
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	**0.012**	**0.014**	----	----	----
EK257A: Nitrite								
Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	----	----	----
EK258A: Nitrate								
Nitrate as N	14797-55-8	0.002	mg/L	**0.004**	<0.002	----	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	**0.004**	<0.002	----	----	----
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.025	mg/L	**0.068**	**0.074**	----	----	----
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.025	mg/L	**0.072**	**0.074**	----	----	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	----	----	----
EK271A: Reactive Phosphorus								
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WQ4	WQ5	----	----	----
			Sampling date / time	03-Apr-2025 16:30	03-Apr-2025 15:10	----	----	----
Compound	CAS Number	LOR	Unit	EB2511642-011	EB2511642-012	--------	--------	--------
				Result	Result	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**78.0**	**81.3**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**76.9**	**81.6**	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	45	139
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	45	139

QUALITY CONTROL REPORT

Work Order	: **EB2511642**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Contact	: Nikita Sutton
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quaterly	Date Samples Received	: 08-Apr-2025
Order number	: ----	Date Analysis Commenced	: 08-Apr-2025
C-O-C number	: ----	Issue Date	: 14-Apr-2025
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001 V2		
No. of samples received	: 12		
No. of samples analysed	: 12		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Timothy Creagh	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6496274)									
EB2511334-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	487	459	5.9	0% - 20%
EB2511642-001	LIND01	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	98	96	2.3	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6496277)									
EB2511642-011	WQ4	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	39800	39200	1.4	0% - 20%
EB2511784-004	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	520	504	3.1	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6496275)									
EB2511334-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	12	15	19.8	No Limit
EB2511642-001	LIND01	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6496276)									
EB2511642-011	WQ4	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	6	0.0	No Limit
EB2511784-004	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	24	20	17.8	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6498329)									
EB2511673-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.03	0.0	No Limit
ET2502003-008	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6495510)									
EB2511650-017	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2511644-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6498171)									
EB2511642-006	LIND06	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EB2511780-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.07	0.07	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6498325)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6498325) - continued									
EB2511673-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.28	0.28	0.0	0% - 20%
ET2502003-008	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.09	0.09	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6496285)									
EB2511334-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.6	0.0	No Limit
EB2511642-007	DW14	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	0.8	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6496284)									
EB2511334-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.09	0.08	0.0	No Limit
EB2511642-007	DW14	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.05	28.9	No Limit
EK255A: Ammonia (QC Lot: 6495311)									
EB2511642-008	WQ1	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	0.006	0.009	45.0	No Limit
EK257A: Nitrite (QC Lot: 6495309)									
EB2511642-008	WQ1	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 6495308)									
EB2511642-008	WQ1	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	0.011	0.011	0.0	No Limit
EK262A: Total Nitrogen (QC Lot: 6496114)									
EB2511642-008	WQ1	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.053	0.062	14.4	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 6496113)									
EB2511642-008	WQ1	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EK271A: Reactive Phosphorus (QC Lot: 6495310)									
EB2511642-008	WQ1	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6496274)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	113	70.0	130
				<10	2000 mg/L	97.7	80.9	118
				<10	2380 mg/L	102	81.1	118
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6496277)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	122	70.0	130
				<10	2000 mg/L	98.9	80.9	118
				<10	2380 mg/L	107	81.1	118
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6496275)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	107	88.0	112
				<5	1000 mg/L	104	88.0	112
				<5	828 mg/L	101	84.9	115
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6496276)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	99.5	88.0	112
				<5	1000 mg/L	103	88.0	112
				<5	828 mg/L	104	84.9	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6498329)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	99.0	83.5	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6495510)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	97.0	90.0	110
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6498171)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.0	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6498325)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	93.8	85.7	111
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6496285)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	89.8	70.1	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6496284)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	97.3	84.7	106
EK255A: Ammonia (QCLot: 6495311)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	98.7	80.0	120
EK257A: Nitrite (QCLot: 6495309)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EK257A: Nitrite (QCLot: 6495309) - continued								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	100	80.0	120
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6495308)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	89.5	80.0	120
EK262A: Total Nitrogen (QCLot: 6496114)								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	95.6	80.0	120
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6496113)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.42 mg/L	114	80.0	120
EK271A: Reactive Phosphorus (QCLot: 6495310)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	92.0	84.0	120
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6499609)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	85.3	53.2	133
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	83.5	44.2	158
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	# 8.9	10.0	32.6
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	75.5	27.6	153
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	86.0	53.6	128
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	85.3	51.6	122
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	126	45.2	139
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	102	47.5	135
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	87.6	53.4	133
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	84.1	56.3	125
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	130	37.1	144
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	94.3	49.8	131
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	100	37.0	131
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	77.9	47.3	127
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	91.7	16.0	150
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	88.8	45.5	128
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	86.0	39.1	129
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	90.4	38.4	134
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	98.2	27.5	146

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Matrix Spike (MS) Report

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6498329)							
EB2511789-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	88.5	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6495510)							
EB2511650-018	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	95.7	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6498171)							
EB2511642-007	DW14	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	90.9	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6498325)							
EB2511789-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	89.6	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6496285)							
EB2511334-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	90.3	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6496284)							
EB2511334-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	90.7	70.0	130
EK255A: Ammonia (QCLot: 6495311)							
EB2511642-010	WQ3	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	111	70.0	130
EK257A: Nitrite (QCLot: 6495309)							
EB2511642-009	WQ2	EK257A-SW: Nitrite as N	14797-65-0	0.2 mg/L	103	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 6495308)							
EB2511642-010	WQ3	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	100	70.0	130
EK262A: Total Nitrogen (QCLot: 6496114)							
EB2511642-009	WQ2	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	92.6	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 6496113)							
EB2511642-009	WQ2	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	104	70.0	130
EK271A: Reactive Phosphorus (QCLot: 6495310)							
EB2511642-010	WQ3	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	98.4	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2511642**	Page	: 1 of 9
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Brisbane
Contact	: BEN PEARCE	Telephone	: +61-7-3552-8685
Project	: Lindeman Island Quaterly	Date Samples Received	: 08-Apr-2025
Site	: ----	Issue Date	: 14-Apr-2025
Sampler	: FIONA LOFT	No. of samples received	: 12
Order number	: ----	No. of samples analysed	: 12

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068B: Organophosphorus Pesticides (OP)	QC-6499609-002	----	**Monocrotophos**	6923-22-4	8.9 %	10.0-32.6%	**Recovery less than lower control limit**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
LIND01, LIND03,	LIND02, LIND05	----	----	----	08-Apr-2025	05-Apr-2025	**3**
Clear Plastic Bottle - Natural							
LIND04, DW14	LIND06,	----	----	----	09-Apr-2025	05-Apr-2025	**4**
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu							
WQ1, WQ3, WQ5	WQ2, WQ4,	----	----	----	08-Apr-2025	07-Apr-2025	**1**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Analytical Methods	Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)						
Pesticides by GCMS	EP068	0	12	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Pesticides by GCMS	EP068	0	12	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) LIND01, LIND02, LIND03, LIND04, LIND05, LIND06, DW14, WQ1, WQ2, WQ3, WQ4, WQ5	**03-Apr-2025**	**----**	----	----	**09-Apr-2025**	10-Apr-2025	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) LIND01, LIND02, LIND03, LIND04, LIND05, LIND06, DW14, WQ1, WQ2, WQ3, WQ4, WQ5	**03-Apr-2025**	**----**	----	----	**09-Apr-2025**	10-Apr-2025	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) LIND01, LIND02, LIND03, LIND04, LIND05, LIND06, DW14	**03-Apr-2025**	**----**	----	----	**10-Apr-2025**	01-May-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) LIND01, LIND02, LIND03, LIND05	**03-Apr-2025**	**----**	----	----	**08-Apr-2025**	05-Apr-2025	✗
Clear Plastic Bottle - Natural (EK057G) LIND04, LIND06, DW14	**03-Apr-2025**	**----**	----	----	**09-Apr-2025**	05-Apr-2025	✗
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) LIND01, LIND02, LIND03, LIND04, LIND05, LIND06, DW14	**03-Apr-2025**	**----**	----	----	**10-Apr-2025**	01-May-2025	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) LIND01, LIND02, LIND03, LIND04, LIND05, LIND06, DW14	**03-Apr-2025**	**09-Apr-2025**	01-May-2025	✓	**09-Apr-2025**	01-May-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) LIND01, LIND02, LIND03, LIND04, LIND05, LIND06, DW14	**03-Apr-2025**	**09-Apr-2025**	01-May-2025	✓	**09-Apr-2025**	01-May-2025	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**03-Apr-2025**	**----**	----	----	**08-Apr-2025**	01-May-2025	✓
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**03-Apr-2025**	**----**	----	----	**08-Apr-2025**	07-Apr-2025	✗
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**03-Apr-2025**	**----**	----	----	**08-Apr-2025**	01-May-2025	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**03-Apr-2025**	**10-Apr-2025**	01-May-2025	✓	**10-Apr-2025**	01-May-2025	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**03-Apr-2025**	**10-Apr-2025**	01-May-2025	✓	**10-Apr-2025**	01-May-2025	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW) WQ1, WQ2, WQ3, WQ4, WQ5	**03-Apr-2025**	**----**	----	----	**08-Apr-2025**	01-May-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
LIND01, LIND02, LIND03, LIND04, LIND05, LIND06, DW14, WQ1, WQ2, WQ3, WQ4, WQ5	**03-Apr-2025**	**10-Apr-2025**	10-Apr-2025	✓	**12-Apr-2025**	20-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	4	38	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	12	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	33	**12.12**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	33	**12.12**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	6	33	**18.18**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	33	**18.18**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Pesticides by GCMS	EP068	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	33	**6.06**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	33	**6.06**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	12	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.

Analytical Methods	Method	Matrix	Method Descriptions
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	WATER	In house: Referenced to APHA 4500-N C & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM Schedule B(3)
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	WATER	In house: APHA 4500-N B and APHA 4500-P I. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	WATER	In house: Referenced to APHA 4500-N B and APHA 4500-P I. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 4971 5800 E: gladstone@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
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WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	x Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mackay		Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
Lindeman Island Quarterly	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt °C
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7	Other comment
SAMPLER: Fiona Loft	SAMPLER MOBILE: 0487 060 276	RELINQUISHED BY:	RECEIVED BY:
COC emailed to ALS? (YES)	EDD FORMAT (or default):	DATE/TIME: 7.4.25	DATE/TIME: 7/4/25
Email Reports to: bpearce@catchmentsolutions.com.au		RELINQUISHED BY:	RECEIVED BY:
Email Invoice to: accounts@catchmentsolutions.com.au		DATE/TIME:	DATE/TIME: 8/4/25 11:50

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	OP Pesticides	TDS, TSS	Nutrients NT-08	Ultratrace Nutrients TN, TP, NH3, NO2, NO3, Reactive P					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	LIND01	03-04-25 13:50	Water			x	x	x						
	LIND02	03-04-25 13:30	Water			x	x	x						
	LIND03	03-04-25 15:20	Water			x	x	x						
	LIND04	03-04-25 15:00	Water			x	x	x						
	LIND05	03-04-25 16:15	Water			x	x	x						
	LIND06	03-04-25 15:45	Water			x	x	x						
	DW14	03-04-25	Water			x	x	x						
	WQ1	03-04-25 15:20	Water			x	x		x					
	WQ2	03-04-25 16:00	Water			x	x		x					
	WQ3	03-04-25 16:45	Water			x	x		x					
	WQ4	03-04-25 16:30	Water			x	x		x					
	WQ5	03-04-25 15:10	Water			x	x		x					

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Form
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division
Brisbane
Work Order Reference
EB2511642

Telephone : - 61-7-3552-8666

MRC Laboratory
89 Connors Road, Paget QLD 4740
07 4961 9042
ABN: 56 240 712 069

ANALYTICAL REPORT

Job Description: **Lindeman Island (J1228)**

Job Number: 25-1507
Revision No.: 00
Date: 10/04/2025
This report supercedes any previous revisions

Client: Catchment Solutions Pty Ltd
Fiona Loft
Suite 4, 85 Gordon Street

Sampled By:	Client#
Sampling Method:	Grab Sample#
Sample Matrix:	Water
No. of Samples Received:	12
Date Sample(s) Received:	4/04/2025
Analysis Date:	4/04/2025

Notes:

- Analysis is performed in accordance with APHA, AS, ASTM and USEPA Standard Methods or NATA approved in-house methods, except where stated otherwise.
- Key: * Result is derived from calculation, # Client supplied data, ^ Analysis not covered by NATA scope of accreditation, NA- Not Analysed, ∅ outsourced to external laboratory.
- This report is not to be reproduced except in full.
- Results relate to samples as received, unless sampled by MRC Laboratory.

Field Observations (if applicable):

Report Comments:

Signatories

James Petrass B.Sc.

Accreditation No. 17048
Accredited for compliance with ISO/IEC 17025 - Testing

25-1507
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	WQ1 3/04/2025 15:20 25-1507-1	Method
Total Coliforms	MPN/100 mL	3,640	APHA 9223 B
E.Coli	MPN/100 mL	***510***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	8	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<10	APHA 9223 B

25-1507
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	WQ2 3/04/2025 16:00 25-1507-2	Method
Total Coliforms	MPN/100 mL	1,830	APHA 9223 B
E.Coli	MPN/100 mL	***100***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	12	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<10	APHA 9223 B

25-1507
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	WQ3 3/04/2025 16:45 25-1507-3	Method
Total Coliforms	MPN/100 mL	14,670	APHA 9223 B
E.Coli	MPN/100 mL	***1,190***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	14	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<10	APHA 9223 B

25-1507
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	WQ4 3/04/2025 16:30 25-1507-4	Method
Total Coliforms	MPN/100 mL	1,200	APHA 9223 B
E.Coli	MPN/100 mL	***200***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	<1	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<10	APHA 9223 B

25-1507
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	WQ5 3/04/2025 15:10 25-1507-5	Method
Total Coliforms	MPN/100 mL	4,950	APHA 9223 B
E.Coli	MPN/100 mL	***970***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	5	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	<10	APHA 9223 B

25-1507
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	DW14 3/04/2025 13:50 25-1507-6	Method
Total Coliforms	MPN/100 mL	17,329	APHA 9223 B
E.Coli	MPN/100 mL	***52***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	2,350	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	588	APHA 9223 B

25-1507
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	Linde01 3/04/2025 13:50 25-1507-7	Method
Total Coliforms	MPN/100 mL	15,531	APHA 9223 B
E.Coli	MPN/100 mL	***41***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,000	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	813	APHA 9223 B

25-1507
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	Linde02 3/04/2025 13:30 25-1507-8	Method
Total Coliforms	MPN/100 mL	>24,196	APHA 9223 B
E.Coli	MPN/100 mL	***253***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	6,200	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	241	APHA 9223 B

25-1507
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	Linde03 3/04/2025 15:20 25-1507-9	Method
Total Coliforms	MPN/100 mL	>24,196	APHA 9223 B
E.Coli	MPN/100 mL	***450***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	2,030	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	733	APHA 9223 B

25-1507
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	Linde04 3/04/2025 16:15 25-1507-10	Method
Total Coliforms	MPN/100 mL	>24,196	APHA 9223 B
E.Coli	MPN/100 mL	***7,270***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	>20,000	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	10,112	APHA 9223 B

25-1507
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	Linde05 3/04/2025 16:15 25-1507-11	Method
Total Coliforms	MPN/100 mL	10,112	APHA 9223 B
E.Coli	MPN/100 mL	***345***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	2,070	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	714	APHA 9223 B

25-1507
Lindeman Island (J1228)

Date Sampled Time Sampled	Units	Linde06 3/04/2025 16:15 25-1507-12	Method
Total Coliforms	MPN/100 mL	>24,196	APHA 9223 B
E.Coli	MPN/100 mL	***695***	APHA 9223 B
Heterotrophic Plate Count	cfu/1mL	1,570	APHA 9215 D
Thermotolerant Coliforms	MPN/100 mL	576	APHA 9223 B

CERTIFICATE OF ANALYSIS

Work Order	: **ES2413703**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Marine and Aquatic sampling	Date Samples Received	: 30-Apr-2024 15:46
Order number	: ----	Date Analysis Commenced	: 01-May-2024
C-O-C number	: ----	Issue Date	: 07-May-2024 15:32
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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
- Surrogate Control Limits

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW1	----	----	----	----
			Sampling date / time	24-Apr-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2413703-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**98**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.45**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.02**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.02**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl 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	**0.8**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.02**	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW1	----	----	----	----
			Sampling date / time	24-Apr-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2413703-001	--------	--------	--------	--------
				Result	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**85.8**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**86.5**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150

QUALITY CONTROL REPORT

Work Order	: **ES2413703**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Marine and Aquatic sampling	Date Samples Received	: 30-Apr-2024
Order number	: ----	Date Analysis Commenced	: 01-May-2024
C-O-C number	: ----	Issue Date	: 07-May-2024
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5761949)									
ES2412448-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	3030	3010	0.8	0% - 20%
ES2413673-014	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	520	515	1.1	0% - 20%
ES2413682-007	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	106	100	5.8	0% - 50%
ES2413734-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2320	2350	1.0	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5761948)									
ES2412448-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	22	22	0.0	No Limit
ES2413673-014	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2413682-007	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2413734-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5765419)									
ES2413689-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	40.2	40.7	1.3	0% - 20%
ES2413689-010	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01 (0.10)*	mg/L	82.4	83.6	1.5	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5769051)									
ES2413703-001	TW1	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5765418)									
EB2413758-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01 (0.10)*	mg/L	<0.10	<0.10	0.0	No Limit
ES2413689-010	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01 (0.10)*	mg/L	<0.10	<0.10	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5765422)									
ES2413689-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (1.0)*	mg/L	53.2	54.3	1.9	0% - 20%
ES2413703-001	TW1	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	0.8	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5765421)									
ES2413689-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.10)*	mg/L	1.17	1.05	10.7	0% - 50%
ES2413703-001	TW1	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.02	0.02	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5761949)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.3	87.0	109
				<10	293 mg/L	117	75.2	126
				<10	2410 mg/L	111	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5761948)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	101	83.0	129
				<5	1000 mg/L	99.0	82.0	110
				<5	928 mg/L	101	83.0	118
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5765419)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	97.7	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5769051)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	105	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5765418)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5765422)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	91.4	69.0	123
				<0.1	1 mg/L	83.1	70.0	123
				<0.1	5 mg/L	88.7	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5765421)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	94.5	71.3	126
				<0.01	0.442 mg/L	95.9	71.3	126
				<0.01	1 mg/L	96.1	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 5760426)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	94.8	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	91.5	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	24.0	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	94.9	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	103	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	99.1	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	94.3	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	94.3	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	89.7	68.6	112

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 5760426) - continued								
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	91.2	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	84.4	67.0	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	90.1	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	96.5	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	93.8	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	90.8	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	92.0	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	93.2	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	99.4	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	97.7	51.6	128

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5765419)							
ES2413689-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	# Not Determined	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5769051)							
ES2413703-001	TW1	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	102	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5765418)							
EB2413758-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	5 mg/L	99.4	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5765422)							
ES2413689-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	# Not Determined	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5765421)							
ES2413689-002	Anonymous	EK067G: Total Phosphorus as P	----	10 mg/L	99.9	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2413703**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Telephone	: +61 7 4952 5795
Project	: Marine and Aquatic sampling	Date Samples Received	: 30-Apr-2024
Site	: ----	Issue Date	: 07-May-2024
Sampler	: BEN PEARCE	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	ES2413689--001	Anonymous	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	ES2413689--002	Anonymous	**Total Kjeldahl Nitrogen as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / **Container** / Client Sample ID(s)	*Extraction / Preparation* Date extracted	Due for extraction	Days overdue	*Analysis* Date analysed	Due for analysis	Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
TW1	----	----	----	06-May-2024	26-Apr-2024	**10**
EP068B: Organophosphorus Pesticides (OP)						
Amber Glass Bottle - Unpreserved						
TW1	03-May-2024	01-May-2024	**2**	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Analytical Methods	Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)						
Pesticides by GCMS	EP068	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Pesticides by GCMS	EP068	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
TW1	24-Apr-2024	----	----	----	01-May-2024	01-May-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
TW1	24-Apr-2024	----	----	----	01-May-2024	01-May-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
TW1	24-Apr-2024	----	----	----	03-May-2024	22-May-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
TW1	24-Apr-2024	----	----	----	06-May-2024	26-Apr-2024	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
TW1	24-Apr-2024	----	----	----	03-May-2024	22-May-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
TW1	24-Apr-2024	03-May-2024	22-May-2024	✓	03-May-2024	22-May-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
TW1	24-Apr-2024	03-May-2024	22-May-2024	✓	03-May-2024	22-May-2024	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
TW1	24-Apr-2024	03-May-2024	01-May-2024	×	06-May-2024	12-Jun-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☒BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
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☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions
OFFICE: Mackay
ORDER NUMBER:
PROJECT MANAGER: Ben Pearce — CONTACT PH: 0488 765 106
SAMPLER: Ben Pearce — SAMPLER MOBILE: 0488 765 106
COC emailed to ALS? (YES) — EDD FORMAT (or default):
Email Reports to: bpearce@catchmentsolutions.com.au
Email Invoice to: accounts@catchmentsolutions.com.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
x Standard TAT (List due date):
Non Standard or urgent TAT (List due date):
ALS QUOTE NO.: EB24CATSOL0001

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
[signature]	T. Hirsch	T. Hirsch	[signature]
DATE/TIME: 26/4/24	DATE/TIME: 26/4/24 10:00	DATE/TIME: 27/4/24 16:00	DATE/TIME: 30/4/24 1546

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	OP Pesticides 1	TDS, TSS 1	Nutrients NT-08		HT				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	TW1	24/04/2024	Water			x	x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
					TOTAL									

Environmental Division Sydney
Work Order Reference
ES2413703

Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preser
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2417805**	Page	: 1 of 3
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 30-May-2024 08:00
Order number	: ----	Date Analysis Commenced	: 30-May-2024
C-O-C number	: ----	Issue Date	: 06-Jun-2024 12:43
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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.

- 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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW1	----	----	----	----
			Sampling date / time	28-May-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2417805-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**76**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.33**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.04**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.04**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.9**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.9**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.03**	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **ES2417805**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 30-May-2024
Order number	: ----	Date Analysis Commenced	: 30-May-2024
C-O-C number	: ----	Issue Date	: 06-Jun-2024
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5834973)									
ES2417534-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	88	87	1.4	No Limit
ES2417751-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	3200	3210	0.2	0% - 20%
ES2417751-015	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	11000	10900	0.9	0% - 20%
ES2417783-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	9710	9530	1.8	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5834974)									
ES2417534-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	36	35	0.0	No Limit
ES2417751-005	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	548	541	1.3	0% - 20%
ES2417751-015	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2417783-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	4340	4440	2.3	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5835281)									
ES2417534-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.02	0.0	No Limit
ES2417837-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.80	0.85	5.6	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5826603)									
WN2406490-006	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2417358-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01 (0.10)*	mg/L	<0.10	<0.10	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5835282)									
ES2417534-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.85	0.86	1.9	0% - 20%
ES2417837-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	68.2	67.5	1.1	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5835278)									
ES2417534-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.1	1.9	6.1	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5835278) - continued									
ES2417766-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (2.0)*	mg/L	95.3	93.7	1.7	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5835277)									
ES2417534-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.21	0.22	0.0	0% - 20%
ES2417766-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.20)*	mg/L	34.9	35.2	0.7	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5834973)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	95.5	87.0	109
				<10	293 mg/L	119	75.2	126
				<10	2410 mg/L	103	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5834974)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	94.0	83.0	129
				<5	1000 mg/L	102	82.0	110
				<5	928 mg/L	95.5	83.0	118
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5835281)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	100	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5826603)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5835282)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	105	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5835278)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	86.2	69.0	123
				<0.1	1 mg/L	97.4	70.0	123
				<0.1	5 mg/L	88.6	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5835277)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	85.3	71.3	126
				<0.01	0.442 mg/L	95.7	71.3	126
				<0.01	1 mg/L	94.0	70.0	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5835281)							
ES2417534-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	124	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5826603)							
ES2417358-001	Anonymous	EK057G: Nitrite as N	14797-65-0	5 mg/L	102	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5835282)							
ES2417534-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	102	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5835278)							
ES2417534-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	89.3	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5835277)							
ES2417534-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	96.6	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2417805**	Page	: 1 of 4
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 30-May-2024
Site	: ----	Issue Date	: 06-Jun-2024
Sampler	: BEN PEARCE	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
TW1	**28-May-2024**	**----**	----	**----**	**04-Jun-2024**	04-Jun-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
TW1	**28-May-2024**	**----**	----	**----**	**04-Jun-2024**	04-Jun-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
TW1	**28-May-2024**	**----**	----	**----**	**05-Jun-2024**	25-Jun-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
TW1	**28-May-2024**	**----**	----	**----**	**30-May-2024**	30-May-2024	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
TW1	**28-May-2024**	**----**	----	**----**	**05-Jun-2024**	25-Jun-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
TW1	**28-May-2024**	**04-Jun-2024**	25-Jun-2024	✓	**04-Jun-2024**	25-Jun-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
TW1	**28-May-2024**	**04-Jun-2024**	25-Jun-2024	✓	**04-Jun-2024**	25-Jun-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions
OFFICE: Mackay
Lindeman Island Monthly
ORDER NUMBER:
PROJECT MANAGER: Ben Pearce — CONTACT PH: 0486 765 106
SAMPLER: Ben Pearce — SAMPLER MOBILE: 0486 765 106
COC emailed to ALS? (YES) — EDD FORMAT (or default):
Email Reports to: bpearce@catchmentsolutions.com.au
Email Invoice to: accounts@catchmentsolutions.com.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)
x Standard TAT (List due date):
Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: EB24CATSOL0001

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 29/5/24 9.30	DATE/TIME: 29/5/24 4:30	DATE/TIME: 29/5/24 16:00	DATE/TIME: 30/5/24 8a

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		TDS, TSS	Nutrients NT-03						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TW1	28-05-24	Water				x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
					TOTAL									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formal
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ES2417805

~~ES2417521~~

Environmental Division Sydney
Work Order Reference
ES2417805

Telephone : + 61-2-8784 8555

CERTIFICATE OF ANALYSIS

Work Order	: **ES2420635**	Page	: 1 of 3
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 25-Jun-2024 08:00
Order number	: ----	Date Analysis Commenced	: 26-Jun-2024
C-O-C number	: ----	Issue Date	: 02-Jul-2024 15:14
Sampler	: F LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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	TW3	----	----	----	----
			Sampling date / time	20-Jun-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2420635-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**82**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	**6**	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.37**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	**1.0**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	**1.0**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	**0.03**	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **ES2420635**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 25-Jun-2024
Order number	: ----	Date Analysis Commenced	: 26-Jun-2024
C-O-C number	: ----	Issue Date	: 02-Jul-2024
Sampler	: F LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5885406)									
ES2420269-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	985	1010	2.4	0% - 20%
ES2420368-011	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	38400	37900	1.4	0% - 20%
WN2407914-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2710	2740	1.4	0% - 20%
WN2407914-012	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	370	349	5.7	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5885407)									
ES2420269-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	58	55	4.9	0% - 50%
ES2420368-011	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
WN2407914-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
WN2407914-012	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5892094)									
ES2420267-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01 (0.10)*	mg/L	<0.10	<0.10	0.0	No Limit
ES2420845-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01 (0.05)*	mg/L	0.10	0.12	22.7	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5890343)									
ES2421231-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01 (0.10)*	mg/L	<0.10	<0.10	0.0	No Limit
ES2420267-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5892095)									
ES2420267-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.09	0.09	0.0	No Limit
ES2420845-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	6.28	6.20	1.4	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5892098)									
ES2420267-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5892098) - continued									
ES2420845-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.6	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5892097)									
ES2420267-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.02	0.0	No Limit
ES2420845-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.03	34.2	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5885406)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	95.2	87.0	109
				<10	293 mg/L	110	75.2	126
				<10	2410 mg/L	112	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5885407)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	94.7	83.0	129
				<5	1000 mg/L	99.5	82.0	110
				<5	928 mg/L	92.4	83.0	118
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5892094)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	107	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5890343)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	93.7	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5892095)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5892098)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	97.7	69.0	123
				<0.1	1 mg/L	110	70.0	123
				<0.1	5 mg/L	103	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5892097)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	95.6	71.3	126
				<0.01	0.442 mg/L	104	71.3	126
				<0.01	1 mg/L	102	70.0	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5892094)							
ES2420267-001	Anonymous	EK055G: Ammonia as N	7664-41-7	10 mg/L	81.8	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5890343)							
ES2420267-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	103	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5892095)							
ES2420267-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	107	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5892098)							
ES2420635-001	TW3	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	97.8	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5892097)							
ES2420635-001	TW3	EK067G: Total Phosphorus as P	----	1 mg/L	97.9	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2420635**	Page	: 1 of 4
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 25-Jun-2024
Site	: ----	Issue Date	: 02-Jul-2024
Sampler	: F LOFT	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural TW3	----	----	----	28-Jun-2024	22-Jun-2024	**6**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) TW3	**20-Jun-2024**	**----**	----	----	**26-Jun-2024**	27-Jun-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TW3	**20-Jun-2024**	**----**	----	----	**26-Jun-2024**	27-Jun-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) TW3	**20-Jun-2024**	**----**	----	----	**01-Jul-2024**	18-Jul-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) TW3	**20-Jun-2024**	**----**	----	----	**28-Jun-2024**	22-Jun-2024	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TW3	**20-Jun-2024**	**----**	----	----	**01-Jul-2024**	18-Jul-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TW3	**20-Jun-2024**	**30-Jun-2024**	18-Jul-2024	✓	**30-Jun-2024**	18-Jul-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TW3	**20-Jun-2024**	**30-Jun-2024**	18-Jul-2024	✓	**30-Jun-2024**	18-Jul-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

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☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions
OFFICE: Mackay
Lindeman Island Monthly
ORDER NUMBER:
PROJECT MANAGER: Ben Pearce — **CONTACT PH:** 0488 765 106
SAMPLER: Fiona Loft — **SAMPLER MOBILE:** 0487 060 276
COC emailed to ALS? (YES) — **EDD FORMAT (or default):**
Email Reports to: bpearce@catchmentsolutions.com.au
Email Invoice to: accounts@catchmentsolutions.com.au

TURNAROUND REQUIREMENTS : x Standard TAT (List due date):
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) — Non Standard or urgent TAT (List due date):
ALS QUOTE NO.: EB24CATSOL0001

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME: 24/6/24	DATE/TIME: 24/6/24 1600	DATE/TIME: 25/6/24

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		TDS, TSS	Nutrients NT-08		HT				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	~~TW3~~ TW3	20/6/24	Water				x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
					TOTAL									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Forma
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division Sydney
Work Order Reference
ES2420635

Telephone : – 61-2-8784 8555

CERTIFICATE OF ANALYSIS

Work Order	: **ES2424929**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: ----	Date Samples Received	: 02-Aug-2024 10:50
Order number	: ----	Date Analysis Commenced	: 05-Aug-2024
C-O-C number	: ----	Issue Date	: 09-Aug-2024 13:48
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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
- Surrogate Control Limits

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW4	----	----	----	----
			Sampling date / time	30-Jul-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2424929-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**52**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.04**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.6**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.6**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW4	----	----	----	----
			Sampling date / time	30-Jul-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2424929-001	--------	--------	--------	--------
				Result	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**116**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**107**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150

QUALITY CONTROL REPORT

Work Order	: **ES2424929**	Page	: 1 of 4
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: ----	Date Samples Received	: 02-Aug-2024
Order number	: ----	Date Analysis Commenced	: 05-Aug-2024
C-O-C number	: ----	Issue Date	: 09-Aug-2024
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5971622)									
ES2424815-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	361	354	2.0	0% - 20%
ES2424929-001	TW4	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	52	48	8.4	No Limit
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5971623)									
ES2424815-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	9	10	0.0	No Limit
ES2424929-001	TW4	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5969461)									
ES2424407-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.11	0.11	0.0	0% - 50%
ES2425309-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01 (1.00)*	mg/L	2.82	3.65	25.6	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5971166)									
ES2425112-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2425111-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5969460)									
ES2424407-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.35	0.36	0.0	0% - 20%
ES2425309-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01 (0.10)*	mg/L	89.3	95.1	6.3	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5969456)									
EN2408242-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (2.0)*	mg/L	50.3	42.7	16.2	0% - 20%
ES2425274-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (2.0)*	mg/L	28.4	26.9	5.6	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5969457)									
EN2408242-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.01	0.01	0.0	No Limit
ES2425274-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.20)*	mg/L	83.9	83.2	0.9	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5971622)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	104	87.0	109
				<10	293 mg/L	113	75.2	126
				<10	2410 mg/L	105	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5971623)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	103	83.0	129
				<5	1000 mg/L	98.4	82.0	110
				<5	928 mg/L	105	83.0	118
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5969461)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	99.7	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5971166)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	94.1	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5969460)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.1	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5969456)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	94.6	69.0	123
				<0.1	1 mg/L	106	70.0	123
				<0.1	5 mg/L	117	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5969457)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	94.9	71.3	126
				<0.01	0.442 mg/L	100	71.3	126
				<0.01	1 mg/L	114	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 5965660)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	82.9	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	84.6	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	24.8	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	88.6	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	98.3	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	102	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	101	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	95.8	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	98.8	68.6	112

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 5965660) - continued								
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	98.4	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	102	67.0	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	97.7	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	96.6	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	101	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	99.8	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	103	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	104	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	105	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	99.6	51.6	128

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5969461)							
ES2424407-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	94.9	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5971166)							
ES2425111-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	102	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5969460)							
ES2424407-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	94.9	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5969456)							
EN2408242-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	# Not Determined	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5969457)							
EN2408242-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	107	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2424929**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Telephone	: +61 7 4952 5795
Project	: ----	Date Samples Received	: 02-Aug-2024
Site	: ----	Issue Date	: 09-Aug-2024
Sampler	: BEN PEARCE	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	EN2408242--002	Anonymous	**Total Kjeldahl Nitrogen as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural TW4	----	----	----	06-Aug-2024	01-Aug-2024	**5**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Analytical Methods	Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)						
Pesticides by GCMS	EP068	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Pesticides by GCMS	EP068	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) TW4	**30-Jul-2024**	**----**	----	**----**	**06-Aug-2024**	06-Aug-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TW4	**30-Jul-2024**	**----**	----	**----**	**06-Aug-2024**	06-Aug-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) TW4	**30-Jul-2024**	**----**	----	----	**06-Aug-2024**	27-Aug-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) TW4	**30-Jul-2024**	**----**	----	----	**06-Aug-2024**	01-Aug-2024	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TW4	**30-Jul-2024**	**----**	----	----	**06-Aug-2024**	27-Aug-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TW4	**30-Jul-2024**	**06-Aug-2024**	27-Aug-2024	✓	**06-Aug-2024**	27-Aug-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TW4	**30-Jul-2024**	**06-Aug-2024**	27-Aug-2024	✓	**06-Aug-2024**	27-Aug-2024	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) TW4	**30-Jul-2024**	**05-Aug-2024**	06-Aug-2024	✓	**07-Aug-2024**	14-Sep-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	18	16.67	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	18	16.67	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	19	15.79	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☒BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
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☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions
OFFICE: Mackay
ORDER NUMBER:
PROJECT MANAGER: Ben Pearce — CONTACT PH: 0488 765 106
SAMPLER: Ben Pearce — SAMPLER MOBILE: 0488 765 106
COC emailed to ALS? (YES) — EDD FORMAT (or default):
Email Reports to: bpearce@catchmentsolutions.com.au
Email Invoice to: accounts@catchmentsolutions.com.au

TURNAROUND REQUIREMENTS : x Standard TAT (List due date):
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) Non Standard or urgent TAT (List due date):
ALS QUOTE NO.: EB24CATSOL0001

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
30/7/24	N. Sutton	N. Sutton	FAN.
DATE/TIME: 4 Logl	DATE/TIME: 31·7·24 11:30	DATE/TIME: 31·7·24 16:00	DATE/TIME: 2/8/24 10.5am

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE — SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) — CONTAINER INFORMATION — ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). — Additional Information

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	OP Pesticides	TDS, TSS	Nutrients NT-08						Additional Information
1	TW1	30·7·24	Water		1	x	x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
				TOTAL										

HT

Environmental Division Sydney
Work Order Reference
ES2424929

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Form
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2427350**	Page	: 1 of 3
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 22-Aug-2024 13:45
Order number	: ----	Date Analysis Commenced	: 22-Aug-2024
C-O-C number	: ----	Issue Date	: 29-Aug-2024 15:46
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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
Dian Dao	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	TW5	----	----	----	----
			Sampling date / time	20-Aug-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2427350-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**78**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.04**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	**0.6**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	**0.6**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	<0.01	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **ES2427350**	Page	: 1 of 4
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 22-Aug-2024
Order number	: ----	Date Analysis Commenced	: 22-Aug-2024
C-O-C number	: ----	Issue Date	: 29-Aug-2024
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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
Dian Dao	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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6010550)									
ES2426641-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	208	205	1.5	0% - 20%
ES2427350-001	TW5	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	78	70	10.5	No Limit
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6010551)									
ES2426641-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2427350-001	TW5	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6014434)									
EN2409473-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	2.06	2.13	3.3	0% - 20%
ES2427635-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.03	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6007015)									
ES2427350-001	TW5	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2427267-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6014433)									
EN2409473-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	18.5	18.3	0.9	0% - 20%
ES2427635-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.60	0.60	0.0	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6014429)									
ES2427317-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (2.0)*	mg/L	146	153	4.3	0% - 20%
ES2427532-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (2.0)*	mg/L	95.7	96.9	1.3	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6014430)									
ES2427317-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.20)*	mg/L	0.86	0.84	2.8	No Limit
ES2427532-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.20)*	mg/L	0.50	0.65	26.8	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6010550)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	96.9	87.0	109
				<10	293 mg/L	114	75.2	126
				<10	2410 mg/L	104	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6010551)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	96.0	83.0	129
				<5	1000 mg/L	96.0	82.0	110
				<5	928 mg/L	95.2	83.0	118
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6014434)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	101	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6007015)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	102	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6014433)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6014429)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	88.9	69.0	123
				<0.1	1 mg/L	123	70.0	123
				<0.1	5 mg/L	92.9	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6014430)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	95.6	71.3	126
				<0.01	0.442 mg/L	84.8	71.3	126
				<0.01	1 mg/L	93.5	70.0	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6014434)							
EN2409473-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	91.0	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6007015)							
ES2427267-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	122	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6014433)							
EN2409473-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6014429)							
EN2409473-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	50 mg/L	99.0	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6014430)							
EN2409473-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	73.2	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2427350**	Page	: 1 of 4
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 22-Aug-2024
Site	: ----	Issue Date	: 29-Aug-2024
Sampler	: BEN PEARCE	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EN2409473--001	Anonymous	**Nitrite + Nitrate as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) TW5	**20-Aug-2024**	**----**	----	----	**23-Aug-2024**	27-Aug-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TW5	**20-Aug-2024**	**----**	----	----	**23-Aug-2024**	27-Aug-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) TW5	**20-Aug-2024**	**----**	----	----	**27-Aug-2024**	17-Sep-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) TW5	**20-Aug-2024**	**----**	----	----	**22-Aug-2024**	22-Aug-2024	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TW5	**20-Aug-2024**	**----**	----	----	**27-Aug-2024**	17-Sep-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TW5	**20-Aug-2024**	**27-Aug-2024**	17-Sep-2024	✓	**28-Aug-2024**	17-Sep-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TW5	**20-Aug-2024**	**27-Aug-2024**	17-Sep-2024	✓	**27-Aug-2024**	17-Sep-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	18	16.67	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	18	16.67	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

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☒BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions
OFFICE: Mackay
Lindeman Island Monthly
ORDER NUMBER:
PROJECT MANAGER: Ben Pearce — CONTACT PH: 0488 765 106
SAMPLER: Ben Pearce — SAMPLER MOBILE: 0488 765 106
COC emailed to ALS? (YES) — EDD FORMAT (or default):
Email Reports to: bpearce@catchmentsolutions.com.au
Email Invoice to: accounts@catchmentsolutions.com.au

TURNAROUND REQUIREMENTS : x Standard TAT (List due date):
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) Non Standard or urgent TAT (List due date):
ALS QUOTE NO.: EB24CATSOL0001

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Mike	N. Sutton	N. Sutton	MR
DATE/TIME: 21.8.24 9:45	DATE/TIME: 21.8.24 9:45	DATE/TIME: 21.8.24 10:00	DATE/TIME: 22/8/24 1345

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		TDS, TSS	Nutrients NT-08						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TW5	20/08/2024	Water				x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
					TOTAL									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Presen
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division Sydney
Work Order Reference
ES2427350

Telephone : + 61-2-8784 8555

CERTIFICATE OF ANALYSIS

Work Order	: **ES2431735**	Page	: 1 of 3
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Marine and Aquatic sampling	Date Samples Received	: 27-Sep-2024 11:50
Order number	: ----	Date Analysis Commenced	: 28-Sep-2024
C-O-C number	: ----	Issue Date	: 03-Oct-2024 15:16
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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	TW1	----	----	----	----
			Sampling date / time	24-Sep-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2431735-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**86**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.80**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	**1.3**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	**1.3**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	**0.03**	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **ES2431735**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Marine and Aquatic sampling	Date Samples Received	: 27-Sep-2024
Order number	: ----	Date Analysis Commenced	: 28-Sep-2024
C-O-C number	: ----	Issue Date	: 03-Oct-2024
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6090117)									
EN2411835-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	589	586	0.4	0% - 20%
ES2431667-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	442	410	7.5	0% - 20%
ES2431675-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	395	354	10.8	0% - 20%
ES2431769-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1970	2010	1.7	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6090116)									
EN2411835-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	21	20	6.1	No Limit
ES2431667-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2431675-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	270	246	9.5	0% - 20%
ES2431769-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	11	12	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6092260)									
EN2411901-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EN2411903-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.07	0.03	72.2	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6086027)									
ES2431749-005	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6092259)									
EN2411901-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EN2411903-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.03	0.03	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6092258)									
ES2431720-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (5.0)*	mg/L	203	202	0.1	0% - 20%
ES2431770-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	1.3	7.8	0% - 50%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6092257)									
ES2431720-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.50)*	mg/L	28.5	27.6	2.9	0% - 20%
ES2431770-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.12	0.12	0.0	0% - 50%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6090117)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	97.0	87.0	109
				<10	293 mg/L	107	75.2	126
				<10	2410 mg/L	99.6	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6090116)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	101	83.0	129
				<5	1000 mg/L	88.0	82.0	110
				<5	879 mg/L	97.2	83.0	118
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6092260)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	103	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6086027)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	100	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6092259)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6092258)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	89.9	69.0	123
				<0.1	1 mg/L	87.6	70.0	123
				<0.1	5 mg/L	90.1	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6092257)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	93.0	71.3	126
				<0.01	0.442 mg/L	95.6	71.3	126
				<0.01	1 mg/L	97.0	70.0	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6092260)							
EN2411901-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	108	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6086027)							
ES2431749-005	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	112	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6092259)							
EN2411901-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	107	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6092258)							
ES2431720-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	# Not Determined	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6092257)							
ES2431720-003	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	# Not Determined	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2431735**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Telephone	: +61 7 4952 5795
Project	: Marine and Aquatic sampling	Date Samples Received	: 27-Sep-2024
Site	: ----	Issue Date	: 03-Oct-2024
Sampler	: FIONA LOFT	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	ES2431720--003	Anonymous	**Total Kjeldahl Nitrogen as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK067G: Total Phosphorus as P by Discrete Analyser	ES2431720--003	Anonymous	**Total Phosphorus as P**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural TW1	----	----	----	28-Sep-2024	26-Sep-2024	**2**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) TW1	**24-Sep-2024**	**----**	----	----	**01-Oct-2024**	01-Oct-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TW1	**24-Sep-2024**	**----**	----	----	**01-Oct-2024**	01-Oct-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) TW1	**24-Sep-2024**	**----**	----	----	**02-Oct-2024**	22-Oct-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) TW1	**24-Sep-2024**	**----**	----	----	**28-Sep-2024**	26-Sep-2024	×

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
TW1	**24-Sep-2024**	**----**	----	----	**02-Oct-2024**	22-Oct-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
TW1	**24-Sep-2024**	**02-Oct-2024**	22-Oct-2024	✓	**02-Oct-2024**	22-Oct-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
TW1	**24-Sep-2024**	**02-Oct-2024**	22-Oct-2024	✓	**02-Oct-2024**	22-Oct-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	**12.50**	**12.50**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	**12.50**	**12.50**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	19	**15.79**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	19	**15.79**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8260 0900 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 45 Commandah Drive Clinton QLD 4680 Ph: 07 7471 6600 E: gladstone@alsglobal.com
MACKAY 79 Harbour Road Mackay QLD 4740 Ph: 07 4941 0177 E: mackay@alsglobal.com
MELBOURNE 24 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	x Standard TAT (List due date): Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mackay			Custody Seal Intact? Yes No N/A
Lindeman Island Monthly	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Fiona Loft	SAMPLER MOBILE: 0487 060 276	RELINQUISHED BY:	RECEIVED BY: N. SUTTON
COC emailed to ALS? (YES)	EDD FORMAT (or default):		
Email Reports to: bpearce@catchmentsolutions.com.au		DATE/TIME: 25.9.24	DATE/TIME: 25.9.24 10:00
Email invoice to: accounts@catchmentsolutions.com.au			

RELINQUISHED BY:	RECEIVED BY:
N. SUTTON	[illegible]
DATE/TIME: 25.9.24 15:00	DATE/TIME: 27/9/24 11:15

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		TDS, TSS	Nutrients NT-08			HT			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	TW1	24.9.24	Water		2		x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
				TOTAL	2									

Environmental Division Sydney
Work Order Reference
ES2431735

Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserve[illegible] Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2434475**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Marine and Aquatic sampling	Date Samples Received	: 24-Oct-2024 10:36
Order number	: ----	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: ----	Issue Date	: 30-Oct-2024 09:03
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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
- Surrogate Control Limits

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*
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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.

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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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW1	----	----	----	----
			Sampling date / time	22-Oct-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2434475-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**85**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.01**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.5**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.5**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.06**	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW1	----	----	----	----
			Sampling date / time	22-Oct-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2434475-001	--------	--------	--------	--------
				Result	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**73.5**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**85.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150

CERTIFICATE OF ANALYSIS

Work Order	: **ES2434475**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Marine and Aquatic sampling	Date Samples Received	: 24-Oct-2024 10:36
Order number	: ----	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: ----	Issue Date	: 30-Oct-2024 09:03
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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*
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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.

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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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW1	----	----	----	----
			Sampling date / time	22-Oct-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2434475-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**85**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.01**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.5**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.5**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.06**	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW1	----	----	----	----
			Sampling date / time	22-Oct-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2434475-001	--------	--------	--------	--------
				Result	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**73.5**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**85.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150

CERTIFICATE OF ANALYSIS

Work Order	: **ES2441656**	Page	: 1 of 3
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Marine and Aquatic sampling	Date Samples Received	: 19-Dec-2024 10:00
Order number	: ----	Date Analysis Commenced	: 23-Dec-2024
C-O-C number	: ----	Issue Date	: 31-Dec-2024 06:03
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- Analytical Results

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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*
Dian Dao	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.

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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	TW9	----	----	----	----
			Sampling date / time	11-Dec-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2441656-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**83**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.02**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	**0.6**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	**0.6**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	**0.03**	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **ES2441656**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Marine and Aquatic sampling	Date Samples Received	: 19-Dec-2024
Order number	: ----	Date Analysis Commenced	: 23-Dec-2024
C-O-C number	: ----	Issue Date	: 31-Dec-2024
Sampler	: BEN PEARCE		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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Accredited for compliance with
ISO/IEC 17025 - Testing

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This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW

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Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6279488)									
ES2441589-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	16300	19600	18.5	0% - 20%
ES2441603-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	442	432	2.3	0% - 20%
ES2441715-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2940	3020	2.7	0% - 20%
ES2441782-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	171	175	2.3	0% - 50%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6279489)									
ES2441589-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	61	62	2.4	0% - 50%
ES2441603-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2441715-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2441782-003	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6283385)									
ES2441650-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.02	0.0	No Limit
ES2441691-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6286334)									
ES2441683-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01 (2.00)*	mg/L	<2.00	<2.00	0.0	No Limit
EN2417006-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.12	0.12	0.0	0% - 50%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6283386)									
ES2441650-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2441691-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.03	0.03	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6283381)									
ES2441650-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.7	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6283381) - continued									
ES2441712-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (1.0)*	mg/L	119	127	6.6	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6283380)									
ES2441650-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.06	0.08	33.8	No Limit
ES2441712-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.10)*	mg/L	13.4	13.4	0.1	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6279488)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	97.0	87.0	109
				<10	293 mg/L	109	75.2	126
				<10	2380 mg/L	104	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6279489)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	96.3	83.0	129
				<5	1000 mg/L	98.7	82.0	110
				<5	828 mg/L	110	83.0	118
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6283385)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	100	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6286334)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	94.0	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6283386)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6283381)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	103	69.0	123
				<0.1	2.5 mg/L	103	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6283380)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	110	71.3	126
				<0.01	0.5 mg/L	106	71.3	126

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6283385)							
ES2441650-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	108	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6286334)							
EN2417006-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	98.4	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6283386)							
ES2441650-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	119	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6283381)							
ES2441653-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	114	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6283380)							
ES2441653-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	112	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2441656**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Telephone	: +61 7 4952 5795
Project	: Marine and Aquatic sampling	Date Samples Received	: 19-Dec-2024
Site	: ----	Issue Date	: 31-Dec-2024
Sampler	: BEN PEARCE	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA015: Total Dissolved Solids dried at 180 ± 5 °C						
Clear Plastic Bottle - Natural TW9	----	----	----	23-Dec-2024	18-Dec-2024	**5**
EA025: Total Suspended Solids dried at 104 ± 2°C						
Clear Plastic Bottle - Natural TW9	----	----	----	23-Dec-2024	18-Dec-2024	**5**
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural TW9	----	----	----	28-Dec-2024	13-Dec-2024	**15**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Analytical Methods	Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Control Samples (LCS)						
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	15.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) TW9	**11-Dec-2024**	**----**	----	----	**23-Dec-2024**	18-Dec-2024	✗
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TW9	**11-Dec-2024**	**----**	----	----	**23-Dec-2024**	18-Dec-2024	✗
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) TW9	**11-Dec-2024**	**----**	----	----	**27-Dec-2024**	08-Jan-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
TW9	**11-Dec-2024**	**----**	----	----	**28-Dec-2024**	13-Dec-2024	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
TW9	**11-Dec-2024**	**----**	----	----	**27-Dec-2024**	08-Jan-2025	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
TW9	**11-Dec-2024**	**24-Dec-2024**	08-Jan-2025	✓	**24-Dec-2024**	08-Jan-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
TW9	**11-Dec-2024**	**24-Dec-2024**	08-Jan-2025	✓	**24-Dec-2024**	08-Jan-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	15.00	×	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

ALS environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5300 E: gladstone@alsglobal.com
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MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
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WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	x Standard TAT (List due date): Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mackay	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)	Custody Seal Intact? Yes No N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	Free Ice / frozen ice bricks present upon receipt? Yes No N/A
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt °C
SAMPLER: Ben Pearce	SAMPLER MOBILE: 0488 765 106		Other comment:
COC emailed to ALS? (YES)	EDD FORMAT (or default):		
Email Reports to: bpearce@catchmentsolutions.com.au			
Email Invoice to: accounts@catchmentsolutions.com.au			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 13/12/24	N. Sutton DATE/TIME: 17.12.24	N. Sutton DATE/TIME: 17.12.24 15:00	DATE/TIME: 19/12/24

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	~~[illegible]~~	TDS, TSS	Nutrients NT-03			HT			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TWQ	11/12/24 ~~12-2-24~~	Water		2.		x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
				TOTAL	2.									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Pla
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division Sydney
Work Order Reference
ES2441656

Telephone : + 61-2-8784 8555

CERTIFICATE OF ANALYSIS

Work Order	: **ES2502542**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 30-Jan-2025 10:25
Order number	: ----	Date Analysis Commenced	: 30-Jan-2025
C-O-C number	: ----	Issue Date	: 07-Feb-2025 08:18
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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
- Surrogate Control Limits

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW10	----	----	----	----
			Sampling date / time	28-Jan-2025 12:20	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2502542-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**82**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.05**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl 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	**0.8**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.33**	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW10	----	----	----	----
			Sampling date / time	28-Jan-2025 12:20	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2502542-001	--------	--------	--------	--------
				Result	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**63.4**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**74.6**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150

QUALITY CONTROL REPORT

Work Order	: **ES2502542**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 30-Jan-2025
Order number	: ----	Date Analysis Commenced	: 30-Jan-2025
C-O-C number	: ----	Issue Date	: 07-Feb-2025
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6351413)									
EN2501708-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	509	511	0.4	0% - 20%
ES2502510-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6090	5900	3.2	0% - 20%
ES2502585-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	907	880	3.0	0% - 20%
ES2502646-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1760	1670	5.1	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6351412)									
EN2501708-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	138	142	2.7	0% - 20%
ES2502510-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	282	275	2.7	0% - 20%
ES2502585-003	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	84	86	2.1	0% - 50%
ES2502646-003	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	40	39	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6350770)									
EN2501708-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.05	0.0	No Limit
ES2502518-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.50	0.52	2.7	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6343854)									
ME2500146-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.04	0.04	0.0	No Limit
ES2501704-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6350769)									
EN2501708-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.63	0.63	0.0	0% - 20%
ES2502518-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.06	0.04	57.1	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6350767)									
ES2502594-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6350767) - continued									
EW2500507-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	6.6	6.2	6.4	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6350765)									
EN2501708-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.10)*	mg/L	0.57	0.26	73.7	No Limit
ES2502518-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.02)*	mg/L	0.40	0.46	14.0	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6351413)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	96.7	87.0	109
				<10	293 mg/L	105	75.2	126
				<10	2380 mg/L	99.5	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6351412)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	99.3	83.0	129
				<5	1000 mg/L	98.3	82.0	110
				<5	828 mg/L	91.4	83.0	118
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6350770)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	99.6	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6343854)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	95.0	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6350769)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	103	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6350767)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	98.8	69.0	123
				<0.1	2.5 mg/L	94.7	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6350765)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	99.3	71.3	126
				<0.01	0.5 mg/L	95.6	71.3	126
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6343695)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	76.1	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	78.7	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	24.0	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	81.8	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	89.7	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	81.5	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	82.0	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	93.4	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	82.1	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	86.3	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	83.5	67.0	121

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6343695) - continued								
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	83.5	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	86.9	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	80.2	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	92.8	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	74.6	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	83.4	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	87.8	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	103	51.6	128

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6350770)							
EN2501708-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	108	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6343854)							
ES2501704-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	92.2	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6350769)							
EN2501708-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	76.9	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6350767)							
ES2502594-007	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	90.7	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6350765)							
EN2501709-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	80.0	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2502542**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 30-Jan-2025
Site	: ----	Issue Date	: 07-Feb-2025
Sampler	: FIONA LOFT	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Pesticides by GCMS	EP068	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Pesticides by GCMS	EP068	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) TW10	**28-Jan-2025**	**----**	----	**----**	**04-Feb-2025**	04-Feb-2025	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TW10	**28-Jan-2025**	**----**	----	**----**	**04-Feb-2025**	04-Feb-2025	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) TW10	**28-Jan-2025**	**----**	----	**----**	**04-Feb-2025**	25-Feb-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) TW10	**28-Jan-2025**	**----**	----	**----**	**30-Jan-2025**	30-Jan-2025	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TW10	**28-Jan-2025**	**----**	----	**----**	**04-Feb-2025**	25-Feb-2025	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TW10	**28-Jan-2025**	**04-Feb-2025**	25-Feb-2025	✓	**04-Feb-2025**	25-Feb-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TW10	**28-Jan-2025**	**04-Feb-2025**	25-Feb-2025	✓	**04-Feb-2025**	25-Feb-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
TW10	**28-Jan-2025**	**31-Jan-2025**	04-Feb-2025	✓	**03-Feb-2025**	12-Mar-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	18	16.67	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☒BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
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☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portsmith@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	x Standard TAT (List due date): Non Standard or urgent TAT (List due date):
OFFICE: Mackay		
Lindeman Island Monthly	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)
ORDER NUMBER:		COC: 1 2 3 4 5 6 7
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7
SAMPLER: Fiona Loft	SAMPLER MOBILE: 0487 060 276	
COC emailed to ALS? (YES)	EDD FORMAT (or default):	
Email Reports to: bpearce@catchmentsolutions.com.au		
Email Invoice to: accounts@catchmentsolutions.com.au		

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Megan Skelton	E. Hirsch	E. Hirsch	[illegible]
DATE/TIME: 29/1	DATE/TIME: 29/1/25 1430	DATE/TIME: 29/1/25 1500	DATE/TIME: 30/1/25 [illegible]

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	OP Pesticides	TDS, TSS	Nutrients NT-08		HT				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	TW1	28/1/25 - 13:20	Water		3	x	x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
				TOTAL	3									

Environmental Division Sydney
Work Order Reference
ES2502542
Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2503886**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Event	Date Samples Received	: 12-Feb-2025 11:10
Order number	: P3120	Date Analysis Commenced	: 12-Feb-2025
C-O-C number	: ----	Issue Date	: 18-Feb-2025 16:42
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0003		
No. of samples received	: 1		
No. of samples analysed	: 1		

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
- Surrogate Control Limits

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- 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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW 11	----	----	----	----
			Sampling date / time	10-Feb-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2503886-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	**122**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	**5**	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.02**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	-----	0.1	mg/L	**0.9**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	-----	0.1	mg/L	**0.9**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	-----	0.01	mg/L	**0.23**	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW 11	----	----	----	----
			Sampling date / time	10-Feb-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2503886-001	--------	--------	--------	--------
				Result	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**72.9**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**80.8**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150

QUALITY CONTROL REPORT

Work Order	: **ES2503886**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Event	Date Samples Received	: 12-Feb-2025
Order number	: P3120	Date Analysis Commenced	: 12-Feb-2025
C-O-C number	: ----	Issue Date	: 18-Feb-2025
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0003		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6374461)									
EN2502413-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	5740	5740	0.1	0% - 20%
ES2503595-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	10	11	0.0	No Limit
ES2503675-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	958	951	0.8	0% - 20%
ES2504030-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	390	382	2.1	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6374460)									
EN2502413-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2503595-003	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2503675-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	151	168	10.8	0% - 20%
ES2504030-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6377797)									
EN2502423-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	1.42	1.57	9.7	0% - 20%
ES2503594-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	8.79	8.75	0.5	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6370659)									
EN2502334-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6377798)									
EN2502423-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.01	0.0	No Limit
ES2503594-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.06	0.06	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6377796)									
ES2503594-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.5)*	mg/L	19.6	18.7	4.3	0% - 20%
ES2504131-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.2)*	mg/L	0.9	0.9	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6377795)									
ES2503594-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.05)*	mg/L	3.44	3.31	4.0	0% - 20%
ES2504131-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.02)*	mg/L	0.24	0.22	10.6	0% - 50%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6374461)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	94.9	87.0	109
				<10	293 mg/L	95.6	75.2	126
				<10	2380 mg/L	103	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6374460)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	93.7	83.0	129
				<5	1000 mg/L	95.3	82.0	110
				<5	828 mg/L	95.4	83.0	118
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6377797)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	95.1	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6370659)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.1	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6377798)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	103	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6377796)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	102	69.0	123
				<0.1	2.5 mg/L	103	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6377795)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	112	71.3	126
				<0.01	0.5 mg/L	86.4	71.3	126
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6371912)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	86.3	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	78.3	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	24.8	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	102	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	94.8	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	91.8	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	88.3	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	98.8	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	89.4	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	87.0	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	87.0	67.0	121

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6371912) - continued								
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	86.8	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	98.1	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	94.9	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	98.6	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	78.2	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	87.6	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	84.0	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	107	51.6	128

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6377797)							
EN2502423-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	105	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6370659)							
EN2502334-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	99.8	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6377798)							
EN2502423-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	109	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6377796)							
ES2503828-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	25 mg/L	107	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6377795)							
ES2503828-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	110	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2503886**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Event	Date Samples Received	: 12-Feb-2025
Site	: ----	Issue Date	: 18-Feb-2025
Sampler	: FIONA LOFT	No. of samples received	: 1
Order number	: P3120	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Pesticides by GCMS	EP068	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Pesticides by GCMS	EP068	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) TW 11	**10-Feb-2025**	**----**	----	----	**13-Feb-2025**	17-Feb-2025	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TW 11	**10-Feb-2025**	**----**	----	----	**13-Feb-2025**	17-Feb-2025	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) TW 11	**10-Feb-2025**	**----**	----	----	**15-Feb-2025**	10-Mar-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) TW 11	**10-Feb-2025**	**----**	----	----	**12-Feb-2025**	12-Feb-2025	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TW 11	**10-Feb-2025**	**----**	----	----	**15-Feb-2025**	10-Mar-2025	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TW 11	**10-Feb-2025**	**14-Feb-2025**	10-Mar-2025	✓	**14-Feb-2025**	10-Mar-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TW 11	**10-Feb-2025**	**14-Feb-2025**	10-Mar-2025	✓	**14-Feb-2025**	10-Mar-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
TW 11	**10-Feb-2025**	**13-Feb-2025**	17-Feb-2025	✓	**17-Feb-2025**	25-Mar-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	1	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	**12.50**	**12.50**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	**12.50**	**12.50**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	11	**27.27**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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CLIENT: Catchment Solutions
OFFICE: Mackay
Lindeman Island ~~Monthly~~ Event
ORDER NUMBER: P3120
PROJECT MANAGER: Ben Pearce — CONTACT PH: 0488 765 100
SAMPLER: Fiona Loft — SAMPLER MOBILE: 0487 060 276
COC emailed to ALS? (YES) — EDD FORMAT (or default):
Email Reports to: bpearce@catchmentsolutions.com.au
Email Invoice to: accounts@catchmentsolutions.com.au

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
x Standard TAT (List due date):
Non Standard or urgent TAT (List due date):
ALS QUOTE NO.: EB24CATSOL0001

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / Chilled ice packs present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Emily Arg	[signature]	[signature]	Fazi
DATE/TIME: 11/2/25	DATE/TIME: 11/2/25	DATE/TIME: 11/2/25	DATE/TIME: 12/2/25 12:44

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	OP Pesticides	TDS, TSS	Nutrients NT-03			HT			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TW1 1		Water		3	x	x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
				TOTAL	3									

Environmental Division Sydney
Work Order Reference
ES2503886

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2507122**	Page	: 1 of 3
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 13-Mar-2025 13:00
Order number	: P3170	Date Analysis Commenced	: 13-Mar-2025
C-O-C number	: ----	Issue Date	: 19-Mar-2025 13:35
Sampler	: Emily Gray		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

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*
Dian Dao	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.

- 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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW12	----	----	----	----
			Sampling date / time	11-Mar-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2507122-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**132**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**9**	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.02**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.9**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.9**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.08**	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **ES2507122**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Anna Riddell
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 13-Mar-2025
Order number	: P3170	Date Analysis Commenced	: 13-Mar-2025
C-O-C number	: ----	Issue Date	: 19-Mar-2025
Sampler	: Emily Gray		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Dian Dao	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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6443601)									
ES2506856-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	450	448	0.4	0% - 20%
ES2506961-012	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	22	22	0.0	No Limit
ES2506975-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	70	80	12.3	No Limit
ES2507089-012	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	696	700	0.7	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6443602)									
ES2506856-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	147	136	7.4	0% - 20%
ES2506961-012	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	21	20	0.0	No Limit
ES2506975-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	6	6	0.0	No Limit
ES2507089-012	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	85	85	0.0	0% - 50%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6441126)									
ES2506893-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01 (0.10)*	mg/L	20.4	20.2	1.4	0% - 20%
ES2507170-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.06	56.1	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6436678)									
ME2500375-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2507114-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.03	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6441127)									
ES2506995-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.11	0.11	0.0	0% - 50%
ES2506893-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.11	0.12	0.0	0% - 50%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6441123)									
ES2506893-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.5)*	mg/L	39.2	35.2	10.6	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6441123) - continued									
ES2506995-007	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (1.0)*	mg/L	8.1	8.5	5.4	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6441122)									
ES2506893-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.05)*	mg/L	5.16	4.68	9.6	0% - 20%
ES2506995-007	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.10)*	mg/L	0.97	1.42	37.9	0% - 50%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6443601)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	96.2	87.0	109
				<10	293 mg/L	109	75.2	126
				<10	2410 mg/L	98.4	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6443602)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	100	83.0	129
				<5	1000 mg/L	92.4	82.0	110
				<5	842 mg/L	96.0	83.0	118
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6441126)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	98.8	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6436678)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	102	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6441127)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6441123)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	94.6	69.0	123
				<0.1	2.5 mg/L	92.4	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6441122)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	99.5	71.3	126
				<0.01	0.5 mg/L	116	71.3	126

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6441126)							
ES2506893-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	# Not Determined	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6436678)							
ES2507114-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	110	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6441127)							
ES2506893-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	111	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6441123)							
ES2506893-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	87.6	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6441122)							
ES2506893-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	93.7	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2507122**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Telephone	: +61 7 4952 5795
Project	: Lindeman Island Monthly	Date Samples Received	: 13-Mar-2025
Site	: ----	Issue Date	: 19-Mar-2025
Sampler	: Emily Gray	No. of samples received	: 1
Order number	: P3170	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	ES2506893--001	Anonymous	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural TW12	----	----	----	14-Mar-2025	13-Mar-2025	**1**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) TW12	**11-Mar-2025**	**----**	----	----	**17-Mar-2025**	18-Mar-2025	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TW12	**11-Mar-2025**	**----**	----	----	**17-Mar-2025**	18-Mar-2025	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) TW12	**11-Mar-2025**	**----**	----	----	**17-Mar-2025**	08-Apr-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) TW12	**11-Mar-2025**	**----**	----	----	**14-Mar-2025**	13-Mar-2025	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TW12	**11-Mar-2025**	**----**	----	----	**15-Mar-2025**	08-Apr-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
TW12	**11-Mar-2025**	**15-Mar-2025**	08-Apr-2025	✓	**15-Mar-2025**	08-Apr-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
TW12	**11-Mar-2025**	**15-Mar-2025**	08-Apr-2025	✓	**15-Mar-2025**	08-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	19	15.79	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8260 9405 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 4971 8600 E: gladstone@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9250 7555 E: samples.perth@alsglobal.com
NEWCASTLE 5-585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 4/10 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	x Standard TAT (List due date): Non Standard or urgent TAT (List due date):
OFFICE: Mackay		
Lindoman Island Monthly	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)
ORDER NUMBER: P3170		COC: 1 2 3 4 5 6 7
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7
SAMPLER: Emily Gray	SAMPLER MOBILE: 0491 216 318	
COC emailed to ALS? (YES)	EDD FORMAT (or default):	
Email Reports to: bpearce@catchmentsolutions.com.au		
Email Invoice to: accounts@catchmentsolutions.com.au		

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt		C	
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Emily Gray	N.SUTTON	N.SUTTON	
DATE/TIME: 12.3.25 14:50	DATE/TIME: 12.3.25 14:50	DATE/TIME: 12.3.25 15:00	DATE/TIME: 13/3/25 1400.

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		TDS, TSS	Nutrients NT-08						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TW12	11/03/2025	Water				x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
				TOTAL										

Environmental Division Sydney
Work Order Reference
ES2507122

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2508646**	Page	: 1 of 3
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Customer Services ES
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Lindeman Island Monthly	Date Samples Received	: 26-Mar-2025 10:15
Order number	: ----	Date Analysis Commenced	: 27-Mar-2025
C-O-C number	: ----	Issue Date	: 02-Apr-2025 11:09
Sampler	: fiona loft		
Site	: ----		
Quote number	: EB24CATSOL0001 V2		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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.

- 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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW13	----	----	----	----
			Sampling date / time	25-Mar-2025 06:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2508646-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**108**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**6**	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.13**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl 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	**0.8**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.07**	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **ES2508646**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Customer Services ES
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Lindeman Island Monthly	Date Samples Received	: 26-Mar-2025
Order number	: ----	Date Analysis Commenced	: 27-Mar-2025
C-O-C number	: ----	Issue Date	: 02-Apr-2025
Sampler	: fiona loft		
Site	: ----		
Quote number	: EB24CATSOL0001 V2		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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

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.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6475352)									
ES2508519-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	268	270	0.9	0% - 20%
ES2508624-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	84	85	0.0	No Limit
ES2508789-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	266	282	5.5	0% - 20%
ES2508948-004	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2020	2020	0.4	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6475353)									
ES2508519-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	24	28	16.4	No Limit
ES2508624-003	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2508789-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	8	8	12.5	No Limit
ES2508948-004	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	164	160	2.3	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6474683)									
ED2500503-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01 (0.10)*	mg/L	2.81	2.83	0.7	0% - 20%
ES2508678-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.67	0.72	8.2	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6468185)									
ES2508641-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2508666-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6474684)									
ES2508540-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.01	0.0	No Limit
ED2500503-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01 (1.00)*	mg/L	2.00	1.99	0.5	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6474682)									
ES2508646-001	TW13	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	0.9	13.8	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6474682) - continued									
ES2508766-014	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.1	1.1	0.0	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6474681)									
ES2508646-001	TW13	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.07	0.06	23.9	No Limit
ES2508766-014	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.17	0.15	11.3	0% - 50%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6475352)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	96.0	87.0	109
				<10	293 mg/L	105	75.2	126
				<10	2410 mg/L	98.9	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6475353)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	99.7	83.0	129
				<5	1000 mg/L	98.6	82.0	110
				<5	842 mg/L	106	83.0	118
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6474683)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	103	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6468185)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	101	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6474684)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	100	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6474682)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	92.4	69.0	123
				<0.1	2.5 mg/L	95.9	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6474681)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	92.8	71.3	126
				<0.01	0.5 mg/L	94.9	71.3	126

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6474683)							
ED2500503-002	Anonymous	EK055G: Ammonia as N	7664-41-7	5 mg/L	105	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6468185)							
ES2508641-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	96.5	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6474684)							
ED2500503-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6474682)							
ES2508670-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	# Not Determined	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6474681)							
ES2508670-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	97.2	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2508646**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Telephone	: +61-2-8784 8555
Project	: Lindeman Island Monthly	Date Samples Received	: 26-Mar-2025
Site	: ----	Issue Date	: 02-Apr-2025
Sampler	: fiona loft	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	ED2500503--002	Anonymous	**Nitrite + Nitrate as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	ES2508670--001	Anonymous	**Total Kjeldahl Nitrogen as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural TW13	----	----	----	28-Mar-2025	27-Mar-2025	**1**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) TW13	**25-Mar-2025**	**----**	----	----	**31-Mar-2025**	01-Apr-2025	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TW13	**25-Mar-2025**	**----**	----	----	**31-Mar-2025**	01-Apr-2025	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) TW13	**25-Mar-2025**	**----**	----	----	**31-Mar-2025**	22-Apr-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) TW13	**25-Mar-2025**	**----**	----	----	**28-Mar-2025**	27-Mar-2025	×

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
TW13	**25-Mar-2025**	**----**	----	----	**31-Mar-2025**	22-Apr-2025	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
TW13	**25-Mar-2025**	**30-Mar-2025**	22-Apr-2025	✓	**30-Mar-2025**	22-Apr-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
TW13	**25-Mar-2025**	**30-Mar-2025**	22-Apr-2025	✓	**30-Mar-2025**	22-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	19	15.79	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

environmental

CHAIN OF CUSTODY

ALS Laboratory please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Cecilia Street Gladstone QLD 4680 Ph: 07 4971 6203 E: gladstone@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
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TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	x Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mackay		Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
Lindoman Island Monthly	ALS QUOTE NO.: EB24CATSOL0001	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt C
PROJECT MANAGER: Ben Pearce	CONTACT PH: 0488 765 106	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Fiona Loft	SAMPLER MOBILE: 0487 060 276	RELINQUISHED BY: F Loft	RECEIVED BY: N. SUTTON
COC emailed to ALS? (YES)	EDD FORMAT (or default):	DATE/TIME: 25/3/25	DATE/TIME: 25.3.25 14:45
Email Reports to: bpearce@catchmentsolutions.com.au		RELINQUISHED BY: N. SUTTON	RECEIVED BY: Juch
Email Invoice to: accounts@catchmentsolutions.com.au		DATE/TIME: 25.3.25 15:00	DATE/TIME: 26/03/25 11:15am

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		TDS, TSS	Nutrients NT-08						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TW13	25/3/25 720	Water				x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
					TOTAL									

CHT

Environmental Division Sydney
Work Order Reference
ES2508646

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2510264**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Customer Services ES
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Lindeman Island Monthly	Date Samples Received	: 09-Apr-2025 12:30
Order number	: ----	Date Analysis Commenced	: 09-Apr-2025
C-O-C number	: ----	Issue Date	: 15-Apr-2025 17:25
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001 V2		
No. of samples received	: 1		
No. of samples analysed	: 1		

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
- Surrogate Control Limits

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- 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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW14	----	----	----	----
			Sampling date / time	03-Apr-2025 12:50	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2510264-001	--------	--------	--------	--------
				Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**96**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.05**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	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	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.3**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.3**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.25**	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TW14	----	----	----	----
			Sampling date / time	03-Apr-2025 12:50	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2510264-001	--------	--------	--------	--------
				Result	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**104**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**84.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150

QUALITY CONTROL REPORT

Work Order	: **ES2510264**	Page	: 1 of 5
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Contact	: Customer Services ES
Address	: SUITE 4 85 - 87 GORDON STREET MACKAY Queesnland 4740	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Lindeman Island Monthly	Date Samples Received	: 09-Apr-2025
Order number	: ----	Date Analysis Commenced	: 09-Apr-2025
C-O-C number	: ----	Issue Date	: 15-Apr-2025
Sampler	: FIONA LOFT		
Site	: ----		
Quote number	: EB24CATSOL0001 V2		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6502245)									
ES2509683-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1050	1040	0.9	0% - 20%
ES2509683-011	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	332	320	3.5	0% - 20%
ES2510141-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	14	14	0.0	No Limit
ES2510146-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	406	399	1.6	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6502246)									
ES2509683-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2509683-011	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2510141-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2510146-005	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	12	12	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6507269)									
EN2505978-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.07	29.7	No Limit
EN2505978-010	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6499057)									
ES2510141-004	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6507268)									
EN2505978-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.0	No Limit
EN2505978-010	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6507273)									
EN2505978-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.1	0.1	0.0	No Limit
ES2508663-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	25.5	24.8	3.0	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6507272)									
EN2505978-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.02	0.02	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6507272) - continued									
ES2508663-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	1.34	1.33	0.0	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6502245)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	101	87.0	109
				<10	293 mg/L	105	75.2	126
				<10	2410 mg/L	104	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6502246)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	102	83.0	129
				<5	1000 mg/L	96.3	82.0	110
				<5	842 mg/L	104	83.0	118
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6507269)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	109	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6499057)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	94.7	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6507268)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	100	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6507273)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	88.2	69.0	123
				<0.1	2.5 mg/L	100	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6507272)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	100	71.3	126
				<0.01	0.5 mg/L	103	71.3	126
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6500184)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	80.7	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	78.7	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	26.1	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	82.7	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	90.4	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	92.8	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	84.7	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	88.1	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	86.1	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	85.3	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	84.8	67.0	121

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6500184) - continued								
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	87.9	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	79.7	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	88.2	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	76.7	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	86.4	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	83.5	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	88.4	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	59.8	51.6	128

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6507269)							
EN2505978-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	114	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6499057)							
ES2510141-004	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	105	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6507268)							
EN2505978-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	106	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6507273)							
EN2505978-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	94.8	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6507272)							
EN2505978-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	98.6	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2510264**	Page	: 1 of 6
Client	: **CATCHMENT SOLUTIONS**	Laboratory	: Environmental Division Sydney
Contact	: BEN PEARCE	Telephone	: +61-2-8784 8555
Project	: Lindeman Island Monthly	Date Samples Received	: 09-Apr-2025
Site	: ----	Issue Date	: 15-Apr-2025
Sampler	: FIONA LOFT	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
TW14	----	----	----	09-Apr-2025	05-Apr-2025	**4**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Analytical Methods	Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)						
Pesticides by GCMS	EP068	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Pesticides by GCMS	EP068	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
TW14	**03-Apr-2025**	**----**	----	**----**	**10-Apr-2025**	10-Apr-2025	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
TW14	**03-Apr-2025**	**----**	----	**----**	**10-Apr-2025**	10-Apr-2025	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
TW14	**03-Apr-2025**	**----**	----	**----**	**13-Apr-2025**	01-May-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
TW14	**03-Apr-2025**	**----**	----	**----**	**09-Apr-2025**	05-Apr-2025	✗
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
TW14	**03-Apr-2025**	**----**	----	**----**	**13-Apr-2025**	01-May-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TW14	**03-Apr-2025**	**13-Apr-2025**	01-May-2025	✓	**13-Apr-2025**	01-May-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TW14	**03-Apr-2025**	**13-Apr-2025**	01-May-2025	✓	**13-Apr-2025**	01-May-2025	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) TW14	**03-Apr-2025**	**10-Apr-2025**	10-Apr-2025	✓	**12-Apr-2025**	20-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	18	16.67	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

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☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Catchment Solutions
OFFICE: Mackay
Lindeman Island Monthly
ORDER NUMBER:
PROJECT MANAGER: Ben Pearce — CONTACT PH: 0488 765 106
SAMPLER: Fiona Loft — SAMPLER MOBILE: 0487 060 276
COC emailed to ALS? (YES) — EDD FORMAT (or default):
Email Reports to: bpearce@catchmentsolutions.com.au
Email Invoice to: accounts@catchmentsolutions.com.au

TURNAROUND REQUIREMENTS : x Standard TAT (List due date):
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: EB24CATSOL0001

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME: 8/4/25 12:32	DATE/TIME: 8/4/25	DATE/TIME: 8/4/25 11:50

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PREservative (refer to codes below)	TOTAL CONTAINERS	OP Pesticides	TDS, TSS	Nutrients NT-08						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TW4	3/4/25 13:50	Water		3	x	x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
					TOTAL 3									

HT

Environmental Division Sydney
Work Order Reference
ES2510264
Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Prese... ...served Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass ...; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.