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Lindeman Great Barrier Reef Resort
Baseline Water Quality Report and Revised Water Quality Monitoring Program

Well Smart Investment Holding (Bris) Pty Ltd

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1. INTRODUCTION

Well Smart Investment Holding (Bris) Pty Ltd (Well Smart) are redeveloping the Lindeman Great Barrier Reef Resort on Lindeman Island, Queensland. The proposed resort complex will comprise 325 suites and villas across three resort areas, including accommodation, bars and restaurants, power generation (solar with diesel backup), airstrip and golf course upgrades, and construction of a new jetty.

Catchment Solutions Pty Ltd was engaged by Well Smart to undertake water quality monitoring to establish water quality baseline conditions prior to redevelopment to satisfy Condition 5 of EPBC Approval EPBC 2015/7461 as follows:

> *The approval holder must implement the Water Quality Monitoring Program. The approval holder must not commence construction until 12 months of baseline data monitoring, as identified in the Water Quality Monitoring Program, has been completed and a revised Water Quality Monitoring Program has been submitted to the Department.*

The objective of the water monitoring program was to establish pre-development baseline water quality of marine waters surrounding Lindeman Island, and freshwaters on the island, for use in evaluating potential for water quality impacts during construction and operation of the resort. The monitoring program was completed largely in accordance with the approved Lindeman Great Barrier Reef Resort Water Quality Monitoring Program prepared by Wild Environmental Consultants in 2018 (WEC, 2018). Water quality data was collected over the period April 2024 to May 2025.

The waters surrounding Lindeman Island are considered high ecological value (HEV). For HEV waters, the generic ANZECC 2000 guideline is that there should be no change to existing condition. To establish baseline conditions, Catchment Solutions adopted the methodology defined in Qld DEHP (2013) *Queensland Water Quality Guidelines 2009* which recommends determination of 20th, 50th and 80th percentile ranges for appropriate water quality indicators, including toxicants and physical stressors. Qld DEHP (2013) considers that for most purposes, assessing change at all three percentiles is sufficient to address the no-change criterion.

2. SITE DESCRIPTION AND SETTING

2.1 Land Uses

The resort development site is described as Lot 2 on CP858366, Lease B, C, D on HR2029, Lot 3 CP858361 and located at Lindemann Island. The development area encompasses a total area of 137.84ha.

The majority of Lindeman Island is forested and protected under the Lindeman Island National Park. The development site is occupied by the former Club Med Lindeman Island Resort. At the time of the monitoring the resort was severely dilapidated with significant damage experienced from Cyclone Yasi (2011) and Cyclone Debbie (2017).

EPBC Approval for Lindemann Island Integrated Tourist Resort (EPBC 2015/7461) was issued on 8 November 2018 by Department of the Environment and Energy for the redevelopment of the existing resort and airstrip at Lindemann Island. The approval has effect until 30 July 2058. The transfer to the existing EPBC approval from White Horse Australia Lindeman Pty Ltd to Well Smart Investment Holding (Bris) Pty Ltd was approved on 25 January, 2024. The proposed development is presented on Figure 1 below:

Figure 1: Coordinator General approved Plan of Development

2.2 Climate and Rainfall

The climate is tropical with defined hot humid wet season from November to April and dry season from May to October.

- Daytime temperatures generally vary from the low 20s °C in winter to around 30 °C in summer.
- Rainfall is highly seasonal—over 300 mm in wet months, dropping to under 40 mm in the dry season
- Annual rainfall: ~1,691 mm, with roughly 106 rainy days.

Rainfall prior to and during the sampling program was highly variable with an extended period of below average rainfall prior to commencement, below average rainfall for the first six months of the sampling program from April 2024 to October 2024, followed by well above average wet season rainfall from November 2024 through April 2025.

Rainfall across the six months preceding the sampling program, including the 2024/24 wet season, was well below average, with rainfall deficit of 400 mm to 800 mm. Anecdotal information from the Lindeman Island caretaker, Mr Stuart Bieleiter, indicated the wet season was very poor, with less rainfall received than at nearby Hamilton Island. Six monthly rainfall anomalies for the Hamilton Island automatic weather station prior to commencement of the program is presented below (from www.bom.gov.au).

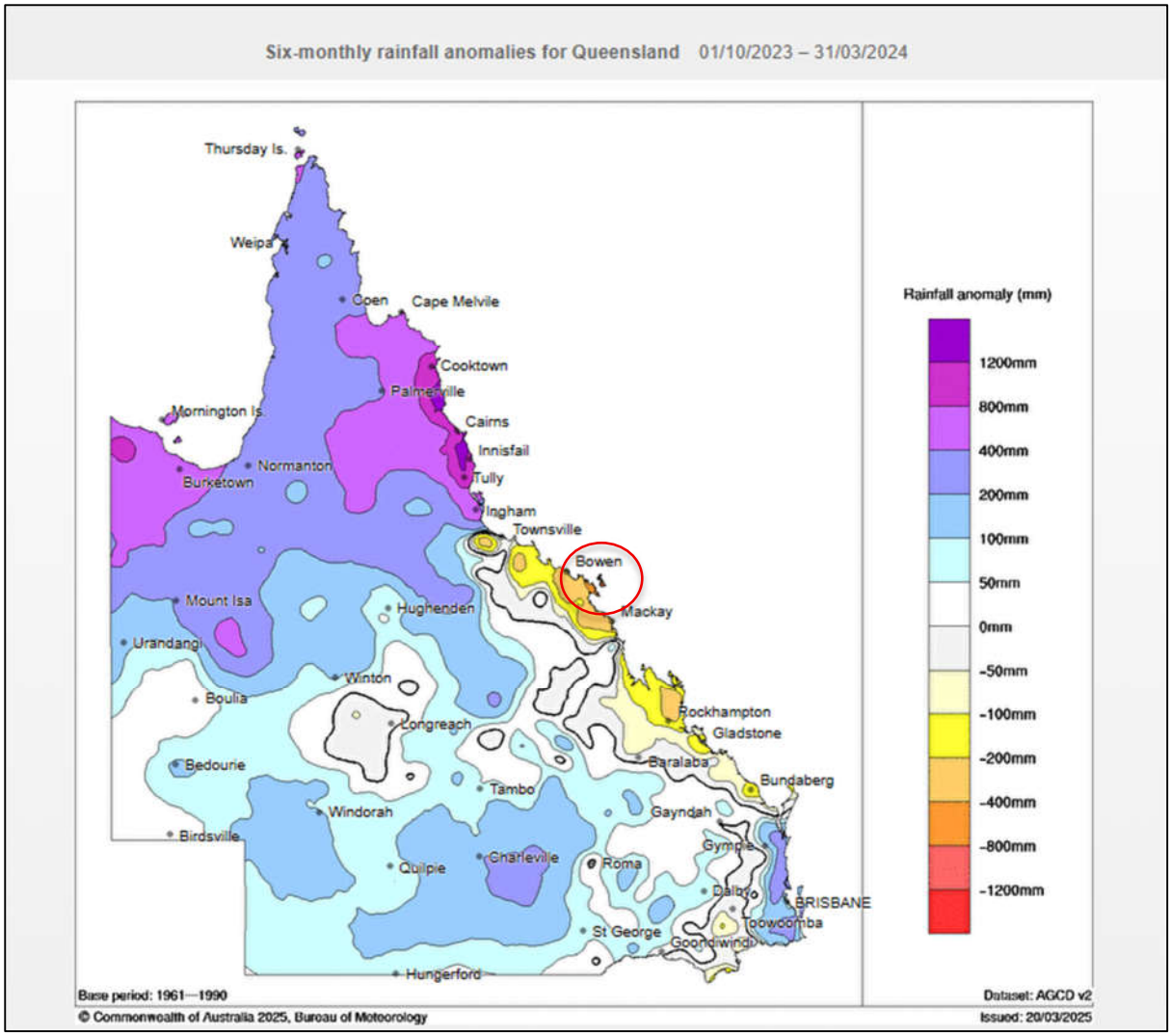

Figure 2: Six month rainfall anomaly, October 2023 – March 2024

Rainfall remained below average for the first half of the monitoring period from April 2024 to September 2024, with rainfall deficit of 200 mm – 400 mm over this period.

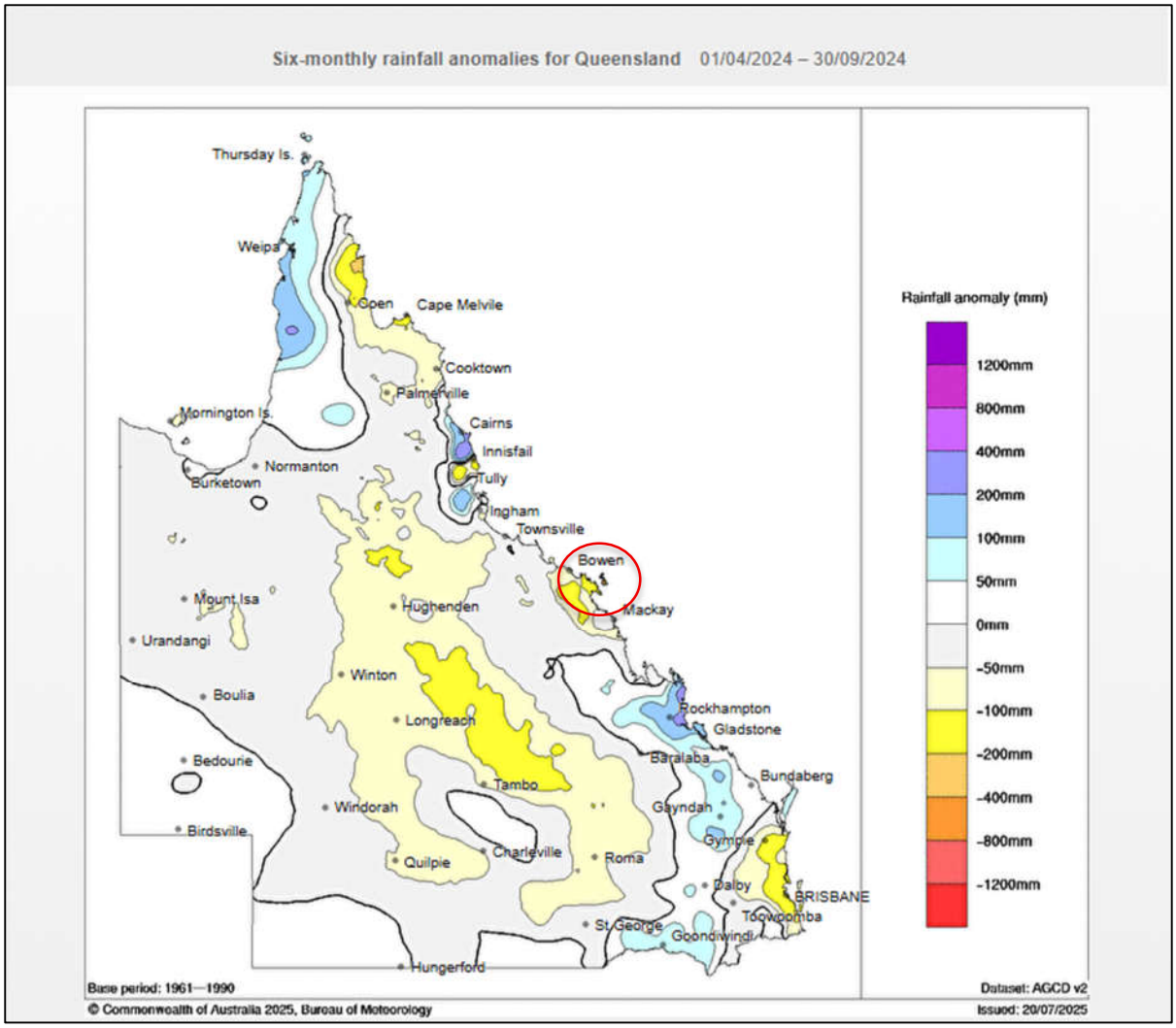

Figure 3: Six month rainfall anomaly, April 2024 – September 2024

From October 2024 through April 2025, rainfall recorded at Hamilton Island Airport was 150% to 200% above the average, with rainfall anomaly of 800 mm to 1200 mm. The 2024/25 wet season was characterised by consistent rainfall, with two major rain events occurring in late December 2024 and February 2025. Rainfall anomaly map for the 2024/25 wet season is presented on Figure 4 below.

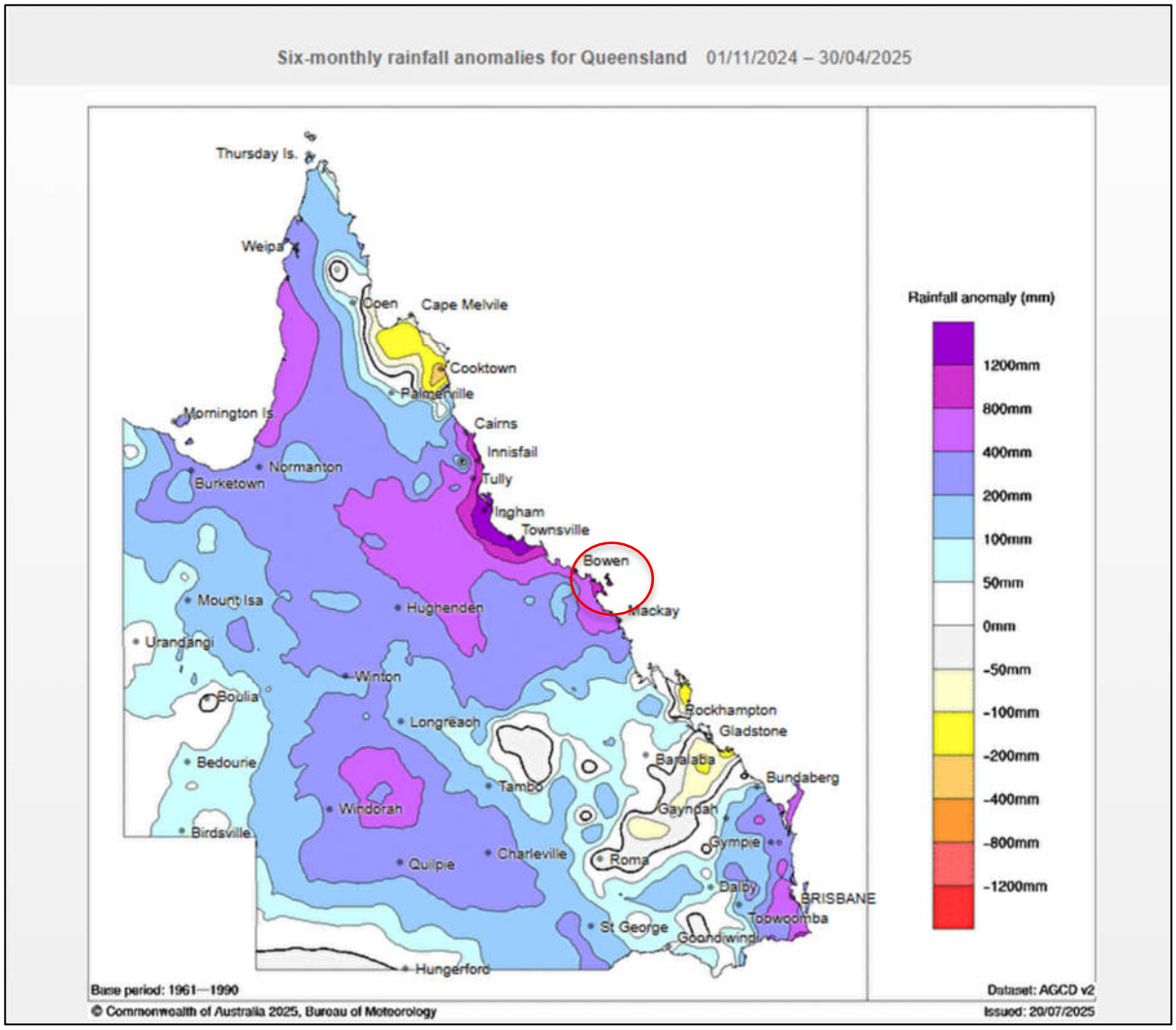

Figure 4: Six month rainfall anomaly, November 2024 – April 2025

The cumulative rainfall for 2024, demonstrating low rainfall across the 2023/24 wet season, and high rainfall in December 2024 is presented on Figure 5 below.

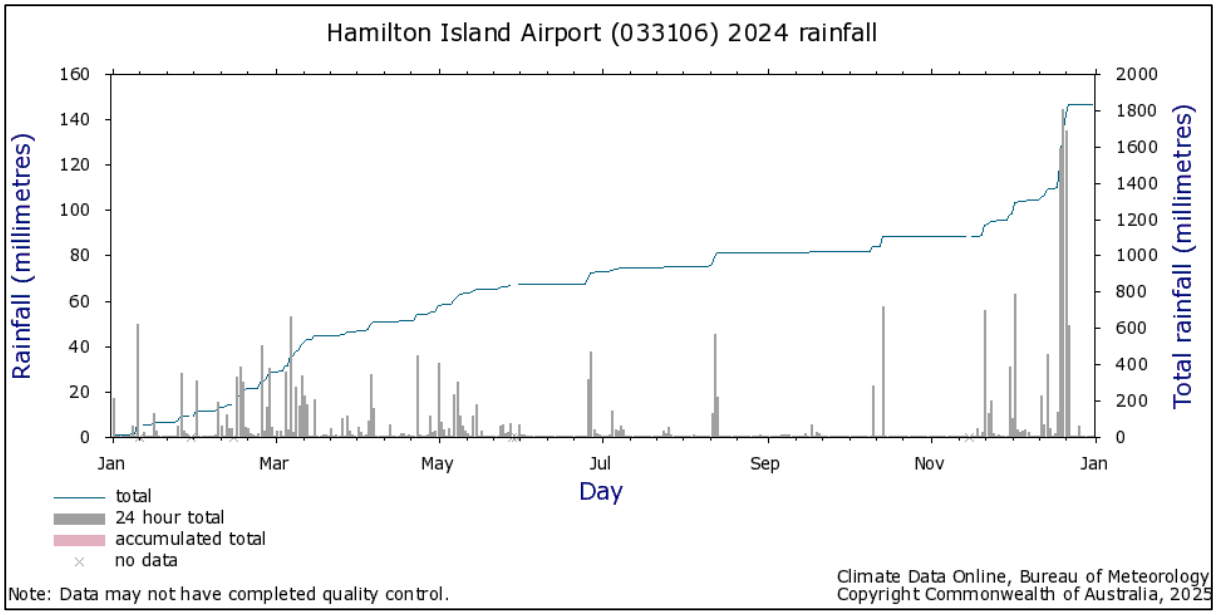

Figure 5: Daily and cumulative rainfall data for 2024 from Hamilton Island Station

Cumulative rainfall through to June 2025 demonstrating the very high rainfall in February 2025 is presented on Figure 6.

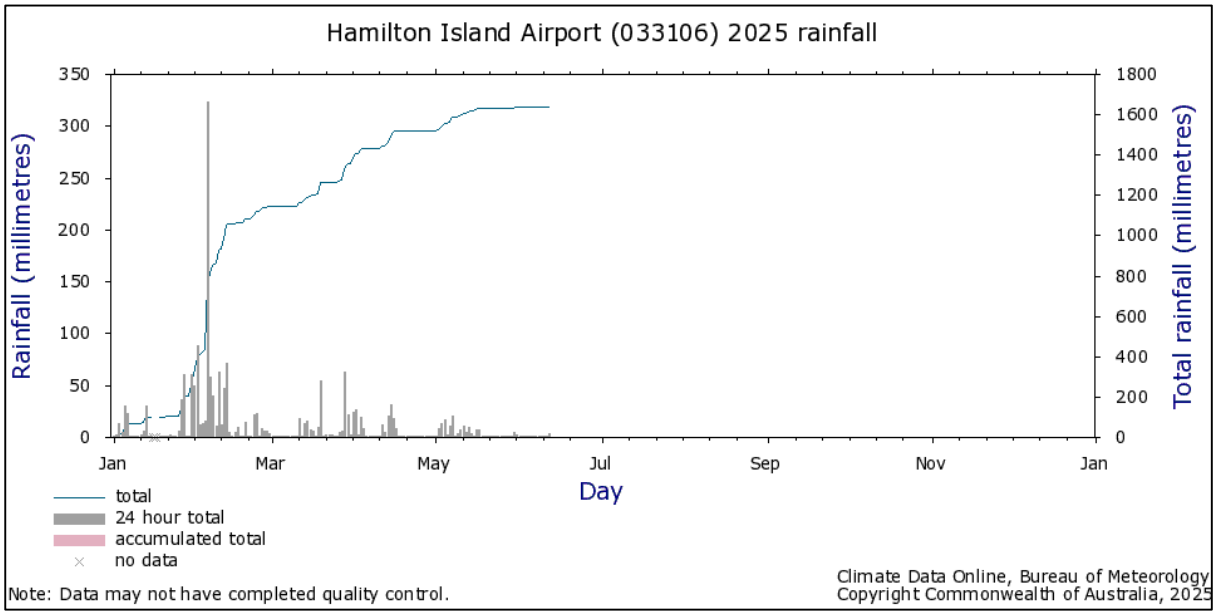

Figure 6: Daily and cumulative rainfall data to June 2025 from Hamilton Island Station

Daily rainfall across the monitoring program is presented on Figure 7. Monsoonal events can be seen in December 2024, February 2025 and March / April 2025.

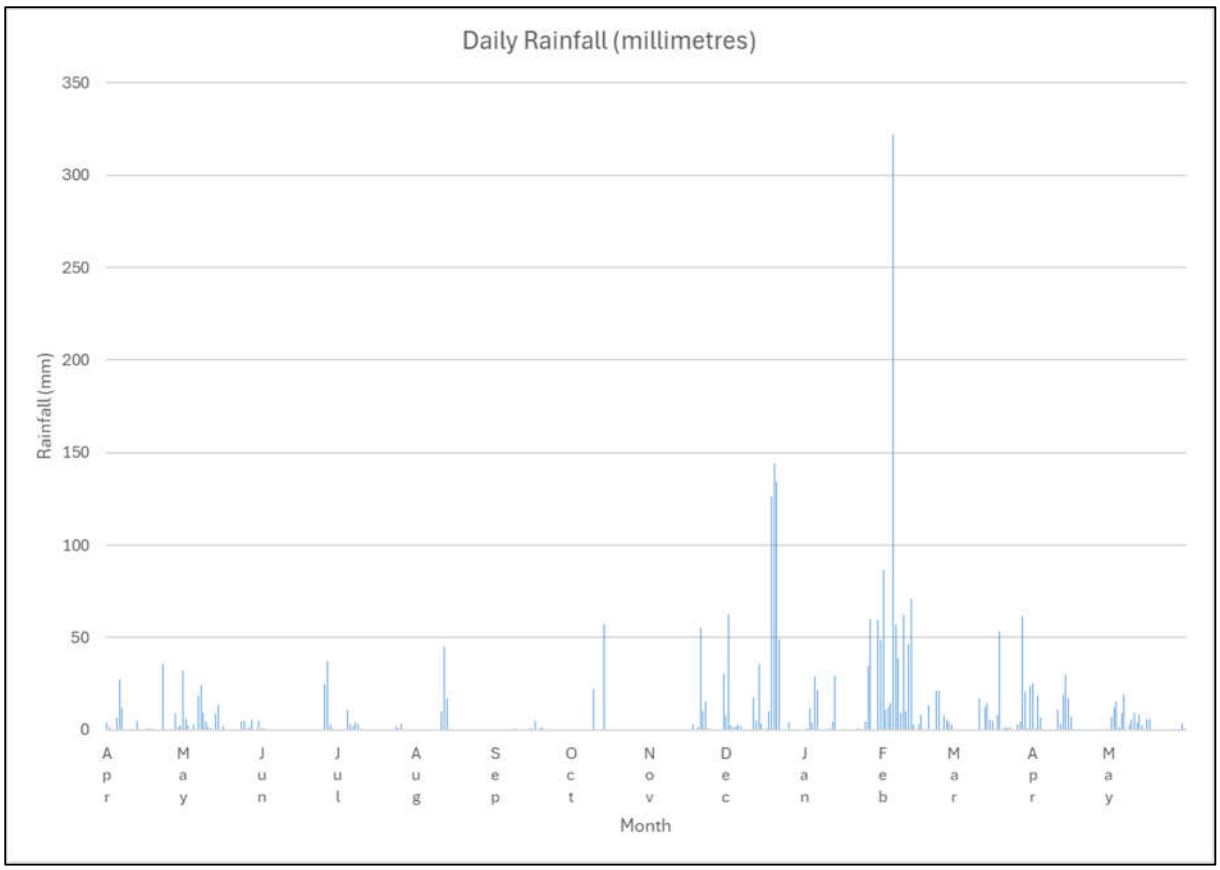

Figure 7: Daily rainfall data across the monitoring period from Hamilton Island Station

Total rainfall measured at the Hamilton Island weather station comprised the following:

- Annual total for 2024 = 1836.6 mm
- Annual total to January to May 2025 = 1635.4 mm

2.3 Topography

Lindeman Island's topography is characterised by steep cliffs and undulating hills. The island reaches a maximum elevation of approximately 200 m AHD at Mt Oldfield. Steep escarpments towards the sea can be found on the west, north and east of the Island. The topography of the development consists of undulated hills ranging from approximately 65 m AHD trending south to sea level.

2.4 Geology

Geology of Lindeman Island is mapped as Lower Cretaceous age Whitsunday Volcanics, characterised by rhyolitic to andesitic volcaniclastic rocks, including ignimbrite, minor flows, conglomerate and sandstone, and aged at around 110 million years. The geology is indicative of large volume explosive volcanism with significant water contribution.

3. SCOPE OF WORK

The sampling program comprised collection of marine water samples from five locations (WQ1 to WQ5) around and in close proximity to the island, and six locations (LIND01 to LIND06) within watercourses on the island itself. The program also included installation of a data logger in close proximity to the boathouse and barge landing ramp for the continuous monitoring of marine water temperature and salinity.

Sample Locations are presented on Figure 8 below:

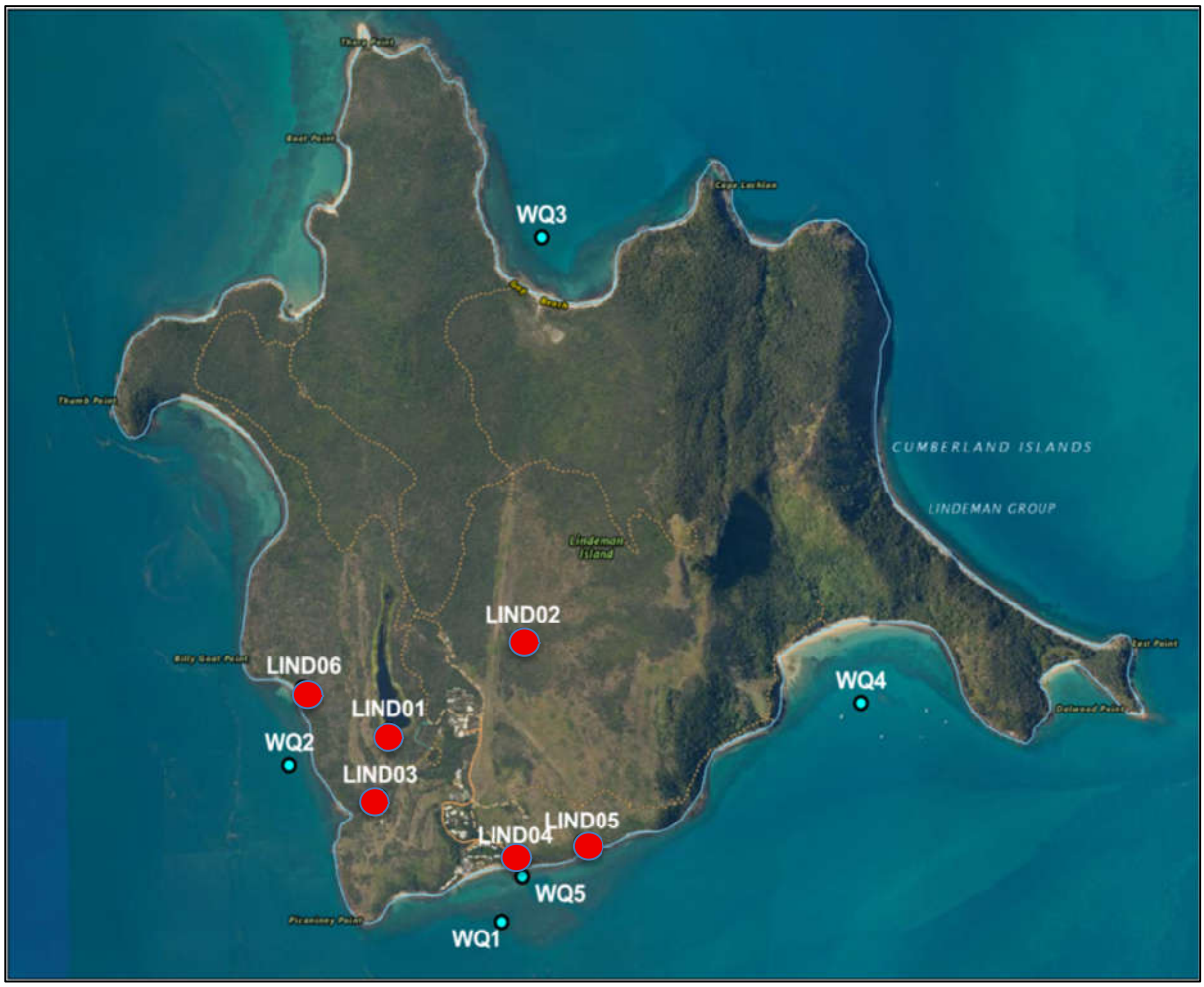

Figure 8: Marine and Terrestrial Sampling Locations

The sampling regime as specified in the WQMP is presented on Table 1 below:

Table 1: Water Sample Regime.

Parameter		Analysis	Sampling Interval
Physical	Temperature	In-situ / Automatic	WQ1 – WQ5 and LIND01 Monthly 2 x Rainfall Events Post Cyclonic Event LIND02 to LIND06 When Possible
	pH		
	Total Suspended Solids		
	Dissolved Oxygen		
	Electrical Conductivity / salinity		
	Turbidity	In-situ	
	Secchi depth		
Chemical	Total Dissolved Solids	Laboratory	
	Total Nitrogen		

Parameter		Analysis	Sampling Interval
	Ammonia		
	Oxidised Nitrogen		
	Total Phosphorus		
	Reactive Phosphorus		
	Organophosphorus Pesticides		WQ1 – WQ5 and LIND01 Quarterly 2 x Rainfall Event Post Cyclonic Event LIND02 to LIND06 When Possible
Biological	Faecal Coliforms	Laboratory	
	Heterotrophic Plate Count		
	Total Coliforms		
	E. coli		

Water quality sampling was conducted on a monthly basis through the period April 2024 to April 2025 and following two rainfall events in February 2025 and April 2025.

Due to the ephemeral nature of the streams, the full cohort of terrestrial surface water samples could only be collected from the two rainfall sampling events (10 February 2025, 3 April 2025) and the 25 March 2025 sampling event.

No cyclone events occurred in the 12 month sampling period.

Sample date, locations and analytes tested are presented in Table 2 below:

Table 2: Sampling dates, type and analytes for WQM on Lindeman Island.

Sample Date	Sample Type	Sample Locations	Analytes
24 April 2024	Quarterly	WQ1-WQ5, LIND01	pH, EC, DO, Temp, Turbidity, OPP, TDS, TSS, TN, NO2, NO3, NH3, TP, RP, Faecal Coliforms, Total Coliforms, HPC, E. coli.
28 May 2024	Monthly	WQ1-WQ5, LIND01	pH, EC, DO, Temp, Turbidity, TDS, TSS, TN, NO2, NO3, NH3, TP, RP
20 June 2024	Monthly	WQ1-WQ5, LIND01	pH, EC, DO, Temp, Turbidity, TDS, TSS, TN, NO2, NO3, NH3, TP, RP
30 July 2024	Quarterly	WQ1-WQ5, LIND01	pH, EC, DO, Temp, Turbidity, OPP, TDS, TSS, TN, NO2, NO3, NH3, TP, RP, Faecal Coliforms, Total Coliforms, HPC, E. coli.
20 August 2024	Monthly	WQ1-WQ5, LIND01	pH, EC, DO, Temp, Turbidity, TDS, TSS, TN, NO2, NO3, NH3, TP, RP
24 September 2024	Monthly	WQ1-WQ5, LIND01	pH, EC, DO, Temp, Turbidity, TDS, TSS, TN, NO2, NO3, NH3, TP, RP
22 October 2024	Quarterly	WQ1-WQ5, LIND01	pH, EC, DO, Temp, Turbidity, OPP, TDS, TSS, TN, NO2, NO3, NH3, TP, RP, Faecal Coliforms, Total Coliforms, HPC, E. coli.
29 November 2024	Monthly	WQ1-WQ5, LIND01	pH, EC, DO, Temp, Turbidity, TDS, TSS, TN, NO2, NO3, NH3, TP, RP
12 December 2024	Monthly	WQ1-WQ5, LIND01, LIND03, LIND05	pH, EC, DO, Temp, Turbidity, TDS, TSS, TN, NO2, NO3, NH3, TP, RP
28 January 2025	Quarterly	WQ1-WQ5, LIND01, LIND02, LIND03, LIND05	pH, EC, DO, Temp, Turbidity, OPP, TDS, TSS, TN, NO2, NO3, NH3, TP, RP, Faecal Coliforms, Total Coliforms, HPC, E. coli.

Sample Date	Sample Type	Sample Locations	Analytes
10 February 2025	Rainfall Event	WQ1-WQ5, LIND01 – LIND06	pH, EC, DO, Temp, Turbidity, OPP, TDS, TSS, TN, NO2, NO3, NH3, TP, RP, Faecal Coliforms, Total Coliforms, HPC, E. coli.
11 March 2025	Monthly	WQ1-WQ5, LIND01, LIND03, LIND05	pH, EC, DO, Temp, Turbidity, TDS, TSS, TN, NO2, NO3, NH3, TP, RP
25 March 2025	Monthly	WQ1-WQ5, LIND01 – LIND06	pH, EC, DO, Temp, Turbidity, TDS, TSS, TN, NO2, NO3, NH3, TP, RP
3 April 2025	Rainfall Event	WQ1-WQ5, LIND01 – LIND06	pH, EC, DO, Temp, Turbidity, OPP, TDS, TSS, TN, NO2, NO3, NH3, TP, RP, Faecal Coliforms, Total Coliforms, HPC, E. coli.

EC = Electrical Conductivity
DO = Dissolved Oxygen
Temp = Temperature
OPP = Organophosphate Pesticides
TDS = Total Dissolved Solids
TSS = Total Suspended Solids
TN = Total Nitrogen
NO2 = Nitrite
NO3 = Nitrate
NH3 = Ammonia
TP = Total Phosphorus
RP = Reactive Phosphorus
HPC = Heterotrophic Plate Count

4. METHODOLOGY

4.1 Project Preliminaries

The following permits and approvals were obtained prior to commencement of the monitoring program:

- Permission from Queensland Parks and Wildlife Service to undertake water sample collection within the National Park under s144 of the Nature Conservation (Protected Areas Management) Regulation 2017.
- A Research Permit (G24/50072.1) was obtained from the Great Barrier Reef Marine Park Authority for collection of marine water samples.
- Consent was granted by Maritime Safety Queensland to install the Sonde on the navigation beacon.

4.2 Surface Water Quality Monitoring

Water sampling was undertaken in accordance with the methods specified in the Australian Standard for water quality sampling – AS/NZS 5667.1:1998 and the Department of Environment, Science, Technology and Innovation's Environmental Protection (Water) Policy 2009 - Monitoring and Sampling Manual.

4.3 Marine Water Quality Sampling

Surface water samples were collected from five locations (WQ1 to WQ5) from marine waters surrounding Lindemand Island. Samples were collected monthly across a 12 month period and from two rainfall events.

Samples were collected across all weather conditions to limit sample bias. Shallow waters necessitated sample collection to be the last half of the flood tide or first half of the ebb tide. Samples were collected during both flow regimes to limit sample bias and ensure representative water quality.

Table 3: Marine sample locations for the WQM program on Lindeman Island

Location	Coordinates	Sample Location Description
WQ1	-20.460800 S 149.040717 E	Located offshore over the shallow reef and near the reef edge. Exposed to prevailing southeast trade winds and strong flood and ebb tidal currents.
WQ2	-20.455917 S 149.031700 E	This sample location was located on the western side of the island. It may receive inputs from the LIND03 and LIND06 ephemeral streams. This location may be subject to strong currents.
WQ3	-20.437400 S 149.041967 E	Located within a sheltered bay on the northern side of the island. Subject to northerly winds in the summer months but otherwise well protected. Little to no tidal current. The sample location was located directly seaward of the discharge location of a freshwater creek that drains the northern portion of the island.
WQ4	-20.453133 S 149.055100 E	Generally protected from prevailing trade winds but subject to strong tidal currents.
WQ5	-20.459717 S 149.041450 E	This site is located adjacent to the proposed jetty and former resort. The location is significantly impacted by strong southeast trade winds.

In-situ monitoring was conducted using a YSI hand-held multiparameter probe, calibrated prior to every sampling event. The following parameters were recorded on field data sheets:

- Temperature.
- pH.
- Dissolved oxygen.
- Electrical conductivity
- Turbidity.
- Total Dissolved Solids.

Manual grab samples for laboratory analysis were collected using a telescopic sample pole from a boat, using a suitable, sterilised container. The samples were collected up current of the boat engine to avoid potential contamination. The bottle was extended into the water and submerged to a depth of at least 0.3m, with the mouth pointing down. Once the bottle was filled, it was removed from the water, the lid replaced and shaken to rinse the entire container. The liquid was discarded and the bottle was rinsed a total of three times with seawater.

Following rinsing, the container was used to fill the laboratory prepared sample containers and placed on ice in and esky for transport under chain of custody to NATA accredited laboratory. The samples were delivered within laboratory holding times where possible. Samples were analysed by accredited laboratory as per their analysis methodologies.

4.4 Sonde Installation and Measurement

The WQMP originally specified that the in-situ monitoring station be located on a jetty, which was decommissioned before the program commenced. Instead, a YSI Exo 3 sonde with a central wiper and wiped conductivity probe was installed on the most inshore starboard navigation marker within the jetty channel directly in front of the proposed resort area at the edge of the channel, closest to Lindeman Island (Figure 9). Permission from MSQ was granted for the installation. The sonde was mounted at the approximate elevation of Lowest Astronomical Tide (LAT) to ensure it remained submerged and was encased in a protective PN12.5 SDR 13.6 PE100 110mm sotted polyethylene pipe sleeve.

The data logger recorded conductivity (EC) and temperature at 1-hour intervals commencing 27 May 2024; the Sonde was removed late November 2024 for maintenance and replaced in December 2024.

During each sampling event the sonde was removed from the navigation marker, cleaned thoroughly and checked to ensure functionality, battery charge and the data was downloaded. The conductivity probe in the sonde was calibrated in the field every three months with 58,000 µS/cm calibration solution using the KOR YSI software.

Figure 9: Location of Sonde installation

4.5 Terrestrial Water Quality Sampling

The terrestrial sampling locations included an established dam (LIND01) and ephemeral, freshwater streams (LIND02-LIND06). The sampling locations are based on the catchments identified in the Lindeman Island EIS (2017) which discharge into the ocean. A description of the locations is provided in Table 3.

Table 4: Terrestrial sample locations for the WQM program on Lindeman Island

LIND01

Sampling location is within a permanent dam, located on the western side of the island.

LIND02

Located upgradient of the airstrip and the resort area with intact and uncleared catchment area. Low gradient ephemeral stream with sand and gravel bed and defined banks. This site was almost permanently dry, with the ephemeral stream only existing during heavy rain events. Flow ceased almost immediately following rain events.

LIND03

Bedrock confined, high gradient, high energy, boulder field creek. Evidence of baseflow from groundwater discharge during the dry season not representative of runoff. Runoff only occurring following large rainfall events. A golf course is within the catchment.

LIND04

Located within a drain adjacent to a sealed access road within the resort. There was little to no flow in this drain outside of rainfall events.

LIND05

High gradient boulder dominated drainage line with low volume baseflow from groundwater discharge that historically appears to have been utilised as a drinking water source by mariners. Ephemeral with small catchment area that includes the cross runway (not used). Flow only observed immediately following large rainfall events.

A pitfall sampler was installed in the creek but was washed out to sea by a storm event.

LIND06

Very steep boulder dominated drainage line. This creek was primarily dry during the sampling program. There was flow during large events, which would cease almost immediately following the cessation of rainfall.

In-situ water quality was analysed using the YSI handheld multiparameter probe and the following parameters were recorded on field data sheets:

- Temperature.
- pH.
- Dissolved oxygen.
- Electrical conductivity.
- Turbidity.
- Total Dissolved Solids.

The manual grab samples were collected directly from the running stream to ensure that no stagnant water was collected. The sample was collected using laboratory prepared sample containers and placed on ice in and esky for transport under chain of custody to NATA accredited laboratory. The samples were delivered within laboratory holding times where possible.

4.6 Field QA/QC

During the monitoring of surface water, field quality control, and quality assurance (QA/QC) procedures and methods were observed in consideration of the below:

- DES. 2018. Monitoring and Sampling Manual: Environmental Protection (Water) Policy.

Brisbane: Department of Environment and Science Government.

Quality Assurance / Quality Control (QA/QC sampling was undertaken in general accordance with specifications outlined in AS4482.1 Guide to sampling and investigating potentially contaminated soil and Qld DES (2018) Monitoring and Sampling Manual: Field QC samples were collected and included the following:

Sample Identification	Sample Type	Sample Matrix	Rate of Collection
Duplicate	Field duplicate of LIND01	Water	1 per event,
Triplicate	Field triplicate of LIND01	Water	1 per event,

Note – Rate of QC sample collection specified as 1 in 20 samples in AS4482.1

The laboratory internal QC procedures are consistent with NEPM policy on laboratory analysis of contaminated soils and waters.

4.7 Laboratory Analysis

The analytical laboratory, Australia Laboratory Services (ALS) was engaged to undertake analyses and is accredited by the National Association of Testing Authorities (NATA) for the requested analyses. Samples submitted to the analytical laboratory were accompanied by the appropriate Chain of Custody form which is completed to include the required analyses and reporting information.

NATA-accredited laboratories (ALS) undertook laboratory quality control procedures including surrogates, blanks, method blanks, and spikes. The quality control results were reviewed by the recipient before acceptance of the groundwater laboratory results from the laboratory.

5. TERRESTRIAL FRESH WATERS RESULTS

To establish baseline water quality, the 20th, 50th and 80th percentile for each analyte was calculated. The 20th and 80th percentiles remove outlier data but still represent natural variability. Half the reporting limit was substituted where an analyte was not detected at concentrations above the laboratory limits of reporting.

Surface water analytical results were compared to the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Proserpine River, Whitsunday Island and O'Connell River Basins Environmental Values and Water Quality Objectives for Island fresh waters – Whitsundays for relative comparison.

Permanent water exists in the dam at sample location LIND01 and a full data set was obtained for this location. The remaining sample locations (LIN02 to LIND06) were located on ephemeral streams with an incomplete dataset. Due to the nature of the sampling locations, results for LIND01 (perennial) were calculated separately to the aggregated result for ephemeral sites LIND02, LIND03, LIND04, LIND05, LIND06.

To ensure all results are displayed clearly and completely, charts used in the section are a combination of line and scatter formats. Line plots are provided for data collected over three or more successively monitoring events and scatter plots used to display other results. Monthly, quarterly and event triggered data is considered jointly and reference made to the sampling event type where relevant to discussions.

Field sheets and calibration records are included in Attachment A. Summary tables of analytical results are presented in Attachment B and Laboratory Analytical Reports are included in Attachment C.

5.1 Electrical Conductivity

Electrical conductivity (EC) at LIND01 (Dam) was consistent through the dry season and variable across the wet season.

EC within the ephemeral streams was highly variable and likely dependent on flow conditions at the time of sampling.

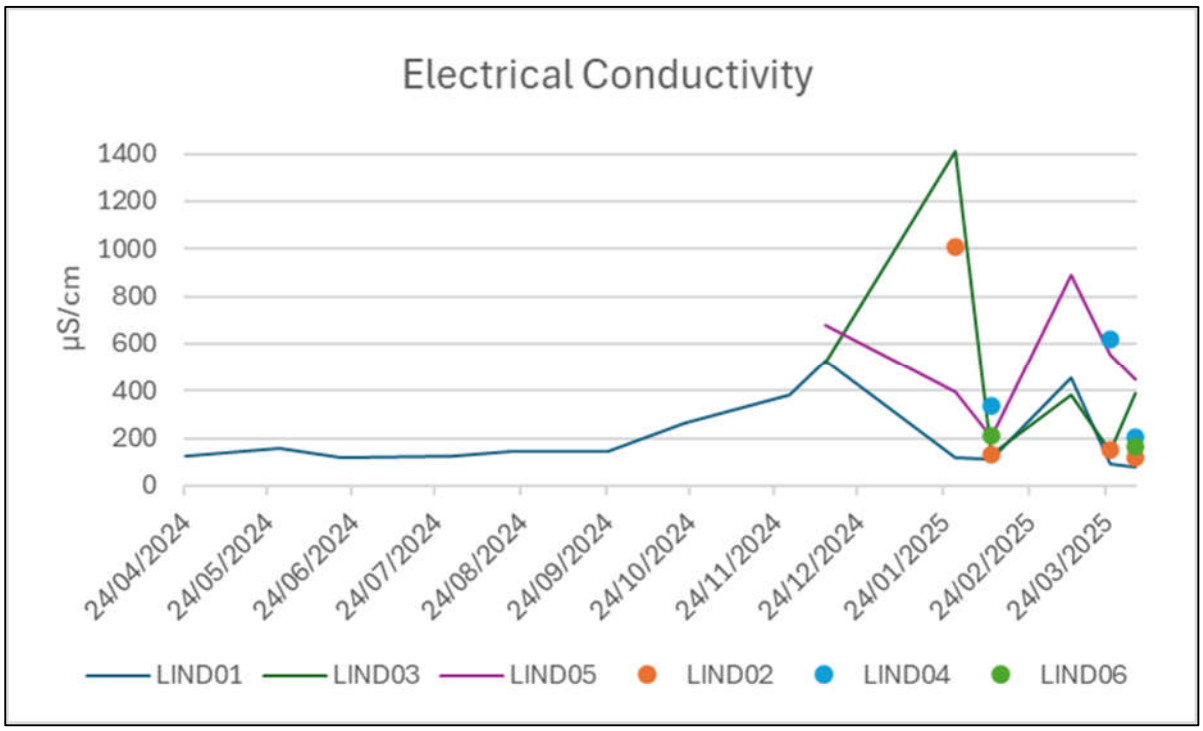

Figure 10: Electrical Conductivity results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

EC at LIND01 was within the water quality objectives. The 20th and 80th percentiles of EC in the ephemeral streams was within the WQOs with the 50th percentile above the WQOs.

The 20th, 50th and 80th percentile values for all terrestrial EC samples combined fall below Water Quality Objective values.

Table 5: Percentile calculations for Electrical Conductivity (units: µS/cm) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective	180	260	780
LIND01	114	133	380
Ephemeral Stream sites (LIND02, LIND03, LIND04, LIND05, LIND06)	148	384	653
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	125	203	528

5.2 pH

Water pH displayed marked variability in both the dam (LIND01) and the ephemeral streams.

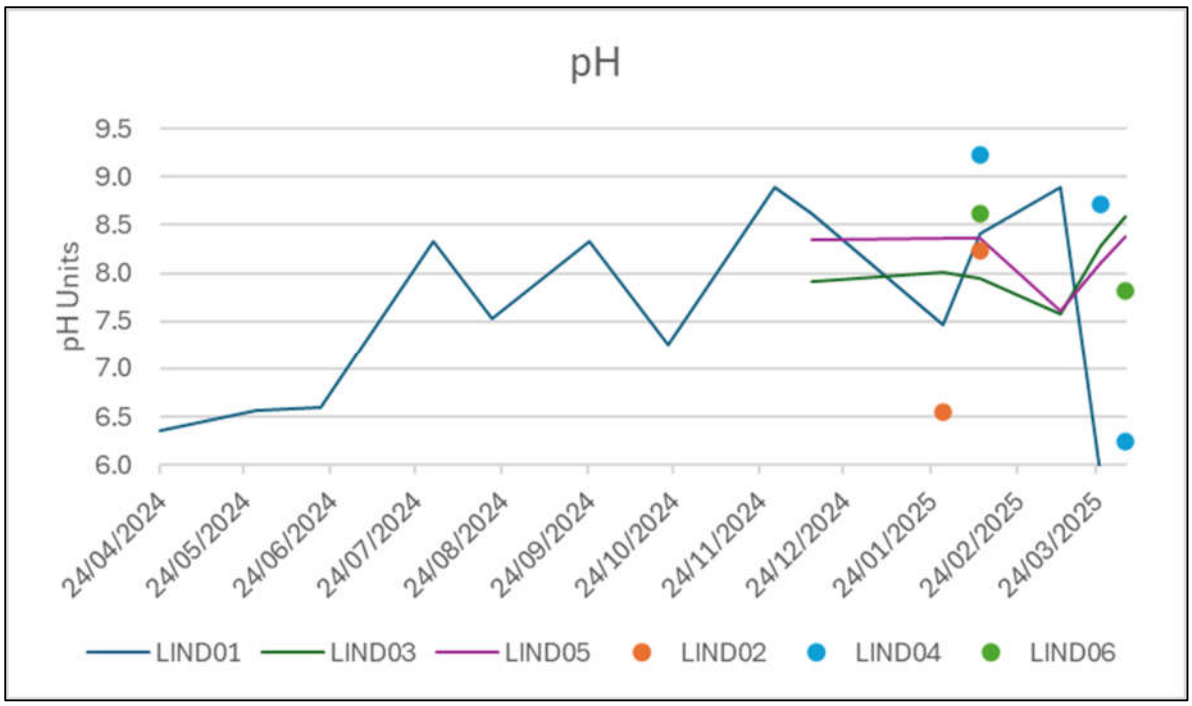

Figure 11: pH results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

The 20th percentile pH value at LIND01 was lower than the Water Quality Objective, with both 50th and 80th percentiles exceeding WQOs. Results for LIND02, LIND03, LIND04, LIND05 and LIND06 were also outside the WQOs.

In combination (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06), the 20th percentile value is less than the Water Quality Objective value, while the 50th and 80th percentile values exceed the Water Quality Objective values., This indicates a high degree of variability in water quality in terms of pH.

Table 6: Percentile calculations for pH (units: pH units) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective	7.2	7.3	7.6
LIND01	6.4	7.5	8.6
Ephemeral Stream sites (LIND02, LIND03, LIND04, LIND05, LIND06)	7.0	8.1	8.5
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	6.6	8.0	8.5

5.3 Dissolved Oxygen

Dissolved oxygen (DO) at LIND01 was consistent throughout the dry season and displayed variability across the wet season.

DO in the ephemeral streams displayed variability with a general decrease across the wet season observed.

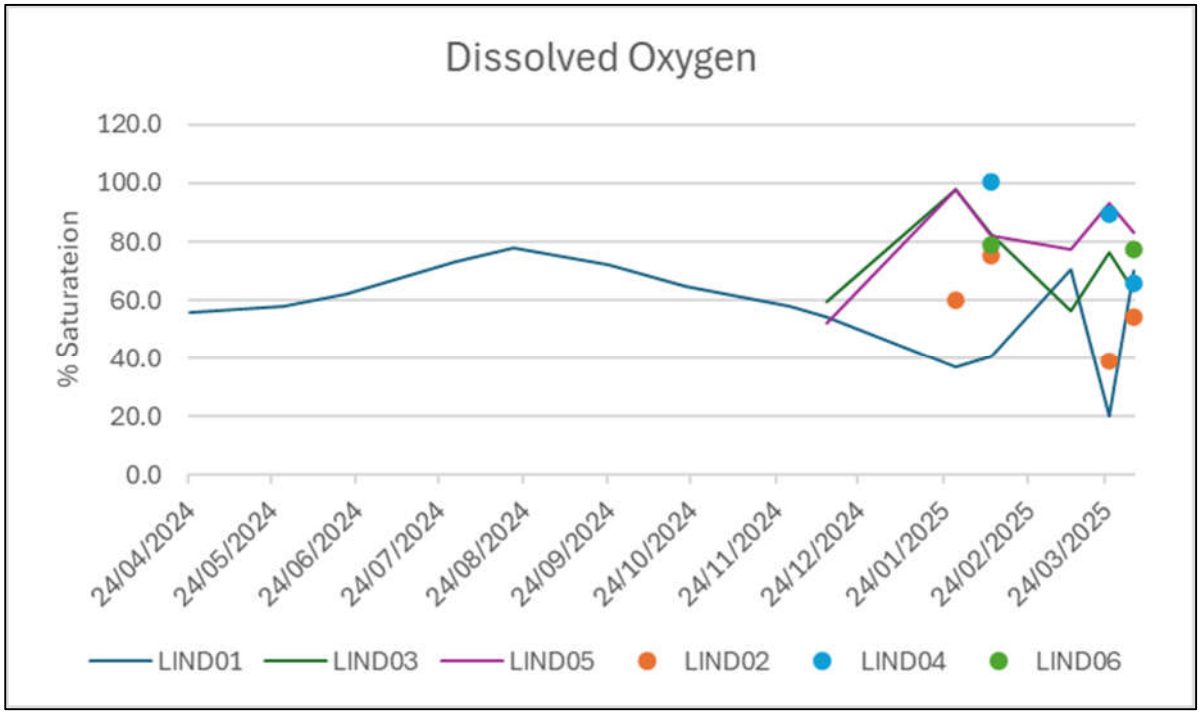

Figure 12: Dissolved Oxygen results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

DO percentiles are presented in Table 7 below. DO at LIND01 and the ephemeral streams was generally below the WQOs but in the expected range.

Table 7: Percentile calculations for Dissolved Oxygen (units: % Saturation) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective – No Flow	50		120
Water Quality Objective – Flow	90		105
LIND01 – No Flow	40.6	60.0	72.1
Ephemeral Stream sites (LIND02, LIND03, LIND04, LIND05, LIND06) - Flow	57.6	77.2	91.5
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	54.5	70.1	82.4

5.4 Turbidity

Turbidity at LIND01 was consistent and low throughout the end of the 2024 wet season the dry season, with an increase in measured in the 2024/25 wet season. This may reflect the poor wet season

experienced in 2024 compared to that of 2025 and the varying impact of surface runoff over these periods.

Turbidity of the ephemeral streams was highly variable and increased across the wet season. Turbidity was also likely to be subject to the flow stage at the time of sampling.

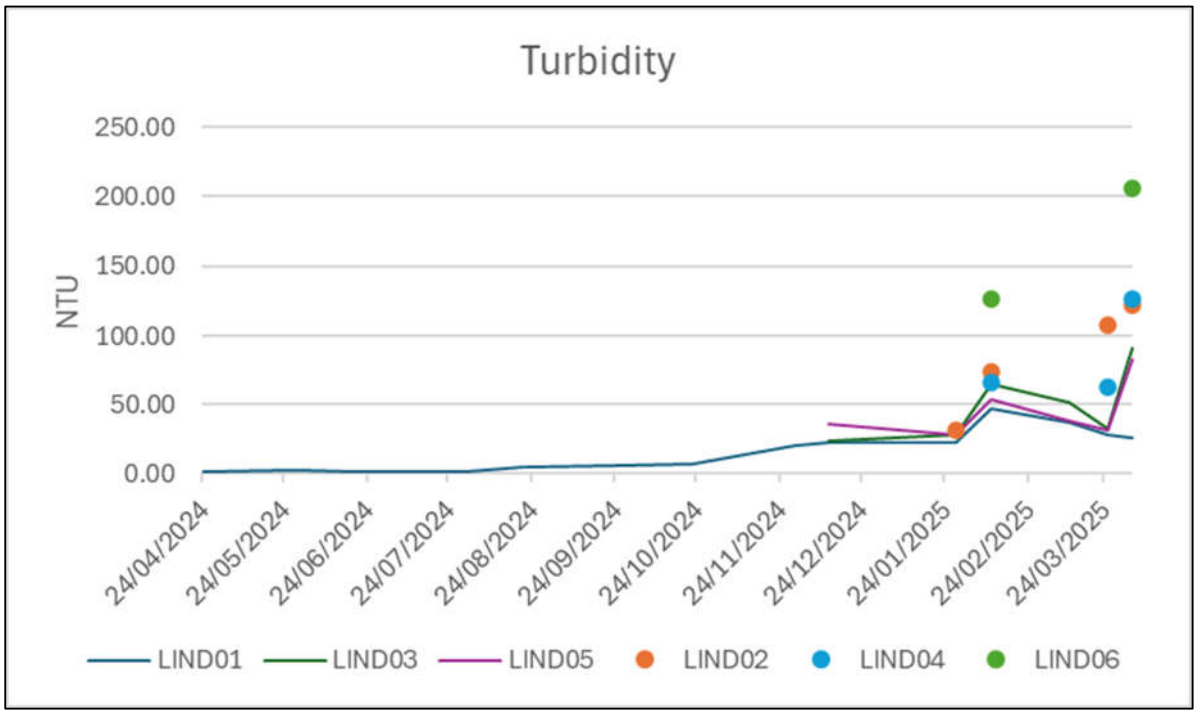

Figure 13: Turbidity results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

Turbidity percentiles are presented in Table 8 below.

Table 8: Percentile calculations for Turbidity (units: NTU) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
LIND01	2.1	14.0	27.8
Ephemeral Stream sites (LIND02, LIND03, LIND04, LIND05, LIND06)	31.4	62.9	116.4
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	10.2	31.5	80.3

5.5 Total Dissolved Solids

Total Dissolved Solids (TDS) at LIND01 were consistent across the monitoring program, with the exception of a one-off peak TDS of 516 mg/L in May 2024. The peak does not correlate with any significant or sustained period of rainfall or other weather event, and does not correlate with EC. Other than this peak, TDS at LIND01 ranged from 72mg/L (June 2024) to 161 mg/L (rainfall event sampling March 2025).

TDS in the samples collected from ephemeral streams were higher than the dam water at LIND01 with no particular pattern observed.

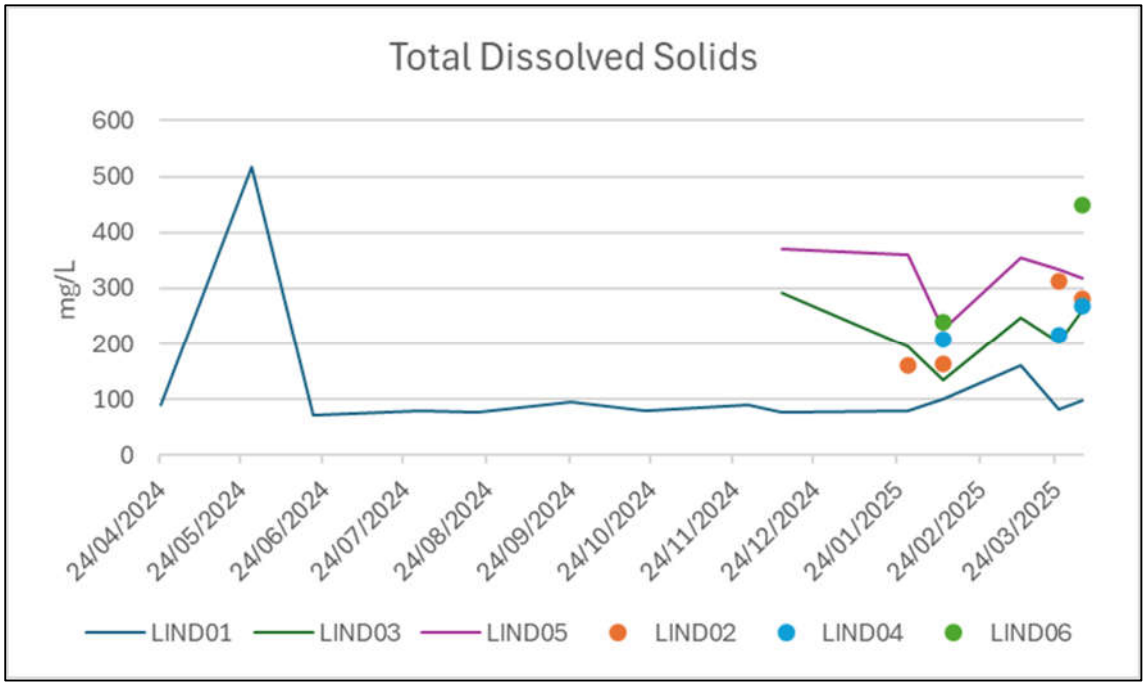

Figure 14: Total Dissolved Solids results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

TDS percentiles are presented in Table 9 below.

Table 9: Percentile calculations for Total Dissolved Solids (units: mg/L) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
LIND01	78	87	101
Ephemeral Stream sites (LIND02, LIND03, LIND04, LIND05, LIND06)	198	261	346
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	84	203	318

5.6 Total Suspended Solids

Total Suspended Solids (TSS) at LIND01 were low or below detection limits across the majority of the sampling program. A peak of 33 mg/L was detected in March 2025 following an extended period of rainfall.

A spike in TSS concentration was detected at LIND04 in early March 2025 following a landslide event in the catchment of the creek.

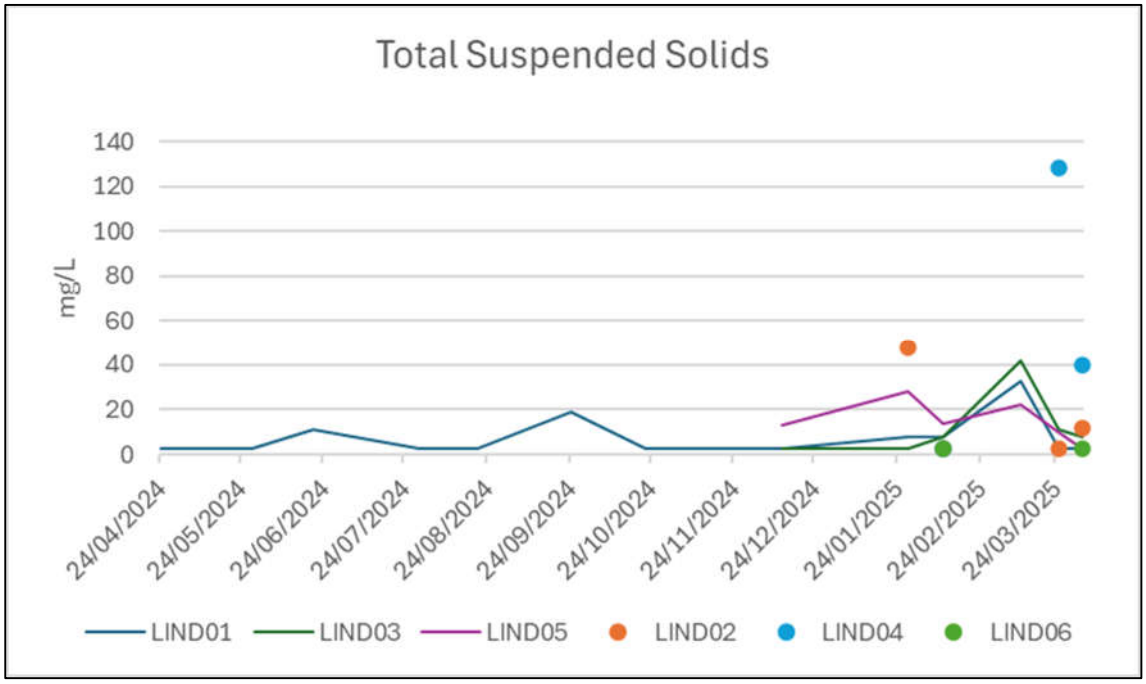

Figure 15: Total Suspended Solids results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

Table 10: Percentile calculations for Total Suspended Solids (units: mg/L) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective	1	2	3
LIND01	<5	<5	11
Ephemeral Stream sites (LIND02, LIND03, LIND04, LIND05, LIND06)	<5	10	35.2
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	<5	5.5	21.4

5.7 Ammonia

Ammonia levels at LIND01 ranged from undetected (less than Level of Reporting) to a peak of 0.75 mg/L in May 2024. Ammonia concentrations were highest in the first two sampling events (April and May 2024).

Results for LIND02 ranged from 0.02 mg/L in February 2025 to a peak value of 0.48 mg/L in January 2025.

Results for LIND03, LIND04, LIND05 and LIND06 ranged from less than Level of Reporting to 0.1 mg/L (LIND03 monthly sampling March 2025) over the monitored period (December 2024 to April 2025).

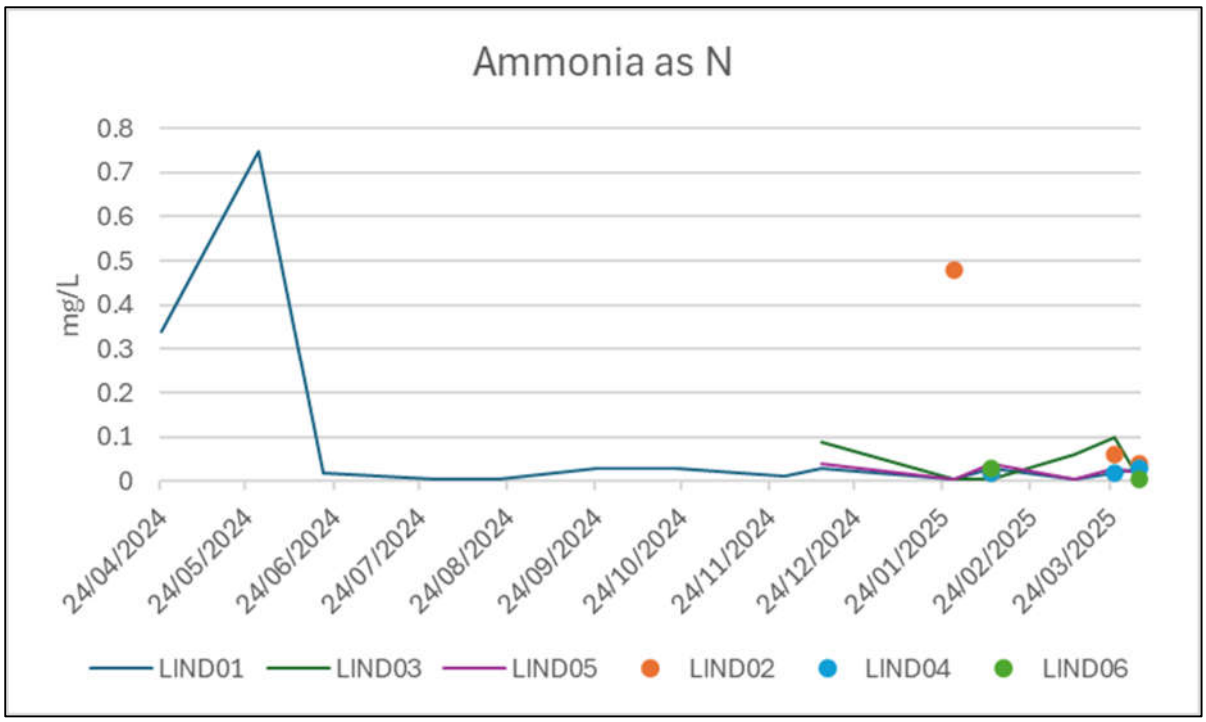

Figure 16: Ammonia results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

Ammonia percentiles are presented in Table 11 below.

Table 11: Percentile calculations for Ammonia as N (units: mg/L) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
LIND01	<0.01	0.025	0.030
Ephemeral Stream sites (LIND02, LIND03, LIND04, LIND05, LIND06)	<0.01	0.030	0.060
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	<0.01	0.022	0.056

5.8 Nitrite + Nitrate

The sum of Nitrite and Nitrate at LIND01 remained below Limit of Reporting levels except in June 2024 (0.03mg/L) and August 2024 (0.08mg/L).

A spike in Nitrite and Nitrate concentration was measured at LIND04 in March 2025 following a landslide event in the catchment of the creek. The peak corresponds with elevated TSS.

Nitrite and Nitrate concentrations in the remainder of the ephemeral stream samples were low.

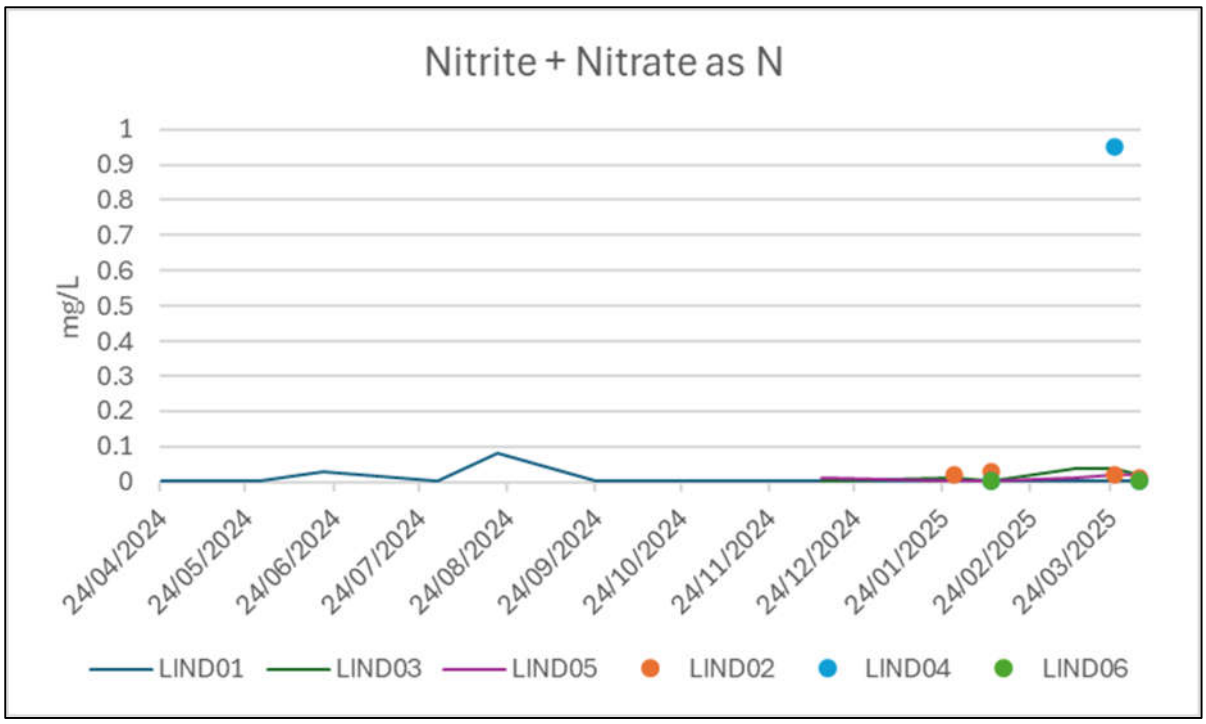

Figure 17: Total Nitrite + Nitrate as N results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

Nitrite and Nitrate percentiles are presented in Table 12 below.

Table 12: Percentile calculations for Total Nitrite + Nitrate as N (units: mg/L) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
LIND01	<0.01	<0.01	<0.01
Ephemeral Stream sites (LIND02, LIND03, LIND04, LIND05, LIND06)	<0.01	0.01	0.026
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	<0.01	<0.01	0.020

5.9 Total Nitrogen

Total Nitrogen (TN) at LIND01 was relatively consistent across the monitoring period.

A distinct TN peak was detected in the first sample collected from LIND05. The TN concentration was consistent with other stream samples in the samples from subsequent flow events.

Similarly, elevated TN was detected in the first sampling event from LIND02, which then reduced in follow up events.

TN spikes were not detected in the first flow event samples from the other ephemeral streams.

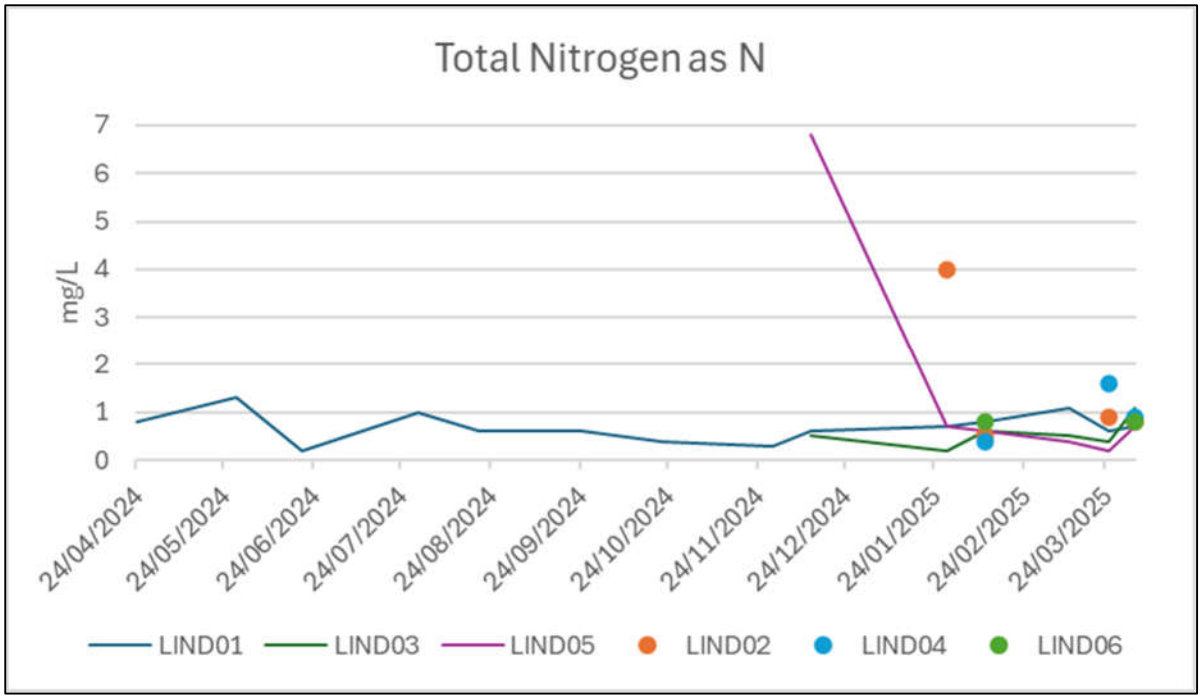

Figure 18: Total Nitrogen as N results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

TN percentiles are presented in Table 13 below.

Table 13: Percentile calculations for Total Nitrogen (units: mg/L) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
LIND01	0.40	0.65	1.00
Ephemeral Stream sites (LIND02, LIND03, LIND04, LIND05, LIND06)	0.40	0.70	1.02
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	0.40	0.07	0.98

5.10 Total Phosphorus

Total Phosphorus (Total P) in dam water at LIND01 was relatively consistent across the monitoring period, with no distinct concentration spikes observed.

Total P in ephemeral stream samples LIND02 and LIND05 were elevated in the first flow event sample and reduced in subsequent events, consistent with Total N.

A spike in Total P concentration was detected in sample LIND04 following the landslide event in the creeks catchment area. Total P in the remaining ephemeral stream samples was otherwise consistent.

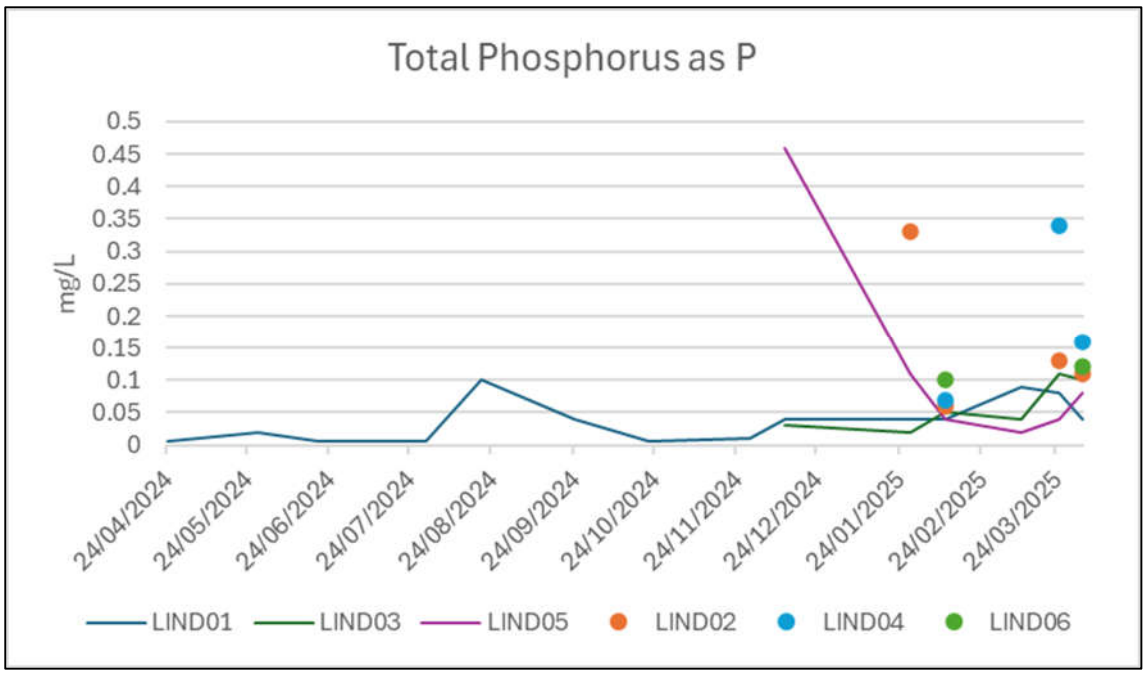

Figure 19: Total Phosphorus as P results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

Total P percentiles are presented in Table 14 below.

Table 14: Percentile calculations for Total Phosphorus (units: mg/L) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
LIND01	<0.01	0.040	0.080
Ephemeral Stream sites (LIND02, LIND03, LIND04, LIND05, LIND06)	0.040	0.100	0.148
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	0.020	0.050	0.110

5.11 Total Coliforms

Total coliforms in dam sample LIND01 demonstrated a gradual increase across the sampling period.

Tota coliforms in the ephemeral stream samples were elevated, with concentrations detected at the maximum detection limit of 24,196 MPN/100 mL in various samples from LIND02, LIND03, LIND05 and LIND06.

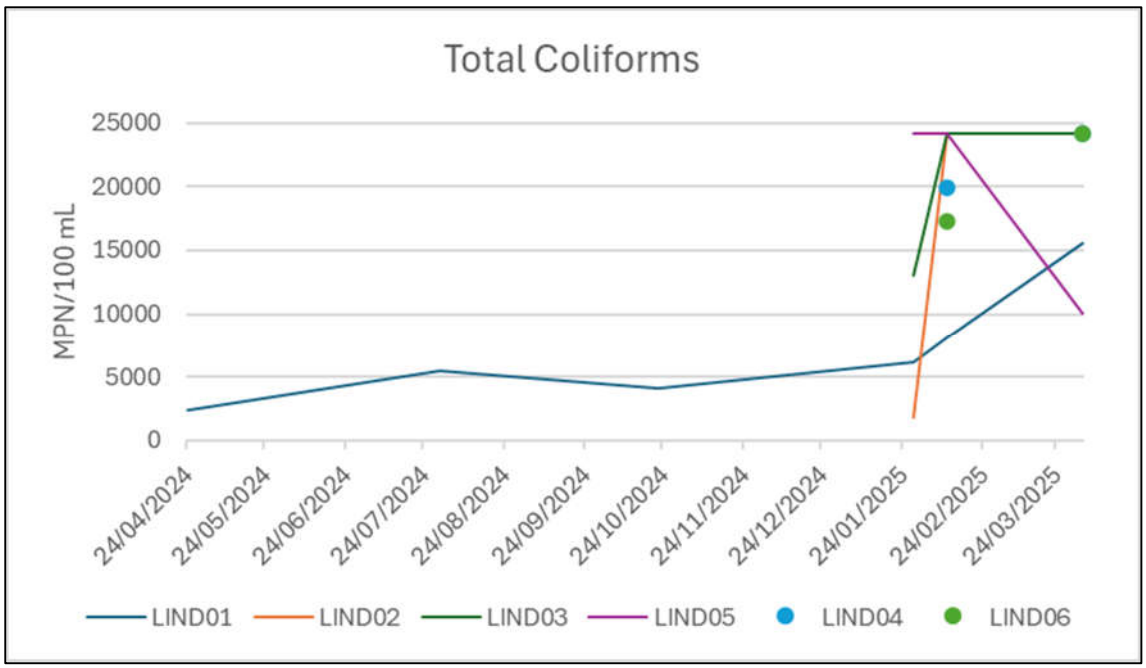

Figure 20: Total Coliforms results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

Total Coliform percentiles are presented in Table 15 below.

Table 15: Percentile calculations for Total Coliforms (units: MPN/100ml) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
LIND01	3094	5803	12584
Other sites (LIND02, LIND03, LIND04, LIND05, LIND06)	12420	24196	24196
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	5475	17329	24196

5.12 *E. coli*

E. coli levels at LIND01 ranged between 9 MPN/100 mL in April 2024 and 75 MPN/100 mL in October 2024, with the exception of 770 MPN/100 ml recorded in July 2024.

A distinct and unexplained E. coli spike was measured in LIND04 in the April 2025 rainfall event sampling round.

E. coli concentrations were consistent and followed the same concentration pattern in the remainder of the ephemeral stream samples.

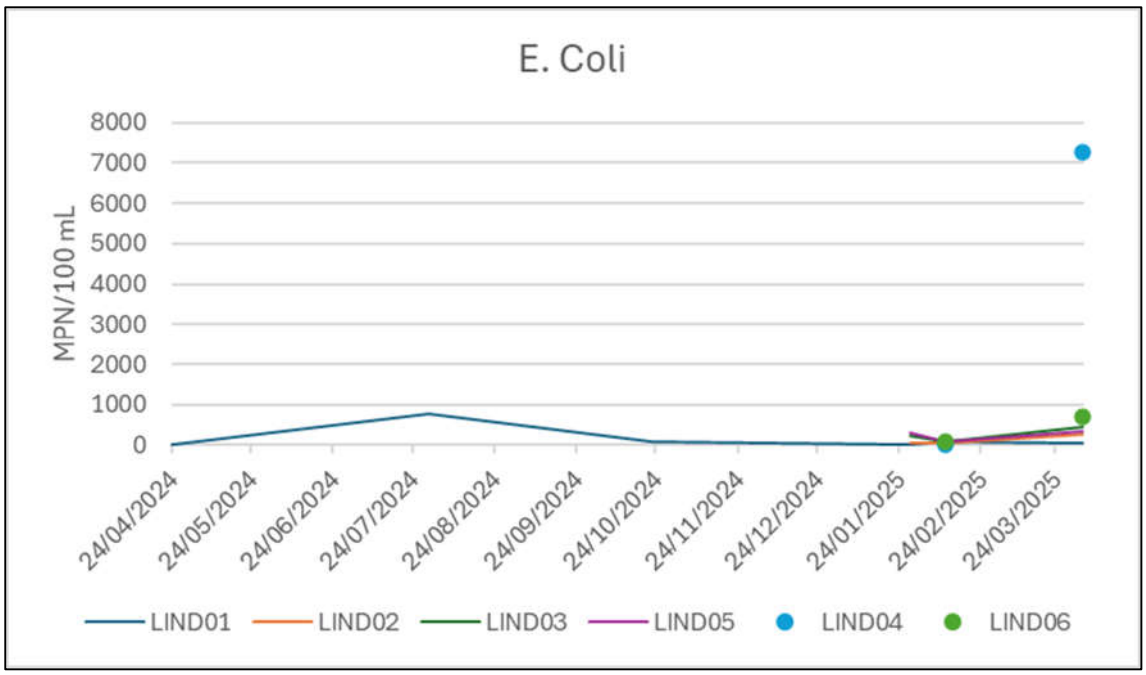

Figure 21: E. coli results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

E. coli percentiles are presented in Table 16 below.

Table 16: Percentile calculations for E. coli (units: MPN/100ml) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
LIND01	13	58	492
Other sites (LIND02, LIND03, LIND04, LIND05, LIND06)	50	243	499
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	41	75	450

5.13 Thermotolerant Coliforms

The pattern of Thermotolerant coliform results is generally consistent with *E. coli* however with a greater magnitude. A significant spike was recorded in LIND04 in the April 2025 rainfall event round.

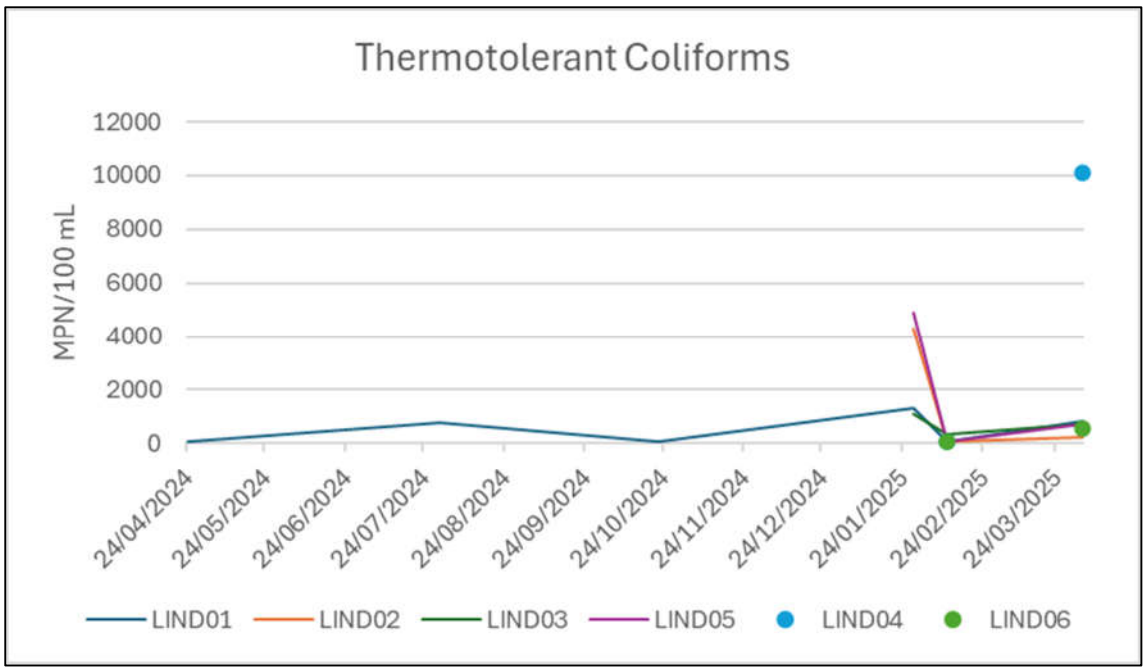

Figure 22: Thermotolerant Coliforms results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

Thermotolerant coliforms percentiles are presented in Table 17 below.

Table 17: Percentile calculations for Thermotolerant Coliforms (units: MPN/100ml) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
LIND01	68	432	1117
Ephemeral Stream sites (LIND02, LIND03, LIND04, LIND05, LIND06)	73	576	4402
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	75	576	1320

5.14 Heterotrophic Plate Count

Heterotrophic Plate Count (HPC) levels at LIND01 ranged between 20 cfu/1 ml in April 2024 and 1,380 cfu/1 ml in February 2025.

LIND04 recorded a peak Heterotrophic Plate Count greater than the Limit of Reporting (20,000 cfu/1 ml) in April 2025 (rainfall event sampling), consistent with elevated *E. coli* and Thermotolerant coliforms.

A Heterotrophic Plate Count level of 6200 cfu/1 ml was recoded at LIND02 in April 2025 (rainfall event sampling). Results for all other samples, including those for LIND03, LIND05 and LIND06 ranged between 20 cfu/1 ml and 2,070 cfu/1 ml in the period sampled (January 2025 to April 2025).

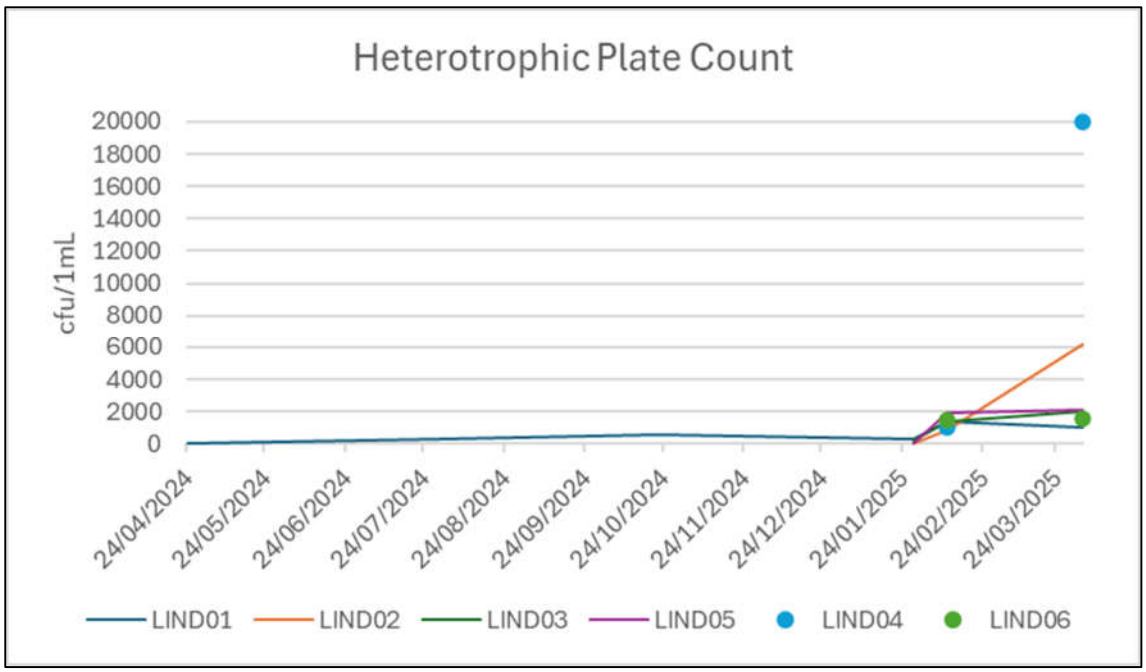

Figure 23: Heterotrophic Plate Count results from Inland Fresh Waters on Lindeman Island, 2024 - 2025

Heterotrophic Plate Count percentiles are presented in Table 18 below.

Table 18: Percentile calculations for Heterotrophic Plate Count (units: cfu/1 ml) for Inland Fresh Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
LIND01	136	465	1228
Ephemeral Stream sites (LIND02, LIND03, LIND04, LIND05, LIND06)	222	1,500	2,896
All Sites (LIND01, LIND02, LIND03, LIND04, LIND05, LIND06)	259	1,070	2,030

5.15 Organophosphorus Pesticides

No Organophosphorus Pesticide (OPP) was detected at concentrations above the laboratory reporting limits in any sample during any sampling event.

6. MARINE WATER QUALITY RESULTS

As noted in Wild Environmental Consultants' Water Quality Monitoring Program document, sampling locations for the baseline pre-development (ambient) water quality monitoring and the construction/operation phase monitoring have been selected to capture water quality within the most sensitive receiving environment (fringing reef).

Where possible, water quality is compared to the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Proserpine River, Whitsunday Island and O'Connell River Basins Environmental Values and Water Quality Objectives for Coastal/marine waters (North-South) HEV2381 open coastal waters (Whitsundays - south to Thomas Island) seaward of Plume line shown in WQ1222 (s3, s4) for point of comparison.

Secchi depth measurements could not be obtained due to strong currents and risk of entanglement of the rope with the boat motors. Secchi results are not considered reliable for reporting or assessment and are not included in the monitoring results dataset. TSS and Turbidity results are considered more representative than Secchi depth for water quality assessment.

6.1 Electrical Conductivity

EC followed the same pattern between all sample locations across all sample events.

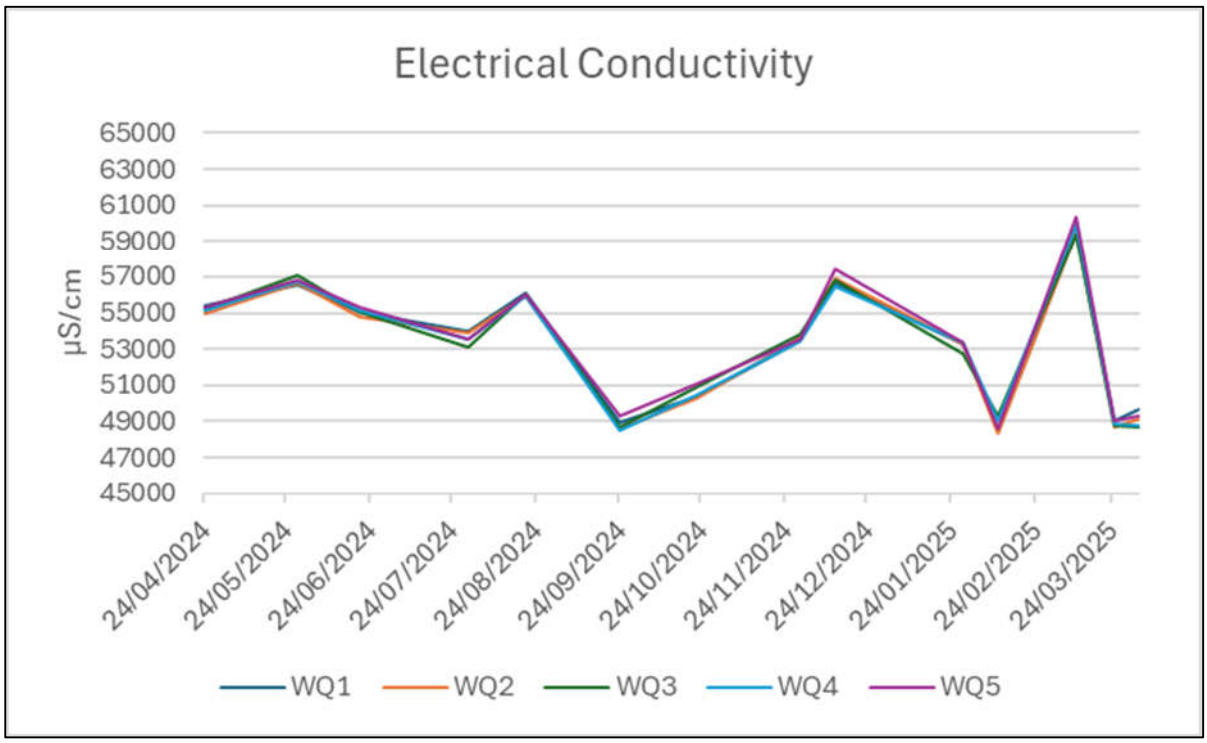

Figure 24: Electrical Conductivity results from Coastal Waters

Electrical Conductivity shows a high degree of correlation across all open coastal water sampling locations and sampling events. Corresponding to this, little variation in 20th, 50th and 80th percentile of the Electrical Conductivity reading between impact sites and control sites was measured.

Electrical conductivity of sea water is directly influenced by water temperature and represented by the general decrease in EC from April 2024 through to September 2024, followed by an increase to December 2024. Significant rainfall occurred from December 2024 through to March 2025, resulting in a decrease in EC due to freshwater additions from runoff.

Table 19: Percentile calculations for Electrical Conductivity (units: µS/cm) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Control Sites (WQ3, WQ4)	48830	53495	56526
Impact Sites (WQ1, WQ2, WQ5)	49120	53594	56595
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	49048	53552	56560

6.2 pH

pH generally followed the same pattern between all sample locations and across all sample events.

A consistent and marked decrease in pH was recorded in the 22 October 2024 sampling event. No rainfall or abnormally high winds were recorded in the 7 days prior to 22 October 2024 sampling. Field records confirm the meter calibration was correct. It is unclear what led to lower pH levels observed at all coastal water sites at the time.

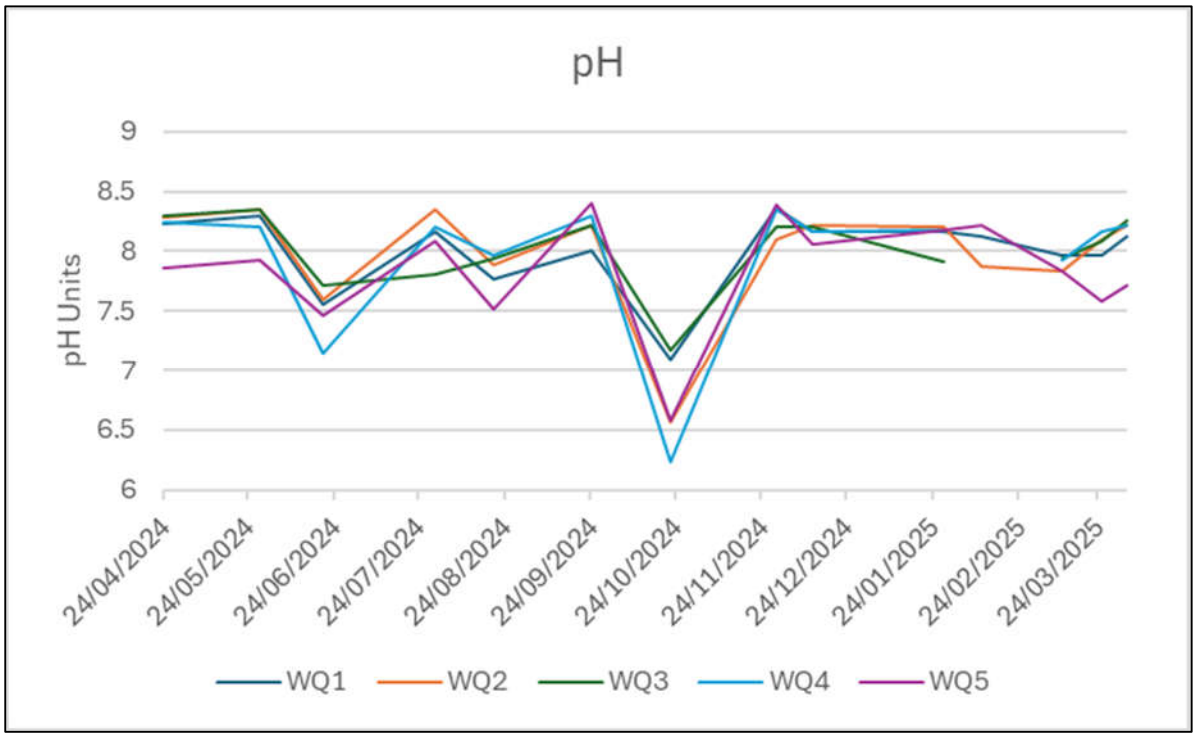

Figure 25: pH results from Coastal Waters

In comparison to the Water Quality Objectives, results are less than the lower and upper limits for coastal waters.

Table 20: Percentile calculations pH (units: pH units) for Open Coastal Waters on Lindeman Island

	Lower Limit	Upper Limit	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective	8.1	8.4			
Control Sites (WQ3, WQ4)	6.2	8.4	7.9	8.2	8.2
Impact Sites (WQ1, WQ2, WQ5)	6.6	8.4	7.7	8.1	8.2
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	6.2	8.4	7.8	8.1	8.2

6.3 Dissolved Oxygen

DO generally followed the same pattern between all sample locations across all sample events.

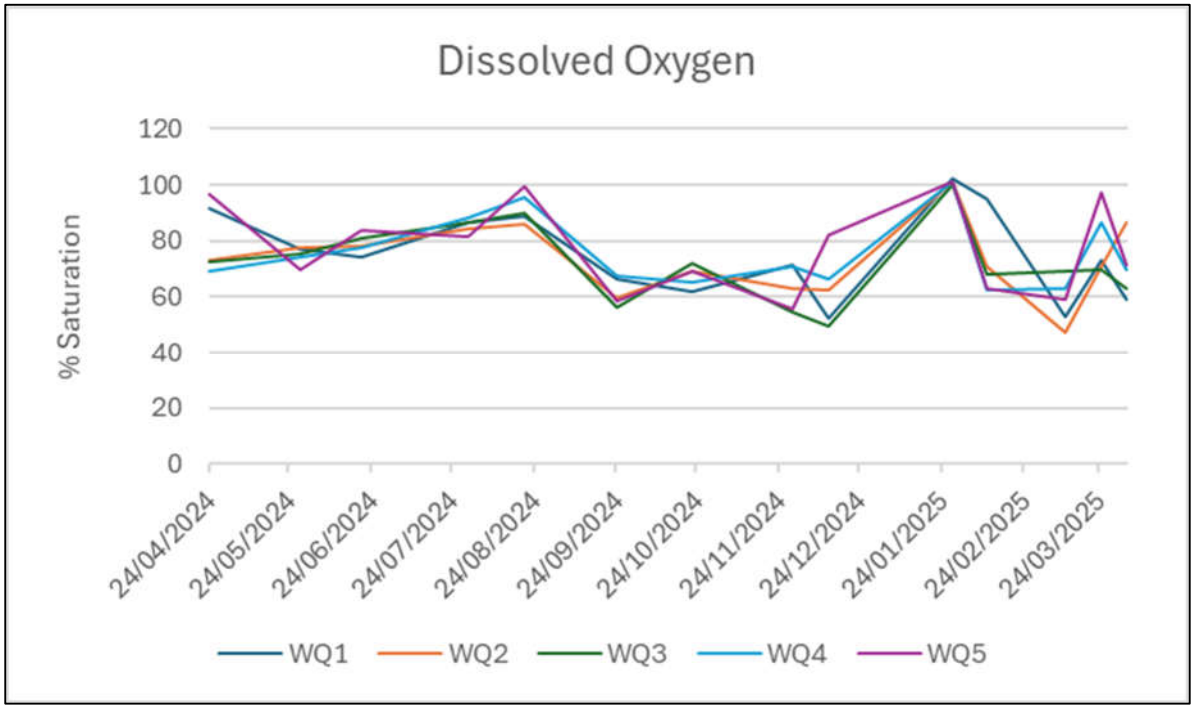

Figure 26: Dissolved Oxygen results from Coastal Waters

In comparison to the Water Quality Objectives results are within limits. DO percentiles are presented in the table below:

Table 21: Percentile calculations for Dissolved Oxygen (units: %) for Open Coastal Waters on Lindeman Island

	Lower Limit	Upper Limit	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective	95	105			
Control Sites (WQ3, WQ4)	49	101	63	71	87
Impact Sites (WQ1, WQ2, WQ5)	47	102	61	73	90
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	47	102	63	72	88

6.4 Turbidity

Turbidity was generally low and consistent between sample location from April 2024 through October 2024. A marked increase in turbidity was observed across all sample locations in November 2024. Coral spawning for the Whitsunday region on the Great Barrier Reef was expected to occur 19-22 November 2024, which may have impacted water clarity and increased turbidity at the time.

Turbidity showed little consistency between sampling locations following the onset of the wet season.

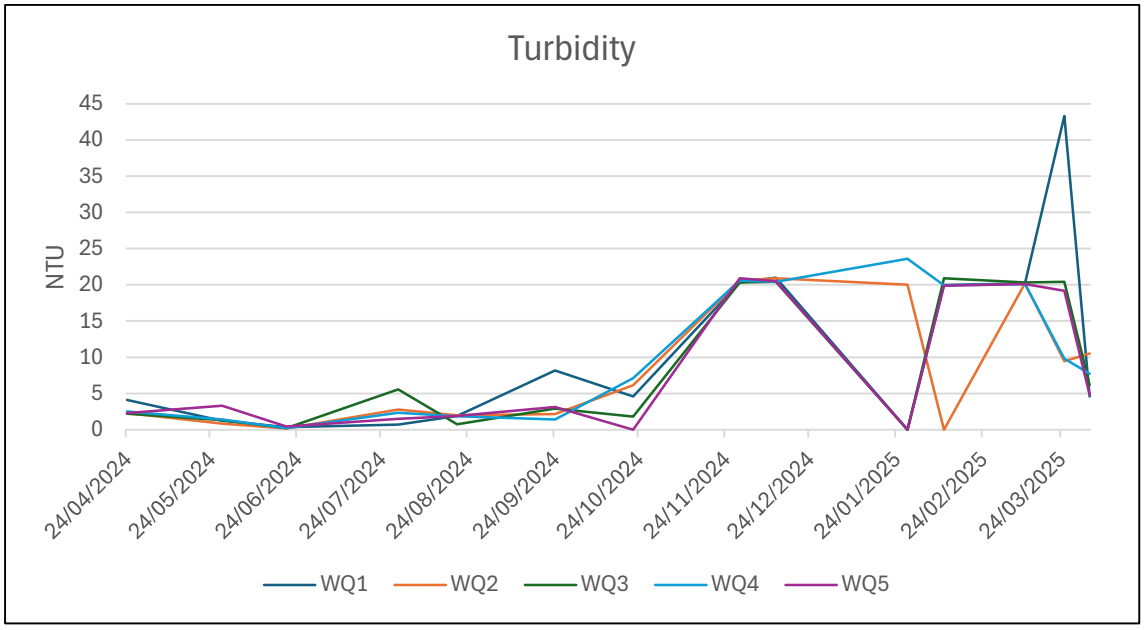

Figure 27: Turbidity results from Coastal Waters

Turbidity percentiles are presented in Table 22 below:

Table 22: Percentile calculations for Turbidity (units: NTU) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective	0.7	1.1	2.1
Control Sites (WQ3, WQ4)	1.4	5.8	20.4
Impact Sites (WQ1, WQ2, WQ5)	0.8	4.3	20.2
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	1.3	4.6	20.3

6.5 Total Dissolved Solids

TDS varied across the sampling period but was consistent between sampling locations at each event. A distinct decrease in TDS at all sample locations was measured in the December 2024 sampling event.

The TDS value of 23,500 mg/L record at WQ3 in October 2024 appears to be on an outlier. Enquiries with the laboratory indicated that QA/QC checks do not show any errors in analysis or reporting. Corresponding Electrical Conductivity measurement of 50,883 µS/cm for the same sample does not support this laboratory result. Sensitivity analysis indicates the outlier had little effect on the percentile ranges.

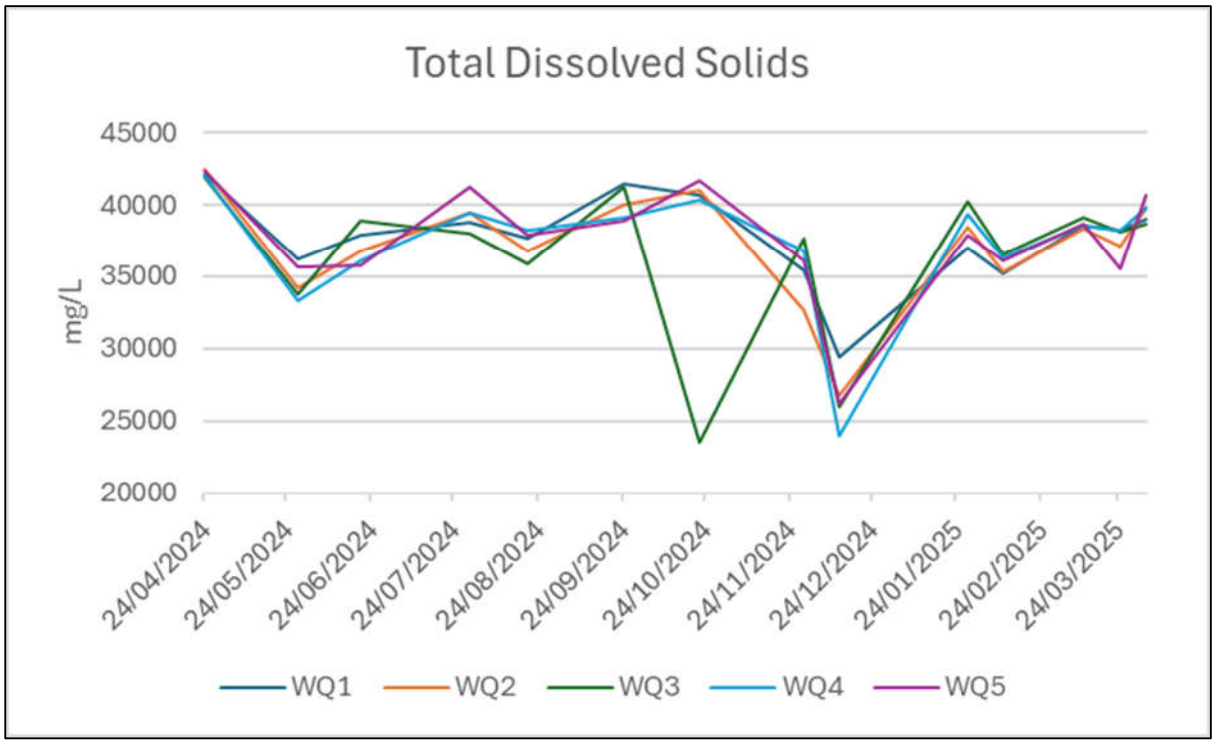

Figure 28: Total Dissolved Solids results from Coastal Waters

Percentile ranges for TDS split between 'Control' sites and 'Impact' sites are presented in Table 23 below.

Table 23: Percentile calculations for Total Dissolved Solids (units: mg/L) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Control Sites (WQ3, WQ4)	35,480	38,200	39,880
Impact Sites (WQ1, WQ2, WQ5)	35,520	37,900	40,700
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	35,620	38,150	40,160

6.6 Total Suspended Solids

Total suspended solids were not detected at concentrations above the limit of reporting in all samples from the May, June and July 2024 and February, March and April 2025 sampling events. The highest TSS was measured in the December 2024 sampling event, with lower concentrations detected in April 2024 and September 2024. TSS in marine waters does not appear to be influenced by rainfall.

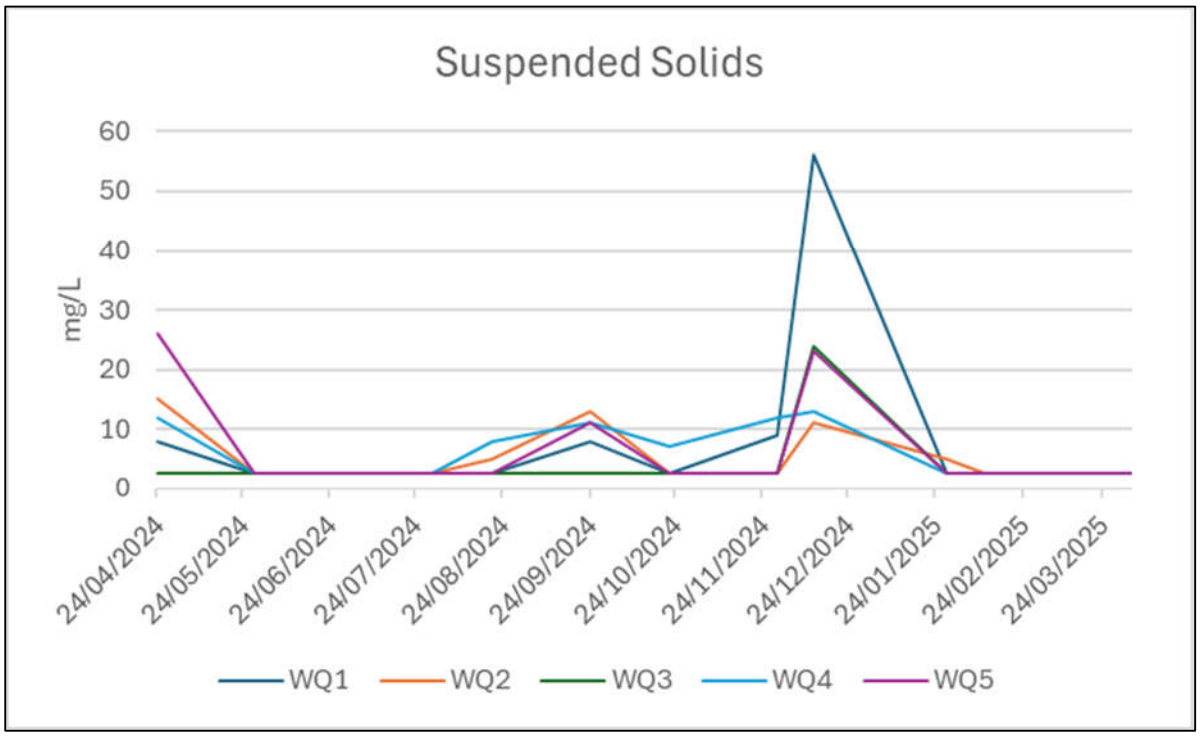

Figure 29: Total Suspended Solids results from Coastal Waters

Percentile ranges for TSS split between 'Control' sites and 'Impact' sites are presented in Table 24 below:

Table 24: Percentile calculations for Total Suspended Solids (units: mg/L) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective	0.9	1.4	2.2
Control Sites (WQ3, WQ4)	<5	<5	8.8
Impact Sites (WQ1, WQ2, WQ5)	<5	<5	8.4
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	<5	<5	8.0

6.7 Ammonia

Ammonia concentrations were generally consistent between all sampling locations. Ammonia was not detected in all samples between July and October 2024 and December 2024 to January 2025. The November 2024 peak may be associated with decomposition of organic material derived from coral spawning.

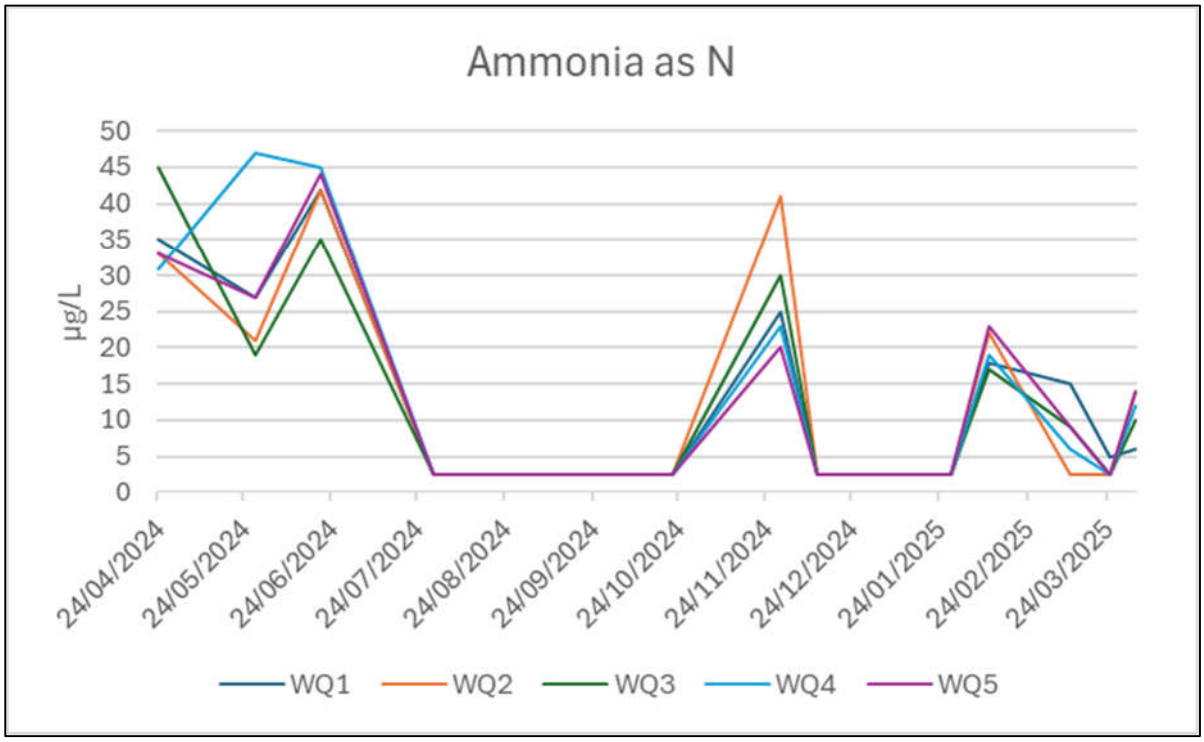

Figure 30: Ammonia results from Coastal Waters

Percentile ranges for ammonia split between 'Control' sites and 'Impact' sites are presented in Table 25 below.

Table 25: Percentile calculations for Ammonia as N (units: µg/L) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective	0	1	6
Control Sites (WQ3, WQ4)	<5	<5	30.2
Impact Sites (WQ1, WQ2, WQ5)	<5	<5	27.0
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	<5	<5	27.0

6.8 Total Nitrite + Nitrate

Nitrite and Nitrate concentrations generally followed the same pattern across the monitoring period with the following exceptions:

- An isolated peak at WQ3 in September 2024 that was not detected in any other sample.
- Elevated concentrations at WQ2 and WQ3 in November 2024
- A moderately elevated concentration at WQ2 in April 2024.

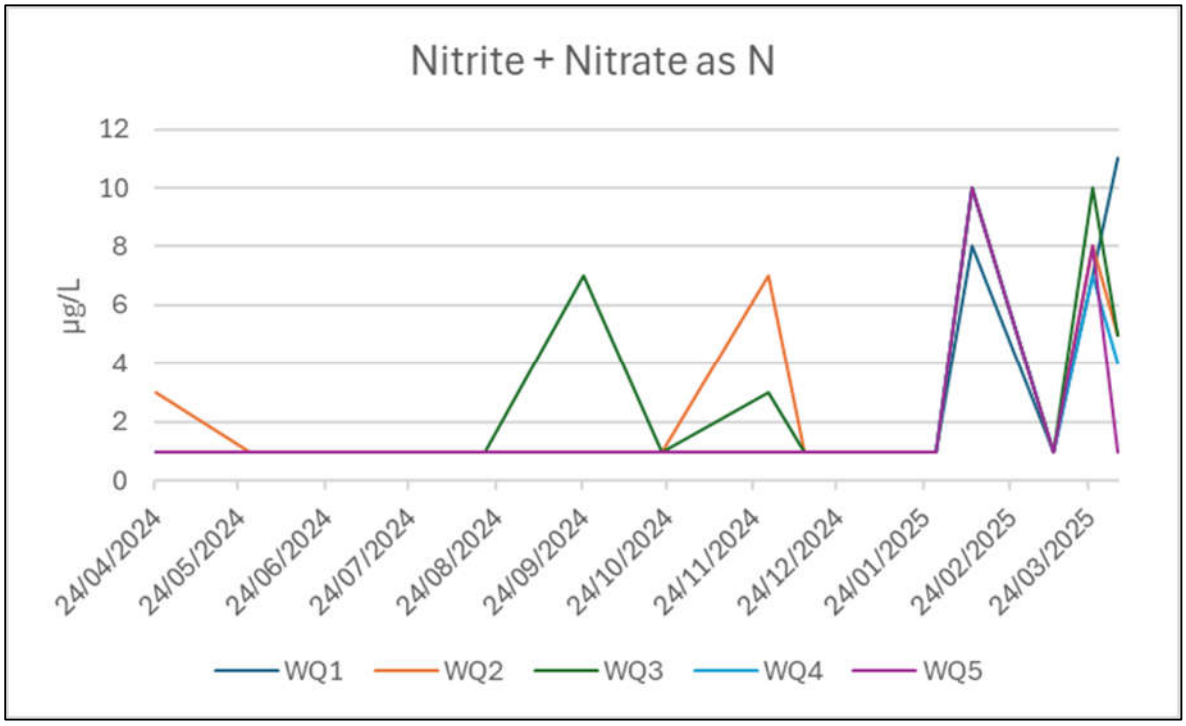

Figure 31: Total Nitrite and Nitrate results from Coastal Waters

Percentile ranges for nitrite and nitrate split between 'Control' sites and 'Impact' sites are presented in Table 26 below.

Table 26: Percentile calculations for Nitrite + Nitrate as N (units: µg/L) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective	0.14	0.49	2.0
Control Sites (WQ3, WQ4)	<2	<2	5.4
Impact Sites (WQ1, WQ2, WQ5)	<2	<2	5.8
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	<2	<2	5.0

6.9 Total Nitrogen

Total N generally followed the same concentration pattern across all sampling events. A spike was detected at WQ5 in the July 2024 event, which is attributed to very strong onshore winds and rough conditions that likely mobilised organic material into the water column.

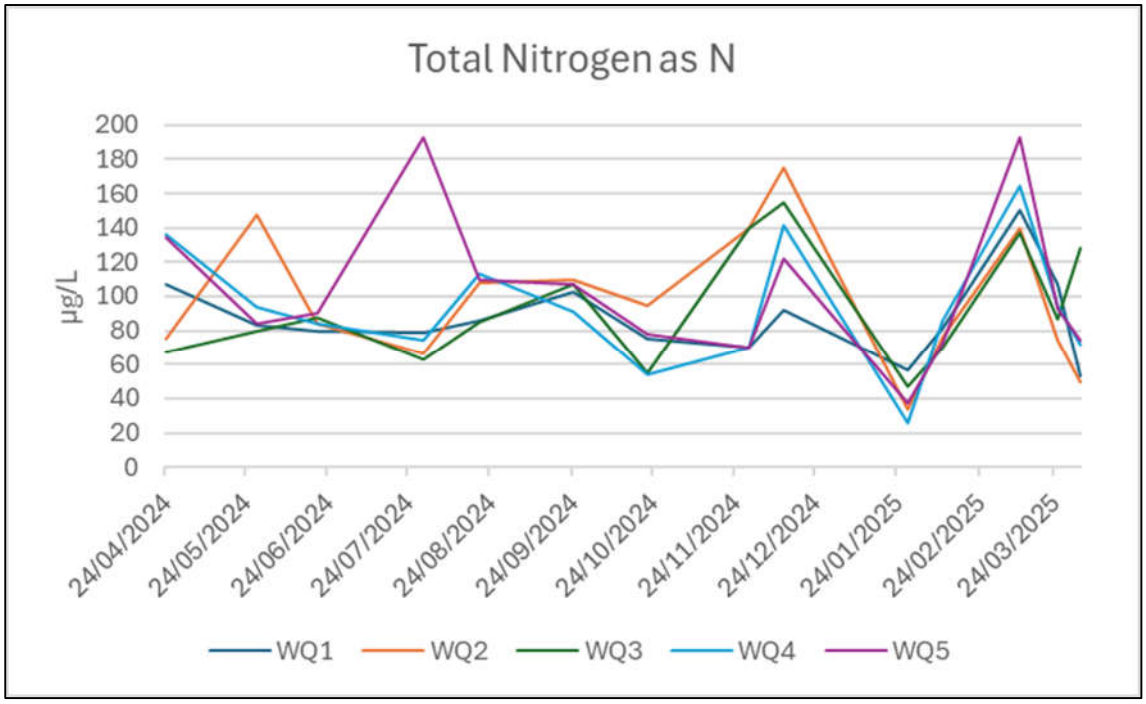

Figure 32: Total Nitrogen as N results from Coastal Waters

Percentile ranges for Total N split between 'Control' sites and 'Impact' sites are presented in Table 27 below. In comparison to the Water Quality Objectives, control site results for 20th and 50th percentiles are lower and the 80th percentile less than 10% higher. Results for all impact sites are less than Water Quality Objectives values.

Table 27: Percentile calculations for Total Nitrogen as N (units: µg/L) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective	75	95	125
Control Sites (WQ3, WQ4)8	66	87	136
Impact Sites (WQ1, WQ2, WQ5)	72	85	127
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	70	86	132

6.10 Filterable Reactive Phosphorus as P

Filterable Reactive Phosphorus (FRP) was record in 19 samples across sample locations. All other results were reported below the laboratory limit of reporting.

FRP results generally followed the same pattern across all sample locations with the exception of a significant spike in November 2024. The spike may be a result of the preceding coral spawning event.

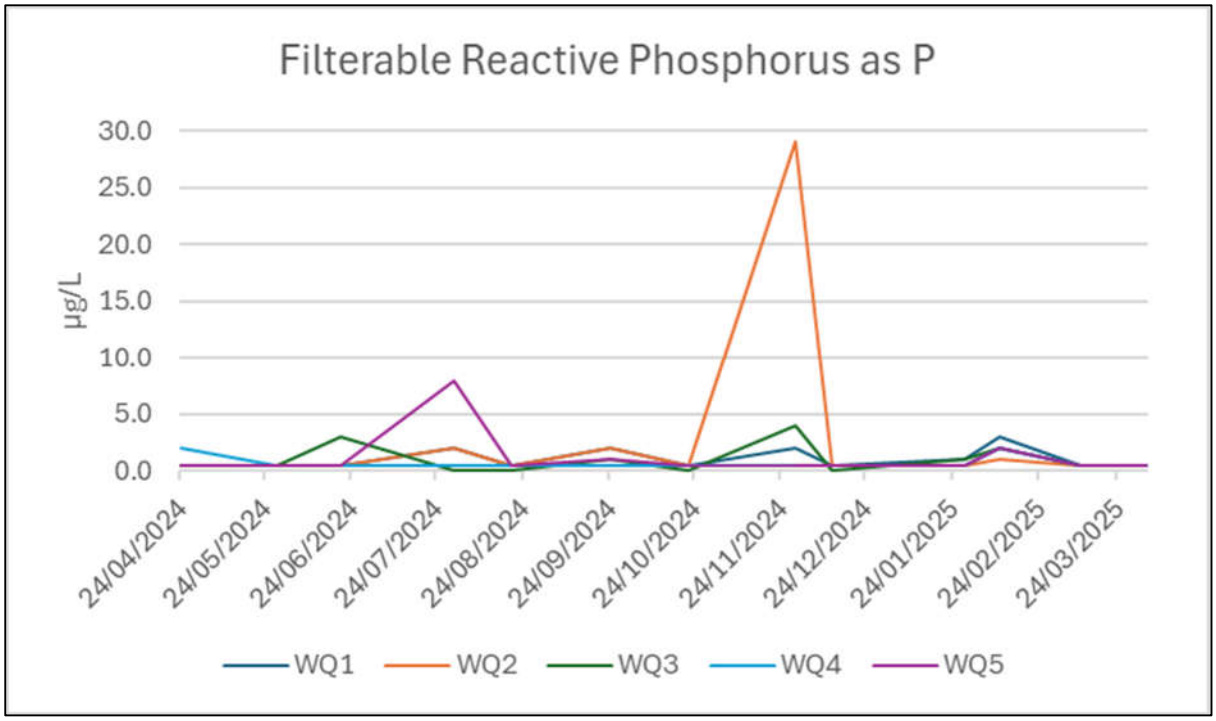

Figure 33: Filterable Recoverable Phosphorus results from Coastal Waters

Percentile ranges for FRP split between 'Control' sites and 'Impact' sites are presented in Table 28 below.

Table 28: Percentile calculations for Filterable Reactive Phosphorus as P (units: µg/L) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective	0	1	3
Control Sites (WQ3, WQ4)	<1	<1	1.2
Impact Sites (WQ1, WQ2, WQ5)	<1	<1	2
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	<1	<1	1.8

6.11 Total Phosphorus

Of the 70 samples analysed, Total Phosphorus was reported in only 2 samples (WQ5 July 2024 and WQ2 November 2024). All other results were reported below the laboratory Limit of Reporting.

Phosphorus at WQ5 in July 2024 is attributed to adverse weather conditions as described above. The origin of the detection at WQ2 in November 2024 is not known but could be attributed to the coral spawning event in the days prior to sampling.

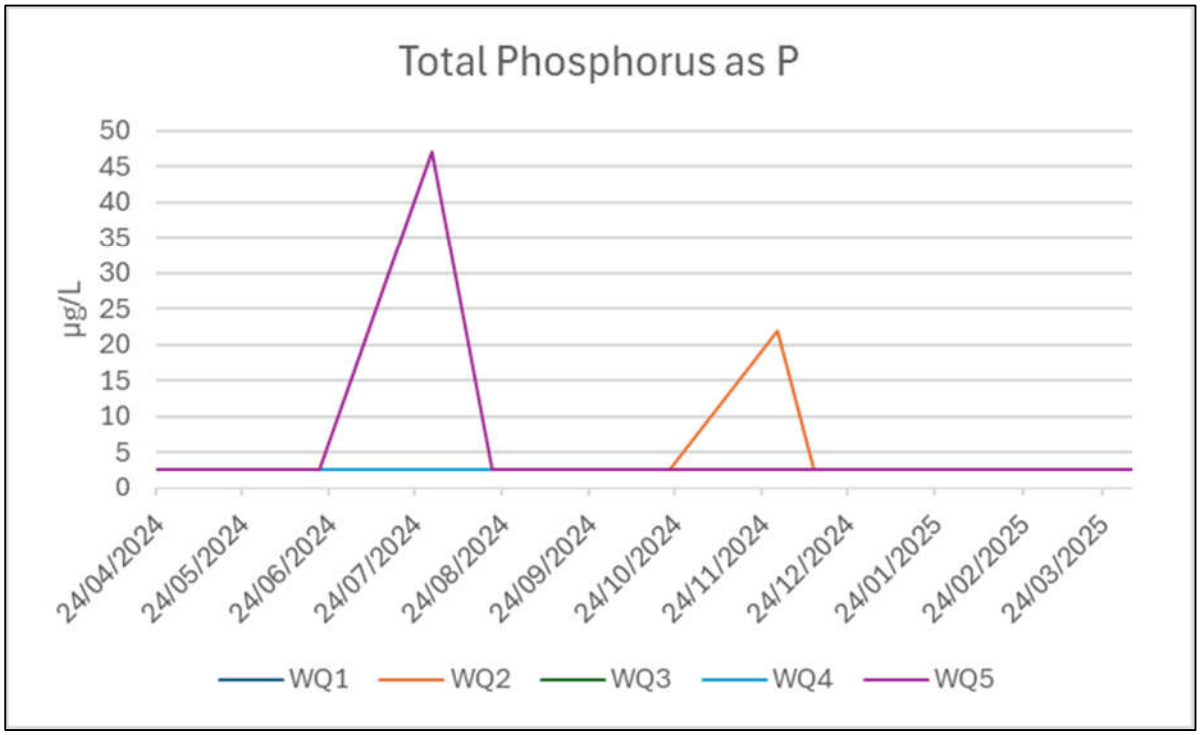

Figure 34: Total Phosphorus as P results from Coastal Waters

Percentile ranges for Total P split between 'Control' sites and 'Impact' sites are presented in Table 29 below.

Table 29: Percentile calculations for Total Phosphorus as P (units: µg/L) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Water Quality Objective	8	11	14
Control Sites (WQ3, WQ4)	<5	<5	<5
Impact Sites (WQ1, WQ2, WQ5)	<5	<5	<5
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	<5	<5	<5

6.12 Total Coliforms

The pattern and magnitude of Total Coliform concentrations was relatively consistent through to January 2025 where concentrations at WQ1, WQ2, WQ3 and WQ5 increased markedly while WQ4 increased and then decreased.

The increase through the wet season is likely attributed to runoff from Lindeman Island, with the largest concentration detected at WQ3 which was located at the discharge point of the largest creek on the island.

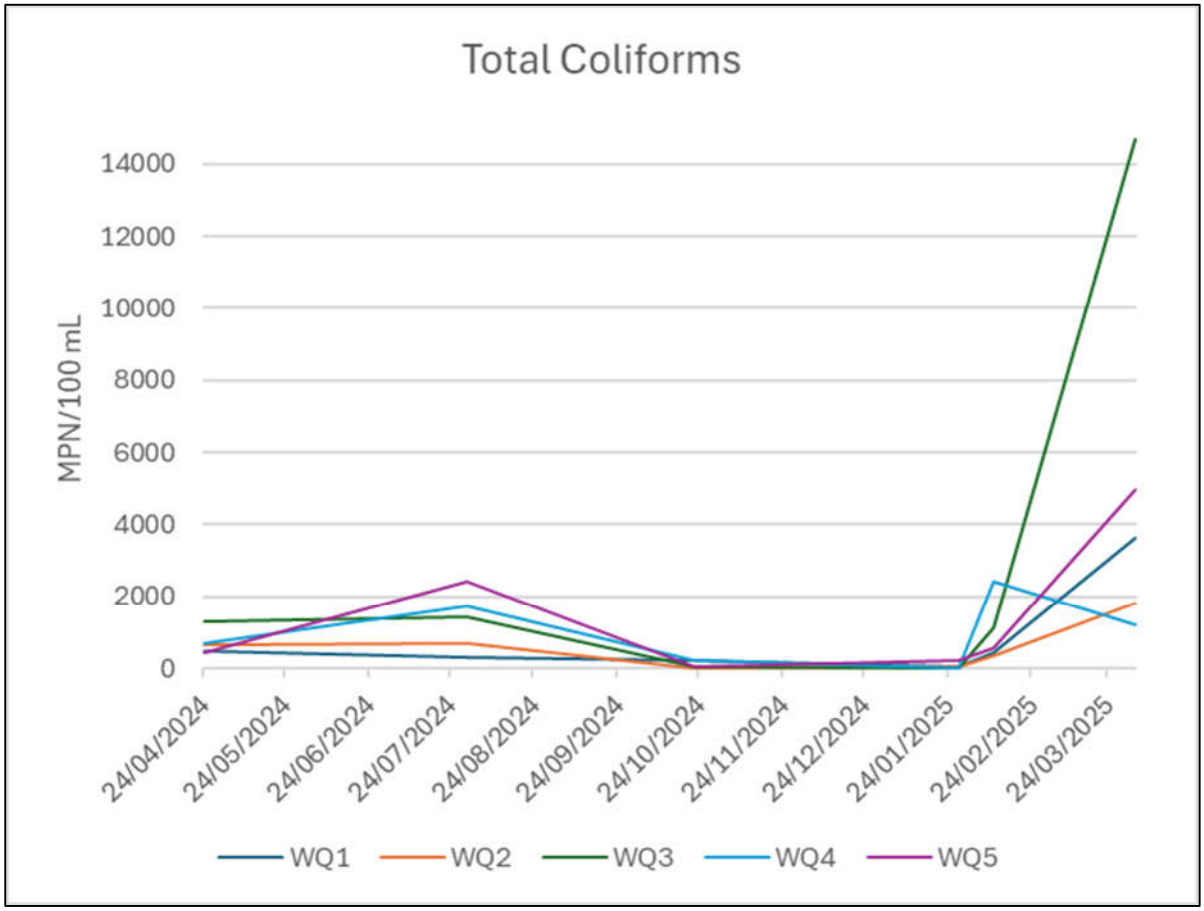

Figure 35: Total Coliforms results from Coastal Waters

Percentile ranges for Total Coliforms split between 'Control' sites and 'Impact' sites are presented in Table 30 below.

Table 30: Percentile calculations for Total Coliforms (units: MPN/100 ml) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Control Sites (WQ3, WQ4)	39	1160	2008
Impact Sites (WQ1, WQ2, WQ5)	57	423	1948
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	54	518	1811

6.13 E. coli

E. coli was recorded at or above the limit of reporting in all sample dates except WQ2, WQ3 and WQ4 in October 2024 and WQ1, WQ2, WQ4 and WQ5 in January 2025. Both of these were monthly sampling events. E. coli concentrations follow the same trend as Total Coliforms with the following noted:

- The highest concentration was detected at WQ5 in the July 2024 sampling event. No rain was recorded prior to the sampling event and the *E. coli* is not attributed to a terrestrial source.
- *E. coli* in samples collected from January 2025 to April 2025 followed the same pattern as Total Coliforms.

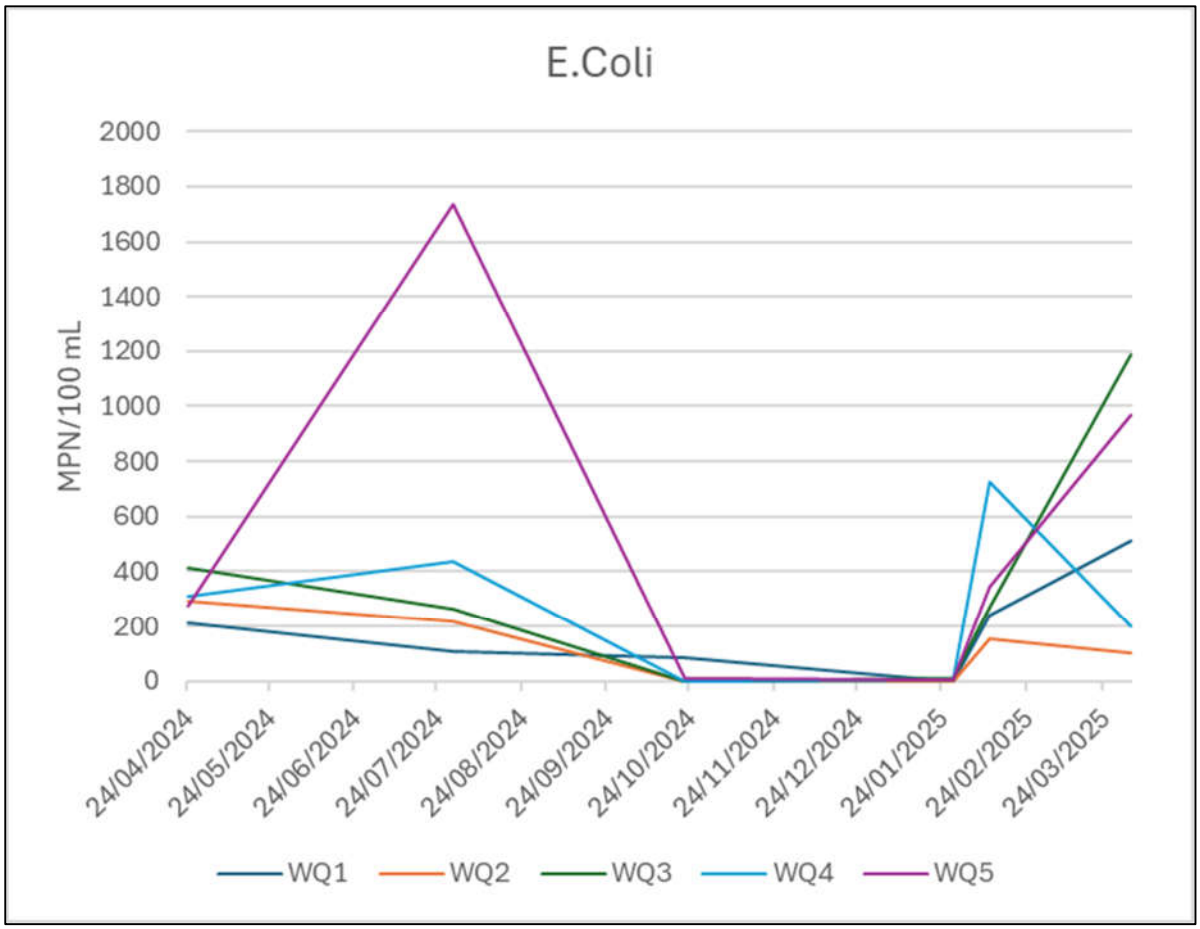

Figure 36: E. coli results from Coastal Waters

Percentile ranges for *E. coli* split between 'Control' sites and 'Impact' sites are presented in Table 31 below.

Table 31: Percentile calculations for E. coli (units: MPN/100 ml) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Control Sites (WQ3, WQ4)	3	267	552
Impact Sites (WQ1, WQ2, WQ5)	4	184	378
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	5	217	430

6.14 Thermotolerant Coliforms

Thermotolerant coliforms were not identified in all samples from April 2024 and July 2024 sampling events and in WQ4 only from the October 2024 event. Thermotolerant coliforms did not follow any pattern in samples collected over the wet season. The highest concentration was at WQ4 in February 2025.

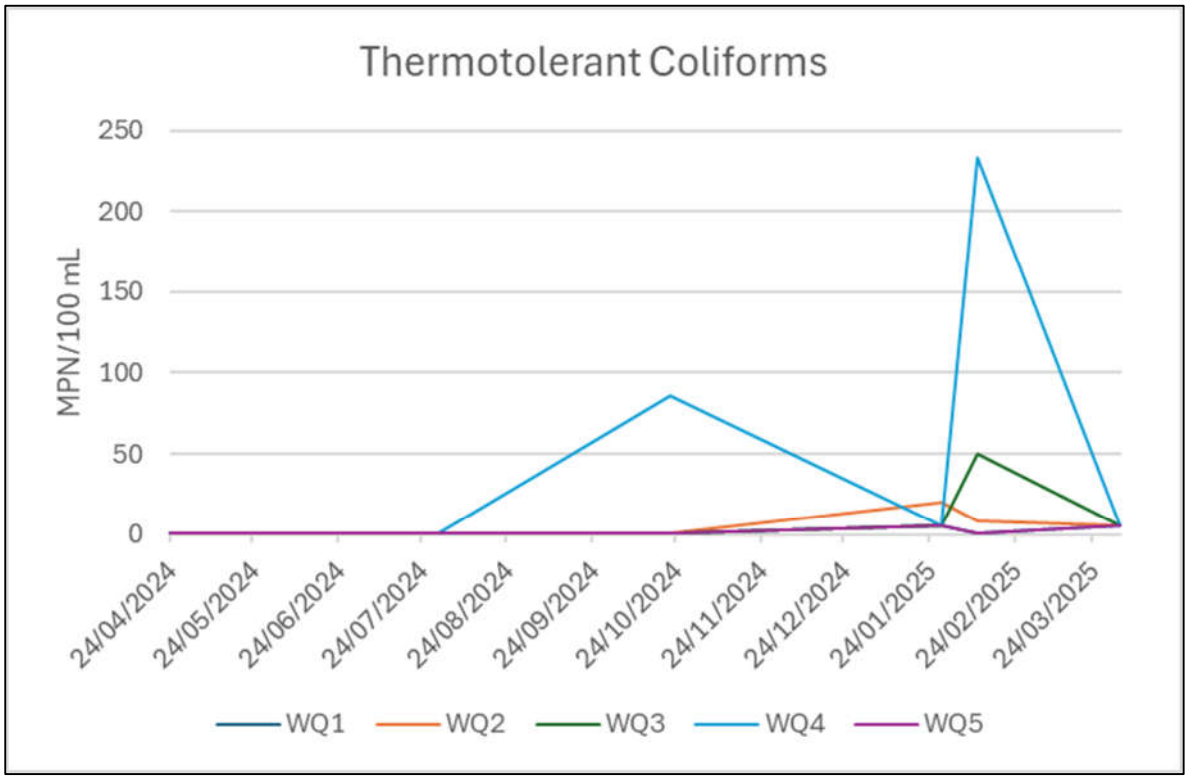

Figure 37: Thermotolerant Coliforms results from Coastal Waters

Percentile ranges for Thermotolerant Coliforms split between 'Control' sites and 'Impact' sites are presented in Table 32 below.

Table 32: Percentile calculations for Thermotolerant Coliforms (units: MPN/100 ml) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Control Sites (WQ3, WQ4)	<1	5	64
Impact Sites (WQ1, WQ2, WQ5)	<1	<1	5
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	<1	<1	5

6.15 Heterotrophic Plate Count

Heterotrophic Plate Count concentrations followed the same pattern between all sample locations across all sample events. The HPC concentrations were elevated in samples WQ3 and WQ5 from the July 2024 event compared against the other samples collect during that event. However, it is noted that HPC was still slightly elevated in the other samples.

HPC was also detected in the February 2025 sample event, albeit at lower concentrations than the July 2024 event.

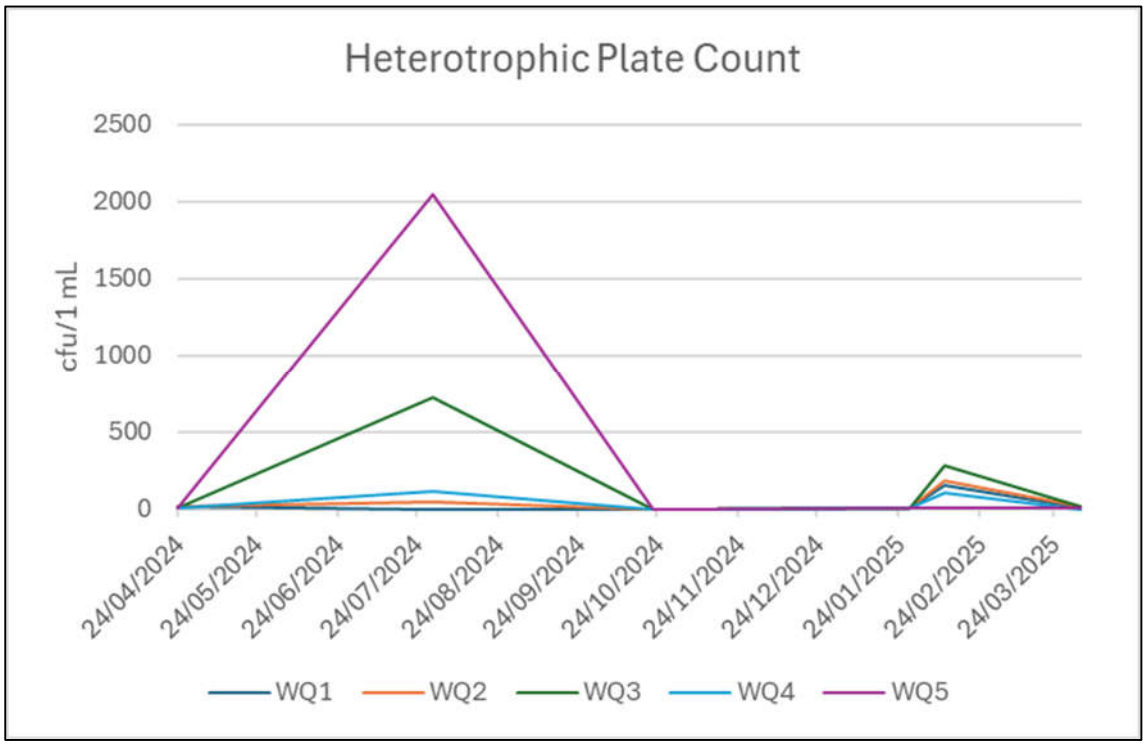

Figure 38: Heterotrophic Plate Count results from Coastal Waters

Percentile ranges for HPC split between 'Control' sites and 'Impact' sites are presented in Table 33 below.

Table 33: Percentile calculations for Heterotrophic Plate Count (units: cfu/1 ml) for Open Coastal Waters on Lindeman Island

	20th Percentile	50th Percentile	80th Percentile
Control Sites (WQ3, WQ4)	<1	8	178
Impact Sites (WQ1, WQ2, WQ5)	<1	9	70
All Sites (WQ1, WQ2, WQ3, WQ4, WQ5)	<1	9	108

6.16 Organophosphorus Pesticides

No Organophosphorus Pesticides were detected above the LOR at any Open Coastal Waters site on Lindeman Island during the sampling period.

6.17 Temperature and Salinity

A YSI EXO3 Multiparameter Sonde data logger collected Electrical Conductivity and Total Dissolved Solids data from 28 May 2024 to 11 November 2024 and 12 December 2024 to 9 June 2025. The unit was unserviceable from 12 November 2024 to 10 December 2024. The sonde was installed on the most inshore starboard navigation marker within the jetty channel directly in front of the proposed resort area at the edge of the channel, closest to Lindeman Island (Figure 2).

The 20th, 50th, 80th percentile and minimum and maximum EC, and temperature for each month of the sampling program is presented on the graph below. EC increases with ocean temperature. An unseasonable drop in surface water temperature and corresponding EC was measured in February, during a period of extended rainfall.

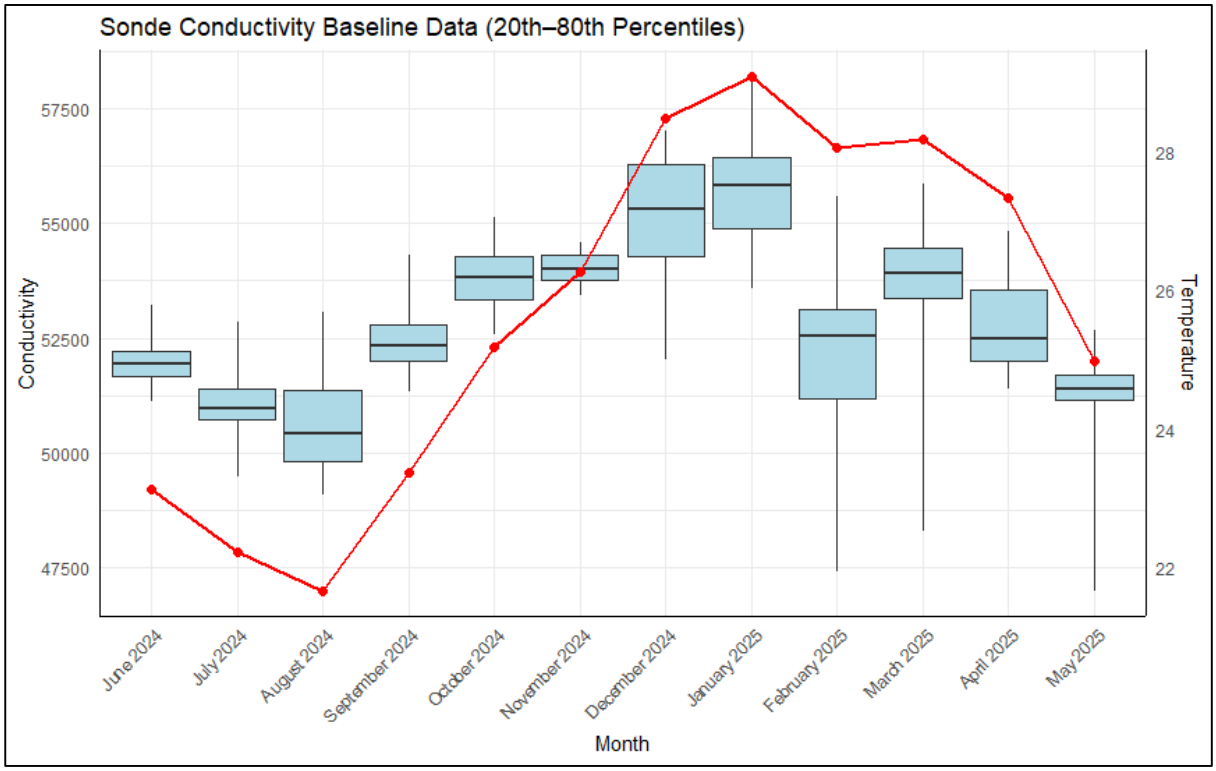

Figure 39: Electrical Conductivity and Temperature, Lindeman Island 2024 - 2025

EC and temperature compensated TDS are presented below on the chart below. Temperature compensated TDS results indicate variability over the wet season from freshwater inputs.

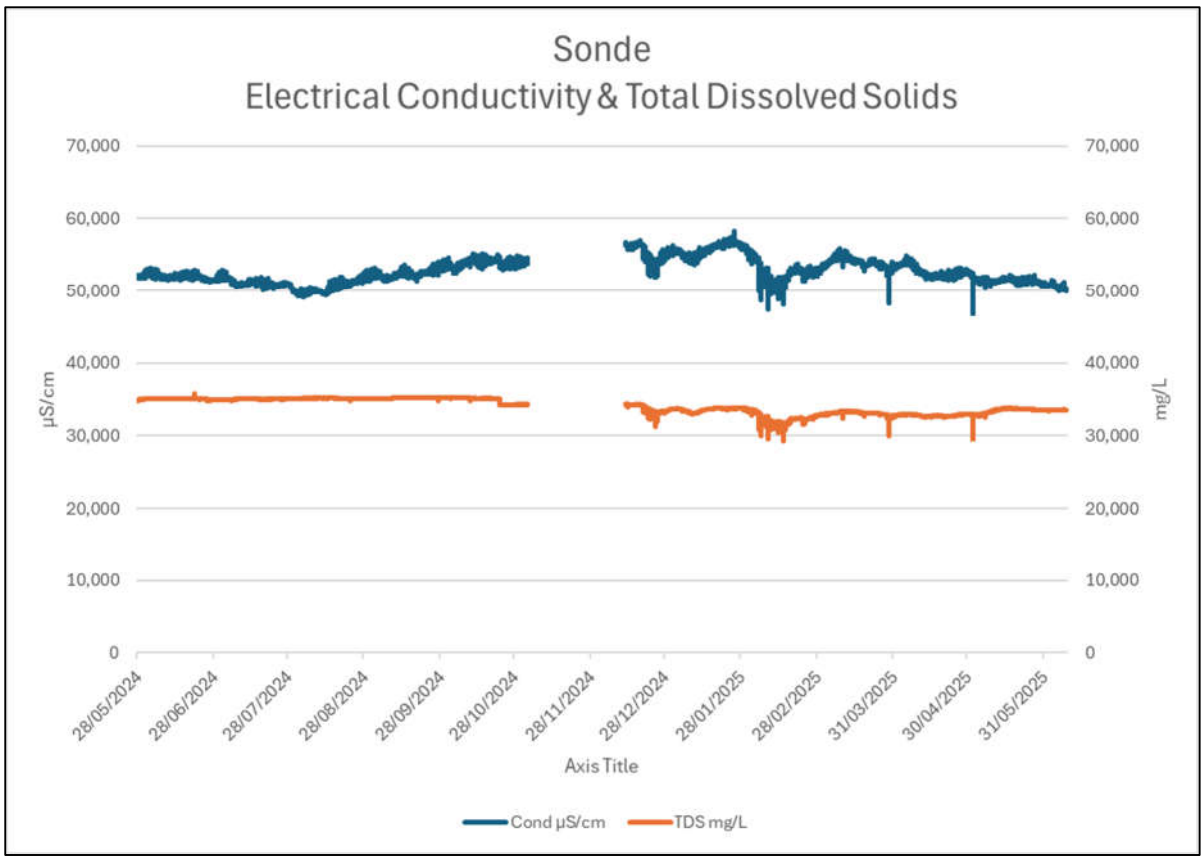

Figure 40: Electrical Conductivity and Total Dissolved Solids data collected via the YSI sonde sample location WQ5 on Lindeman Island, 2024 - 2025

Percentiles for EC and TDS across the monitoring period are presented in the table below:

Table 34: Percentile calculations for EC and TDS for Coastal Waters

	20th Percentile	50th Percentile	80th Percentile
Electrical Conductivity (uS/cm)	51,221	52,334	54,218
Total Dissolved Solids (mg/L)	32,962	33,793	35,100

7. FIELD QA/QC ASSESSMENT

The following sample pairs exceeded the data quality indicator of 20% relative percent difference where the results were greater than five time the limit of reporting as per Qld DES (2018) *Monitoring and Sampling Manual*:

- Ammonia in triplicate pair LIND01 and TW1.
- TDS in duplicate pair LIND01 and DW2 and LIND01 and TW2.
- TDS, TSS, ammonia, Total N and Total P between duplicate pair LIND01 and DW3.
- TSS ammonia, Total N and Total P between triplicate pair LIND01 and TW3.
- TDS between duplicate pair LIND01 and DW4 and between triplicate pair LIND01 and TW4.

- TDS between duplicate pair LIND01 and DW9.
- Total P between triplicate pair LIND01 and TW9.
- TDS and TSS between duplicate pair LIND01 and DW10.
- Total P between triplicate pair LIND01 and TW10.
- TSS between triplicate pair LIND01 and TW11
- TSS between duplicate pair LIND01 and DW12 and triplicate pair LIND01 and TW12.
- TDS between duplicate pair LIND01 and DW13 and triplicate pair LIND01 and TW13.

TDS and TSS outliers were attributed to stirring up of the substrate while sampling. The primary sample result was typically lower than the duplicate and triplicate and were the first sample collected. The primary sample was used for calculating percentiles.

The ammonia, nitrogen and phosphorus outliers are attributed to collection of organic material in the samples. As above, the outliers appear to be attributed to stirring up of substrate during sampling.

All other duplicate and triplicate pair results were within the Data Quality Indicators. Catchment Solutions accepts the reliability of the analytical data.

8. SUMMARY OF BASELINE WATER QUALITY RESULTS

Based on observations made during the sampling program and in accordance with the WQMP, baseline data has been separated into the following sample sites:

- LIND01 as a stand-alone data point due to its perennial nature with no flow.
- Ephemeral stream samples LIND02, LIND03, LIND04, LIND05 and LIND06 have been grouped to provide a representation of surface water quality in flowing surface waters.
- Marine sample control sites WQ3 and WQ4 have been grouped as they are outside the influence of site construction activities.
- Marine impact locations WQ1, WQ2 and WQ5 have been grouped to provide a representation of water quality in the coastal zone adjacent to the resort. It is noted that WQ5 is located in shallow water in close proximity to the shoreline where water quality is influenced by wind direction and strength.

8.1 Baseline Water Quality – Dam

The summary of baseline water quality from LIND01 is presented below:

Table 35: Baseline monitoring results for Terrestrial Fresh Water location LIND01 (2024 – 2025)

Island Fresh Waters – Perennial (LIND01)	Unit	20th Percentile	50th Percentile	80th Percentile
Electrical Conductivity	µS/cm	114	133	380
pH	pH units	6.4	7.5	8.6
Dissolved Oxygen	% Saturation	40.6	60.0	72.1
Turbidity	NTU	2.1	14.0	27.8
Total Dissolved Solids	mg/L	78	87	101
Total Suspended Solids	mg/L	<5	<5	11
Ammonia	mg/L	<0.01	0.025	0.030
Total Nitrite + Nitrite	mg/L	<0.01	<0.01	<0.01
Total Nitrogen as N	mg/L	0.40	0.65	1.00
Total Phosphorus	mg/L	<0.01	0.04	0.08
Total Coliforms	MPM/100 mL	3094	5803	12584
E. Coli	MPM/100 mL	13	58	492
Thermotolerant Coliforms	MPM/100 mL	68	432	1117
Heterotrophic Plate Count	cfu/1 mL	136	465	1228
Organophosphorus Pesticides	µg/L	Non-detect for all OPPs		

8.2 Baseline Water Quality – Ephemeral Streams

The summary of baseline water quality data from ephemeral stream sample locations LIND02, LIND03, LIND04, LIND05 and LIND06 are presented in the table below:

Table 36: Baseline monitoring results for the Inland Fresh Water locations LIND02 – LIND06 (2024 – 2025)

Island Fresh Waters – Ephemeral (LIND04, LIND05, LIND06)	Unit	20th Percentile	50th Percentile	80th Percentile
Electrical Conductivity	µS/cm	148	384	653
pH	pH units	7.0	8.1	8.5
Dissolved Oxygen	% Saturation	57.6	77.2	91.5
Turbidity	NTU	31.4	62.9	116.4
Total Dissolved Solids	mg/L	198	261	346
Total Suspended Solids	mg/L	<5	10	35.2
Ammonia	mg/L	<0.01	0.03	0.06
Total Nitrite + Nitrite	mg/L	<0.01	0.01	0.026
Total Nitrogen	mg/L	0.40	0.70	1.02
Total Phosphorus	mg/L	0.04	0.10	0.148
Total Coliforms	MPM/100 ml	12420	24,196 upper LOR	24,196 upper LOR
E. Coli	MPM/100 ml	50	243	499
Thermotolerant Coliforms	MPM/100 ml	73	576	4402
Heterotrophic Plate Count	cfu/1 ml	222	1500	2896
Organophosphorus Pesticides	µg/L	<LOR	<LOR	<LOR

8.3 Baseline Water Quality – Marine Control Sites

Baseline monitoring results from control sites WQ3 and WQ4 is presented in the table below:

Table 37: Baseline monitoring results for the Open Coastal Water control locations WQ3 and WQ4 (2024 – 2025)

Coastal/marine waters – Control Sites (WQ3, WQ4)	Unit	20th Percentile	50th Percentile	80th Percentile
Electrical Conductivity	µS/cm	48,830	53,495	56,526
pH	pH units	7.9	8.2	8.2
Dissolved Oxygen	% Saturation	63	71	87
Turbidity	NTU	1.4	5.8	20.4
Total Dissolved Solids	mg/L	35,480	38,200	39,880
Total Suspended Solids	mg/L	<5	<5	8.8
Ammonia	µg/L	<5	<5	30.2
Total Nitrite + Nitrate	µg/L	<2	<2	5.4
Total Nitrogen	µg/L	66	87	136
Filterable Recoverable Phosphorus as P	µg/L	<1	<1	1.2
Total Phosphorus	µg/L	<5	<5	<5
Total Coliforms	MPM/100 ml	39	1160	2008
E. Coli	MPM/100 ml	3	267	552
Thermotolerant Coliforms	MPM/100 ml	<1	5	64
Heterotrophic Plate Count	cfu/1 ml	<1	8	178
Organophosphorus Pesticides	µg/L	<LOR	<LOR	<LOR

8.4 Baseline Water Quality – Marine Impact Sites

Baseline monitoring results from control sites WQ1, WQ2 and WQ5 is presented in the table below:

Table 38: Baseline monitoring results for the Open Coastal Water impact locations WQ1, WQ2 and WQ5 (2024 – 2025)

Coastal/marine waters – Impact Sites (WQ1, WQ2, WQ5)	Unit	20th Percentile	50th Percentile	80th Percentile
Electrical Conductivity	µS/cm	49,120	53,594	56,595
pH	pH units	7.7	8.1	8.2
Dissolved Oxygen	% Saturation	61	73	90
Turbidity	NTU	1.2	4.6	20.2
Total Dissolved Solids	mg/L	35,520	37,900	40,700
Total Suspended Solids	mg/L	<5	<5	8.4
Ammonia	µg/L	<1	3.8	27.0
Total Nitrite + Nitrate	µg/L	<2	<2	5.8
Total Nitrogen	µg/L	72	85	127
Filterable Recoverable Phosphorus as P	µg/L	<1	<1	2
Total Phosphorus	µg/L	<5	<5	<5
Total Coliforms	MPM/100 ml	57	423	1948 upper LOR
E. Coli	MPM/100 ml	4	184	378
Thermotolerant Coliforms	MPM/100 ml	<1	<1	5
Heterotrophic Plate Count	cfu/1 ml	<1	9	70
Organophosphorus Pesticides	µg/L	<LOR	<LOR	<LOR

8.5 Baseline Water Quality – Temperature, Electrical Conductivity and Total Dissolved Solids

Baseline monitoring results from temperature and EC constant monitoring is presented in the table below:

Table 39: Baseline monitoring results for the Open Coastal Water Sonde data (2024 – 2025)

Coastal/marine waters – Jetty Channel	Unit	20th Percentile	50th Percentile	80th Percentile
Electrical Conductivity	µS/cm	51,221	52,334	54,218
Total Dissolved Solids	mg/L	32,962	33,793	35,100

9. CONSTRUCTION / OPERATIONAL PHASE WATER QUALITY MONITORING PROGRAM

Construction and operation of the resort are to be managed such that receiving water quality, both terrestrial and marine, is not degraded beyond background conditions. Discharges from site must not result in:

- Visible contamination of receiving waters.
- Formation of sediment plumes.
- Persistent turbidity increases beyond natural variability.
- Adverse alteration of ambient water quality conditions.

Water quality is to be assessed against baseline water quality monitoring data.

Monitoring and Response Framework

The monitoring and response framework and order of tasks is presented below:

- Monitoring program (what will be measured) – Section 9.1.
- Sampling schedule (when it will be measured) - Section 9.2.
- Assessment methodology (how results will be interpreted) – Section 9.3.
- Trigger values (what benchmarks apply) – Section 9.4.
- Assessment criteria (how significance is determined) – Section 9.5.
- Management triggers (when action is required) – Section 9.6.
- Significant impact definition (when a problem exists) – Section 9.7
- Corrective actions (what action is taken) – Section 9.8.

9.1 Updated Water Quality Monitoring Program

The original Water Quality Monitoring Plan prepared by WEC in 2018 was updated in 2025 by NGH to reflect minor changes in sampling locations and changes to legislation. The updated version (NGH, 2025) is included in Attachment D.

9.2 Sampling Schedule

The sampling schedule, methodology and QA/QC for the Construction / Operational phase water quality monitoring from the NGH (2025) Water Quality Monitoring Plan is considered suitable for ongoing monitoring and is presented in Table 40 below:

Table 40: Construction / Operational Phase Sampling Schedule

Parameter		Analysis	Sampling Interval
Physical	Temperature	In-situ / Automatic	WQ1 – WQ5 and LIND01 Quarterly 2 x Rainfall Events Post Cyclonic Event LIND02 to LIND06 When Possible
	pH		
	Total Suspended Solids		
	Dissolved Oxygen		
	Electrical Conductivity / salinity		
	Turbidity	In-situ	
Chemical	Total Dissolved Solids	Laboratory	
	Total Nitrogen		
	Ammonia		
	Oxidised Nitrogen		
	Total Phosphorus		
	Reactive Phosphorus		
	Organophosphorus Pesticides		
Biological	Faecal Coliforms	Laboratory	
	Heterotrophic Plate Count		
	Total Coliforms		
	E. coli		
	Temperature	Fixed Continuous	Hourly
	Electrical Conductivity	Fixed Continuous	Hourly

9.3 Assessment of Results

The following sections define the methodology for identifying threshold levels and the duration of change in monitored water quality that would constitute a significant impact on receiving environments. The methodology adopts a multiple-lines-of-evidence approach, incorporating:

- Baseline (reference) conditions with the Natural Variability Envelope (NVE) represented at the 20th, 50th, and 80th Percentiles of baseline data.
- Published Guideline Trigger Values (GTV), where available and relevant.
- Site-Specific Trigger Values (SSTVs).
- Magnitude, duration and frequency of exceedance.
- Spatial extent of impact.
- Origin of impact.
- Ecological relevance.

Exceedance of a Trigger Value, including an SSTV or Guideline Trigger Value, does not in itself indicate environmental harm. Trigger values are investigation thresholds used to identify potential impacts requiring further assessment.

9.4 Trigger Values and Threshold Levels

Guideline Trigger Values

ANZG (2018) default guideline values for toxicants are adopted as threshold levels for ammonia and OPPs. The 95% species protection for slightly to moderately disturbed ecosystems was selected for freshwaters and 99% level of species protection adopted for marine waters of the Great Barrier Reef Marine Park (where available).

Table 41: Guideline Trigger Values

Analyte	Unit	Fresh Waters	Marine Waters
Ammonia	mg/L	0.72	0.5
Azinphos methyl	ug/L	0.02	N/A
Chlorpyriphos	ug/L	0.01	0.0005
Diazinon	ug/L	0.01	N/A
Dimethoate	ug/L	0.15	N/A
Fenitrothion	ug/L	0.2	0.001
Malathion	ug/L	0.05	N/A
Parathion	ug/L	0.004	N/A
Profenophos	ug/L	0.02	N/A
Temephos	ug/L	0.05	0.0004

Site-Specific Trigger Values

Site-Specific Trigger Values are set at the 80th Percentile of the baseline values for total suspended solids, turbidity, nutrients (total nitrogen, ammonia, nitrate and nitrite, total phosphorus, reactive phosphorus), organophosphorus pesticides, faecal coliforms, total coliforms and *E. coli*.

Table 42: Site-Specific Trigger Values

Analyte	Unit	Dam	Ephemeral Streams	Marine Control Sites	Marine Impact Sites
Turbidity	NTU	27.8	116.4	20.4	20.2
Total Suspended Solids	mg/L	11	35.2	8.8	8.4
Ammonia	mg/L	0.030	0.06	0.03	0.027
Total Nitrite + Nitrate	mg/L	<0.01	0.026	0.0054	0.0058
Total Nitrogen	mg/L	1.00	1.02	0.136	0.127
Filterable Recoverable Phosphorus as P	mg/L	-	-	0.0012	0.002
Total Phosphorus	mg/L	0.08	0.148	<0.005	<0.005
Total Coliforms	MPM/100 ml	12,584	24,196 upper LOR	2,008	1984 upper LOR
E. Coli	MPM/100 ml	492	499	552	378
Thermotolerant Coliforms	MPM/100 ml	1,117	4,402	64	5
Heterotrophic Plate Count	cfu/1 ml	1,228	2896	178	70
Organophosphorus Pesticides	µg/L	<LOR	<LOR	<LOR	<LOR

Natural Variability Envelope

Physical stress indicators temperature, pH, dissolved oxygen, total dissolved solids and electrical conductivity will be compared against the Natural Variability Envelope (20th, 50th, 80th Percentiles of baseline data).

Trigger values adopted for the dam and ephemeral streams are the baseline 20th, 50th and 80th Percentiles for each analyte presented in Tables 35 and 36.

Trigger values adopted for Coastal Marine Waters are the baseline 20th, 50th and 80th Percentiles for each analyte presented in Tables 37, 38 and 39.

9.5 Assessment Criteria

Results collected during Construction and Operational Phase monitoring shall be assessed against Baseline Conditions, the Natural Variability Envelope (NVE), Site-Specific Trigger Values (SSTVs) and Guideline Trigger Values (GTVs).

Exceedance of a trigger value does not automatically indicate environmental harm or a significant impact. Exceedances shall be evaluated using the following impact assessment criteria.

Magnitude of Change

Magnitude refers to the degree to which measured water quality differs from Baseline Conditions, the NVE, SSTVs or GTVs.

Assessment should consider:

- The extent of exceedance above the applicable trigger value.
- The degree of departure from Baseline Conditions.
- Whether the exceedance represents a minor fluctuation or a substantial change in water quality.

Larger exceedances are generally associated with an increased likelihood of environmental impact and higher management response levels.

Duration of Change

Duration refers to the length of time water quality remains outside Baseline Conditions, the NVE or applicable trigger values.

Assessment should consider:

- Whether the exceedance is temporary or sustained.
- The rate at which water quality returns to Baseline Conditions.
- The number of consecutive monitoring events during which exceedances are observed.

Short-duration exceedances associated with natural events are generally of lower significance than persistent departures from Baseline Conditions.

Frequency of Exceedance

Frequency refers to how often exceedances occur over the monitoring period.

Assessment should consider:

- Single isolated exceedances.
- Repeated exceedances across multiple monitoring events.
- Persistent or recurring exceedances indicating an ongoing source of impact.

Increasing frequency generally indicates an increased likelihood that the exceedance is associated with site activities and may require management intervention.

Spatial Extent

Spatial extent refers to the geographic distribution of observed water quality changes.

Assessment should consider:

- Whether exceedances are confined to a single monitoring location or occur across multiple locations.
- The relationship between upstream, downstream, control and impact monitoring sites, where applicable.

- Whether impacts are localised or evident throughout receiving environments.

Impacts observed only at impact locations may indicate a site-related source, whereas similar responses at both control and impact locations may indicate regional or naturally occurring influences. Due to complex environmental conditions, care must be taken when evaluating water quality data from impact locations against control locations to ensure the water quality data is comparable.

Ecological Relevance

Ecological relevance refers to the likelihood that observed water quality changes may adversely affect environmental values.

Assessment should consider:

- Potential adverse effects on aquatic flora and fauna.
- Potential degradation of aquatic habitat quality.
- Potential alteration of ecosystem processes.
- The sensitivity of receiving environments and ecological receptors.

An exceedance may be considered of low significance where no adverse ecological consequence is expected, even if a trigger value has been exceeded.

Overall Impact Assessment

The significance of a water quality exceedance shall be determined through consideration of all assessment criteria collectively. The significance of an exceedance generally increases where:

- The magnitude of exceedance is large.
- Exceedances are sustained or recurring.
- Impacts occur across multiple monitoring locations.
- Site activities are identified as the likely cause.
- Adverse ecological effects are observed or considered likely.

The outcomes of the impact assessment shall be used to determine the appropriate management response and trigger level in accordance with Section 9.6.

9.6 Corrective Action / Management Triggers

Management trigger levels are based on the magnitude, duration, frequency, spatial extent and potential ecological significance of departures from Baseline Conditions, SSTVs, GTVs and the NVE.

Consideration of the influence of short-duration exceedances associated with natural environmental processes shall be undertaken. Examples may include:

- Rainfall and flood events.
- Cyclonic activity.
- Wind-driven turbidity events.

- Tidal fluctuations.
- Coral spawning events.
- Naturally occurring algal blooms.

Level 1 – Alert

A Level 1 Alert is triggered where one or more of the following occurs:

- An exceedance of an SSTVs, GTVs or the NVE is recorded.
- An exceedance is minor in magnitude and limited in duration (single event).
- The exceedance is not observed at multiple monitoring locations.
- No adverse ecological effects are evident or anticipated.

Response:

- Review monitoring results and field observations.
- Inspect relevant erosion, sediment and water quality controls. Where possible, confirm source of water quality impact (site derived, natural, other anthropogenic).
- Confirm data quality and sampling procedures.
- Increase surveillance and consider additional monitoring where appropriate.

Level 2 – Action

A Level 2 Action is triggered where impact is attributed to site activities and one or more of the following occurs:

- Exceedances are repeated or sustained.
- Exceedance magnitude is substantial relative to Baseline Conditions or trigger values (>250% of the applicable trigger value).
- Water quality remains outside the NVE for an extended period.
- Impacts extend beyond the immediate source area.

Response:

- Undertake investigation and root cause analysis.
- Implement corrective actions to eliminate or reduce the source of impact.
- Increase monitoring frequency to monthly until water quality returns to Baseline Conditions.
- Review the adequacy of erosion, sediment and water quality controls and modify where required.

Level 3 – Escalated Response

A Level 3 Escalation is triggered where impact is attributed to site activities and one or more of the following occurs:

- Exceedances are persistent and are not consistent with expected natural variability.
- A sustained shift in water quality outside Baseline Conditions and the NVE is observed.
- Impacts are spatially extensive and occur across multiple receiving environments.
- Guideline Trigger Values or SSTVs are exceeded to a degree indicating likely environmental harm.
- Measurable adverse ecological effects are observed or are reasonably likely to occur.
- A statistically significant and persistent trend away from Baseline Conditions is identified and attributable to site activities.

Response:

- Immediately implement management measures to stop or minimise the impact.
- Notify relevant management personnel and regulatory authorities where required.
- Undertake remediation and environmental rehabilitation as appropriate.
- Continue increased monitoring frequency until recovery toward Baseline Conditions is demonstrated.
- Review and revise management plans, controls and construction practices to prevent recurrence.
- Engage subject matter expert to review and revise.

9.7 Significant Impact Determination

A Significant Impact is considered to have occurred where the weight of evidence indicates that site activities have caused, or are likely to cause, a sustained deterioration in water quality beyond natural variability resulting in actual or potential adverse effects on environmental values.

The criteria below are consistent with the Level 3 escalation criteria in Section 9.6 but are applied for the specific purpose of determining whether a Significant Impact has occurred. In determining significance, consideration shall be given to:

- Magnitude of exceedance relative to Baseline Conditions, SSTVs, GTVs and the Natural Variability Envelope.
- Duration of exceedance and recovery time.
- Frequency and recurrence of exceedances.
- Spatial extent of impacts.
- Whether impacts are attributable to site activities.
- Actual or likely adverse ecological effects.

A Significant Impact will generally be identified where one or more of the following occur:

- Exceedances persist for three or more consecutive monitoring events.
- Water quality remains outside the Natural Variability Envelope for an extended period.
- Impacts are observed across multiple receiving environments.
- A statistically significant and persistent trend away from Baseline Conditions is identified.
- Measurable adverse ecological effects are observed or are reasonably likely to occur.

Determination of a Significant Impact shall be based on the collective weight of evidence and professional judgement, rather than any single trigger value exceedance.

9.8 Corrective Actions

Corrective actions are to be commensurate to the type and magnitude of water quality issue and resulting environmental impact. In general, corrective actions involve: (1) immediately stopping the impact where practicable, (2) isolating, containing and rectifying the issue, and (3) implementing additional controls or modifying project activities to prevent recurrence. These corrective actions are discussed below.

Immediate Actions

Implemented as soon as a trigger is exceeded and attributed to site activities:

- Cease or modify relevant works contributing to the impact.
- Isolate the source area (e.g. bunding, diversion drains).
- Contain affected water (e.g. hold within sediment basins or excavations).

- Deploy temporary controls, such as sediment socks / silt curtains, inlet protection, temporary bunds or check dams.
- Inspect all erosion and sediment controls (ESC) across the site.
- Notify the Environmental Representative / Site Supervisor within 1 business day.

Investigation and Root Cause Analysis

Where repeated exceedances are measured:

- Identify the source and pathway of impact (e.g. stockpile erosion, dewatering discharge, batters).
- Review recent rainfall or tidal conditions, construction staging and disturbed areas, adequacy of installed controls vs design, inspection records.
- Re-confirm whether exceedance is construction-related, or attributable to natural/background variation

Corrective actions include, but are not limited to the following:

Table 43: Corrective Actions

Issue	Response
TSS / Turbidity Exceedances	• Repair or replace failed controls. • Increase capacity or redundancy of controls including larger sediment basins or sediment traps. • Improve soil stabilisation by applying mulch, hydromulch, jute matting, erosion control blankets etc. • Reduce exposed soil areas by staging works or limiting clearing footprint. • Reduce runoff velocity with check dams, level spreaders, flow control structures etc. • Where possible stage works during the dry season. • Stabilise hillslopes.

Issue	Response
Non-compliant water discharge	• Hold water in sediment tanks and add flocculant • pH adjustment through lime dosing or neutralisation system • Hydrocarbon removal through oil / water separator and use of absorbent booms and pads. • Use geofabric filtration bags.
Exceedance associated with dewatering	• Reduce discharge rate to allow for adequate treatment • Re-route discharge to vegetated areas or sediment basins and away from drainage lines. • No discharge during unsuitable conditions.
Surface water flow	• Install or upgrade diversion drains and bunds or cut off drains • Regrade disturbed areas to avoid concentrated flow. • Stabilise flow paths to prevent scour • Direct runoff to treatment controls prior to discharge to waterways.
Contamination and spill response	• Immediately stop the source. • Deploy spill kit. • Excavate and remove contaminated material. • Review chemical storage procedures.
Coastal Environments	• Instal or extend silt curtains • Adjust timing of works to suitable tidal windows / tidal stage • Relocate discharge points away from sensitive receptors including coral and seagrass. • Change technique to one with less disturbance

Issue	Response
System Improvements	• Review and revise erosion and sediment control plan, site procedures and staging plan. • Additional supervision during high risk works • Update risk assessments • Implement additional controls ahead of the onset of wet season conditions. • Annual Water Quality Program Review.

10. REFERENCES

http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=136&p_display_type=dailyDataFile&p_startYear=2025&p_c=-219245559&p_stn_num=033106

NGH (2025) Water Quality Monitoring Plan, November 2025

Qld DEHP (2009) Water Quality Guidelines, Version 3, ISBN 978-0- 9806986-0-2.

Qld DES (2018) Monitoring and Sampling Manual

Wild Environmental Consultants (2018) Water Quality Monitoring Program, September 2018.

11. LIMITATIONS

Catchment Solutions Pty Ltd has prepared according to the agreed scope of work (J1228) outlined in for Well Smart Investment Holdings (Bris) Pty Ltd. It's intended solely for the use of the Corporation for this specific project and its stated purpose.

The report is not meant for use in other projects or by third parties. Catchment Solutions relied on information from the client, their agents, and third parties to create the report. Reading the report in its entirety is recommended, and it should not be used in parts or different contexts, nor by third parties. The report is not equivalent to legal advice; only qualified legal professionals can provide legal advice.

The report's details are based on information provided for laboratory analysis by ALS and Mackay Regional Council Laboratory.

Catchment Solutions' advice relies on laboratory analysis and project information. However, the accuracy of the advice might be limited by unforeseen factors and undiscovered variations in surface water conditions.

ATTACHMENT A

Catchment Solutions

Calibration Record Sheet

Instrument Make: YSI

Instrument Model:

Viewer Serial #:

Sonde Serial #: Lindeman's Island.

Calibrated by:

Date: 24 / 4 / 24

Parameter	Calibration Standard Expiry Date:	Units	Calibration Results	
			Standard Value	Measured Value after calibrations
pH		pH units	4.00	3.96
pH		pH units	7.00	7.04
pH		pH units	10.00	/
Temp.	n/a	°C		
EC		µS/cm	2760 @ 25°C	2760
DO	n/a	% sat.	100% sat in air	100 %
Turbidity		NTU	0.02	Turbidity
Turbidity		NTU	20	Metre - Air
Turbidity		NTU	100	Met.
Turbidity		NTU	800	

Visible signs of probe damage/wear/poor condition?	Comments:

Comments:

Signature:

Date: 24/4/24

Catchment Solutions

CS-F-QA-003 Surface Water Field Sheet

Site Number:	Date:	Time:	Job No.
Linde 01	24.4.24	10.45	J1228.

Site Location:	Field Team:
Lindeman Island - Dam.	

In-Situ Water Quality

Parameter	Unit	Value	Comment
Water Temperature	°C	19.8°	(Duplicate)
Dissolved Oxygen	%	55.7%	
Dissolved Oxygen	mg/L	5.21 mg/L	
Conductivity	µs/cm @25°C	124.6	
pH	pH unit	6.35	
Turbidity	NTU	2.1 NTU	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No (9) 4	Types (Colours) of bottles collected:
		1 Bottles.	TSS – Poly green
		2	Nutrients purple plastic 1 Filtered
		1	Pesticides - Qld health amber bottle
		1	Metal – Dissolved (filtered)
		2	Hydrocarbons – 2 glass purple bottles
		1	Orange

Weather Conditions Today

Rain		Yes	(No)	Comments:
Cloud Cover		(Yes)	No	Comments:
Wind		(Yes)	No	Comments:
Oil & Grease Visual		Yes	(No)	Comments:

Comments

Catchment Solutions

CS-F-QA-003 Surface Water Field Sheet

Site Number: NQ 1	Date: 24.4.24	Time: 11.30	Job No.
Site Location: In front of Bungalow.	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
Water Temperature	°C	26.2	
Dissolved Oxygen	%	91.4%	
Dissolved Oxygen	mg/L	6.38mg/L	
Conductivity	µs/cm @25°C	55358.	
pH	pH unit	8.23	
Turbidity	NTU	4.1 NTU	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No (9)	Types (Colours) of bottles collected:
		1	TSS – Poly green
		2	Nutrients purple plastic 1 Filtered
		1	Pesticides - Qld health amber bottle
		1	Metal – Dissolved (filtered)
		2	Hydrocarbons – 2 glass purple bottles
		1	Orange

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:
Oil & Grease Visual	Yes	No	Comments:

Comments

Catchment Solutions

CS-F-QA-003 Surface Water Field Sheet

Site Number: NQ2.	Date: 24.4.24	Time: 13.20	Job No.
Site Location:	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
Water Temperature	°C	25.9°	
Dissolved Oxygen	%	72.9%	
Dissolved Oxygen	mg/L	5.05 mg/L	
Conductivity	µs/cm @25°C	54957	
pH	pH unit	8.28	
Turbidity	NTU	2.3 NTU	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No (9)	Types (Colours) of bottles collected:
		1	TSS – Poly green
		2	Nutrients purple plastic 1 Filtered
		1	Pesticides - Old health amber bottle
		1	Metal – Dissolved (filtered)
		2	Hydrocarbons – 2 glass purple bottles
		1	Orange

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:
Oil & Grease Visual		Yes		No	Comments:

Comments

Catchment Solutions

CS-F-QA-003 Surface Water Field Sheet

Site Number: NQ3	Date: 24·4·24	Time: 13·45	Job No.
Site Location:	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
Water Temperature	°C	26·2°	
Dissolved Oxygen	%	72.5%	
Dissolved Oxygen	mg/L	5·06 mg/L	
Conductivity	µs/cm @25°C	55199	
pH	pH unit	8·29	
Turbidity	NTU	2·2 NTU.	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No (9)	Types (Colours) of bottles collected:
		1	TSS – Poly green
		2	Nutrients purple plastic 1 Filtered
		1	Pesticides - Qld health amber bottle
		1	Metal – Dissolved (filtered)
		2	Hydrocarbons – 2 glass purple bottles
		1	Orange

Weather Conditions Today

Rain	Yes	(No)	Comments:
Cloud Cover	(Yes)	No	Comments:
Wind	(Yes)	No	Comments:
Oil & Grease Visual	Yes	(No)	Comments:

Comments

Catchment Solutions

CS-F-QA-003 Surface Water Field Sheet

Site Number: NQ 4	Date: 24.4.24	Time: 13:00	Job No.
Site Location:	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
Water Temperature	°C	25.90	
Dissolved Oxygen	%	69.1%	
Dissolved Oxygen	mg/L	4.80 mg/L	
Conductivity	µs/cm @25°C	55175	
pH	pH unit	8.24	
Turbidity	NTU	2.5 NTU	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No (9)	Types (Colours) of bottles collected:
		1	TSS – Poly green
		2	Nutrients purple plastic, 1 Filtered
		1	Pesticides - Qld health amber bottle
		1	Metal – Dissolved (filtered)
		2	Hydrocarbons – 2 glass purple bottles
		1	Orange

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:
Oil & Grease Visual	Yes	No	Comments:

Comments

Catchment Solutions

CS-F-QA-003 Surface Water Field Sheet

Site Number: NQ5	Date: 24.4.24	Time: 12:00	Job No.
Site Location: Entrance to Barge Ramp.	Field Team: BP		

In-Situ Water Quality

Parameter	Unit	Value	Comment
Water Temperature	°C	26.82	
Dissolved Oxygen	%	96.6%	
Dissolved Oxygen	mg/L	6.73mg/L	
Conductivity	µs/cm @25°C	55347	
pH	pH unit	7.86	
Turbidity	NTU	2.3 NTU.	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No (9)	Types (Colours) of bottles collected:
		1	TSS – Poly green
		2	Nutrients purple plastic 1 Filtered
		1	Pesticides - Qld health amber bottle
		1	Metal – Dissolved (filtered)
		2	Hydrocarbons – 2 glass purple bottles
		1	Orange

Weather Conditions Today

Rain	Yes	(No)	Comments:
Cloud Cover	Yes	(No)	Comments:
Wind	(Yes)	No	Comments:
Oil & Grease Visual	Yes	(No)	Comments:

Comments

Mackay REGIONAL COUNCIL

Request for Laboratory Testing & Chain of Custody

MRC Laboratory
89 Connors Road, Paget
ABN: 56 240 712 069
Phone 07 4961 9042
labenquiries@mackay.qld.gov.au

CLIENT DETAILS

Client	Catchment Solutions
Contact	Ben Pearce
Phone	0488 765 106
Address	4/85 Gordon Street, Mackay Qld 4740
Email	bpearce@catchmentsolutions.com.au
Email Invoice to *If different to report*	accounts@catchmentsolutions.com.au

Project ID	J1228	Purchase Order	
Site	Lindeman Island	Job No (MRC Clients)	
Email Report To	bpearce@catchmentsolutions.com.au	Results Required By *Date*	
		Urgent TAT Requested	

Reports will be emailed to Primary Contact by default — *Urgent TAT fee may apply, please contact lab*

CHAIN OF CUSTODY

Sampler	Fiona Loft		
Mobile Phone	0487060276		
Samples Relinquished By			
Name	Fiona Loft	Date	26/4/24
Sign	F Loft.	Time	

Lab Use Only — LIMS Batch No.

Samples Received By	
Name	
Sign	
Date	
Time	

Condition Received: Room Temp / Chilled / Frozen

Samples are to be kept chilled once collected and delivered to the laboratory within 24 hours.

Sample Information

Sample No.	Sample Description	Date Sampled	Time Sampled	Matrix (Water/Soil)	Grab/ Composite	Sample Bottles	E.g. pH or Anions	Faecal Coliforms	Heterotrophic Plate Count	Total Coliforms	E. Coli							Notes (e.g known hazards, special handling, storage or diposal)
E.g.	Tank 1	13/03/2020	7.10am	Water	Grab	P, ST	X											
1	WQ5	24/04/24	12:00		✓			X	X	X	X							
2	DW1	24/04/2024		Water	✓			X	X	X	X							
3	TW1	24/04/24			✓			X	X	X	X							
4																		
5																		
6																		
7																		
8																		
9																		
10							3											

Bottle Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, H = HCl preserved Plastic, SP = Sulfuric Preserved Plastic, ST = Sterile Bottle, AG = Amber Glass Unpreserved

Please contact the laboratory on 07 4961 9042 for sample bottles or advice on the appropriate analyses for your samples.

Mackay REGIONAL COUNCIL

Request for Laboratory Testing & Chain of Custody

MRC Laboratory
89 Connors Road, Paget
ABN: 56 240 712 069
Phone 07 4961 9042
labenquiries@mackay.qld.gov.au

CLIENT DETAILS

Client	Catchment Solutions
Contact	Ben Pearce
Phone	0488 765 106
Address	4/85 Gordon Street, Mackay Qld 4740
Email	bpearce@catchmentsolutions.com.au
Email Invoice to *If different to report*	accounts@catchmentsolutions.com.au

Project ID	J1228	Purchase Order	
Site	Lindeman Island	Job No (MRC Clients)	
Email Report To	bpearce@catchmentsolutions.com.au	Results Required By *Date*	
		Urgent TAT Requested	

Reports will be emailed to Primary Contact by default — *Urgent TAT fee may apply, please contact lab*

CHAIN OF CUSTODY

Sampler	Fiona Loft		
Mobile Phone	0457 060 276		
Samples Relinquished By			
Name	Fiona Loft	Date	26/4/24
Sign	F Loft	Time	

Lab Use Only

Samples Received By	
Name	
Sign	
Date	
Time	

LIMS Batch No.

Condition Received

Room Temp / Chilled / Frozen

Samples are to be kept chilled once collected and delivered to the laboratory within 24 hours.

Sample Information

Sample No.	Sample Description	Date Sampled	Time Sampled	Matrix (Water/Soil)	Grab/ Composite	Sample Bottles	*E.g. pH or Anions*	Faecal Coliforms	Heterotrophic Plate Count	Total Coliforms	E. Coli							Notes (e.g known hazards, special handling, storage or diposal)
E.g.	*Tank 1*	*13/03/2020*	*7.10am*	*Water*	*Grab*	*P, ST*	X											
1	LIND01	24/04/2024	10·45	Water	✓			X	X	X	X							
~~2~~	~~LIND02~~	~~24/04/2024~~		~~Water~~				~~X~~	~~X~~	~~X~~	~~X~~							
~~3~~	~~LIND03~~	~~24/04/2024~~		~~Water~~				~~X~~	~~X~~	~~X~~	~~X~~							
~~4~~	~~LIND04~~	~~24/04/2024~~		~~Water~~				~~X~~	~~X~~	~~X~~	~~X~~							
~~5~~	~~LIND05~~	~~24/04/2024~~		~~Water~~				~~X~~	~~X~~	~~X~~	~~X~~							
~~6~~	~~LIND06~~	~~24/04/2024~~		~~Water~~				~~X~~	~~X~~	~~X~~	~~X~~							
7	WQ1	24/04/2024	11·30	Water	✓			X	X	X	X							
8	WQ2	24/04/2024	13·20	Water	✓			X	X	X	X							
9	WQ3	24/04/2024	13·45	Water	✓			X	X	X	X							
10	WQ4	24/04/2024	13·00	Water	✓	5		X	X	X	X							

Bottle Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, H = HCl preserved Plastic, SP = Sulfuric Preserved Plastic, ST = Sterile Bottle, AG = Amber Glass Unpreserved

Please contact the laboratory on 07 4961 9042 for sample bottles or advice on the appropriate analyses for your samples.

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
☐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
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:
J Lopt			
DATE/TIME: 26/4/24	DATE/TIME:	DATE/TIME:	DATE/TIME:

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	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~~						
	WQ1	24/04/2024 11:30	Water				x		x					
	WQ2	24/04/2024 13:20	Water				x		x					
	WQ3	24/04/2024 13:45	Water				x		x					
	WQ4	24/04/2024 13:00	Water				x		x					
	WQ5	24/04/2024 12:00	Water				x		x					
	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 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 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
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☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
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☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@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

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

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

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]			
DATE/TIME: 26/4/24	DATE/TIME:	DATE/TIME:	DATE/TIME:

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.
	TW1	24/04/2024	Water			x	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 = 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.

Lindeman Great Barrier Reef Resort
Water Quality Monitoring Program
Field Sheet

Site Number: Lind01	Date: 28.5.24	Time: 11:00
Site Location: Sample at Dam / Monthly	Field Team: FL / JP	

In-Situ Water Quality

Parameter	Unit	Value	Comment
Water Temperature	°C	21.6°	
Conductivity	µs/cm @25°C	157.8	
DO	Mg/L	5.09	58.1%
pH	pH unit	6.56	
Turbidity	NTU	3.07	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No (2)	Types (Colours) of bottles collected:
		1	Nutrient 1 purple plastic - 1
		1	TSS spare – Poly green 500ml

Weather Conditions Today

Rain	Yes	No
Cloud Cover	Yes	No
Wind	Yes	No
Oil & Grease Visual	Yes	No
Bore Condition	Yes	No

Comments

Duplicate DW1
& Triplicate TW1 (Sent to Sydney)

Longitude (decimal degree GDA94)

Latitude (decimal degree GDA94)

Lindeman Great Barrier Reef Resort
Water Quality Monitoring Program
Field Sheet

Site Number: WQ 1		Date: 28.5.24	Time: 1.38
Site Location Monthly		Field Team: FL / JP	

In-Situ Water Quality

Parameter	Unit	Value	Comment
Water Temperature	°C	22.7	
Conductivity	µs/cm @25°C	56580	
DO	Mg/L	5.16 mg/L	76.8%
pH	pH unit	8.30	
Turbidity	NTU	1.23	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No (2)	Types (Colours) of bottles collected:
		1	Nutrient-TN & TP 1 light green plastic
		1 ✓	TSS spare – **Poly green 500ml**
		1	Ultra trace nutrient, reactive P, Nitrate, Nitrite, Ammonia 1 dark green bottle - **Filtered**
			3.5 Secchi

Weather Conditions Today

Rain	Yes	(No)
Cloud Cover	Yes	(No)
Wind	(Yes)	No
Oil & Grease Visual	Yes	(No)
Bore Condition	Yes	No

Comments

straight behind 5. at boat ramp
near other island.

Longitude (decimal degree GDA94)

Latitude (decimal degree GDA94)

Lindeman Great Barrier Reef Resort
Water Quality Monitoring Program
Field Sheet

Site Number: WQ 2	Date: 28.5.24	Time: 1.45
Site Location Monthly	Field Team: FL / JP	

In-Situ Water Quality

Parameter	Unit	Value	Comment
Water Temperature	°C	22.8°	In front of ck.
Conductivity	µs/cm @25°C	56622	Rangers hut.
DO	Mg/L	5.62 mg/L	77.4%.
pH	pH unit	8.35	
Turbidity	NTU	.84	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No (2)	Types (Colours) of bottles collected:
		1	Nutrient-TN & TP 1 light green plastic
		1 ✓	TSS spare – **Poly green 500ml**
		1	Ultra trace nutrient, reactive P, Nitrate, Nitrite, Ammonia 1 dark green bottle - **Filtered**
			4m - secchi

Weather Conditions Today

Rain	Yes	No (circled)
Cloud Cover	Yes (circled)	No
Wind	Yes (circled)	No
Oil & Grease Visual	Yes	No (circled)
Bore Condition	Yes	No

Comments

Longitude (decimal degree GDA94)

Latitude (decimal degree GDA94)

Lindeman Great Barrier Reef Resort
Water Quality Monitoring Program
Field Sheet

Site Number: WQ 3	Date: 28.5.24	Time: 2.10
Site Location Monthly – Entrance to Barge Ramp	Field Team: FL / JP	

In-Situ Water Quality

Parameter	Unit	Value	Comment
Water Temperature	°C	23.1°	Near log around
Conductivity	µs/cm @25°C	57076	other side of island.
DO	Mg/L	5.14 mg/L	75.3%
pH	pH unit	8.35	
Turbidity	NTU	1.33	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No (2)	Types (Colours) of bottles collected:
		1	Nutrient-TN & TP 1 light green plastic
		1	TSS spare – **Poly green 500ml**
		1	Ultra trace nutrient, reactive P, Nitrate, Nitrite, Ammonia 1 dark green bottle - **Filtered**
			2.5 mtres Seechi

Weather Conditions Today

Rain	Yes	(No)
Cloud Cover	(Yes)	No
Wind	(Yes)	No
Oil & Grease Visual	Yes	(No)
Bore Condition	Yes	No

Comments

Longitude (decimal degree GDA94)

Latitude (decimal degree GDA94)

Lindeman Great Barrier Reef Resort
Water Quality Monitoring Program
Field Sheet

Site Number: WQ 4	Date: 28/5/24	Time: 1.15
Site Location Monthly (to the (R) of wes)	Field Team: FL / JP	

In-Situ Water Quality			
Parameter	**Unit**	**Value**	**Comment**
Water Temperature	°C	22.9°	
Conductivity	µs/cm @25°C	56717	
DO	Mg/L	5.12mg/L	74.2%
pH	pH unit	8.20	
Turbidity	NTU	1.43	

Laboratory Analysis of Water Quality			
Grab Samples Collected	**Yes**	**No (2)**	**Types (Colours) of bottles collected:**
		1	Nutrient-TN & TP 1 light green plastic
		1	TSS spare – **Poly green 500ml**
		1	Ultra trace nutrient, reactive P, Nitrate, Nitrite, Ammonia 1 dark green bottle - **Filtered**
			4 mtre secchi

Weather Conditions Today				
Rain		Yes		(No)
Cloud Cover		(Yes)		No
Wind		(Yes)		No
Oil & Grease Visual		Yes		(No)
Bore Condition		Yes		No

Comments

Longitude (decimal degree GDA94)

Latitude (decimal degree GDA94)

Lindeman Great Barrier Reef Resort
Water Quality Monitoring Program
Field Sheet

Site Number: WQ 5		Date: 28/5/24	Time: 1.00 pm
Site Location: In front of Bungalow / Monthly		Field Team: FL / JP	

In-Situ Water Quality

Parameter	Unit	Value	Comment
Water Temperature	°C	23.1°	2.5 metres - Secchi.
Conductivity	µs/cm @25°C	56778	(on bottom)
DO	Mg/L	4.77 mg/L	69.7%
pH	pH unit	7.92	
Turbidity	NTU	3.33	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No (2)	Types (Colours) of bottles collected:
		1	Nutrient-TN & TP 1 light green plastic
		1	TSS spare – **Poly green 500ml**
		1	Ultra trace nutrient, reactive P, Nitrate, Nitrite, Ammonia 1 dark green bottle - **Filtered**

Weather Conditions Today

Rain		Yes		No
Cloud Cover		Yes		No
Wind		Yes		No
Oil & Grease Visual		Yes		No
Bore Condition		Yes		No

Comments

Longitude (decimal degree GDA94)

Latitude (decimal degree GDA94)

Catchment Solutions

Calibration Record Sheet

Instrument Make: YSI and APERA
Instrument Model: Quatro/ Quatro Plus and TN400
Viewer Serial #:
Sonde Serial #:
Calibrated by: Fiona Loft
Date: 28/5/24

Parameter	Calibration Standard Expiry Date:	Units	Calibration Results	
			Standard Value	Measured Value after calibrations
pH		pH units	4.00	4.01
pH		pH units	7.00	6.90.
pH		pH units	10.00	/
Temp.	n/a	°C		
EC		µS/cm	2760 @ 25°C	2760
DO	n/a	% sat.	100% sat in air	100%
Turbidity		NTU	0	✓
Turbidity		NTU	20	✓
Turbidity		NTU	100	✓
Turbidity		NTU	400	✓
Turbidity		NTU	800	✓

Visible signs of probe damage/wear/poor condition?	Comments:

Comments:

Signature: F Loft
Date: 28/5/24

CHAIN OF CUSTODY

ALS Laboratory
please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8349 0201 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
DARWIN 15 Duncan Street Winnellie NT 0820 Ph: 08 8947 4200 E: darwin@alsglobal.com
MELBOURNE 1/ 4 Dalton Road Alphington VIC 3078 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
NEWCASTLE 5 Rosetta Road Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9250 0700 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 Desoto Court Garbutt QLD 4814 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WAGGA WAGGA 1/ 18-19 Tarcutta Street Wagga Wagga NSW 2650 Ph: 02 6971 9696 E: wagga.wagga@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
Lindsmen 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		
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:
4 Lodge 9.30	E. Hirsch	E. Hirsch	
DATE/TIME: 29/5/24	DATE/TIME: 29/5/24 9:30	DATE/TIME: 29/5/24 16.00	DATE/TIME:

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 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 ->)

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : ☒ Standard TAT (List due date):
OFFICE: Mackay	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) Non Standard or urgent TAT (List due date):
Lindeman Island Monthly	ALS QUOTE NO.: EB24CATSOL0001
ORDER NUMBER:	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7
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	

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:
J Lee	E. Hirsch	E. Hirsch	
DATE/TIME: 29/5/24 9 30	DATE/TIME: 29/5/24 4:30	DATE/TIME: 29/5/24 16:00	DATE/TIME:

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 ensure correct 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.
	TW1	28-05-24	Water				x	x						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS

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.

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind01 - Monthly**	Date: 20/6/24	Time: 8:30	Job No. J1228
Site Location: Sample at Dam	Field Team: BP / FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C	19.90	
Dissolved Oxygen	% saturation	61.8%	
Dissolved Oxygen	mg/L	5.06 mg/L	
Conductivity	µs/cm @25°C	119.6	
pH	pH unit	6.60	
Turbidity	NTU	1.69 NTU	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1 ✓	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes	No	Comments:
Cloud Cover		Yes	No	Comments:
Wind		Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ1 - Monthly**	Date: 20/6/24	Time: 12.05	Job No.
Site Location: Marine Approx 200 mt off Home Beach right behind 5 near other island	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.460800 Lat 149.040717 Long
Water Temperature	°C	22.5°	
Dissolved Oxygen	% saturation	74.0 %	
Dissolved Oxygen	mg/L	5.05 mg/L	
Conductivity	µs/cm @25°C	55063	
pH	pH unit	7.56.	
Turbidity	NTU	.36	
Secchi	Metres	2.5 m	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ2 - Monthly**	Date: 20/6/24	Time: 12·20	Job No. J1228
Site Location: Marine In front of creek – Rangers Hut	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.455917 Lat 149.031700 Long
Water Temperature	°C	22·4°	
Dissolved Oxygen	% saturation	78·2 %	
Dissolved Oxygen	mg/L	5·34 mg/L	
Conductivity	µs/cm @25°C	54797	
pH	pH unit	7·59	
Turbidity	NTU	·17 NTU	
Secchi	Metres	2·00 metres	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ3 - Monthly**	Date: 20/6/24	Time: 12.45.	Job No.
Site Location: Marine 100 m off Gap Beach around other side of island	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.437400 Lat 149.041967 Long
Water Temperature	°C	22.5°	
Dissolved Oxygen	% saturation	81.1 %	
Dissolved Oxygen	mg/L	5.57 mg/L	
Conductivity	µs/cm @25°C	55058	
pH	pH unit	7.71	
Turbidity	NTU	.23 NTU	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ4 - Monthly**	Date: 20/6/24	Time: 11.45.	Job No.
Site Location: Marine To the far right of the island when looking at it.	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.453133 Lat 149.055100 Long
Water Temperature	°C	22.6°	
Dissolved Oxygen	% saturation	77.7%	
Dissolved Oxygen	mg/L	5.32 mg/L	
Conductivity	µs/cm @25°C	55155	
pH	pH unit	7.14	
Turbidity	NTU	24 NTU	
Secchi	Metres	3.5 metres.	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes	✓	No	Comments: Slight.

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ5 - Monthly**	Date: 20/6/24	Time: 10·00	Job No.
Site Location: Marine In front of ramp / Bungalow	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.459717 Lat 149.041450 Long
Water Temperature	°C	22·7°	
Dissolved Oxygen	% saturation	83·8%	
Dissolved Oxygen	mg/L	5·80 mg/L	
Conductivity	µs/cm @25°C	55320·	
pH	pH unit	7·47	
Turbidity	NTU	42 NTU	
Secchi	Metres	2·5 mtres	bottom - clear.

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1 ✓	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Catchment Solutions

Calibration Record Sheet

Instrument Make: YSI and APERA
Instrument Model: Quatro/ Quatro Plus and TN400
Viewer Serial #:
Sonde Serial #: Lindeman Island J1228.
Calibrated by: Fiona Loft
Date: 20/6/24

Parameter	Calibration Standard Expiry Date:	Units	Calibration Results	
			Standard Value	Measured Value after calibrations
pH		pH units	4.00	4.1
pH		pH units	7.00	7.01
pH		pH units	10.00	—
Temp.	n/a	°C		
EC		µS/cm	2760 @ 25°C	2760
DO	n/a	% sat.	100% sat in air	100%
Turbidity		NTU	0	✓
Turbidity		NTU	20	✓
Turbidity		NTU	100	✓
Turbidity		NTU	400	✓
Turbidity		NTU	800	✓

Visible signs of probe damage/wear/poor condition?	Comments:

Comments:

Signature: F Loft

Date: 20/6/24

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
☐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):
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

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:			

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):				
Email Reports to: bpearce@catchmentsolutions.com.au		DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:
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					
	~~DW2~~ DW3	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 = 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 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 4e 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: 0244223 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):
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:
DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:

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.
	~~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 = 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.

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind[redacted]01- Quarterly**	Date: 30/7/24	Time: 2.05pm	Job No. 21228
Site Location: Sample at Dam	Field Team: BP/FL/LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	18.9	
Dissolved Oxygen	% saturation	73.3	
Dissolved Oxygen	mg/L	6.71	
Conductivity	µs/cm @25°C	125.0	
pH	pH unit	8.33	
Turbidity	NTU	1.81 NTU	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments: Sunny
Wind		Yes		No	Comments: 25-30 knots

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ2**	Date: 30-7-24	Time: 11.45	Job No.
Site Location: Marine Quarterly In front of creek – Rangers Hut	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.455917 Lat 149.031700 Long
Water Temperature	°C	20.0°	
Dissolved Oxygen	% saturation	84.3%	
Dissolved Oxygen	mg/L	6.06 mg/L	
Conductivity	µs/cm @25°C	53930	
pH	pH unit	8.35	
Turbidity	NTU	2.80 NTU	
Secchi	Metres	N/A.	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1 ✓	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes	No	Comments:
Cloud Cover		Yes	No	Comments:
Wind		Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ~~3~~ 1	Date: 30.7.24	Time: 11.15	Job No.
Site Location: Marine Quarterly 100 m off Gap Beach around other side of island	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.437400 Lat 149.041967 Long
Water Temperature	°C	30.1°	
Dissolved Oxygen	% saturation	86.4%	
Dissolved Oxygen	mg/L	6.09 mg/L	
Conductivity	µs/cm @25°C	54012.	
pH	pH unit	8.17	
Turbidity	NTU	.70 NTU	
Secchi	Metres	N/A	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1 ✓	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ4	Date: 30/7/24	Time: 11.00.	Job No.
Site Location: Marine Quarterly To the far right of the island when looking at it.	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.453133 Lat 149.055100 Long
Water Temperature	°C	19.8	
Dissolved Oxygen	% saturation	88.2	
Dissolved Oxygen	mg/L	6.35	
Conductivity	µs/cm @25°C	53,515	
pH	pH unit	~~7.9~~ 8.2	
Turbidity	NTU	2.35 NTU	
Secchi	Metres	—	N/A

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ1 5	Date: 30/7/24	Time: 10·15	Job No.
Site Location: Marine Quarterly Approx 200 mt off Home Beach right behind 5 near other island	Field Team: FL.		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.460800 Lat 149.040717 Long
Water Temperature	°C	19.5°	
Dissolved Oxygen	% saturation	81.3 %	
Dissolved Oxygen	mg/L	5.83 mg/L	
Conductivity	µs/cm @25°C	53588	
pH	pH unit	8.09	
Turbidity	NTU	1.48 NTU	
Secchi	Metres	N/A.	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ3	Date: 30/7/24	Time: 9.45	Job No. J1228.
Site Location: Marine Quarterly In front of ramp / Bungalow	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.459717 Lat 149.041450 Long
Water Temperature	°C	19.3	
Dissolved Oxygen	% saturation	86.7 %	
Dissolved Oxygen	mg/L	6.33 mg/L.	
Conductivity	µs/cm @25°C	53146	
pH	pH unit	7.81	
Turbidity	NTU	5.55	
Secchi	Metres	—	NIL.

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain	Yes	No	Comments:	
Cloud Cover	Yes	No	Comments:	
Wind	Yes	No	Comments:	V windy 35 knots.

Comments

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
☐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 Desane 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
	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:
COC emailed to ALS? (YES)	EDD FORMAT (or default):		
Email Reports to: bpearce@catchmentsolutions.com.au		DATE/TIME:	DATE/TIME:
Email Invoice to: accounts@catchmentsolutions.com.au			

RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME:

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.
	TW1		Water			x	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 = 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.

Mackay REGIONAL COUNCIL

Request for Laboratory Testing & Chain of Custody

MRC Laboratory
89 Connors Road, Paget
ABN: 56 240 712 069
Phone 07 4961 9042
labenquiries@mackay.qld.gov.au

CLIENT DETAILS

Client: Catchment Solutions
Contact: Ben Pearce — Phone: 0488 765 106
Address: 4/85 Gordon Street, Mackay Qld 4740
Email: bpearce@catchmentsolutions.com.au
Email Invoice to: accounts@catchmentsolutions.com.au
If different to report

Project ID: J1228 — Purchase Order:
Site: Lindeman Island — Job No (MRC Clients):
Email Report To: bpearce@catchmentsolutions.com.au — Results Required By *Date*:
Urgent TAT Requested:
Reports will be emailed to Primary Contact by default — *Urgent TAT fee may apply, please contact lab*

CHAIN OF CUSTODY

Sampler: Fiona Loft
Mobile Phone: 0487060276
Samples Relinquished By
Name: Fiona Loft — Date: 31.7.24
Sign: F Loft — Time: 11:15

Lab Use Only — LIMS Batch No.
Samples Received By
Name: Melissa Reilly
Sign: M Reilly
Date: 31.7.24
Time: 11.15
Condition Received: Room Temp / Chilled / Frozen
Samples are to be kept chilled once collected and delivered to the laboratory within 24 hours.

Sample Information

Sample No.	Sample Description	Date Sampled	Time Sampled	Matrix (Water/Soil)	Grab/ Composite	Sample Bottles	E.g. pH or Anions	Faecal Coliforms	Heterotrophic Plate Count	Total Coliforms	E. Coli							Notes (e.g known hazards, special handling, storage or diposal)
E.g.	Tank 1	13-03-20	7.10am	Water	Grab	P, ST	X											
1	WQ5	30.7.24	10.15	W	✓	1		X	X	X	X							
2	DW1	30.7.24		Water	✓	1		X	X	X	X							
3	WQ1	30.7.24	11.15	W	✓	1		X	X	X	X							
4	WQ2	30.7.24	11.45	W	✓	1		X	X	X	X							
5	WQ3	30.7.24	9.45	W	✓	1		X	X	X	X							
6	WQ4	30.7.24	11.00	W	✓	1		X	X	X	X							
7	Lindol	30.7.24	14.05	W	✓	1		X	X	X	X							
8																		
9																		
10																		

Bottle Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, H = HCl preserved Plastic, SP = Sulfuric Preserved Plastic, ST = Sterile Bottle, AG = Amber Glass Unpreserved

Please contact the laboratory on 07 4961 9042 for sample bottles or advice on the appropriate analyses for your samples.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

CLIENT: Catchment Solutions	TURNAROUND REQUIREMENTS : x Standard TAT (List due date):
OFFICE: Mackay	(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) Non Standard or urgent TAT (List due date):
Lindeman Island Quarterly	ALS QUOTE NO.: EB24CATSOL0001
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	

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 kgk	DATE/TIME: N. SUTTON 31.7.24 11:30	DATE/TIME:	DATE/TIME:

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	30.7.24 14.05	Water			x	x	x						
	WQ1	30.7.24 11.15	Water			x	x		x					
	WQ2	30.7.24 11.45	Water			x	x		x					
	WQ3	30.7.24 9.45	Water			x	x		x					
	WQ4	30.7.24 11.00	Water			x	x		x					
	WQ5	30.7.24 10.15	Water			x	x		x					
	DW1+	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 = 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.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@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
	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):	30/7/24	N. SUTTON		
Email Reports to: bpearce@catchmentsolutions.com.au		DATE/TIME: 4 Logt	DATE/TIME: 31-7-24 11:30	DATE/TIME:	DATE/TIME:
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						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc
	TW1	30.7.24	Water		1	x	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 = 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

Multi Parameter Water Meter

Instrument **YSI Quatro Pro Plus**
Serial No. **11K100576**

airmet
Air-Met Scientific Pty Ltd

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. COND	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Diffusion mode Aspirated mode

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.00		413995	pH 7.01
2. pH 4.00		pH 4.00		414104	pH 4.01
3. ORP		230.3mV		418135/418134	230.3mV
4. EC		2760uS		414103	2761uS
5. D.O		100%		water	99.0% - 753.0mmHg
6. Temp		24.4oC		MultiTherm	24.4oC

Calibrated by: **Morten Peters**

Calibration date: **09-Aug-24**

Next calibration due: **9-Feb-25**

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind01 - Monthly**	Date: 20/8/24	Time: 8:45am	Job No. J1228
Site Location: Sample at Dam	Field Team: Ben Pearce & Megan Skelton		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C	21.5	
Dissolved Oxygen	% saturation	77.9	
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C	141.8	
pH	pH unit	7.52	
Turbidity	NTU	5.38	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ1 - Monthly**	Date: 2018/24	Time: 10-20	Job No. J1228
Site Location: Marine Approx 200 mt off Home Beach right behind 5 near other island	Field Team: BP/MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.460800 Lat 149.040717 Long
Water Temperature	°C	20.7	
Dissolved Oxygen	% saturation	88.8	
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C	56,122	
pH	pH unit	7.77	
Turbidity	NTU	1.91	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments: mixed sun+cloud
Wind	✓	Yes		No	Comments: 15 knots

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ2 - Monthly**	Date: 20/8/24	Time: 10-35	Job No. J1228
Site Location: Marine In front of creek – Rangers Hut	Field Team: BP/MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.455917 Lat 149.031700 Long
Water Temperature	°C	20.7	
Dissolved Oxygen	% saturation	86.1	
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C	55962	
pH	pH unit	7.89	
Turbidity	NTU	1.98	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments: Mixed sun + cloud
Wind		Yes		No	Comments: 15 knots

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ3 - Monthly**	Date: 20/8/24	Time: 10:57	Job No. J1228
Site Location: Marine 100 m off Gap Beach around other side of island	Field Team: BP/MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.437400 Lat 149.041967 Long
Water Temperature	°C	20.9	
Dissolved Oxygen	% saturation	90.1	
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C	56057	
pH	pH unit	7.94	
Turbidity	NTU	0.74	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments: 15 knots protected

Comments

Catchment Solutions

Site Number: **WQ4 - Monthly**	Date: 20/8/24	Time: 11.15	Job No. J1228
Site Location: Marine To the far right of the island when looking at it.	Field Team: BP/MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.453133 Lat 149.055100 Long
Water Temperature	°C	~~24~~ 21.0	
Dissolved Oxygen	% saturation	95.7	
Dissolved Oxygen	mg/L	/	
Conductivity	µs/cm @25°C	55,918	
pH	pH unit	7.97	
Turbidity	NTU	1.87	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments: mixed
Wind		Yes		No	Comments: 15 knots wind affected

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ5 - Monthly**	Date: 20/8/24	Time: 9:35	Job No. J1228
Site Location: Marine In front of ramp / Bungalow	Field Team: BP / MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.459717 Lat 149.041450 Long
Water Temperature	°C	20.9	
Dissolved Oxygen	% saturation	99.5	
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C	55 986	
pH	pH unit	7.51	
Turbidity	NTU	1.91	
Secchi	Metres	4.25	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments: 15 knots

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind01 - Monthly**	Date: 24.9.24	Time: 12.15	Job No.
Site Location: Sample at Dam	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C	23.8	
Dissolved Oxygen	% saturation	72.1	
Dissolved Oxygen	mg/L	5.84	
Conductivity	µs/cm @25°C	142.4	
pH	pH unit	8.33	
Turbidity	NTU	6.03.	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ1 - Monthly**	Date: 24.9.24	Time: 9.00	Job No. J1255
Site Location: Marine Approx 200 mt off Home Beach right behind 5 near other island	Field Team: FL MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.460800 Lat 149.040717 Long
Water Temperature	°C	23.3°	
Dissolved Oxygen	% saturation	66.5%	
Dissolved Oxygen	mg/L	4.53	
Conductivity	µs/cm @25°C	48928	
pH	pH unit	8.18	
Turbidity	NTU	3.42	
Secchi	Metres	too windy	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ2 - Monthly**	Date: 24.9.24	Time: 9.00	Job No.
Site Location: Marine In front of creek – Rangers Hut	Field Team: FL MS.		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.455917 Lat 149.031700 Long
Water Temperature	°C	23.1°	
Dissolved Oxygen	% saturation	59.4%	
Dissolved Oxygen	mg/L	4.12 mg/L	
Conductivity	µs/cm @25°C	48606	
pH	pH unit	8.21	
Turbidity	NTU	2.18.	
Secchi	Metres	—	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes	(No)	Comments:
Cloud Cover		Yes	(No)	Comments:
Wind	(Yes)		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ3 - Monthly**	Date: 24.9.24	Time: 9.40	Job No. 1255
Site Location: Marine 100 m off Gap Beach around other side of island	Field Team: FL MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.437400 Lat 149.041967 Long
Water Temperature	°C	23.0	
Dissolved Oxygen	% saturation	56.5 90	
Dissolved Oxygen	mg/L	3.84	
Conductivity	µs/cm @25°C	48659	
pH	pH unit	8.21	
Turbidity	NTU	2.89 NTU	
Secchi	Metres	–	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ4 - Monthly**	Date: 24.9.24	Time: 10:00	Job No.
Site Location: Marine To the far right of the island when looking at it.	Field Team: FL MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.453133 Lat 149.055100 Long
Water Temperature	°C	22.9°	
Dissolved Oxygen	% saturation	67.7 %	
Dissolved Oxygen	mg/L	4.64 mg/L	
Conductivity	µs/cm @25°C	48548	
pH	pH unit	8.29	
Turbidity	NTU	1.39 NTU	
Secchi	Metres	—	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ5 - Monthly**	Date: 24.9.24	Time: 11.00.	Job No.
Site Location: Marine In front of ramp / Bungalow	Field Team: FL / MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.459717 Lat 149.041450 Long
Water Temperature	°C	23°	
Dissolved Oxygen	% saturation	58.7	
Dissolved Oxygen	mg/L	3.73	
Conductivity	µs/cm @25°C	49304	
pH	pH unit	8.40	
Turbidity	NTU	3.15 NTU	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

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
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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):
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
Freeze / 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: 25/9/24	N. SUTTON DATE/TIME: 25.9.24 10:00	DATE/TIME:	DATE/TIME:

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	24-9-24 12:15	Water		2		x	x						
	WQ1	" 9:00	Water		3		x		x					
	WQ2	" 9:20	Water		3		x		x					
	WQ3	" 9:40	Water		3		x		x					
	WQ4	" 10:00	Water		3		x		x					
	WQ5	" 11:00	Water		3		x		x					
	~~SW4~~ DWi	"	N ~~Water~~		~~3~~ 2		~~x~~ x	~~x~~ x						
					18									

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.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐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): 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:
	N. SUTTON		
DATE/TIME: 25-9-24	DATE/TIME: 25.9.24 10:00	DATE/TIME:	DATE/TIME:

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.
	TW1	24.9.24	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 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 Environmental

ALS Laboratory: please tick →

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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): 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:
DATE/TIME:	DATE/TIME: N. Sutton 25.9.24 10:00	DATE/TIME:	DATE/TIME:

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		Water		2		x	x						
	WQ1		Water		3		x		x					
	WQ2		Water		3		x		x					
	WQ3		Water		3		x		x					
	WQ4		Water		3		x		x					
	WQ5		Water		3		x		x					
	DW1		Water		2		x	x						
					18									

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.

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Linde01- Quarterly**	Date: 22/10/24	Time: 1.45	Job No.
Site Location: Sample at Dam	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	29.2°	
Dissolved Oxygen	% saturation	64.5%	
Dissolved Oxygen	mg/L	4.90	
Conductivity	µs/cm @25°C	262.3	
pH	pH unit	7.26	
Turbidity	NTU	7.65	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ1	Date: 22/10/24	Time: 8.45	Job No.
Site Location: Marine Quarterly Approx 200 mt off Home Beach right behind 5 near other island	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.460800 Lat 149.040717 Long
Water Temperature	°C	25.6	
Dissolved Oxygen	% saturation	61.6	
Dissolved Oxygen	mg/L	4.18	
Conductivity	µs/cm @25°C	50390	
pH	pH unit	7.10	
Turbidity	NTU	4.57	
Secchi	Metres	4.5m	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ2	Date: 22/10/24	Time: 10·10.	Job No.
Site Location: Marine Quarterly In front of creek – Rangers Hut	Field Team: FL, LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.455917 Lat 149.031700 Long
Water Temperature	°C	25·5	
Dissolved Oxygen	% saturation	68·9	
Dissolved Oxygen	mg/L	4·75	
Conductivity	µs/cm @25°C	50314	
pH	pH unit	6·57	
Turbidity	NTU	6·13	
Secchi	Metres	5·0 m.	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ3**	Date: 22/10/24	Time: 9:30	Job No.
Site Location: Marine Quarterly 100 m off Gap Beach around other side of island	Field Team: FL LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.437400 Lat 149.041967 Long
Water Temperature	°C	26.0	
Dissolved Oxygen	% saturation	72.0	
Dissolved Oxygen	mg/L	4.77	
Conductivity	µs/cm @25°C	50883	
pH	pH unit	7.17	
Turbidity	NTU	1.8	
Secchi	Metres	5.0	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes	No	Comments:
Cloud Cover		Yes	No	Comments:
Wind		Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ4	Date: 22/10/24	Time: 9.15	Job No.
Site Location: Marine Quarterly To the far right of the island when looking at it.	Field Team: FL LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.453133 Lat 149.055100 Long
Water Temperature	°C	25.6	
Dissolved Oxygen	% saturation	65.3	
Dissolved Oxygen	mg/L	4.52	
Conductivity	µs/cm @25°C	6.23	
pH	pH unit	50410	
Turbidity	NTU	7.09	
Secchi	Metres	- couldn't get - too shallow	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ5	Date: 22/10/24	Time: 11.15	Job No.
Site Location: Marine Quarterly In front of ramp / Bungalow	Field Team: FL LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.459717 Lat 149.041450 Long
Water Temperature	°C	26.1	
Dissolved Oxygen	% saturation	69.3	
Dissolved Oxygen	mg/L	4.65	
Conductivity	µs/cm @25°C	51042	
pH	pH unit	6.58	
Turbidity	NTU		
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Sonde Callibrated today.

Catchment Solutions

Calibration Record Sheet

Instrument Make: YSI and APERA
Instrument Model: Quatro/ Quatro Plus and TN400
Viewer Serial #: Lindeman Island.
Sonde Serial #: J1228
Calibrated by: Fiona Loft
Date: 22/10/24

Parameter	Calibration Standard Expiry Date:	Units	Calibration Results	
			Standard Value	Measured Value after calibrations
pH		pH units	4.00	4.02.
pH		pH units	7.00	7.01
pH		pH units	10.00	✓
Temp.	n/a	°C		
EC		µS/cm	2760 @ 25°C	2760
DO	n/a	% sat.	100% sat in air	100.90 ✓
Turbidity		NTU	0	✓
Turbidity		NTU	20	✓
Turbidity		NTU	100	✓
Turbidity		NTU	400	✓
Turbidity		NTU	800	✓

Visible signs of probe damage/wear/poor condition?	Comments:

Comments:

Signature: F Loft

Date: 22/10/24

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ1 - Monthly**	Date: 29/11/24	Time: 11:40	Job No. J1228 ~~J1259~~
Site Location: Marine Approx 200 mt off Home Beach right behind 5 near other island	Field Team: MS LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.460800 Lat 149.040717 Long
Water Temperature	°C	27.3	
Dissolved Oxygen	% saturation	71.2	
Dissolved Oxygen	mg/L	4.66	
Conductivity	µs/cm @25°C	53450	
pH	pH unit	8.36	
Turbidity	NTU	20.3	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes	(No)	Comments:
Cloud Cover		(Yes)	No	Comments:
Wind		(Yes)	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ2 - Monthly**	Date: 29/11/24	Time: 11:00	Job No. J1228
Site Location: Marine In front of creek – Rangers Hut	Field Team: MS LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.455917 Lat 149.031700 Long
Water Temperature	°C	27.3	
Dissolved Oxygen	% saturation	63	
Dissolved Oxygen	mg/L	4.43	
Conductivity	µs/cm @25°C	53599	
pH	pH unit	8.10	
Turbidity	NTU	20.6	
Secchi	Metres	4	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes	(No)	Comments:
Cloud Cover	(Yes)		No	Comments:
Wind	(Yes)		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ3 - Monthly**	Date: 29/11	Time: 11:15	Job No. J12258
Site Location: Marine 100 m off Gap Beach around other side of island	Field Team: MS LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.437400 Lat 149.041967 Long
Water Temperature	°C	27.4	
Dissolved Oxygen	% saturation	54.6	
Dissolved Oxygen	mg/L	3.57	
Conductivity	µs/cm @25°C	53826	
pH	pH unit	8.20	
Turbidity	NTU	20.3	
Secchi	Metres	~4	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ4 - Monthly**	Date: 29/11	Time: 11:30	Job No. 31288
Site Location: Marine To the far right of the island when looking at it.	Field Team: LH MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.453133 Lat 149.055100 Long
Water Temperature	°C	27.1	
Dissolved Oxygen	% saturation	71.1	
Dissolved Oxygen	mg/L	4.52	
Conductivity	µs/cm @25°C	53475	
pH	pH unit	8.35	
Turbidity	NTU	~~14.37~~	20.6
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ5 - Monthly**	Date: 29/11/24	Time: 11:50	Job No. S1228
Site Location: Marine In front of ramp / Bungalow	Field Team: MS LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.459717 Lat 149.041450 Long
Water Temperature	°C	27.0	
Dissolved Oxygen	% saturation	55.9	
Dissolved Oxygen	mg/L	3.69	
Conductivity	µs/cm @25°C	53512	
pH	pH unit	8.39	
Turbidity	NTU	20.9	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind01 - Monthly**	Date: 29/11/24	Time: 1:15	Job No. 31288
Site Location: Sample at Dam	Field Team: MS, LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C	30.0°C	
Dissolved Oxygen	% saturation	57.7	
Dissolved Oxygen	mg/L	4.35	
Conductivity	µs/cm @25°C	380.3	
pH	pH unit	8.90	
Turbidity	NTU	20.4	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Bottle
	✓	1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes	No	Comments:
Cloud Cover		Yes	No	Comments:
Wind		Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind02-Monthly**	Date: 29/11/24	Time:	Job No. 51288
Site Location: Sample at Pitfall near Airstrip	Field Team: MS LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C		DRY
Dissolved Oxygen	% saturation		
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C		
pH	pH unit		
Turbidity	NTU		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind03-Monthly**	Date: 29/11/24	Time:	Job No. J1228 ~~J1259~~
Site Location: Sample at Creek on beach down from Rangers hut	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C		DRY
Dissolved Oxygen	% saturation		
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C		
pH	pH unit		
Turbidity	NTU		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind04 - Monthly**	Date: 29/11/24	Time:	Job No. 31228 ~~31259~~
Site Location: Sample at end of Drain – KP sampler	Field Team: MS LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C		DRY
Dissolved Oxygen	% saturation		
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C		
pH	pH unit		
Turbidity	NTU		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind05 - Monthly**	Date: 29/11/24	Time:	Job No. J1228 ~~J1259~~
Site Location: Sample at Creek on Beach past Lind04	Field Team: MS CH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C		DRY
Dissolved Oxygen	% saturation		
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C		
pH	pH unit		
Turbidity	NTU		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind06 - Monthly**	Date: 29/11/24	Time:	Job No. J1228 ~~J1259~~
Site Location: Sample at Creek on Billy Goat Point	Field Team: MS LH		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C		
Dissolved Oxygen	% saturation		
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C		
pH	pH unit		
Turbidity	NTU		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Calibration Record Sheet

Instrument Make: YSI and APERA
Instrument Model: Quatro/ Quatro Plus and TN400
Viewer Serial #:
Sonde Serial #:
Calibrated by: L. Harvey
Date: 29/11/24

Parameter	Calibration Standard Expiry Date:	Units	Calibration Results	
			Standard Value	Measured Value after calibrations
pH		pH units	4.00	4.03
pH		pH units	7.00	7.09
pH		pH units	10.00	9.98
Temp.	n/a	°C		
EC		µS/cm	2760 @ 25°C	2898 @ 26.0°C
DO	n/a	% sat.	100% sat in air	✓
Turbidity		NTU	0	0.02
Turbidity		NTU	20	✓
Turbidity		NTU	100	✓
Turbidity		NTU	400	✓
Turbidity		NTU	800	✓

Visible signs of probe damage/wear/poor condition?	Comments: Nil.

Comments: N/A

Signature: L Harvey
Date: 29/11/24

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ1 - Monthly**	Date: 12/12/24	Time: 8.50	Job No.
Site Location: Marine Approx 200 mt off Home Beach right behind 5 near other island	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.460800 Lat 149.040717 Long
Water Temperature	°C	27.7	
Dissolved Oxygen	% saturation	52.5%	
Dissolved Oxygen	mg/L	3.33	
Conductivity	µs/cm @25°C	56617	
pH	pH unit	8.16	
Turbidity	NTU	21.0	
Secchi	Metres	130.9 ORP.	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ2 - Monthly**	Date: 12/12/24	Time: 9.15	Job No.
Site Location: Marine In front of creek – Rangers Hut	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.455917 Lat 149.031700 Long
Water Temperature	°C	27.8	
Dissolved Oxygen	% saturation	62.7	
Dissolved Oxygen	mg/L	3.98	
Conductivity	µs/cm @25°C	56902	
pH	pH unit	8.22	
Turbidity	NTU	20.9	
Secchi	Metres ORP	134.7	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ3 - Monthly**	Date: 12/12/24	Time: 9.30	Job No.
Site Location: Marine 100 m off Gap Beach around other side of island	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.437400 Lat 149.041967 Long
Water Temperature	°C	27.9	
Dissolved Oxygen	% saturation	49.3	
Dissolved Oxygen	mg/L	3.15	
Conductivity	µs/cm @25°C	56832.	
pH	pH unit	8.20	
Turbidity	NTU	20.4	
Secchi	Metres ORP	174.5	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ4 - Monthly**	Date: 12/12/24	Time: 9.45	Job No.
Site Location: Marine To the far right of the island when looking at it.	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.453133 Lat 149.055100 Long
Water Temperature	°C	27.7°	
Dissolved Oxygen	% saturation	66.4	
Dissolved Oxygen	mg/L	4.23	
Conductivity	µs/cm @25°C	56478	
pH	pH unit	8.17	
Turbidity	NTU	20.4	
Secchi	Metres ORP	204.3	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes	No	Comments:
Cloud Cover		Yes	No	Comments:
Wind		Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ5 - Monthly**	Date: 12/12/24	Time: 8·40	Job No.
Site Location: Marine In front of ramp / Bungalow	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.459717 Lat 149.041450 Long
Water Temperature	°C	27·9	
Dissolved Oxygen	% saturation	82·1	
Dissolved Oxygen	mg/L	5.27	
Conductivity	µs/cm @25°C	57395	
pH	pH unit	8·06	
Turbidity	NTU	20·5	
Secchi ORP	Metres	129·5	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes	No	Comments:
Cloud Cover		Yes	No	Comments:
Wind		Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind01 - Monthly**	Date: 12/12	Time: 10:30	Job No.
Site Location: Sample at Dam	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			Duplicate
Water Temperature	°C	30.6	Triplicate
Dissolved Oxygen	% saturation	54.0	
Dissolved Oxygen	mg/L	4.00	
Conductivity	µs/cm @25°C	529	
pH	pH unit	8.62	
Turbidity	NTU	22.6	ORP 105.03

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind02-Monthly**	Date:	Time:	Job No.
Site Location: Sample at Pitfall near Airstrip	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C		DRY
Dissolved Oxygen	% saturation		
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C		
pH	pH unit		
Turbidity	NTU		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind03-Monthly**	Date: 12/12/24	Time: 13·15	Job No.
Site Location: Sample at Creek on beach down from Rangers hut	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C	26·9	
Dissolved Oxygen	% saturation	59·5	
Dissolved Oxygen	mg/L	4·56	
Conductivity	µs/cm @25°C	522	
pH	pH unit	7·92.	
Turbidity	NTU	23·6	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind04 - Monthly**	Date:	Time:	Job No.
Site Location: Sample at end of Drain – KP sampler	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C		
Dissolved Oxygen	% saturation		DRY
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C		
pH	pH unit		
Turbidity	NTU		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind05 - Monthly**	Date: 12/12/24	Time: 11.30.	Job No.
Site Location: Sample at Creek on Beach past Lind04 Walk Left of Ramp.	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	26.1	
Dissolved Oxygen	% saturation	51.990	
Dissolved Oxygen	mg/L	4.16	
Conductivity	µs/cm @25°C	675.	
pH	pH unit	8.35.	
Turbidity	NTU	35.9.	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1 ✓	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		(No)	Comments:
Cloud Cover		(Yes)		No	Comments:
Wind		Yes		(No)	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind06 - Monthly**	Date:	Time:	Job No.
Site Location: Sample at Creek on Billy Goat Point	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C		
Dissolved Oxygen	% saturation		
Dissolved Oxygen	mg/L		DRY
Conductivity	µs/cm @25°C		
pH	pH unit		
Turbidity	NTU		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Calibration Record Sheet

Instrument Make: YSI and APERA
Instrument Model: Quatro/ Quatro Plus and TN400
Viewer Serial #: Lindeman Island.
Sonde Serial #:
Calibrated by: Fiona Loft.
Date: 11.12.24

Parameter	Calibration Standard Expiry Date:	Units	Calibration Results	
			Standard Value	Measured Value after calibrations
pH		pH units	4.00	4.01
pH		pH units	7.00	7.02
pH		pH units	10.00	/
Temp.	n/a	°C		
EC		µS/cm	2760 @ 25°C	2760
DO	n/a	% sat.	100% sat in air	✓
Turbidity		NTU	0	✓
Turbidity		NTU	20	✓
Turbidity		NTU	100	✓
Turbidity		NTU	400	✓
Turbidity		NTU	800	✓

Visible signs of probe damage/wear/poor condition?	Comments:

Comments:

Signature: F Loft
Date: 11/12/24

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
☐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):
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:	DATE/TIME:	DATE/TIME:

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	12.12.24 10:30	Water		2		x	x						
	WQ1	12.12.24 8:50	Water		3		x		x					
	WQ2	12.12.24 9:15	Water		3		x		x					
	WQ3	12.12.24 9:30	Water		3		x		x					
	WQ4	12.12.24 9.45	Water		3		x		x					
	WQ5	12.12.24 8:40	Water		3		x		x					
	DW01	12.12.24	Water		2		x	x						
	Lindo3	12.12.24 13:15	W		2		x	x						
	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 = 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 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
☐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

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:

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

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 13/12/24	DATE/TIME:	DATE/TIME:	DATE/TIME:

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	~~OPesticides~~	TDS, TSS	Nutrients NT-08						PLEASE FORWARD TO SYDNEY LABORATORY FOR ANALYSIS
	TW9	12.12.24	Water		2.	x	x	x						
				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 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.

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ1	Date: 28/1/25	Time: 1025	Job No. 31228
Site Location: Marine Quarterly Approx 200 mt off Home Beach right behind 5 near other island	Field Team: BP/MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.460800 Lat 149.040717 Long
Water Temperature	°C	29	
Dissolved Oxygen	% saturation	102	
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C	53313	
pH	pH unit	8.17	
Turbidity	NTU	~~69.94~~	0
Secchi	Metres	~~1.074~~	107.4 ORP

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain	Yes	No	Comments:	
Cloud Cover	Yes	No	Comments:	
Wind	Yes	No	Comments:	20 knot easterly

Comments

Very high vis. Very high tide
Strong onshore wind

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ2	Date: 28/1/25	Time: 10·35	Job No. J1228
Site Location: Marine Quarterly In front of creek – Rangers Hut	Field Team: BP/MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.455917 Lat 149.031700 Long
Water Temperature	°C	29.2	105.4 ORP
Dissolved Oxygen	% saturation	101	
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C	53317	
pH	pH unit	8.20	
Turbidity	NTU	20	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain	Yes	No	Comments:	
Cloud Cover	Yes	No	Comments:	
Wind	Yes	No	Comments:	

Comments

In the lee of the easterly
Good VIZ

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ3	Date: 25/1/25	Time: 9.40am	Job No. 31228
Site Location: Marine Quarterly 100 m off Gap Beach around other side of island	Field Team: BP / MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.437400 Lat 149.041967 Long
Water Temperature	°C 28.9	28.9	
Dissolved Oxygen	% saturation	100	
Dissolved Oxygen	mg/L	–	
Conductivity	µs/cm @25°C	52,790	
pH	pH unit	7.91	
Turbidity	NTU	~~[illegible]~~ 0	
~~Secchi~~ ORP	~~Metres~~	108.1	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain	Yes	~~No~~	Comments:	
Cloud Cover	Yes	No	Comments:	
Wind	Yes	No	Comments:	20 knot Easterly

Comments

More wave action to normal

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ4**	Date: 1/25	Time: 10.05am	Job No. J1228
Site Location: Marine Quarterly To the far right of the island when looking at it.	Field Team: BP/MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points		~~29.1~~	-20.453133 Lat 149.055100 Long
Water Temperature	°C	29.1	
Dissolved Oxygen	% saturation	101	
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C	53,358	
pH	pH unit	8.18	
Turbidity	NTU	~~2.04~~	23.6
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain	Yes	(No)	Comments:
Cloud Cover	(Yes)	No	Comments:
Wind	(Yes)	No	Comments: 20 knot easterly

Comments

Very high tide, Windward bay, Good viz

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ5	Date: 28/1/25	Time: 11.30	Job No. J1228
Site Location: Marine Quarterly In front of ramp / Bungalow	Field Team: BP/MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.459717 Lat 149.041450 Long
Water Temperature	°C	29.3	
Dissolved Oxygen	% saturation	101	105.6 ORP
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C	53376	
pH	pH unit	8.18	
Turbidity	NTU	0	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain	Yes	No	Comments:	
Cloud Cover	Yes	No	Comments:	
Wind	Yes	No	Comments:	20 knots

Comments

20 knot easterly
Very high tide
Good vis

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Linde01- Quarterly**	Date: 28/1	Time: 13:20	Job No. 31228
Site Location: Sample at Dam	Field Team: MS / BP		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	28.5	
Dissolved Oxygen	% saturation	37	
Dissolved Oxygen	mg/L	~~118~~	
Conductivity	µs/cm @25°C	118.3	
pH	pH unit	7.46	56.6 ORP
Turbidity	NTU	22.2	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Linde02- Quarterly**	Date: 28/1/28	Time: 1:45	Job No. 51228
Site Location: Sample at pitfall on Airstrip	Field Team: MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	28.5	
Dissolved Oxygen	% saturation	60	
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C	1008	
pH	pH unit	6.55	103.3 ORP
Turbidity	NTU	31.5	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes		(No)	Comments:
Cloud Cover		(Yes)		No	Comments:
Wind		(Yes)		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: Linde03 - Quarterly	Date: 28/1/25	Time: 11.20	Job No. J1228
Site Location: Sample at Creek on beach down from Rangers Hut	Field Team: BP/MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	28.1	
Dissolved Oxygen	% saturation	98%	
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C	1413	
pH	pH unit	8.01	
Turbidity	NTU	27.7	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Creek flowing well. Previous high flows
Pitfall sampler washed away

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Linde05 - Quarterly**	Date: 28/1	Time: 12:10	Job No. J1228
Site Location: Sample at Beach past Linde04	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	27.6	
Dissolved Oxygen	% saturation	98	
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C	394	
pH	pH unit	8.37	
Turbidity	NTU	28	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Low flow / strong trickle

Catchment Solutions

Site Number: WQ1	Date: 10/2/25	Time: 12:30	Job No. J1228
Site Location: Marine Quarterly Approx 200 mt off Home Beach right behind 5 near other island	Field Team: BP + EG		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.460800 Lat 149.040717 Long
Water Temperature	°C	26.5	
Dissolved Oxygen	% saturation	95	
Dissolved Oxygen	mg/L	6.12	
Conductivity	µs/cm @25°C	48431	
pH	pH unit	8.12	
Turbidity	NTU	19.98	
~~Secchi~~ ORP	Metres	148.6	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
	✓	1	Orange Amber Glass 100ml
	✓	1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind	✓	Yes		No	Comments: 12-14 Knots

Comments

choppy, current flowing fast.

Catchment Solutions

Site Number: WQ2	Date: 10/2/25	Time: 11.00	Job No. J1228
Site Location: Marine Quarterly In front of creek – Rangers Hut	Field Team: EG / BP		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.455917 Lat 149.031700 Long
Water Temperature	°C	26.7	
Dissolved Oxygen	% saturation	70.7	
Dissolved Oxygen	mg/L	4.71	
Conductivity	µs/cm @25°C	48320	
pH	pH unit	~~4.24~~	7.87
Turbidity	NTU	0.00	checked against 100 and 800 standards
~~Secchi~~ ORP	Metres	134.5	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
	✓	1	Orange Amber Glass 100ml
	✓	1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind		Yes		No	Comments: 10 knots

Comments

Lee shore
Very clear

Catchment Solutions

Site Number: WQ3	Date: 10/2/25	Time: 10:10	Job No. 31228
Site Location: Marine Quarterly 100 m off Gap Beach around other side of island	Field Team: BP/EG		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.437400 Lat 149.041967 Long
Water Temperature	°C	26.9	
Dissolved Oxygen	% saturation	67.8	
Dissolved Oxygen	mg/L	4.50	
Conductivity	µs/cm @25°C	49285	
pH	pH unit	~~4.24~~	Error
Turbidity	NTU	20.9	
~~Secchi~~ ORP	Metres	161.1	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
	✓	1	Orange Amber Glass 100ml
	✓	1	Clear 250ml Plastic - E. coli

Weather Conditions Today

		Yes		No	Comments:
Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind		Yes	✓	No	Comments:

Comments

East south east wind
some wave action

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ4	Date: 10/2/2025	Time: 10.40	Job No. J1228
Site Location: Marine Quarterly To the far right of the island when looking at it.	Field Team: BP / EG		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.453133 Lat 149.055100 Long
Water Temperature	°C	26.8	
Dissolved Oxygen	% saturation	62.2	
Dissolved Oxygen	mg/L	4.06	
Conductivity	µs/cm @25°C	49,005	
pH	pH unit	~~4.24~~	Error
Turbidity	NTU	19.93	
~~Secchi~~ off	Metres	131.4	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - FILTERED
	✓	1	Orange Amber Glass 100ml
	✓	1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind		Yes	✓	No	Comments:

Comments

East South East 7 knots
Some wave action

Catchment Solutions

Site Number: WQ5	Date: 10/2/25	Time: 12:30	Job No. J1228
Site Location: Marine Quarterly In front of ramp / Bungalow	Field Team: BP + EG.		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.459717 Lat 149.041450 Long
Water Temperature	°C	26.8	
Dissolved Oxygen	% saturation	62.9	
Dissolved Oxygen	mg/L	4.22	
Conductivity	µs/cm @25°C	48618	
pH	pH unit	8.21	
Turbidity	NTU	19.89	readings switching between 0.00 and 19.9.
~~Secchi~~ OAP	Metres	135.4	1 reading of 41.5 calibrated w 20 and 100

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
	✓	1	Orange Amber Glass 100ml
	✓	1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind	✓	Yes		No	Comments: 12 – 14 knots

Comments

very choppy.

Catchment Solutions

Site Number: Linde01- Quarterly	Date: 10/02/25	Time: 14:20	Job No. J1228
Site Location: Sample at Dam	Field Team: BP + EG		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	26.1	
Dissolved Oxygen	% saturation	40.6	
Dissolved Oxygen	mg/L	3.25	
Conductivity	µs/cm @25°C	114.1	
pH	pH unit	8.41	
Turbidity	NTU	46.9	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
	✓	1	Orange Amber Glass – 100ml x3
	✓	1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind		Yes	✓	No	Comments:

Comments

Catchment Solutions

Site Number: Linde02- Quarterly	Date: 10/02/25	Time:	Job No. J1228
Site Location: Sample at pitfall on Airstrip	Field Team: BP + EG		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	25.6	
Dissolved Oxygen	% saturation	75.3	
Dissolved Oxygen	mg/L	6.07	
Conductivity	µs/cm @25°C	132.4	
pH	pH unit	8.24	
Turbidity	NTU	73.2	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
	✓	1	Orange Amber Glass – 100ml
	✓	1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind		Yes	✓	No	Comments:

Comments

Catchment Solutions

Site Number: Linde03 - Quarterly	Date: 10/2/25	Time: 12:10	Job No. J1228
Site Location: Sample at Creek on beach down from Rangers Hut	Field Team: BP + EG		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	26.2	
Dissolved Oxygen	% saturation	~~85~~ 82.5	
Dissolved Oxygen	mg/L	6.61	
Conductivity	µs/cm @25°C	130.3	
pH	pH unit	7.94	
Turbidity	NTU	64.8	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
	✓	1	Orange Amber Glass – 100ml
	✓	1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain	Yes	(No)	Comments:	
Cloud Cover	(Yes)	No	Comments:	
Wind	(Yes)	No	Comments:	10 knots ESE

Comments

Creek has very large flows. All pools drowned out

Catchment Solutions

Site Number: Linde04 - Quarterly	Date: 20/12/25	Time: 1·25	Job No. J1228
Site Location: Sample at Creek on beach to the right of boat ramp	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	25·3	
Dissolved Oxygen	% saturation	100·7	
Dissolved Oxygen	mg/L	8·22	
Conductivity	µs/cm @25°C	332·5	
pH	pH unit	9·23	
Turbidity	NTU	66	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain	✓	Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Catchment Solutions

Site Number: Linde05 - Quarterly	Date: 10/02/25	Time: 15:00	Job No. 51228
Site Location: Sample at Beach past Linde04	Field Team: BP + EG		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	26.1	
Dissolved Oxygen	% saturation	82.2	
Dissolved Oxygen	mg/L	6.55	
Conductivity	µs/cm @25°C	202.9	
pH	pH unit	8.37	
Turbidity	NTU	53.4	ORP = 142.3

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
	✓	1	Orange Amber Glass – 100ml
	✓	1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind	✓	Yes		No	Comments: 10 knots.

Comments

Catchment Solutions

Site Number: Linde06 - Quarterly	Date: 10/02/25	Time: 11:35	Job No. J 1228
Site Location: Sample at Billy Goat Beach	Field Team: BP + EG		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	25.9	
Dissolved Oxygen	% saturation	79.0	
Dissolved Oxygen	mg/L	6.35	
Conductivity	µs/cm @25°C	212.4	
pH	pH unit	8.62	ORP = 76.5
Turbidity	NTU	126	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
	✓	1	Orange Amber Glass – 100ml
	✓	1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

water running well

Calibration Record Sheet

Instrument Make: YSI and APERA
Instrument Model: Quatro/ Quatro Plus and TN400
Viewer Serial #:
Sonde Serial #:
Calibrated by: Emily gray
Date: 10/02/2025

Parameter	Calibration Standard Expiry Date:	Units	Calibration Results	
			Standard Value	Measured Value after calibrations
pH		pH units	4.00	3.92
pH		pH units	7.00	6.85
pH		pH units	10.00	[illegible]
Temp.	n/a	°C		
EC		µS/cm	2760 @ 25°C	~2880
DO	n/a	% sat.	100% sat in air	84.4%
Turbidity		NTU	0	✓
Turbidity		NTU	20	
Turbidity		NTU	100	
Turbidity		NTU	400	
Turbidity		NTU	800	

Visible signs of probe damage/wear/poor condition?	Comments:

Comments:

Signature:

Date:

Calibration Record Sheet

Instrument Make: YSI and APERA
Instrument Model: Quatro/ Quatro Plus and TN400
Viewer Serial #:
Sonde Serial #:
Calibrated by: Emily Gray
Date: 10/3/2025

Parameter	Calibration Standard Expiry Date:	Units	Calibration Results	
			Standard Value	Measured Value after calibrations
pH		pH units	4.00	4.00
pH		pH units	7.00	7.01
pH		pH units	10.00	10.00
Temp.	n/a	°C		na
EC		µS/cm	58000 @ 25°C	58009
DO	n/a	% sat.	100% sat in air	100
Turbidity		NTU	0	0
Turbidity		NTU	20	20
Turbidity		NTU	100	100
Turbidity		NTU	400	400
Turbidity		NTU	800	800

Visible signs of probe damage/wear/poor condition?	Comments:

Comments:

Signature: Emily Gray.
Date: 10/3/25

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: Lind01 - Monthly	Date: 11/3/25	Time: 13:10pm	Job No. J128
Site Location: Sample at Dam	Field Team: EG + MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C	32.1	
Dissolved Oxygen	% saturation	70.7	
Dissolved Oxygen	mg/L	5.15	
Conductivity	µs/cm @25°C	452.6	
pH	pH unit	8.89	
Turbidity	NTU	36.5	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Bottle
	✓	1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover		Yes	✓	No	Comments:
Wind	✓	Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind02-Monthly**	Date:	Time:	Job No. J7228
Site Location: Sample at Pitfall near Airstrip	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C		
Dissolved Oxygen	% saturation		
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C		
pH	pH unit		
Turbidity	NTU		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

no water

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind03-Monthly**	Date: 11/3/25	Time: 11:10am	Job No. J128
Site Location: Sample at Creek on beach down from Rangers hut	Field Team: EG + MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C	27.1	
Dissolved Oxygen	% saturation	56.3	
Dissolved Oxygen	mg/L	4.51	
Conductivity	µs/cm @25°C	382.3	
pH	pH unit	7.57	
Turbidity	NTU	51.7	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green Bottle
	✓	1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind		Yes	✓	No	Comments:

Comments

strong current in the ocean

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind04 - Monthly**	Date:	Time:	Job No.
Site Location: Sample at end of Drain – KP sampler	Field Team:		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C		
Dissolved Oxygen	% saturation		
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C		
pH	pH unit		
Turbidity	NTU		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

no water to collect

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind05 - Monthly**	Date: 11/3/25	Time: 10:40 am	Job No. J1228
Site Location: Sample at Creek on Beach past Lind04	Field Team: EG + MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	25.9	
Dissolved Oxygen	% saturation	77.5	
Dissolved Oxygen	mg/L	6.46	
Conductivity	µs/cm @25°C	891	
pH	pH unit	7.61	
Turbidity	NTU	38.4	ORP = 131

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Bottle
	✓	1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind	✓	Yes		No	Comments:

Comments

sheltered not much wind

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind06 - Monthly**	Date: 11/3/25	Time:	Job No. J1228
Site Location: Sample at Creek on Billy Goat Point	Field Team: EG + MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C		
Dissolved Oxygen	% saturation		
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C		
pH	pH unit		
Turbidity	NTU		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover		Yes	✓	No	Comments: only very few clouds.
Wind	✓	Yes		No	Comments: 5 knots

Comments

no water flowing.

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ1 - Monthly	Date: 11/3/25	Time: 12:15pm	Job No. J128
Site Location: Marine Approx 200 mt off Home Beach right behind 5 near other island	Field Team: EG + MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.460800 Lat 149.040717 Long
Water Temperature	°C	27.8	
Dissolved Oxygen	% saturation	53.0	
Dissolved Oxygen	mg/L	3.38	
Conductivity	µs/cm @25°C	59454	
pH	pH unit	7.97	
Turbidity	NTU	20.2	
~~Secchi~~ ORP	Metres	149.9	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ2 - Monthly**	Date: 11/3/25	Time: 11:25	Job No. J1228
Site Location: Marine In front of creek – Rangers Hut	Field Team: MS + EG		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.455917 Lat 149.031700 Long
Water Temperature	°C	28.0	
Dissolved Oxygen	% saturation	47.2	
Dissolved Oxygen	mg/L	3.00	
Conductivity	µs/cm @25°C	59486	
pH	pH unit	7.83	
Turbidity	NTU	20.2	
~~Secchi~~ ORP	Metres		154 ORP

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ3 - Monthly**	Date: 11/3/25	Time: 11:40am	Job No. J1228
Site Location: Marine 100 m off Gap Beach around other side of island	Field Team: EG + MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.437400 Lat 149.041967 Long
Water Temperature	°C	28	
Dissolved Oxygen	% saturation	69.4	
Dissolved Oxygen	mg/L	4.42	
Conductivity	µs/cm @25°C	59415	
pH	pH unit	7.94	
Turbidity	NTU	20.3	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

		Yes		No	Comments:
Rain		Yes	✓	No	Comments:
Cloud Cover		Yes	✓	No	Comments:
Wind	✓	Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ4 - Monthly**	Date: 11/3/25	Time: 12:00	Job No. J1228
Site Location: Marine To the far right of the island when looking at it.	Field Team: MS + EG		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.453133 Lat 149.055100 Long
Water Temperature	°C	28.1	
Dissolved Oxygen	% saturation	63.2	
Dissolved Oxygen	mg/L	4.02	
Conductivity	µs/cm @25°C	59865	
pH	pH unit	7.93	
Turbidity	NTU	20.1	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ5 - Monthly	Date: 11/3/25	Time: 10:10 am	Job No. J128
Site Location: Marine In front of ramp / Bungalow	Field Team: EG + MS		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.459717 Lat 149.041450 Long
Water Temperature	°C	28.2	
Dissolved Oxygen	% saturation	59.0	
Dissolved Oxygen	mg/L	3.75	
Conductivity	µs/cm @25°C	60359	
pH	pH unit	7.83	
Turbidity	NTU	20.1	
~~Secchi~~ ORP	Metres	140.2	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
	✓	1	TSS – 250ml Poly green
	✓	1	Nutrient TN & TP 1 light green plastic
	✓	1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind	✓	Yes		No	Comments: 10 -12 knots

Comments

not choppy

Catchment Solutions

Site Number: WQ1 - Monthly	Date: 25/03/25	Time: 09:10	Job No. 51228
Site Location: Marine Approx 200 mt off Home Beach right behind 5 near other island	Field Team: EG + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.460800 Lat 149.040717 Long
Water Temperature	°C	27	
Dissolved Oxygen	% saturation	73	
Dissolved Oxygen	mg/L	4.86	
Conductivity	µs/cm @25°C	49041	
pH	pH unit	7.97	
Turbidity	NTU	43.3	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind	✓	Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ2 - Monthly**	Date: 25/03/25	Time: 09:20	Job No. J1223
Site Location: Marine In front of creek – Rangers Hut	Field Team: EG + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.455917 Lat 149.031700 Long
Water Temperature	°C	27°	
Dissolved Oxygen	% saturation	71.0	
Dissolved Oxygen	mg/L	4.87	
Conductivity	µs/cm @25°C	48699	
pH	pH unit	8.10	
Turbidity	NTU	9.44	
Secchi	Metres	—	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain		Yes	✓	No	Comments:
Cloud Cover	✓	Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ3 - Monthly**	Date: 25/03/25	Time: 10.20	Job No. J1228
Site Location: Marine 100 m off Gap Beach around other side of island	Field Team: EG + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.437400 Lat 149.041967 Long
Water Temperature	°C	27.0°	
Dissolved Oxygen	% saturation	69.7	
Dissolved Oxygen	mg/L	4.56	
Conductivity	µs/cm @25°C	48764	
pH	pH unit	8.09	
Turbidity	NTU	20.4	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

	Yes	No	Comments:
Rain		(No)	
Cloud Cover	(Yes)	No	
Wind	(Yes)	No	

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ4 - Monthly	Date: 25/03/25	Time: 10.45	Job No. J1228
Site Location: Marine To the far right of the island when looking at it.	Field Team: EG + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.453133 Lat 149.055100 Long
Water Temperature	°C	27.1	
Dissolved Oxygen	% saturation	86.4	
Dissolved Oxygen	mg/L	5.73	
Conductivity	µs/cm @25°C	48835	
pH	pH unit	8.16	
Turbidity	NTU	9.81	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ5 - Monthly**	Date: 25/03/25	Time: 8 50	Job No. J1228
Site Location: Marine In front of ramp / Bungalow	Field Team: EG + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.459717 Lat 149.041450 Long
Water Temperature	°C	27.2	
Dissolved Oxygen	% saturation	97.2	
Dissolved Oxygen	mg/L	6.28	
Conductivity	µs/cm @25°C	49077	
pH	pH unit	7.58	
Turbidity	NTU	19.18	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: Lind02-Monthly	Date: 25/03/25	Time: 07:45	Job No. J1228
Site Location: Sample at Pitfall near Airstrip	Field Team: EG + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C	25.5	
Dissolved Oxygen	% saturation	38.9	
Dissolved Oxygen	mg/L	3.14	
Conductivity	µs/cm @25°C	5.37	
pH	pH unit	149.3	
Turbidity	NTU	108.0	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind04 - Monthly**	Date: 25/03/25	Time: 11:00	Job No. J1228
Site Location: Sample at end of Drain – KP sampler	Field Team: EG + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C	25.9	
Dissolved Oxygen	% saturation	76.1	
Dissolved Oxygen	mg/L	6.31	
Conductivity	µs/cm @25°C	146.5	
pH	pH unit	8.29	
Turbidity	NTU	32.5	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind03-Monthly**	Date: 25/03/25	Time: 9.35	Job No. J1228
Site Location: Sample at Creek on beach down from Rangers hut	Field Team: EG + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C	25.7	
Dissolved Oxygen	% saturation	89.2	
Dissolved Oxygen	mg/L	7.57	
Conductivity	µs/cm @25°C	619	
pH	pH unit	8.72	
Turbidity	NTU	62.9	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Catchment Solutions

Site Number: Lind05 - Monthly	Date: 25/03/25	Time: 11.30	Job No. J1228
Site Location: Sample at Creek on Beach past Lind04	Field Team: EG + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	25.8	
Dissolved Oxygen	% saturation	93.1	
Dissolved Oxygen	mg/L	7.42	
Conductivity	µs/cm @25°C	556	
pH	pH unit	8.11	
Turbidity	NTU	31.3	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Catchment Solutions

Site Number: Lind06 - Monthly	Date: 25/03/25	Time: 9.50.	Job No. J1228
Site Location: Sample at Creek on Billy Goat Point	Field Team: EG + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C		No Sample.
Dissolved Oxygen	% saturation		
Dissolved Oxygen	mg/L		
Conductivity	µs/cm @25°C		
pH	pH unit		
Turbidity	NTU		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **Lind01 - Monthly**	Date: 25/03/25	Time: 7.20	Job No. J1228
Site Location: Sample at Dam	Field Team: EG + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			
Water Temperature	°C	25.4	
Dissolved Oxygen	% saturation	20.2	
Dissolved Oxygen	mg/L	1.66	
Conductivity	µs/cm @25°C	88.6	
pH	pH unit	5.89	
Turbidity	NTU	27.8	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Bottle
		1	Nutrient 1 purple plastic

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Dup / Triplicate

Calibration Record Sheet

Instrument Make: YSI and APERA
Instrument Model: Quatro/ Quatro Plus and TN400
Viewer Serial #: Lindeman
Sonde Serial #:
Calibrated by: Fiona Loft
Date: 25/3/25

Parameter	Calibration Standard Expiry Date:	Units	Calibration Results	
			Standard Value	Measured Value after calibrations
pH		pH units	4.00	4.02
pH		pH units	7.00	7.01
pH		pH units	10.00	10.00
Temp.	n/a	°C		
EC		µS/cm	2760 @ 25°C	2760
DO	n/a	% sat.	100% sat in air	100.90
Turbidity		NTU	0	✓
Turbidity		NTU	20	✓
Turbidity		NTU	100	✓
Turbidity		NTU	400	✓
Turbidity		NTU	800	✓

Visible signs of probe damage/wear/poor condition?	Comments:

Comments:

Signature: F Loft
Date: 25/3/25

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
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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):
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:
DATE/TIME: 25/3/25 2:45	DATE/TIME: N. Sutton 25.3.25 14:45	DATE/TIME:	DATE/TIME:

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	25/3/25 7:20	Water		2		x	x						
	LIND02	25/3/25 ~~[illegible]~~	Water	7.45	2		x	x						
	LIND03	25/3/25 ~~[illegible]~~ 9.35	Water	9.35	2		x	x						
	LIND04	25/3/25 11.00	Water		2		x	x						
	LIND05	25/3/25 11.30	Water		2		x	x						
	~~LIND06~~		~~Water~~		~~2~~		~~x~~	~~x~~						
	WQ1	25/3/25 9.10	Water		3		x		x					
	WQ2	25/3/25 9.20	Water		3		x		x					
	WQ3	25/3/25 10:20	Water		3		x		x					
	WQ4	25/3/25 10:~~[illegible]~~	Water		3		x		x					
	WQ5	25/3/25 8.50	Water		3		x		x					
	DW13	25/3/25	Water		2		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.

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ1**	Date: 31/4/25	Time: 15:20	Job No. J1228
Site Location: Marine Quarterly Approx 200 mt off Home Beach right behind 5 near other island	Field Team: JP + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.460800 Lat 149.040717 Long
Water Temperature	°C	28.5	
Dissolved Oxygen	% saturation	59.1 %	
Dissolved Oxygen	mg/L	3.87	
Conductivity	µs/cm @25°C	49646	
pH	pH unit	8.12	
Turbidity	NTU	4.61	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1 ✓	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: **WQ2**	Date: 3/4/25	Time: 16-00	Job No. J1228
Site Location: Marine Quarterly In front of creek – Rangers Hut	Field Team: JP + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Points			-20.455917 Lat 149.031700 Long
Water Temperature	°C	28.1	
Dissolved Oxygen	% saturation	86.3	
Dissolved Oxygen	mg/L	5.64	
Conductivity	µs/cm @25°C	49149	
pH	pH unit	8.21	
Turbidity	NTU	10.53	
Secchi	Metres	/	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Catchment Solutions

Site Number: WQ3	Date: 3/4/25	Time: 16:45	Job No. J1228
Site Location: Marine Quarterly 100 m off Gap Beach around other side of island	Field Team: JP + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.437400 Lat 149.041967 Long
Water Temperature	°C	28.2	
Dissolved Oxygen	% saturation	63.0	
Dissolved Oxygen	mg/L	4.16	
Conductivity	µs/cm @25°C	48711	
pH	pH unit	8.25	
Turbidity	NTU	6.13	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ4	Date: 3/4/25	Time: 16.30	Job No. J1228
Site Location: Marine Quarterly To the far right of the island when looking at it.	Field Team: JP + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.453133 Lat 149.055100 Long
Water Temperature	°C	27.7	
Dissolved Oxygen	% saturation	69.9 %	
Dissolved Oxygen	mg/L	4.68	
Conductivity	µs/cm @25°C	48808	
pH	pH unit	8.22	
Turbidity	NTU	7.75	
Secchi	Metres	—	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes	No	Comments:
Cloud Cover		Yes	No	Comments:
Wind		Yes	No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: WQ5	Date: 3/4/25	Time: 15:10	Job No. J1228
Site Location: Marine Quarterly In front of ramp / Bungalow	Field Team: JP + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS points			-20.459717 Lat 149.041450 Long
Water Temperature	°C	28.8	
Dissolved Oxygen	% saturation	71.3	
Dissolved Oxygen	mg/L	4.66	
Conductivity	µs/cm @25°C	49343	
pH	pH unit	7.71	
Turbidity	NTU	4.82.	
Secchi	Metres		

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient TN & TP 1 light green plastic
		1	Nutrient, (Ultra trace) 1 dark green bottle - **FILTERED**
		1	Orange Amber Glass 100ml
		1	Clear 250ml Plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: Linde01- Quarterly	Date: 3/4/25	Time: 13:50	Job No. J1228
Site Location: Sample at Dam	Field Team: JP + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	28.9	
Dissolved Oxygen	% saturation	70.1	
Dissolved Oxygen	mg/L	5.39	
Conductivity	µs/cm @25°C	80.7	
pH	pH unit	5.63	
Turbidity	NTU	26.3	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: Linde02- ~~Quarterly~~ Event 2.	Date: 3/4/25	Time: 13:30	Job No. J1228
Site Location: Sample at pitfall on Airstrip	Field Team: JP + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			Ck running
Water Temperature	°C	27.1	lots of water
Dissolved Oxygen	% saturation	54.2 %	
Dissolved Oxygen	mg/L	4.26	
Conductivity	µs/cm @25°C	114.6	
pH	pH unit	5.63	
Turbidity	NTU	122.0	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain	Yes		No	Comments:
Cloud Cover	Yes		No	Comments:
Wind	Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: Linde03 - Quarterly	Date: 3/4/25	Time: 15.30	Job No. J1228
Site Location: Sample at Creek on beach down from Rangers Hut	Field Team: JP + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	27.3	
Dissolved Oxygen	% saturation	63.4%	
Dissolved Oxygen	mg/L	5.01	
Conductivity	µs/cm @25°C	385.9	
pH	pH unit	8.58	
Turbidity	NTU	90.7	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: Linde04 - Quarterly	Date: 3/4/25	Time: 15:00	Job No. J1228
Site Location: Sample at Creek on beach to the right of boat ramp	Field Team: JP + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	27.5	
Dissolved Oxygen	% saturation	65.6	
Dissolved Oxygen	mg/L	5.14	
Conductivity	µs/cm @25°C	200.5	
pH	pH unit	6.24	
Turbidity	NTU	126.0	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: Linde05 - Quarterly	Date: 3/4/25	Time: 16.15	Job No. J1228
Site Location: Sample at Beach past Linde04	Field Team: JP + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	26.7	
Dissolved Oxygen	% saturation	83.0	
Dissolved Oxygen	mg/L	6.60	
Conductivity	µs/cm @25°C	445.6	
pH	pH unit	8.38	
Turbidity	NTU	82.0	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain		Yes		No	Comments:
Cloud Cover		Yes		No	Comments:
Wind		Yes		No	Comments:

Comments

Lindeman Great Barrier Reef Resort – Water Quality Field Sheet

Catchment Solutions

Site Number: Linde06 - Quarterly	Date: 3/4/25	Time: 15.45	Job No. J1228
Site Location: Sample at Billy Goat Beach	Field Team: JP + FL		

In-Situ Water Quality

Parameter	Unit	Value	Comment
GPS Point			
Water Temperature	°C	27.2	
Dissolved Oxygen	% saturation	77.2 %	
Dissolved Oxygen	mg/L	6.11	
Conductivity	µs/cm @25°C	165.2	
pH	pH unit	7.82	
Turbidity	NTU	206.0	

Laboratory Analysis of Water Quality

Grab Samples Collected	Yes	No	Types (Colours) of bottles collected:
		1	TSS – 250ml Poly green
		1	Nutrient 1 purple plastic – 60ml Sulfuric Acid
		1	Orange Amber Glass – 100ml
		1	Clear / Grey 250ml plastic - E. coli

Weather Conditions Today

Rain	Yes	No	Comments:
Cloud Cover	Yes	No	Comments:
Wind	Yes	No	Comments:

Comments

LINDERMAN SAMPLING CHEAT SHEET

- Duplicates and Triplicates:
  - Taken at LIND01 as the nutrients are not high enough in the marine samples

- Sample storage:
  - Only MARINE ULTRATRACE samples are to be frozen; other marine samples in the fridge
    - These ultratrace samples are to be frozen EVERY TRIP before they are to be delivered to ALS
  - Do not freeze land/pitfall samples

Locations of land-based samples:

- Lind01 – Dam
- Lind02 – Next to airport strip on the right-hand side. Need to walk over a small 'bump'. Location is marked by flagging tape along the path and located on the right-hand size of the creek bed.
- Lind03 – Use the tender to pull into an inlet. Walk over the rocks to find the sampling location. It is a small scramble, but the location is obvious. There is only one path, which leads to the pitfall sampler.
- Lind04 – To the right-hand side of the jetty.
- Lind05 – Walk along the beach. The location is marked by a very distinct, square boulder. Turn towards the vegetation and the location should be marked by two spikey looking trees.
- Lind06 – Walk to the very right-hand side of the beach. Scramble up some rocks and the sampler is located behind a fallen tree which looks like a bridge.

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
☐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 : 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: F Loft 7.4.25	DATE/TIME:	DATE/TIME:	DATE/TIME:

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 = 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.

Mackay REGIONAL COUNCIL

Request for Laboratory Testing & Chain of Custody

1 of 2.

MRC Laboratory
89 Connors Road, Paget
ABN: 56 240 712 069
Phone 07 4961 9042
labenquiries@mackay.qld.gov.au

CLIENT DETAILS

Client	Catchment Solutions
Contact	Ben Pearce
Phone	0488 765 106
Address	4/85 Gordon Street, Mackay Qld 4740
Email	bpearce@catchmentsolutions.com.au
Email Invoice to (If different to report)	accounts@catchmentsolutions.com.au

Project ID	J1228	Purchase Order	
Site	Linderman Island	Job No (MRC Clients)	
Email Report To	bpearce@catchmentsolutions.com.au	Results Required By Date	
		Urgent TAT Requested	

Reports will be emailed to Primary Contact by default — *Urgent TAT fee may apply, please contact lab*

CHAIN OF CUSTODY

Sampler	Fiona Loft		
Mobile Phone	0487 060 276		
Samples Relinquished By			
Name	Fiona Loft	Date	4/4/25
Sign	F. Loft	Time	10:55

Lab Use Only — LIMS Batch No.

Samples Received By			
Name	Krysta Bryan		
Sign			
Date	4/4/25	**Condition Received**	
Time	10:55	Room Temp / Chilled / Frozen	

Samples are to be kept chilled once collected and delivered to the laboratory within 24 hours.

Sample Information

Sample No.	Sample Description	Date Sampled	Time Sampled	Matrix (Water/Soil)	Grab/ Composite	Sample Bottles	E.g. pH or Anions	Faecal Coliforms	Heterotrophic Plate Count	Total Coliforms	E. Coli							Notes (e.g known hazards, special handling, storage or disposal)
E.g.	*Tank 1*	*13-03-20*	*7.10am*	*Water*	*Grab*	*P, ST*	X										14.5°C	
1	WQ1	3/4/25	15:20	Water				X	X	X	X							
2	WQ2	3/4/25	16:00	Water				X	X	X	X							
3	WQ3	3/4/25	16:45	Water				X	X	X	X							
4	WQ4	3/4/25	16:30	Water				X	X	X	X							
5	WQ5	3/4/25	15:10	Water				X	X	X	X							
6	DW1 4	3/4/25	13:50	Water				X	X	X	X							
7	Linde01	3/4/25	13:50	Water				X	X	X	X							
8	Linde02	3/4/25	13:30	Water				X	X	X	X							
9	Linde03	3/4/25	15:20	Water				X	X	X	X							
10	Linde04	3/4/25	16:15	Water				X	X	X	X							

Bottle Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, H = HCl preserved Plastic, SP = Sulfuric Preserved Plastic, ST = Sterile Bottle, AG = Amber Glass Unpreserved

Please contact the laboratory on 07 4961 9042 for sample bottles or advice on the appropriate analyses for your samples.

Mackay REGIONAL COUNCIL

Request for Laboratory Testing & Chain of Custody

(2)

MRC Laboratory
89 Connors Road, Paget
ABN: 56 240 712 069
Phone 07 4961 9042
labenquiries@mackay.qld.gov.au

CLIENT DETAILS

Client	Catchment Solutions
Contact	Ben Pearce
Phone	0488 765 106
Address	4/85 Gordon Street, Mackay Qld 4740
Email	bpearce@catchmentsolutions.com.au
Email Invoice to *If different to report*	accounts@catchmentsolutions.com.au

Project ID	J1228	Purchase Order	
Site	Lindeman Island	Job No (MRC Clients)	
Email Report To	bpearce@catchmentsolutions.com.au	Results Required By *Date*	
		Urgent TAT Requested	

Reports will be emailed to Primary Contact by default — *Urgent TAT fee may apply, please contact lab*

CHAIN OF CUSTODY

Sampler	Fiona Loft		
Mobile Phone			
Samples Relinquished By			
Name	Fiona Loft	Date	3/4/25
Sign	F Loft	Time	10:55

Lab Use Only — LIMS Batch No.

Samples Received By			
Name	Krystal Bryant		
Sign			
Date	4/4/25	**Condition Received**	
Time	10:35	Room Temp / Chilled / Frozen	

Samples are to be kept chilled once collected and delivered to the laboratory within 24 hours.

Sample Information

Sample No.	Sample Description	Date Sampled	Time Sampled	Matrix (Water/Soil)	Grab/ Composite	Sample Bottles	E.g. pH or Anions	Faecal Coliforms	Heterotrophic Plate Count	Total Coliforms	E. Coli							Notes (e.g known hazards, special handling, storage or diposal)
E.g.	*Tank 1*	*13-03-20*	*7.10am*	*Water*	*Grab*	*P, ST*	X											
1	Linde05	3/4/25	16:15	Water				X	X	X	X							
2	Linde06	3/4/25	16:15	Water				X	X	X	X							
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Bottle Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, H = HCl preserved Plastic, SP = Sulfuric Preserved Plastic, ST = Sterile Bottle, AG = Amber Glass Unpreserved

Please contact the laboratory on 07 4961 9042 for sample bottles or advice on the appropriate analyses for your samples.

ATTACHMENT B

Table 1: Summary of Surface Water Analytical Data - Ammonia

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1	mg/L		0.035	0.027	0.042	<0.005	<0.005	<0.005	<0.005	0.025
WQ2	mg/L		0.033	0.021	0.042	<0.005	<0.005	<0.005	<0.005	0.041
WQ3 (Control)	mg/L		0.045	0.019	0.035	<0.005	<0.005	<0.005	<0.005	0.03
WQ4 (Control)	mg/L		0.031	0.047	0.045	<0.005	<0.005	<0.005	<0.005	0.023
WQ5	mg/L		0.033	0.027	0.044	<0.005	<0.005	<0.005	<0.005	0.02
LIND01	mg/L		0.34	0.75	0.02	<0.01	<0.01	0.03	0.03	0.01
LIND02	mg/L		-	-	-	-	-	-	-	-
LIND03	mg/L		-	-	-	-	-	-	-	-
LIND04	mg/L		-	-	-	-	-	-	-	-
LIND05	mg/L		-	-	-	-	-	-	-	-
LIND06	mg/L		-	-	-	-	-	-	-	-
Duplicate	mg/L		0.31	0.79	0.19	0.1	0.01	0.02	<0.01	0.02
RPD	%		9.23	5.19	161.90	nc	nc	40	100	66.67
Triplicate	mg/L		0.45	0.33	0.37	-	0.04	0.8	0.01	-
RPD	%		36.84	82.14	64.29	-	120	190.24	nc	-

Notes:

Total concentrations in mg/L

DW1 = duplicate of LIND01

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 1: Summary of Surface Water Analytical Data - Ammonia

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1	mg/L		<0.005	0.014	0.018	0.015	0.005	0.006
WQ2	mg/L		<0.005	<0.005	0.022	<0.005	<0.005	0.014
WQ3 (Control)	mg/L		<0.005	0.007	0.017	0.009	<0.005	0.010
WQ4 (Control)	mg/L		<0.005	0.008	0.019	0.006	<0.005	0.012
WQ5	mg/L		<0.005	<0.005	0.023	0.009	<0.005	0.014
LIND01	mg/L		0.03	<0.01	0.03	<0.01	0.02	0.03
LIND02	mg/L		-	0.48	0.02	-	0.06	0.04
LIND03	mg/L		0.09	<0.01	<0.01	0.06	0.10	<0.01
LIND04	mg/L		-	-	0.02	-	0.02	0.03
LIND05	mg/L		0.04	<0.01	0.04	<0.01	0.03	0.02
LIND06	mg/L		-	-	0.03	-	-	<0.01
Duplicate	mg/L		<0.01	<0.01	0.02	<0.01	0.08	0.02
RPD	%		nc	nc	40	nc	120	40
Triplicate	mg/L		-	0.05	0.02	0.02	0.13	0.05
RPD	%		-	133.33	0	66.66	47.62	85.71

Notes:

Total concentrations in mg/L

DW1 = duplicate of LIND01

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 2: Summary of Surface Water Analytical Data - Nitrate + Nitrite

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1	mg/L		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
WQ2	mg/L		0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.007
WQ3 (Control)	mg/L		<0.002	<0.002	<0.002	<0.002	<0.002	0.007	<0.002	0.003
WQ4 (Control)	mg/L		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
WQ5	mg/L		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
LIND01	mg/L		<0.01	<0.01	0.03	<0.01	0.08	<0.01	<0.01	<0.01
LIND02	mg/L		-	-	-	-	-	-	-	-
LIND03	mg/L		-	-	-	-	-	-	-	-
LIND04	mg/L		-	-	-	-	-	-	-	-
LIND05	mg/L		-	-	-	-	-	-	-	-
LIND06	mg/L		-	-	-	-	-	-	-	-
Duplicate	mg/L		<0.01	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	<0.1
RPD	%		nc	nc	nc	nc	66.67	nc	nc	nc
Triplicate	mg/L		0.02	0.04	0.01	-	<0.01	<0.01	<0.01	-
RPD	%		66.66	190.24	nc	-	190.24	nc	nc	-

Notes:

Total concentrations in mg/L

DW1 = duplicate of LIND01

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 2: Summary of Surface Water Analytical Data - Nitrate + Nitrite

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1	mg/L		<0.002	<0.002	0.008	<0.002	0.007	0.011
WQ2	mg/L		<0.002	<0.002	0.010	<0.002	0.008	0.005
WQ3 (Control)	mg/L		<0.002	<0.002	0.010	<0.002	0.010	0.005
WQ4 (Control)	mg/L		<0.002	<0.002	0.010	<0.002	0.007	0.004
WQ5	mg/L		<0.002	<0.002	0.010	<0.002	0.008	<0.002
LIND01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
LIND02	mg/L		-	0.02	0.03	-	0.02	0.01
LIND03	mg/L		0.01	0.01	<0.01	0.04	0.04	0.02
LIND04	mg/L		-	-	<0.01	-	0.95	<0.01
LIND05	mg/L		<0.1	<0.01	<0.01	0.01	0.02	0.02
LIND06	mg/L		-	-	<0.01	-	-	<0.01
Duplicate	mg/L		0.02	<0.01	<0.01	<0.01	<0.01	<0.01
RPD	%		66.66	nc	nc	nc	nc	nc
Triplicate	mg/L		-	<0.01	0.01	<0.01	<0.01	<0.01
RPD	%		-	nc	nc	nc	nc	nc

Notes:

Total concentrations in mg/L

DW1 = duplicate of LIND01

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 3: Summary of Surface Water Analytical Data - Total Nitrogen

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1	ug/L		0.107	0.083	0.08	0.079	0.086	0.103	0.075	0.07
WQ2	ug/L		0.075	0.148	0.084	0.066	0.108	0.11	0.095	0.14
WQ3 (Control)	ug/L		0.067	0.08	0.088	0.063	0.085	0.107	0.055	0.14
WQ4 (Control)	ug/L		0.136	0.094	0.084	0.074	0.113	0.091	0.054	0.07
WQ5	ug/L		0.134	0.084	0.09	0.193	0.11	0.107	0.078	0.07
LIND01	mg/L		0.8	1.3	0.2	1	0.6	0.6	*0.4*	0.3
LIND02	mg/L		-	-	-	-	-	-	-	-
LIND03	mg/L		-	-	-	-	-	-	-	-
LIND04	mg/L		-	-	-	-	-	-	-	-
LIND05	mg/L		-	-	-	-	-	-	-	-
LIND06	mg/L		-	-	-	-	-	-	-	-
Duplicate	mg/L		0.7	1.2	0.6	1.1	0.5	0.4	0.4	0.5
RPD	%		13.33	8	100	9.52	18.18	40	0	50
Triplicate	mg/L		0.8	0.9	1	-	0.6	1.3	0.5	-
RPD	%		13.33	28.57	50	-	18.18	105.88	22.22	-

Notes:

Total concentrations in mg/L

DW1 = duplicate of LIND01

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 3: Summary of Surface Water Analytical Data - Total Nitrogen

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1	ug/L		0.092	0.057	0.081	0.150	0.107	0.053
WQ2	ug/L		0.175	0.034	0.076	0.140	0.074	0.050
WQ3 (Control)	ug/L		0.155	0.047	0.070	0.137	0.087	0.128
WQ4 (Control)	ug/L		0.141	0.026	0.086	0.164	0.095	0.072
WQ5	ug/L		0.122	0.037	0.073	0.193	0.093	0.074
LIND01	mg/L		0.6	0.7	0.8	1.1	0.6	0.7
LIND02	mg/L		-	4	0.5	-	0.9	0.8
LIND03	mg/L		0.5	0.2	0.6	0.5	0.4	1.1
LIND04	mg/L		-	-	0.4		1.6	0.9
LIND05	mg/L		6.8	0.7	0.6	0.4	0.2	0.7
LIND06	mg/L		-	-	0.8	-	-	0.8
Duplicate	mg/L		0.7	0.7	0.6	1.0	0.7	0.8
RPD	%		15.38	0	28.57	9.52	15.38	13.33
Triplicate	mg/L		-	0.8	0.9	0.9	0.8	1.3
RPD	%		-	13.33	40	10.53	13.33	47.62

Notes:

Total concentrations in mg/L

DW1 = duplicate of LIND01

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 4: Summary of Surface Water Analytical Data - Total Phosphorus

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1	ug/L		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
WQ2	ug/L		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.022
WQ3 (Control)	ug/L		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
WQ4 (Control)	ug/L		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
WQ5	ug/L		<0.005	<0.005	<0.005	0.047	<0.005	<0.005	<0.005	<0.005
LIND01	mg/L		<0.01	0.02	<0.01	<0.01	0.1	0.04	*<0.01*	0
LIND02	mg/L		-	-	-	-	-	-	-	-
LIND03	mg/L		-	-	-	-	-	-	-	-
LIND04	mg/L		-	-	-	-	-	-	-	-
LIND05	mg/L		-	-	-	-	-	-	-	-
LIND06	mg/L		-	-	-	-	-	-	-	-
DUPE	mg/L		<0.01	0.02	<0.01	<0.01	0.02	0.02	0.01	0.03
RPD	%		nc	0	nc	nc	133.33	66.67	nc	100
TRIP	mg/L		0.02	0.3	0.03	-	<0.01	0.03	0.6	-
RPD	%		66.66	175	0	-	66.66	40	193.44	-

Notes:

Total concentrations in mg/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 4: Summary of Surface Water Analytical Data - Total Phosphorus

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1	ug/L		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
WQ2	ug/L		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
WQ3 (Control)	ug/L		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
WQ4 (Control)	ug/L		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
WQ5	ug/L		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
LIND01	mg/L		0.04	0.04	0.04	0.09	0.08	0.04
LIND02	mg/L		-	0.33	0.06	-	0.13	0.11
LIND03	mg/L		0.03	0.02	0.05	0.04	0.11	0.10
LIND04	mg/L		-	-	0.07	-	0.34	0.16
LIND05	mg/L		0.46	0.11	0.04	0.02	0.04	0.08
LIND06	mg/L		-	-	0.10	-	-	0.12
DUPE	mg/L		0.04	0.03	0.04	0.04	0.03	0.04
RPD	%		0	28.57	0	76.92	90.91	0
TRIP	mg/L		-	0.33	0.23	0.08	0.07	0.25
RPD	%		-	166.67	140.74	66.67	80	144.83

Notes:

Total concentrations in mg/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 5: Summary of Surface Water Analytical Data - Reactive Phosphorus

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1	mg/L		<0.001	<0.001	<0.001	0.002	<0.001	0.002	<0.001	0.002
WQ2	mg/L		<0.001	<0.001	<0.001	0.002	<0.001	0.002	<0.001	0.029
WQ3 (Control)	mg/L		<0.001	<0.001	0.003	<0.001	<0.001	0.001	<0.001	0.004
WQ4 (Control)	mg/L		0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
WQ5	mg/L		<0.001	<0.001	<0.001	0.008	<0.001	0.001	<0.001	<0.001
LIND01	mg/L		-	-	-	-	-	-	-	-
LIND02	mg/L		-	-	-	-	-	-	-	-
LIND03	mg/L		-	-	-	-	-	-	-	-
LIND04	mg/L		-	-	-	-	-	-	-	-
LIND05	mg/L		-	-	-	-	-	-	-	-
LIND06	mg/L		-	-	-	-	-	-	-	-

Notes:

Total concentrations in mg/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 5: Summary of Surface Water Analytical Data - Reactive Phosphorus

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1	mg/L		<0.001	0.001	0.003	<0.001	<0.001	<0.001
WQ2	mg/L		<0.001	<0.001	0.001	<0.001	<0.001	<0.001
WQ3 (Control)	mg/L		<0.001	0.001	0.002	<0.001	<0.001	<0.001
WQ4 (Control)	mg/L		<0.001	<0.001	0.002	<0.001	<0.001	<0.001
WQ5	mg/L		<0.001	<0.001	0.002	<0.001	<0.001	<0.001
LIND01	mg/L		-	-	-	-	-	-
LIND02	mg/L		-	-	-	-	-	-
LIND03	mg/L		-	-	-	-	-	-
LIND04	mg/L		-	-	-	-	-	-
LIND05	mg/L		-	-	-	-	-	-
LIND06	mg/L		-	-	-	-	-	-

Notes:

Total concentrations in mg/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 6: Summary of Surface Water Analytical Data - Temperature

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1	°C		26.2	22.7	22.5	20.1	20.7	23.3	25.6	27.3
WQ2	°C		26	23	22	20	21	23	26	27
WQ3 (Control)	°C		26.2	23.1	22.5	19.3	20.9	23	26	27.4
WQ4 (Control)	°C		26	23	23	20	21	23	26	27
WQ5	°C		26.2	23.1	22.7	19.5	20.9	23	26.1	27
LIND01	°C		19.8	21.6	19.9	18.9	21.5	23.8	29.2	30
LIND02	°C		-	-	-	-	-	-	-	-
LIND03	°C		-	-	-	-	-	-	-	-
LIND04	°C		-	-	-	-	-	-	-	-
LIND05	°C		-	-	-	-	-	-	-	-
LIND06	°C		-	-	-	-	-	-	-	-

Notes:

Degrees Celcius

Taken in-situ

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 6: Summary of Surface Water Analytical Data - Temperature

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1	°C		27.7	29	26.5	27.8	27	28.5
WQ2	°C		28	29	27	28	27	28
WQ3 (Control)	°C		27.9	28.9	26.9	28	27	28.2
WQ4 (Control)	°C		28	29	27	28	27	28
WQ5	°C		27.9	29.3	26.8	28.2	27.2	28.8
LIND01	°C		30.6	28.5	26.1	32.1	25.4	28.9
LIND02	°C		-	28.5	25.6		25.5	27.1
LIND03	°C		26.9	28.1	26.2	27.1	25.9	27.3
LIND04	°C		-	-	25.3	-	25.7	27.5
LIND05	°C		26.1	27.6	26.1	25.9	25.8	26.7
LIND06	°C		-	-	25.9	-	-	27.2

Notes:

Degrees Celcius

Taken in-situ

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Catchment Solutions

Table 7: Summary of Surface Water Analytical Data - Dissolved Oxygen %

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1	% Saturation		91.4	76.8	74	86.4	88.8	66.5	61.6	71.2
WQ2	% Saturation		72.9	77.4	78.2	84.3	86.1	59.4	68.9	63
WQ3 (Control)	% Saturation		72.5	75.3	81.1	86.7	90.1	56.5	72	54.6
WQ4 (Control)	% Saturation		69.1	74.2	77.7	88.2	95.7	67.7	65.3	71.1
WQ5	% Saturation		96.6	69.7	83.9	81.3	99.5	58.7	69.3	55.9
LIND01	% Saturation		55.7	58.1	61.89	73.3	77.9	72.1	64.5	57.7
LIND02	% Saturation		-	-	-	-	-	-	-	-
LIND03	% Saturation		-	-	-	-	-	-	-	-
LIND04	% Saturation		-	-	-	-	-	-	-	-
LIND05	% Saturation		-	-	-	-	-	-	-	-
LIND06	% Saturation		-	-	-	-	-	-	-	-

Notes:

% Saturation

Taken in-situ

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 7: Summary of Surface Water Analytical Data - Dissolved Oxygen %

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1	% Saturation		52.5	102	95	53	73	59.1
WQ2	% Saturation		62.7	101	70.7	47.2	71	86.3
WQ3 (Control)	% Saturation		49.3	100	67.8	69.4	69.7	63
WQ4 (Control)	% Saturation		66.4	101	62.2	63.2	86.4	69.9
WQ5	% Saturation		82.1	101	62.9	59	97.2	71.3
LIND01	% Saturation		54	37	40.6	70.7	20.2	70.1
LIND02	% Saturation		-	60	75.3	-	38.9	54.2
LIND03	% Saturation		59.5	98	82.5	56.3	76.1	63.4
LIND04	% Saturation		-	-	100.7	-	89.2	65.6
LIND05	% Saturation		51.99	98	82.2	77.5	93.1	83
LIND06	% Saturation		-	-	79	-	-	77.2

Notes:

% Saturation

Taken in-situ

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Catchment Solutions

Table 8: Summary of Surface Water Analytical Data - Dissolved Oxygen mg/L

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1	mg/L		6.38	5.16	5.05	6.09	-	4.53	4.18	4.66
WQ2	mg/L		5	6	5	6	-	4	5	4
WQ3 (Control)	mg/L		5.06	5.14	5.57	6.33	-	3.84	4.77	3.57
WQ4 (Control)	mg/L		5	5	5	6	-	5	5	5
WQ5	mg/L		6.73	4.77	5.8	5.83	-	3.73	4.65	3.69
LIND01	mg/L		5.21	5.09	5.06	6.71	-	5.84	4.9	4.35
LIND02	mg/L		-	-	-	-	-	-	-	-
LIND03	mg/L		-	-	-	-	-	-	-	-
LIND04	mg/L		-	-	-	-	-	-	-	-
LIND05	mg/L		-	-	-	-	-	-	-	-
LIND06	mg/L		-	-	-	-	-	-	-	-

Notes:

Total concentrations in mg/L

Taken in-situ

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Catchment Solutions

Table 8: Summary of Surface Water Analytical Data - Dissolved Oxygen mg/L

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1	mg/L		3.33	-	6.12	3.38	4.86	3.87
WQ2	mg/L		4	-	5	3	5	6
WQ3 (Control)	mg/L		3.15	-	4.5	4.42	4.56	4.16
WQ4 (Control)	mg/L		4	-	4	4	6	5
WQ5	mg/L		5.27	-	4.22	3.75	6.28	4.66
LIND01	mg/L		4	-	4.06	5.15	1.66	5.39
LIND02	mg/L			-	6.07	-	3.14	4.26
LIND03	mg/L		4.56	-	6.61	4.51	6.31	5.01
LIND04	mg/L			-	8.22		7.57	5.14
LIND05	mg/L		4.16	-	6.55	6.46	7.42	6.6
LIND06	mg/L		-	-	6.35	-	-	6.11

Notes:

Total concentrations in mg/L

Taken in-situ

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 9: Summary of Surface Water Analytical Data - Turbidity NTU

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1			4.1	1.23	0.36	0.7	1.91	8.18	4.57	20.3
WQ2			2	1	0	3	2	2	6	21
WQ3 (Control)			2.2	1.33	0.23	5.55	0.74	2.89	1.8	20.3
WQ4 (Control)			3	1	0	2	2	1	7	21
WQ5			2.3	3.33	0.42	1.48	1.91	3.15		20.9
LIND01			2.1	3.07	1.69	1.81	5.38	6.03	7.65	20.4
LIND02			-	-	-	-	-	-	-	-
LIND03			-	-	-	-	-	-	-	-
LIND04			-	-	-	-	-	-	-	-
LIND05			-	-	-	-	-	-	-	-
LIND06			-	-	-	-	-	-	-	-

Notes:

Total concentrations in mg/L

Taken in-situ

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 9: Summary of Surface Water Analytical Data - Turbidity NTU

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1			21	0	19.98	20.2	43.3	4.61
WQ2			21	20	0	20	9	11
WQ3 (Control)			20.4	0	20.9	20.3	20.4	6.13
WQ4 (Control)			20	24	20	20	10	8
WQ5			20.5	0	19.89	20.1	19.18	4.82
LIND01			22.6	22.2	46.9	36.5	27.8	26.3
LIND02			-	31.5	73.2	-	108	122
LIND03			23.6	27.7	64.8	51.7	32.5	90.7
LIND04			-	-	66	-	62.9	126
LIND05			35.9	28	53.4	38.4	31.3	82
LIND06			-	-	126	-	-	206

Notes:

Total concentrations in mg/L

Taken in-situ

TW1 = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 10: Summary of Surface Water Analytical Data - Total Dissolved Solids

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1	mg/L		42100	36200	37900	38800	37700	41500	40700	35400
WQ2	mg/L		42,500	34,200	36,800	39,500	36,800	40000	41000	32600
WQ3 (Control)	mg/L		41900	33800	38900	38000	35900	41200	23500	37700
WQ4 (Control)	mg/L		42,000	33,300	36,100	39,500	38,200	39100	40300	36800
WQ5	mg/L		42300	35700	35800	41200	37900.0	38900	41700	36100
LIND01	mg/L		91	516	72	80	78	95	80	91
LIND02	mg/L		-	-	-	-	-	-	-	-
LIND03	mg/L		-	-	-	-	-	-	-	-
LIND04	mg/L		-	-	-	-	-	-	-	-
LIND05	mg/L		-	-	-	-	-	-	-	-
LIND06	mg/L		-	-	-	-	-	-	-	-
Duplicate	mg/L		86	80	187	128	90.00	77	86	86
RPD	%		5.65	146.31	88.80	46.15	14.29	20.93	7.23	5.65
Triplicate	mg/L		98	76	82	-	78.00	86	85	-
RPD	%		13.04	5.13	78.07	-	14.29	11.04	1.17	-

Notes:

Total concentrations in mg/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 10: Summary of Surface Water Analytical Data - Total Dissolved Solids

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1	mg/L		29400	37000	35200	38600	38200	39000
WQ2	mg/L		26700	38400	35300	38300	37100	39800
WQ3 (Control)	mg/L		26000	40200	36500	39100	38100	38700
WQ4 (Control)	mg/L		24000	39300	36300	38500	38200	39800
WQ5	mg/L		26200	37900	36100	38700	35600	40700
LIND01	mg/L		76	80	101	161	82	98
LIND02	mg/L		-	162	164	-	314	281
LIND03	mg/L		292	194	134	247	203	261
LIND04	mg/L		-	-	207	-	216	268
LIND05	mg/L		370	361	226	355	333	319
LIND06	mg/L		-	-	240	-	-	448
Duplicate	mg/L		214	118	110	153	109	99
RPD	%		95.17	38.38	8.53	5.10	28.27	1.02
Triplicate	mg/L		-	82	122	132	108	96
RPD	%		-	36.00	10.34	14.74	0.92	3.08

Notes:

Total concentrations in mg/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Catchment Solutions

Table 11: Summary of Surface Water Analytical Data - Total Suspended Solids

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1	mg/L		8	<5	<5	<5	<5	8	<5	9
WQ2	mg/L		15	<5	<5	<5	5	13	<5	<5
WQ3 (Control)	mg/L		<5	<5	<5	<5	<5	<5	<5	<5
WQ4 (Control)	mg/L		12	<5	<5	<5	8	11	7	12
WQ5	mg/L		26	<5	<5	<5	<5	11	<5	<5
LIND01	mg/L		<5	<5	11	<5	<5	19	<5	<5
LIND02	mg/L		-	-	-	-	-	-	-	-
LIND03	mg/L		-	-	-	-	-	-	-	-
LIND04	mg/L		-	-	-	-	-	-	-	-
LIND05	mg/L		-	-	-	-	-	-	-	-
LIND06	mg/L		-	-	-	-	-	-	-	-
Duplicate	mg/L		<5	5	8	<5	<5	<5	<3	-
RPD	%		nc	nc	31.58	nc	nc	116.67	nc	-
Triplicate	mg/L		<5	<5	6	<5	<5	<5	<5	-
RPD	%		nc	nc	28.57	nc	nc	nc	nc	-

Notes:

Total concentrations in mg/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Catchment Solutions

Table 11: Summary of Surface Water Analytical Data - Total Suspended Solids

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1	mg/L		56	<5	<5	<5	<5	<5
WQ2	mg/L		11	5	<5	<5	<5	<5
WQ3 (Control)	mg/L		24	<5	<5	<5	<5	<5
WQ4 (Control)	mg/L		13	<5	<5	<5	<5	<5
WQ5	mg/L		23	<5	<5	<5	<5	<5
LIND01	mg/L		<5	8	8	33	<5	<5
LIND02	mg/L		-	48	<5	-	<5	12
LIND03	mg/L		<3	<5	8	42	11	8
LIND04	mg/L		-	-	<5	-	128	40
LIND05	mg/L		13	38	14	22	10	<5
LIND06	mg/L		-	-	<5	-	-	<5
Duplicate	mg/L		<5	5	<5	14	<5	5
RPD	%		nc	46.15	46.15	80.85	nc	nc
Triplicate	mg/L		-	<5	5	9	6	<5
RPD	%		-	nc	nc	43.48	18.18	nc

Notes:

Total concentrations in mg/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 12: Summary of Surface Water Analytical Data - pH

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1	mg/L		8.23	8.3	7.56	8.17	8	8.18	4	8
WQ2	mg/L		8	8	8	8	8	8.21	6.57	8
WQ3 (Control)	mg/L		8.29	8.35	7.71	7.81	7.94	8.21	7.17	8.2
WQ4 (Control)	mg/L		8	8	7	8	8	8.29	6.23	8.35
WQ5	mg/L		7.86	7.92	7.47	8.09	**7.5**	8.4	6.58	8
LIND01	mg/L		6.35	6.56	6.6	8.33	7.52	8.33	7.26	8.9
LIND02	mg/L		-	-	-	-	-	-	-	-
LIND03	mg/L		-	-	-	-	-	-	-	-
LIND04	mg/L		-	-	-	-	-	-	-	-
LIND05	mg/L		-	-	-	-	-	-	-	-
LIND06	mg/L		-	-	-	-	-	-	-	-

Notes:

Total concentrations in mg/L

Taken in-situ

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 12: Summary of Surface Water Analytical Data - pH

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1	mg/L		8.16	8.17	8.12	7.97	7.97	8.12
WQ2	mg/L		8.22	8.2	7.87	7.83	8.1	8.21
WQ3 (Control)	mg/L		8.2	7.91	error	7.94	8.09	8.25
WQ4 (Control)	mg/L		8.17	8.18	error	7.93	8.16	8.22
WQ5	mg/L		8.06	8.18	8.21	7.83	7.58	7.71
LIND01	mg/L		8.62	7.46	8.41	8.89	5.89	5.63
LIND02	mg/L		-	6.55	8.24	-	5.37	5.63
LIND03	mg/L		-	8.01	7.94	7.57	8.29	8.58
LIND04	mg/L		-	-	9.23	-	8.72	6.24
LIND05	mg/L		-	8.37	8.37	7.61	8.11	8.38
LIND06	mg/L		-	-	8.62	-	-	7.82

Notes:

Total concentrations in mg/L

Taken in-situ

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 13: Summary of Surface Water Analytical Data - Conductivity

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	28/05/2024	20/06/2024	30/07/2024	20/08/2024	24/09/2024	22/10/2025	29/11/2024
WQ1			55358	56580	55063	54012	56122	48928	50390	53450
WQ2			54957	56622	54797	53930	55962	48606	50314	53599
WQ3 (Control)			55199	57076	55058	53146	56057	48659	50883	53826
WQ4 (Control)			55175	56717	55155	53515	55918	48548	50410	53475
WQ5			55347	56778	55320	53588	55986	49304	51042	53512
LIND01			125	158	120	125	142	142	262	380
LIND02			-	-	-	-	-	-	-	-
LIND03			-	-	-	-	-	-	-	-
LIND04			-	-	-	-	-	-	-	-
LIND05			-	-	-	-	-	-	-	-
LIND06			-	-	-	-	-	-	-	-

Notes:

Total concentrations in mg/L

Taken in-situ

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 13: Summary of Surface Water Analytical Data - Conductivity

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	12/12/2024	28/01/2025	10/02/2025	11/03/2025	25/03/2025	3/04/2025
WQ1			56617	53313	48431	59454	49041	49646
WQ2			56902	53317	48320	59486	48699	49149
WQ3 (Control)			56832	52790	49285	59415	48764	48711
WQ4 (Control)			56478	53358	49005	59865	48835	48808
WQ5			57395	53376	48618	60359	49077	49343
LIND01			529	118	114	453	89	81
LIND02			-	1008	132	-	149	115
LIND03			-	1413	130.3	382.3	146.5	385.9
LIND04			-	-	333	-	619	201
LIND05			-	394	202.9	891	556	445.6
LIND06			-	-	212	-	-	165

Notes:

Total concentrations in mg/L

Taken in-situ

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 14: Summary of Surface Water Analytical Data - Microbiological (Thermotolerant Coliforms)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	30/07/2024	22/10/2025	28/01/2025	10/02/2025	3/04/2025
WQ1	mg/L		<1	<1	<1	<10	<1	<10
WQ2	mg/L		<1	<1	<1	<10	8	<10
WQ3 (Control)	mg/L		<1	<1	<1	20	50	<10
WQ4 (Control)	mg/L		<1	<1	86	<10	233	<10
WQ5	mg/L		<1	<1	<1	<10	<1	<10
LIND01	mg/L		93	770	75	309	63	813
LIND02	mg/L		-	-	-	20	63	241
LIND03	mg/L		-	-	-	259	368	>24,196
LIND04	mg/L		-	-	-	-	75	10,112
LIND05	mg/L		-	-	-	>24,196	98	714
LIND06	mg/L		-	-	-	-	63	576
DUPE	mg/L		108	-	75	156	110	588
RPD	%		14.93	-	0	65.81	54.34	32.12

Notes:

Total concentrations in mg/L

Taken in-situ

DUPE = duplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 15: Summary of Surface Water Analytical Data - Microbiological (E.coli)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	30/07/2024	22/10/2025	28/01/2025	10/02/2025	3/04/2025
WQ1	mg/L		214	108	86	<1	238	510
WQ2	mg/L		291	219	<1	<1	153	100
WQ3 (Control)	mg/L		411	261	<1	10	272	1,190
WQ4 (Control)	mg/L		308	435	<1	<10	727	200
WQ5	mg/L		276	1733	10	<10	345	970
LIND01	mg/L		9	770	75	20	74	41
LIND02	mg/L		-	-	-	52	41	253
LIND03	mg/L		-	-	-	243	86	450
LIND04	mg/L		-	-	-	-	31	7,270
LIND05	mg/L		-	-	-	309	74	345
LIND06	mg/L		-	-	-	-	73	695
DUPE	mg/L		9	-	41	63	63	52
RPD	%		0	-	58.62	103.61	16.06	23.66

Notes:

Total concentrations in mg/L

Taken in-situ

DUPE = duplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 16: Summary of Surface Water Analytical Data - Microbiological (Heterotrophic Plate Count)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	30/07/2024	22/10/2025	28/01/2025	10/02/2025	3/04/2025
WQ1	mg/L		20	<1	<1	<10	150	8
WQ2	mg/L		20	50	<1	20	180	12
WQ3 (Control)	mg/L		10	720	<1	<10	280	14
WQ4 (Control)	mg/L		3	110	<1	<10	100	<1
WQ5	mg/L		10	2,050	<1	<10	10	5
LIND01	mg/L		20	310	620	1,320	1,380	1,000
LIND02	mg/L		-	-	-	4,280	880	6,200
LIND03	mg/L		-	-	-	1,090	1,350	2,030
LIND04	mg/L		-	-	-		1,070	>20,000
LIND05	mg/L		-	-	-	4,890	1,960	2,070
LIND06	mg/L		-	-	-		1,500	1,570
DUPE	mg/L		300	-	750	980	1,380	2,350
RPD	%		175	-	18.98	29.57	0	80.60

Notes:

Total concentrations in mg/L

Taken in-situ

DUPE = duplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 17: Summary of Surface Water Analytical Data - Microbiological (Total Coliforms)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limit of Reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	mg/L		488	299	204	63	411	3,640
WQ2	mg/L		649	687	10	31	8	1,830
WQ3 (Control)	mg/L		1,300	1,414	52	<10	1,120	14,670
WQ4 (Control)	mg/L		687	1,733	233	20	2,420	1,200
WQ5	mg/L		435	2,420	31	201	548	4,950
LIND01	mg/L		2,420	5,475	4,106	6,131	8,164	15,531
LIND02	mg/L		-	-	-	1,785	24,196	>24,196
LIND03	mg/L		-	-	-	12,997	24,196	>24,196
LIND04	mg/L		-	-	-	-	75	>24,196
LIND05	mg/L		-	-	-	75	24,196	10,112
LIND06	mg/L		-	-	-	-	17,329	>24,196
DUPE	mg/L		2,790	-	6,488	15,531	9,208	17,329
RPD	%		14.20	-	44.97	86.79	12.02	10.94

Notes:

Total concentrations in mg/L

Taken in-situ

DUPE = duplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 18: Summary of Surface Water Data - Organophosphorus Pesticides (Dichlorvos)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 19: Summary of Surface Water Data - Organophosphorus Pesticides (Demeton-S-methyl)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 20: Summary of Surface Water Data - Organophosphorus Pesticides (Monocrotophos)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	2	<2.0	<2.0	<2.0	<2.0	<0.5	<0.5
WQ2	ug/L	2	<2.0	<2.0	<2.0	<2.0	<0.5	<0.5
WQ3 (Control)	ug/L	2	<2.0	<2.0	<2.0	<2.0	<0.5	<0.5
WQ4 (Control)	ug/L	2	<2.0	<2.0	<2.0	<2.0	<0.5	<0.5
WQ5	ug/L	2	<2.0	<2.0	<2.0	<2.0	<0.5	<0.5
LIND01	ug/L	2	<2.0	<2.0	<2.0	<2.0	<0.5	<0.5
LIND02	ug/L	2	-	-	-	<2.0	<0.5	<0.5
LIND03	ug/L	2	-	-	-	<2.0	<0.5	<0.5
LIND04	ug/L	2	-	-	-	-	<0.5	<0.5
LIND05	ug/L	2	-	-	-	<2.0	<0.5	<0.5
LIND06	ug/L	2	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 21: Summary of Surface Water Data - Organophosphorus Pesticides (Dimethoate)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 22: Summary of Surface Water Data - Organophosphorus Pesticides (Diazinon)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 23: Summary of Surface Water Data - Organophosphorus Pesticides (Chlorpyrifos-methyl)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 24: Summary of Surface Water Data - Organophosphorus Pesticides (Parathion-methyl)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
WQ2	ug/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
WQ3 (Control)	ug/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
WQ4 (Control)	ug/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
WQ5	ug/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
LIND01	ug/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
LIND02	ug/L	2	-	-	-	<2.0	<2.0	<2.0
LIND03	ug/L	2	-	-	-	<2.0	<2.0	<2.0
LIND04	ug/L	2	-	-	-	-	<2.0	<2.0
LIND05	ug/L	2	-	-	-	<2.0	<2.0	<2.0
LIND06	ug/L	2	-	-	-	-	<2.0	<2.0
DUPE	ug/L	<0.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 25: Summary of Surface Water Data - Organophosphorus Pesticides (Fenthion)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 26: Summary of Surface Water Data - Organophosphorus Pesticides (Malathion)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 27: Summary of Surface Water Data - Organophosphorus Pesticides (Chlorpyrifos)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 28: Summary of Surface Water Data - Organophosphorus Pesticides (Parathion)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
WQ2	ug/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
WQ3 (Control)	ug/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
WQ4 (Control)	ug/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
WQ5	ug/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
LIND01	ug/L	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
LIND02	ug/L	2	-	-	-	<2.0	<2.0	<2.0
LIND03	ug/L	2	-	-	-	<2.0	<2.0	<2.0
LIND04	ug/L	2	-	-	-	-	<2.0	<2.0
LIND05	ug/L	2	-	-	-	<2.0	<2.0	<2.0
LIND06	ug/L	2	-	-	-	-	<2.0	<2.0
DUPE	ug/L	<0.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 29: Summary of Surface Water Data - Organophosphorus Pesticides (Pirimphos-ethyl)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 30: Summary of Surface Water Data - Organophosphorus Pesticides (Chlorfenvinphos)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 31: Summary of Surface Water Data - Organophosphorus Pesticides (Bromophos-ethyl)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 32: Summary of Surface Water Data - Organophosphorus Pesticides (Fenamiphos)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 33: Summary of Surface Water Data - Organophosphorus Pesticides (Prothiofos)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 34: Summary of Surface Water Data - Organophosphorus Pesticides (Ethion)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 35: Summary of Surface Water Data - Organophosphorus Pesticides (Carbophenothion)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

Table 36: Summary of Surface Water Data - Organophosphorus Pesticides (Azinphos Methyl)

Baseline Water Quality Monitoring - April 2024 to March 2025

Project No: J1228

Address: Lindeman Island, Qld

Sample Location	Unit	Limits of reporting	24/04/2024	30/07/2024	22/10/2024	28/01/2025	10/02/2025	3/04/2025
WQ1	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ2	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ3 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ4 (Control)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WQ5	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND01	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LIND02	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND03	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND04	ug/L	<0.5	-	-	-	-	<0.5	<0.5
LIND05	ug/L	<0.5	-	-	-	<0.5	<0.5	<0.5
LIND06	ug/L	<0.5	-	-	-	-	<0.5	<0.5
DUPE	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc
TRIP	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD	%		nc	nc	nc	nc	nc	nc

Notes:

Total concentrations in ug/L

DUPE = duplicate of LIND01

TRIP = triplicate of LIND01

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reportiing limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

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

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ALS Laboratory: please tick →

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☐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
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		

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ISO/IEC 17025 - Testing

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

General Comments

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Where moisture determination has been performed, results are reported on a dry weight basis.

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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 →

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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):	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
ISO/IEC 17025 - Testing

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- 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

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.

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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.

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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	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

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: 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.

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)

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

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: 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.

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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.

- 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

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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*
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

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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
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☐ 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 →

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☐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

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

General Comments

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^ = This result is computed from individual analyte detections at or above the level of reporting
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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

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

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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)

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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	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 →

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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 5800 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): 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
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

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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 →

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
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):	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 →

☐ADELAIDE 31 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 45 Glademandah Drive Clinton QLD 4680 Ph: 07 7471 6600 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	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

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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		

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Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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^ = This result is computed from individual analyte detections at or above the level of reporting
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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
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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*
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General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 18 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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☐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

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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.

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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.
- 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
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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
☐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
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 →

☐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 76 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
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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
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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☐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
☐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
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 →

☐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
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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
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
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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
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MACKAY 79 Harbour Road Mackay QLD 4740 Ph: 07 4941 0177 E: mackay@alsglobal.com
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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.

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	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

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.

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.

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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	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

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.

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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	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		

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: 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 →

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 5300 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: 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		

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: 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
☐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: 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 →

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 Commonwealth Drive Clinton QLD 4680 Ph: 07 7471 6000 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
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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~~ 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 →

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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
NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 6209 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
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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☐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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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.

ATTACHMENT D

NGH
A FYFE Company

Prepared for White Horse Australia Lindeman Pty Ltd

Water Quality Monitoring Plan

Lindeman Great Barrier Reef Resort

November 2025

Project Number: 250755

Document verification

Project Title:	Lindeman Great Barrier Reef Resort
Project Number:	250755
Project File Name:	Lindeman Great Barrier Reef Resort Water Quality Monitoring Plan

Revision	Project Number/ Ref	Date	Prepared by	Description	Reviewed by
V2.1	JW181157	26/9/2018	Matthew Ayre	Final - Updated following regulator review	Nicholas Baker
Draft V0.1	250755	10/10/2025	Rachelle Brown	Draft update of V2.1 Final report following monitoring location updates and company changes	Jaclyn Wells
V1.0	250755	3/11/2025	Rachelle Brown	Final version following client review and approval	Jaclyn Wells

NGH is committed to environmentally sustainable practices, including fostering a digital culture and minimising printing. Where printing is unavoidable, NGH prints on 100% recycled paper.

We acknowledge the Traditional Owners of this land and pay our respect to Elders past, present and emerging. We recognise that the First Nations peoples of Australia have traditionally managed the resources of this land in a sustainable way, and that they are the original custodians of the Australian environment.

Explanatory Note- Version Information

Catchment Solutions has been engaged by Well Smart Group to undertake water quality monitoring of the marine waters surrounding Lindeman Island, and terrestrial waters within creeks and dams on the island, since April 2024 in accordance with the Lindeman Island Great Barrier Reef Resort Water Quality Monitoring Program (prepared by Wild Environmental Consultants in September 2018). In undertaking the sampling program, Catchment Solutions identified that the location of two of the terrestrial water samples (LIND03 and LIND06) required alteration. These changes have no impact on the objectives or outcomes of the water quality monitoring program, as assessed by Catchment Solutions. The revised site locations were reviewed and recommended by Catchment Solutions based on the following, as provided to NGH by Well Smart Group:

- LIND03 – the sample location could not be safely accessed and has been relocated 90 metres downstream of the original location on the same steep bedrock confined waterway on the western side of the island. The purpose of the sample location is to monitor water quality downstream of the golf course. The change of location has no impact on this objective as there is an increase in area of golf course within the catchment of the revised sample location.
- LIND06 – the objective of the sample location was to monitor the water quality of runoff from the golf course. Inspection of the original location failed to identify a defined waterway as the landscape is steep (>30%) with overland flow occurring as undefined sheetwash. The absence of a defined watercourse renders it difficult to collect a representative water sample of runoff from the golf course. A defined watercourse was identified approximately 140 metres to the south southeast that also receives runoff from the golf course and is in the same topographic setting.

It is understood the Department of Environment, Climate Change, Energy, Environment and Water have requested preparation of a revised Water Quality Monitoring Program reflecting the aforementioned sampling location changes. This report updates the Lindeman Island Great Barrier Reef Resort Water Quality Monitoring Program prepared by Wild Environmental Consultants in September 2018 to reflect these minor amendments and is issued by Fyfe (formerly NGH, and formerly Wild Environmental). In 2022, NGH expanded its environmental expertise through the acquisition of Wild Environmental. More recently in 2025, NGH and Fyfe have joined to further expand service offerings, enhance project delivery, and provide greater value to clients from development to execution.

This updated version was prepared at the request of Well Smart Group to incorporate revised GPS coordinates and figures showing the new sample locations. The template, style and some regulatory agency names have also been updated. There are no other changes to background information, objectives, parameters or recommendations.

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Appendices

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Acronyms and abbreviations

AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
AS/NZS	Australian Standard/New Zealand Standard
BACI	before-after, control-impact
BOM	Australian Bureau of Meteorology
C	Celsius
Cardno	Cardno QLD Pty Ltd
COC	chain-of-custody
DCCEEW	Department of Climate Change, Energy, the Environment and Water (formerly DEE, Department of the Environment and Energy) (Qld)
DEE	Department of the Environment and Energy (Qld)
DEHP	Department of Environment and Heritage Protection (Qld)
DETSI	Department of Environment, Tourism, Science and Innovation (formerly DEHP, Department of Environment and Heritage Protection) (Qld)
EIS	Environmental impact statement
EPBC	Environment Protection and Biodiversity Conservation
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EPP Water	*Environmental Protection (Water) Policy 2009*
ESCP	Erosion and Sediment Control Plan
EY	exceedances per year
g	grams
GBR	Great Barrier Reef

GBRMP	Great Barrier Reef Marine Park
GBRMPA	Great Barrier Reef Marine Park Authority
GDA	Geographic Datum of Australia
GIS	Geographic information system
GPS	Geographical positioning system
ha	hectares
IFD	Intensity-Frequency-Duration
km	kilometres
L	litres
LOD	limit of detection
m	metres
MD	moderately disturbed
MEDLI	Model for Effluent Disposal using Land Irrigation
MRC	Mackay Regional Council
MWQMP	Marine Water Quality Monitoring Program
NATA	National Association of Testing Authorities
NTU	nephelometric turbidity units
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
S	Siemens
SD	slightly disturbed
Sp/spp	Species/multiple species
TWQMP	Terrestrial Water Quality Monitoring Program

WHAL	White Horse Australia Lindeman Pty Ltd
WQ	water quality
WQMP	Water Quality Monitoring Program
WQO	Water Quality Objective

1. Introduction

1.1. Background

White Horse Australia Lindeman Pty Ltd (WHAL) is proposing to develop the Lindeman Great Barrier Reef Resort on Lindeman Island, approximately 12 km southeast of Hamilton Island, Queensland (Figure 1). The project will involve the redevelopment of the existing Lindeman Island Resort as well as the construction of additional resort areas. The project has been declared a controlled action, for which an EIS has been prepared. As part of the approvals process, WHAL has been issued with a decision notice under the *Environment Protection and Biodiversity Conservation Act 1999.* A requirement of which is the preparation and implementation of a water quality monitoring program. This document has been prepared as the Marine Water Quality Monitoring Program (MWQMP). A supporting Terrestrial Water Quality Monitoring Program (TWQMP) is attached at Appendix A.

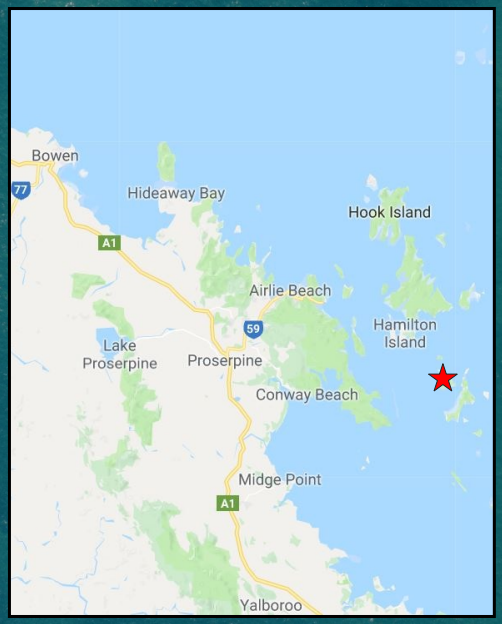
The purpose of this monitoring program is to protect the Great Barrier Reef World Heritage Area, National Heritage Place, and Marine Park's values, including but not limited to:

- Impacts on ecological values;
- Impacts on social values.

Specifically, the program aims to protect water quality which in turn protects the condition and trend of habitats and populations of species, supported by good water quality including at a minimum:

- Coral reefs and corals;
- Seagrass meadows, and seagrasses.

Wild Environmental Consultants (now NGH – A Fyfe Company) have prepared this monitoring program on behalf of White Horse Australia Lindeman Pty Ltd.



BHR2029

CHR2029

DHR2029

2CP858366

3CP858361

2CP858366

8HR1954

LEGEND

Development Lot Boundaries

Property Boundaries

Datum: WGS 84

0 250 500 750 1,000 m

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Lindeman Island Water Monitoring

Figure 1 - Site Location

Ref: Lindeman Island Water Monitoring \ Site Location Author: Oscar Puignou Lopez Date created: 13/10/2025 © NGH 13/10/2025 © ESRI 2022

1.2. Project Description

White Horse Australia Lindeman Pty Ltd is seeking to redevelop the Lindeman Island Resort on Lindeman Island, Queensland. The resort redevelopment will be comprised of 325 suites and villas over three (3) resort areas (Figure 2). The development will include:

- redevelopment and expansion of the existing resort to include a 5-star Beach Resort, 6-star Spa Resort, a 5-star Eco Resort and 4-star Tourist Villa Precinct facilities including a conference centre, beach club, restaurants and lounges;
- a central village precinct comprising restaurants, bar, night club, conference facility buildings, arrival centre, shops, sport and recreation centre and a staff village;
- expansion of the current services area including power generation (solar with diesel back-up), sewage treatment and water treatment;
- existing airstrip and golf course upgrades;
- upgrade to the existing jetty and additional moorings;
- ecotourism facilities - a National Park and Great Barrier Reef Educational Centre; and
- environmental enhancements - native vegetation replanting, improvements to stormwater management and a shift towards renewable energy sources[1].

[1] White Horse Australia: Limited, 2018, Lindeman Island Environmental Impact Statement, Executive Summary and Information Package, Proposal to develop and operate the Lindeman Great Barrier Reef Resort, Figure 1.

Datum: WGS 84

0 100 200 300 400 m

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Lindeman Island Water Monitoring

Figure 2 - Site Layout

Ref: Lindeman Island Water Monitoring \ Site Layout Author: Oscar Pugnou Lopez Date created: 13/10/2025 © NGH 13/10/2025 © ESRI 2022

1.3. Site Description

The development is located on Lindeman Island, an island within the Whitsunday Island Archipelago, approximately 12km southwest of Hamilton Island (Figure 1). Table 1 presents the key site information, including details on land tenure, local government area, total land and development area.

Table 1 Site Description

Address	Lindeman Island, Whitsunday Archipelago, Queensland
Lot/Plan	– Lot 2 on CP858366; – Lot 3 on CP858361; – Lot 8 on HR1954; – Lot B on HR2029; – Lot C on HR2029; and – Lot D on HR2029.
Total Area	140.5 Ha
Site Owner	White Horse Australia Lindeman Pty Ltd
Site Operator	White Horse Australia Lindeman Pty Ltd
Local Government Area	Mackay Regional Council
Current Land Use	Special Activities (Tourism)
Proposed Land Use	Special Activities (Tourism)

1.4. Existing Land Use

The development site is currently occupied by the Former Lindeman Island Resort owned previously by Club Med Pty Ltd. The resort was closed on the 31st January 2012 and was acquired by WHAL during April 2012. Since its acquisition, the resort has remained in a state of care and maintenance while the planning and environmental approval process for the redevelopment is finalised.

2. Integration with the Terrestrial Water Quality Monitoring Program

Modifications of land and unsustainable land use practises have resulted in adverse outcomes for the Great Barrier Reef Marine Park (GBRMP). Increased sediment and inputs of nutrients and pesticides to reef ecosystems have the potential to impact on receiving great barrier reef environments.

Freshwater inflows to the GBR from the redevelopment of the Lindeman Great Barrier Reef Resort, will lead to the construction of additional impervious areas which have the potential to increase the amount of freshwater and associated contaminants including sediments, nutrients, and pesticides leaving the development, entering the natural watercourses and eventually entering the receiving marine receiving environment. The discharge of elevated volumes of runoff into the receiving environment, has the potential to directly impact the water quality of the marine waters of Lindeman Island.

It is important for the protection of the GBR environmental values, that the water quality parameters of the Island's ephemeral streams which discharge runoff into the receiving environment, be monitored. Terrestrial water monitoring can detect elevated water parameters within the stream which in turn, act as an early warning to potential adverse effects of the GBR. If the results of terrestrial water quality monitoring determine that sediment loads and/or contaminant concentrations are above the site specific or the Queensland Water Quality Objectives (2009) Trigger Limits, corrections to site operations will occur to mitigate the potential damage, to prevent any further impacts to the GBR.

A supporting Terrestrial Water Quality Monitoring Program has been prepared in accordance with Section 5.1.4 of the Coordinator General's Report which states that *"Monitoring and maintenance programs to manage terrestrial and marine water quality will be implemented as part of the project."* This program is at Appendix A.

This WQMP specifically addresses Conditions 1 and 2 of the EPBC Approval however is directly impacted by the outcomes of the TWQMP, the TWQMP has been included as an appendix to this document.

3. Environmental Context

3.1. Climate and Rainfall

Climate data for the development site is sourced from Hamilton Island (Station 033106) approximately 11km to the northwest of Lindeman Island. Climate and weather data indicates that the coolest month is July with an average minimum temperature of 17.9°C and an average maximum temperature of 21.5°C (Figure 3). The warmest month is January with an average minimum temperature of 24.8°C and an average maximum temperature of 29.9°C. The annual average rainfall is 1456mm (Figure 4). However, during 2017/18, the recorded annual rainfall was 1040mm [2].

[2] Australian Government Bureau of Meteorology, 2018, Climate Statistics for Australian Locations – Hamilton Island, Available Online, http://www.bom.gov.au/climate/averages/tables/cw_033106.shtml

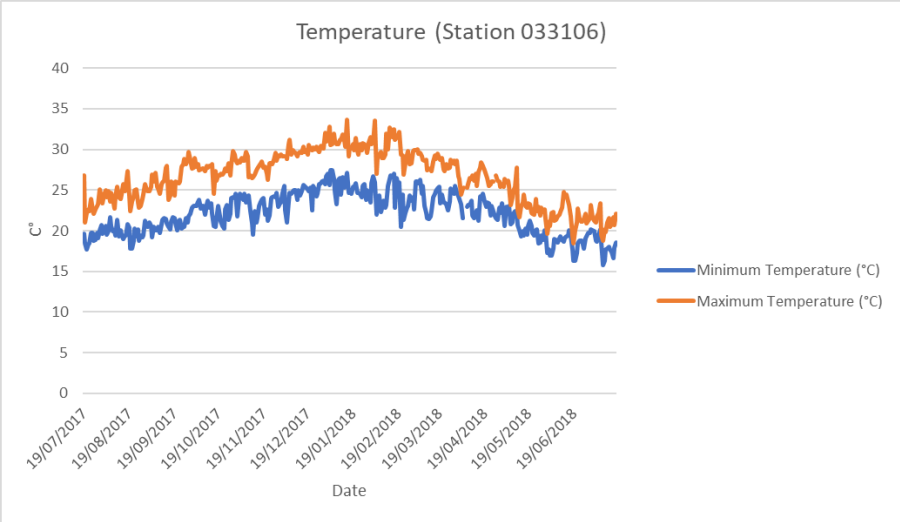

Figure 3 Temperature Data

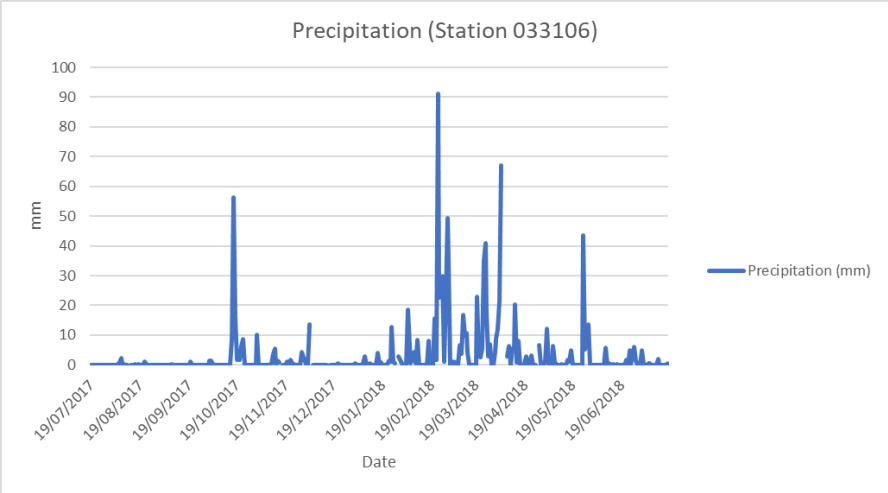

Figure 4 Precipitation Data

3.2. Topography

Lindeman Island's topography is characterised by steep cliffs and undulating hills. The island reaches a maximum elevation of approximately 200 m AHD. Steep escarpments towards the sea can be found on the west, north and east of the Island. Site specifically, the topography of the development consists of undulated hills ranging from approximately 65 m AHD trending south to sea level (Figure 5).

Datum: WGS 84

0 100 200 300 400 m

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Lindeman Island Water Monitoring

Figure 5 - Sub-catchments and Watershed

Ref: Lindeman Island Water Monitoring \ Sub-catchments and Watershed Author: Oscar Puignou Lopez Date created: 13/10/2025 © NGH 13/10/2025 © ESRI 2022

3.3. Geology

3.3.1. Regional Geology

Lindeman Island is a part of the Whitsunday Volcanics Province, an Early Cretaceous formation of extrusive and intrusive igneous rocks. The formation expresses a broad range of rock compositions from basalts through to rhyolites and other intermediate silicic rocks. Regionally, the Hamilton Island and Lindeman Island groups are characterised by lithic breccias and coarse lithic ignimbrites which are indicative of large volume explosive volcanism with significant water contribution[3].

3.3.2. Site Geology

Lindeman Island is dominated by of pyroclastic deposits. Specifically, petrological analysis has determined that island is underlain by tuff, defined as *"pale green hornblende, plagioclase, fine grained volcanic rock fragments and quartz set in a devitrified and recrystallised matrix".* Minor amounts of Tuffaceous cobble conglomerate, andesite and pyroclastics can be identified on the south coast of the island while smaller outcrops of trachyte and andesite along the northeast and north coastline[4]. There are three faults on Lindeman Island which strike at a bearing of approximately 170° [5].

3.4. Soil

According to the Cardno's Preliminary Geotechnical Assessment prepared for the EIS, the soils of the development appear to be thin and are either the product of colluvial processes or residual weathering of parent material. These occur as clayey gravels or gravelly clays up to 0.3 m thick with an organic-rich topsoil. The boundary between the soils and rock tends to be abrupt and well defined[4].

3.5. Hydrology

3.5.1. Surface Water

The development site is characterised by 12 sub-catchments (Figure 5). The streams within these sub-catchments are ephemeral in nature with watershed occurring seasonally. The exception to this is the site dam within sub-catchment D, which is a perennial waterbody and will serve as the main water source for the redevelopment.

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[3] Clarke. D.E, Paine. A.G.L & Jensen A.R, 1972, Geology of the Proserpine 1:250,000 Sheet Area, Queensland, Australian Government Publishing Service, Canberra, ACT.

[4] Cardno (Qld) Pty Ltd, 2015, Preliminary Geotechnical Assessment- Lindeman Island Redevelopment, Mackay, Queensland

[5] Queensland Government, 2018, Queensland Globe – Geoscientific Information – Geology – Detailed 1:100,000, Brisbane, Queensland

3.5.2. Groundwater

As mentioned in Section 3.3.2, the site is underlain by pyroclastic deposits as well as some minor andesite and trachytes. This specific geology is not conductive to the formation of aquifers. Historical bore records indicate groundwater resources are limited to periods of high rainfall. Therefore, it is inferred that groundwater underlying the site is restricted to areas of intense fracturing within the rock which allows water to accumulate intermittently[6].

3.6. Vegetation

As a part of the EIS, Cardno QLD Pty Ltd (Cardno) conducted a Flora and Fauna assessment of the development area and surrounding area. The assessment included the georeferencing of the regional ecosystems previously mapped by the Queensland Government. These georeferenced regional ecosystems are described in Table 2.

Table 2 Regional Ecosystems

Code	Short Description	Biodiversity Status
8.3.2	Melaleuca viridiflora woodland on seasonally inundated alluvial plains with impeded drainage[7].	Endangered
8.12.11a	Semi-evergreen microphyll vine thicket. Emergent species include *Araucaria cunninghamii*, *Falcataria toona*, *Terminalia porphyrocarpa* and *Argyrodendron polyandrum*. The canopy is often dominated by *Cleistanthus dallachyanus*, *Mimusops elengi*, *Terminalia porphyrocarpa* and *Euroschinus falcatus*[8].	Least Concern
8.12.12d	*Corymbia clarksoniana* woodland to open forest (8-30m tall). Common associated to codominant species may include *C. tessellaris*, *Eucalyptus platyphylla*, *C. dallachiana*, *E. drepanophylla*, *E. tereticornis* and *Allocasuarina littoralis*. (The canopy often consists of a mixture of several Corymbia and/or Eucalyptus species). *Corymbia intermedia* may occasionally be present. *Eucalyptus tereticornis* is an occasional emergent[9].	Least Concern

[6] White Horse Australia Limited, 2017, Lindeman Great Barrier Reef Resort Project - Environmental Impact Statement, Chapter 18, Robina, Australia.

[7] Queensland Government, 2017, Regional Ecosystem Details for 8.3.2

[8]Queensland Government, 2017, Regional Ecosystem Details for 8.12.11a

[9] Queensland Government, 2017, Regional Ecosystem Details for8.12.12d

8.12.13a	*Themeda triandra* and/or *Imperata cylindrica* and/or *Chionachne cyathopoda* tussock grassland to closed tussock grassland (0.3-0.7m tall), or *Xanthorrhoea latifolia* subsp*. latifolia* dwarf open shrubland to open heath (0.3 - 2m tall). Occasional emergents may include *Banksia integrifolia* subsp. *compar*, *Pandanus* spp. and rainforest spp. *Themeda triandra* is the most common dominant species in this ecosystem and often forms the majority of the ground cover[10].	Of Concern
8.12.14c	*Lophostemon confertus* closed forest to tall shrubland (3.5-28m tall). The canopy is often exclusively *L. confertus*, however occasional associated species may include *Eucalyptus exserta*, *E. tereticornis*, *E. drepanophylla* and *Acacia spirorbis* subsp. *solandri*. There is sometimes a very sparse to mid-dense lower tree layer dominated by species such as *Lophostemon confertus*, *Mallotus philippensis*, *Pittosporum ferrugineum*, *Acronychia laevis*, *Neolitsea brassii* and *Acacia leptostachya*[11].	Least Concern

3.7. Marine Environment

3.7.1. Marine Environment Features

The Marine environment of Lindeman Island is within the NB6 Inner Shelf Lagoon Continental Islands Bioregion and the Whitsunday region of the Great Barrier Reef Marine Park. This non-reef bioregion is characterised by "Strong currents, with some gravel and hydroids around Pine Peak Island. Some gorgonians and low reef sites, water very turbid. Seagrass meadows in some bays"[12]. Specifically, Lindeman Island's Marine Environment is characterised by sandy beaches, Rocky intertidal zones, fringing coral reefs, soft bottom areas and soft sea grass areas[13].

Fringing Coral Reef

According to aerial imagery, fringing coral reefs exist on rocky outcrops surrounding Lindeman Island. These coral reefs extend at variable distances from the shoreline from approximately 20 to 100m. Since 2013, there has been four (4) marine ecology surveys conducted for the marine environments surrounding Lindeman Island. During 2013, BMT WBM conducted the first marine ecology survey consisted of four (4) survey locations. The survey determined that the coral cover at these survey points was variable from <25% to 100% adjacent to the existing resort jetty. Subsequent

[10] Queensland Government, 2017, Regional Ecosystem Details for 8.12.13a

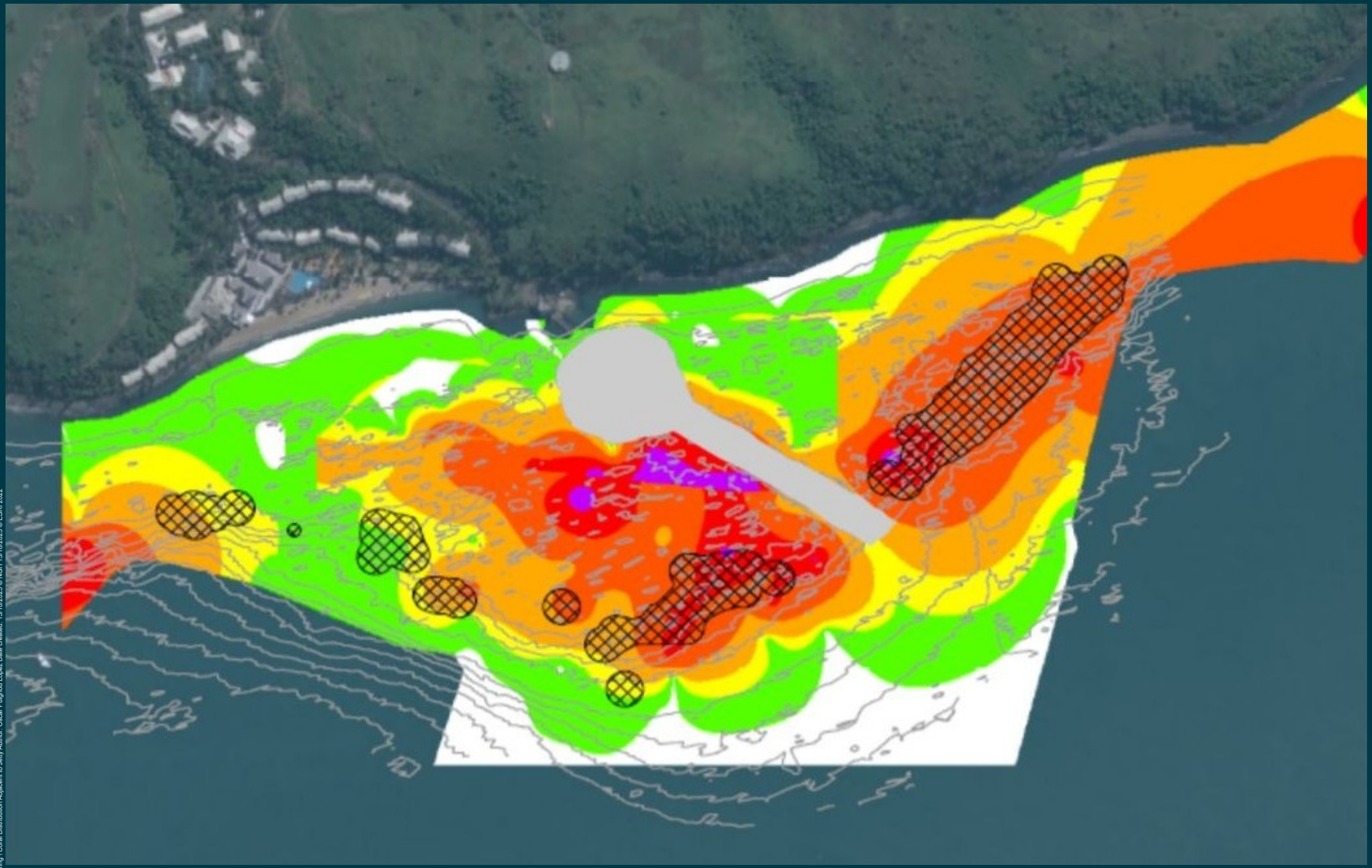
[11] Queensland Government, 2017, Regional Ecosystem Details for 8.12.14c

[12] Great Barrier Reef Marine Park Authority. 2002. *Non-reef bioregion: NB6 Inner Shelf Lagoon Continental Islands,* GBRMPA, Townsville, viewed 31 July 2018, http://www.gbrmpa.gov.au/__data/assets/pdf_file/0016/6082/nb6.pdf

[13] Cardno Qld Pty Ltd, 2017, Lindeman Great Barrier Reef Resort Project - Marine Ecology Assessment, Level 11 Green Square North Tower, 515 St Paul's Terrace, Fortitude Valley QLD.

surveys conducted by the Great Barrier Reef Marine Park Authority (GBRMPA) and Cardno, confirmed the coral density of the previous survey (Figure 6)[13,14].

[14] The details of this figure have been sourced from the Environmental Impact Statement (EIS) prepared by Cardno (QLD) Pty Ltd. NGH/Fyfe does not own any intellectual property contained within this figure.



Datum: WGS 84

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Lindeman Island Water Monitoring

Figure 6 - Coral Distribution Adjacent to Jetty

Ref: Lindeman Island Water Monitoring \ Coral Distribution Adjacent to Jetty Author: Oscar Puignou Lopez Date created: 13/10/2025 © NGH 13/10/2025 © ESRI 2022

4. Potential Water Quality Impacts

The nature of the construction and operational activities may have potential impacts to the receiving environments water quality. Development activities and their associated potential impacts are summarised in Table 3.

Table 3 Potential Impacts and Contaminants

Activity	Potential Impacts	Water Quality Contaminants
Construction activities	Increased turbidity due to soil loss and erosion control failures. Elevated suspended sediment loads, which can have adverse impacts on coral reefs. Disturbance of acid sulfate soils.	pH, sulphate, suspended solids, turbidity, toxicants (metals/metalloids and other chemicals).
Sewage effluent (treated)	Increased nutrient loads. Increased biological oxygen demand, leading to the potential asphyxiation of aquatic animal life (e.g. low dissolved oxygen), algal blooms, smothering of flora and fauna, impairment of ecosystem structure and function, and public health risks.	Nutrients, pathogens, suspended solids, toxicants (metals/metalloids, pesticides, residual disinfectants and pharmaceuticals).
Golf course and landscaping irrigation	Increased nutrient loads, pesticides and asphyxiation of aquatic animal life (e.g. low dissolved oxygen levels leading to fish kills). Eutrophication leading to algal blooms, smothering of flora and fauna, impairment of ecosystem structure and function, diseases and introduced species.	pH, nutrients (ammonia, nitrate, phosphorus), pesticides, and other chemicals), suspended solids, and carbonaceous material.

4.1. Characteristics of Any Releases

The quality and quantity of any discharge from the above activities discharging into the receiving environments difficult to determine, as they will only occur during event runoffs, or failures in management controls. Strict management plans will be in place to prevent, control or abate the release of contaminated water or to mitigate the impacts through alternative release strategies. Water specific plans for the project include:

- Irrigation Management Plan;
- Lindeman Stormwater Management Plan and Water Balance; and
- Waste Management Technical Report

Additional water specific management plans are yet to be prepared.

Discharge into the receiving environment would be diffuse land runoff. In the event of runoff or spills, contaminants of concern will be conveyed into gullies, drainage features, and intermittent streams of the island, prior to being discharged into the Marine Park.

4.2. Release Locations and Configuration

4.2.1. Stormwater

Stormwater from the development includes runoff from vegetated areas including constructed gardens, golf courses and natural vegetation as well as impervious surfaces (e.g. paths, roads, roofs, hardstands etc.).

Currently, runoff intersects vegetated swales located around the site. These swales provide some polishing of runoff prior to discharge into the receiving environment via existing watercourses. No other treatment of stormwater currently occurs[15].

The development will involve the disturbance of soil. An Erosion and Sediment Control Plan (ESCP) is required to be prepared to take all reasonable and practicable measures, to minimise short and long-term soil erosion and the adverse effects of sediment and/or pollutant transport on the receiving environment. This includes the delineation of watershed direction, quality and quantity. As of the preparation of this WQMP, an ESCP is yet to be prepared for the Lindeman Great Barrier Reef Resort.

The location of these sedimentation basins and the configuration of the additional treatment features are yet be determined. It is assumed that following primary and secondary treatment, discharge from the detention basins will be discharged into the receiving environment[15].

4.2.2. Sewage Effluent

Sewage produced by the development is to be treated onsite. Wastewater generated will be collected and pumped to the new wastewater treatment plant. The treatment plant will consist of a membrane bioreactor capable of producing Class A^+ recycled water. Once treated, wastewater is to be held within a 15ML storage tank. The treated wastewater will be either returned to the resorts for non-potable use or will be used for irrigation on landscaped areas and the golf

[15] Cardno QLD Pty Ltd, 2017, Lindeman Great barrier Reef Resort Project – Environmental Impact Statement: Appendix P Lindeman Stormwater Management Plan and Water Balance.

course. As there are limited industrial uses, it has been determined that Biosolids are to be collected, dried, treated and transported to the mainland for use in soil amelioration.

As per the Coordinator Generals Report "*Modelling indicates, based on 100 per cent occupancy of the resort, with an irrigation area of 11.88 ha, an irrigation rate of 5.6 ML/ha/year and a storage of 15 ML, that zero overflows or discharges are anticipated, with less than 4mm run-off each year. MEDLI modelling shows the receiving environment has the capacity to handle the proposed application rate"*.

In the event of plant failure or adverse climatic conditions, the following contingency measures are committed:

- Additional individual collection tanks;
- 100% stand by pumping capacity;
- Emergency by [pass connection points in accordance with the MRC Guidelines;
- Mechanical failure alarm;
- Backup power supplies; and
- Emergency storage capacity incorporated into the pump well[16].

In the event that all management measure fails, it is expected that effluent will discharge into the storage dam. In the event that the dam overflows, wastewater will flow into the receiving environment via the ephemeral streams.

In addition, sewage may be released from the increased number of moored vessels which may increase as a result of the development.

4.2.3. Golf Course and Landscaping Contaminants

The implications of impacts on surface waters of irrigation and maintenance of the golf course and landscapes is related to the application of fertilizers and pesticides. Pesticides are biologically active compounds designed to interfere with metabolic processes.

Pesticides commonly used in golf courses and landscaping include:

- Organophosphates (e.g. Round up);
- Fungicides;
- Other broad-spectrum herbicides.

The fate of most of the chemicals is expected to be captured in water features of the golf course, and the main lake.

Pesticides commonly cited in water quality guidelines such as: atrazine, diuron, ametryn, etc., are primarily applied in large scale agriculture. Although they may be present due to catchment land use, it is not considered necessary to monitor due to not being associated with the development.

[16] State of Queensland: The Department of State Development, Manufacturing, Infrastructure and Planning, 2018, Lindeman Great Barrier Reef Resort project: Coordinator-General's evaluation report on the environmental impact statement,

4.3. Negligible Contaminants

Several other potential contaminants were considered, however the likelihood of increased loads and therefore potential risks associated with them, was considered negligible. These include:

- petroleum hydrocarbons, primary due to small scale spills of diesel or fuel oils from small vessels and moored larger vessels; and
- anti-fouling coating residues, containing biocides. These are predominantly used on large commercial vessels and ships, and have been banned in Australia since 2008.

5. Receiving Environment Values

Potentially impacted water includes both intermittent ephemeral streams and surface water of the island, and the coastal and marine waters of the Conservation Park Zone of the Marine Park under the *Great Barrier Reef Marine Park Zoning Plan 2003* and within the Conservation Park Zone of the Queensland Coast Marine Park under the *Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004*.

ANZECC and ARMCANZ (2000) guidelines prescribe the six environmental values for consideration as:

- Aquatic ecosystems;
- Primary industries (irrigation and general water users, stock drinking water, aquaculture, and human consumption of aquatic foods);
- Recreation and aesthetics (primary recreation, secondary recreation, visual appreciation);
- Drinking water;
- Industrial water; and
- Cultural and spiritual values.

Environmental values for specific receiving waters in Queensland are defined under Schedule 1 *Environmental values and water quality objectives for waters* of the *Environmental Protection (Water) Policy 2009* (EPP Water).

Water of Lindeman Island relevant to the development of the resort includes:

- Mackay Whitsunday coastal waters – Whitsunday Islands Fresh Waters; and
- Mackay Whitsunday coastal waters – Coastal waters landward of plume – Open coastal waters.

The EPP Water scheduled values for surface water for the receiving environment is described in Table 4.

Table 4 Environmental Values for Lindeman Island Waters

Waterway Name	Environmental Values	Relevance to Monitoring Program
Whitsunday Islands fresh waters	Aquatic ecosystems – moderately disturbed (MD)	Intermittent streams of the island may contain biological diversity.
	Irrigation	Irrigation of golf course and landscaped amenity will be required from storage dam.
	Secondary recreation	Island fresh waters are used for secondary contact activities such as hiking, bushwalking, general enjoyment.
	Visual recreation	Island fresh waters are part or and connected to the Lindeman Island National park, and have high visual amenity value.
	Drinking water	This is potentially relevant to the water contained in the storage dam, which may be treated for use as drinking water.
	Cultural and spiritual values	Traditional owners of the monitoring area are the Ngaro people. Results of the assessment area relevant to this study.
Whitsunday Islands coastal and marine waters SD2381 Open coastal waters	Aquatic ecosystems – slightly disturbed (SD)	Biodiversity values of the receiving environment include fringing coral reefs and Great Barrier Reef World Heritage Area.
	Primary recreation	Receiving marine waters are used for primary contact activities such as swimming, snorkelling, diving, and water sports. Free from faecal contamination and poor visibility.
	Secondary recreation	Receiving marine waters are used for secondary contact activities such as boating and fishing. Protection of water to maintain fish habitat and safety is important.
	Visual recreation	Waters part of Great Barrier Reef World Heritage Area and have high visual amenity value. Receiving water should be free of visual impacts such as floating debris, oil, grease, and other objectionable matter. Protect receiving waters from algal blooms.
	Drinking water	Reverse osmosis (desalination) plants may be in use to treat sea water for drinking water.
	Cultural and spiritual values	Traditional owners of the monitoring area are the Ngaro people. Results of the assessment area relevant to this study.

5.1. Water Quality Objectives

This monitoring program adopts the scheduled water quality objectives (WQO) in the absence of more locally applicable baseline data. To ensure that all of the environmental values identified are protected, the most stringent guidelines were selected.

Following the pre-development baseline monitoring, locally significant guideline values may be developed for all parameters to be analysed based upon the data collected during baseline monitoring. In accordance with the Queensland Water Quality Guidelines, the 20th and 80th percentiles will be calculated to form guideline values against which monitoring data obtained during construction and operational monitoring can be compared. Subsequent monitoring data will then be plotted against these guideline values.

5.1.1. Whitsunday Islands Fresh Water

As per Section 3.5.1, watershed on Lindeman Island is dominated by ephemeral streams which flow intermittently dependant on seasonal variation. Generally environmental values for specific waters in Queensland are defined under Schedule 1 *Environmental values and water quality objectives for waters* of the *Environmental Protection (Water) Policy 2009.* Schedule 1 was reviewed and found that no environmental values or water quality objectives have been identified specifically for ephemeral waters.

The application of water quality objectives to ephemeral waters is defined as problematic. As flow decreases during seasonal change, water quality of the stream becomes less dependent on upstream flow and more dependent on local influences. As the stream ceases flow, and local influences increase, water quality between segregated waterholes within the stream can vary significantly.

Physical parameters can become highly variable within waterholes formed by the cease of stream flow. The size of waterholes tends to define the extent of variation in physical parameters. Specifically, the stagnation and stratification of waterholes can give rise to highly variable pH values. Therefore, the application of the guidelines for these indicators to waterholes in non-flow conditions may be inappropriate. However, larger waterholes may express water quality values similar to perennial streams.

Indicators such as nutrients could also be affected by non-flow conditions. Smaller waterholes tend to exhibit increased levels of organic N while larger waterholes would not undergo large variations. In addition, biological indicators can also be affected by non-flow events. Smaller waterholes tend have lower species diversity due to lack of resources.

While waterholes within ephemeral streams are often of lower quality than flowing streams, they often serve as an important resource for species when resources are limited. According to the ANZECC 2000 guidelines, there is ongoing studies into the development of better indicators for ephemeral streams. However, currently there is a lack good data on these stream types while not offering adequate advice on the issue.

However, as per the *Environmental Protection (Water) Policy 2009* for the *Proserpine River, Whitsunday Island and O'Connell River Basins*, in the absence of locally applicable information, the 20th, 50th and 80th percentiles for Whitsunday Islands fresh waters are to be based on the WQOs sourced from Repulse Creek Sub-catchment (for moderately disturbed ecosystems). All applicable objectives are displayed in Table 5.

Lindeman Island does contain one (1) perennial fresh water source, the water storage dam, for which the WQOs defined in Table 5 have also applied.

Table 5 Baseflow Water Quality Objectives

Parameter	Water Quality Objective
Dissolved Inorganic Nitrogen (µg/L)	< 31
Particulate Nitrogen (µg/L)	< 52
Filterable Reactive Phosphorus (µg/L)	< 15
Particulate Phosphorus (µg/L)	< 17
Dissolved Oxygen (%)	**No-flow**: 20th and 80th percentile: 50%–120% saturation **Flow**: 20th and 80th percentile: 90%–105% saturation
Suspended Solids (mg/L)	< 3
pH	7.2–7.6
Electrical Conductivity (µS/cm)	< 780
Ametryn	< LOD
Atrazine	< LOD
Diuron	< LOD
Tebuthiuron	< LOD
Organophosphorus pesticides	As per ANZECC
Intestinal enterococci (/100mL)	95th percentile – 40 organisms per 100 mL
Cyanobacteria/algae	**Level 1**: ≥10 µg/L total microcystins; or 50,000 cells/mL toxic Microcystis aeruginosa; or biovolume equivalent of ≥ 4 mm^3/L **Level 2**: ≥ 10 mm^3/L for total biovolume of all cyanobacterial material where known toxins are not present

5.1.2. Whitsunday Islands Open Coastal Waters – Slightly to moderately disturbed

The WQOs applicable to the marine receiving environment are outlined in Table 6. Lindeman Island is situated within Open Coastal Waters section of Great Barrier Reef Marine Park Conservation Park Zone under the *Great Barrier Reef Marine Park Zoning Plan 2003.* The site is located within Reef Bioregion RHC High Continental Island defined as *"Geomorphologically unique. Both cross-shelf and north/south gradient in benthic communities. Species-poor, muddy reefs close to the Proserpine River. Unique and very fragile hard and soft coral communities in the inlets"*[17]*.* The Island is within the "plume line" and is subject to variations in physical and chemical parameters resulting from poor land management, erosion, pollutants from the continent and rainfall.

The *Environmental Protection (Water) Policy 2009* - Whitsunday Islands coastal and marine waters (including Whitsunday, Lindeman groups, Circular Quay Reef) outlines environmental values for the marine waters surrounding Lindeman Island.

[17] Great Barrier Reef Marine Park Authority, 2001, Bioregions of the Great Barrier Reef World Heritage Area, Townsville, Queensland.

Table 6 Open coastal waters landward of the plume line WQOs

Parameter	Water Quality Objective
Particulate N (annual mean)	≤ 20µg/L
Particulate P (annual mean)	≤ 2.8 µg/L
Chlorophyll-*a* (annual mean)	≤ 0.45 µg/L
Dissolved Oxygen	95–105 % saturation
Turbidity (median)	<1 NTU
Secchi Depth (annual mean)	(annual mean): ≥ 10 m
Suspended Solids (annual mean)	(annual mean): ≤ 2.0 mg/L
pH	8.1–8.4
Temperature	<1˚C increase above long-term average maximum
Ametryn	<0.5 µg/L
Atrazine	<0.6 µg/L
Diuron	<0.9 µg/L
Hexazinone	<1.2 µg/L
Tebuthiuron	<0.02 µg/L
Tributyltin	<0.0004 µg/L
Organophosphorus pesticides	As per ANZECC

6. Marine Water Quality Monitoring Program

6.1. Monitoring Program Design

The Program adopts a long term before-after, control-impact (BACI) design and includes a combination of replicated sampling in time and replicated sampling at appropriate spatial scales to determine impacts and consider natural variation. The BACI design will measure change using statistical analysis, which is sufficient to deal with the often non-normally distributed data. The proposed BACI design introduces methods to estimate the natural variability and measure the potential or actual changes in the receiving environment.

The program design is prepared to examine the interactions in time between the potential impact sites (BAC**I**) and a set of control (BA**C**I) locations. The statistical analysis will demonstrate whether the interactions between the impacted sites and control sites, are statistically different from the naturally occurring interactions

in time among the control sites. The purpose of the analysis of natural variation in space and time is to identify whether a small impact is or is not within the bounds of what occurs naturally. In the event that there is evidence of an impact that is outside of natural variability, it will act as a trigger for management or remedial action in accordance with the reporting framework identified later in this WQMP.

6.2. Baseline versus Construction/Operation Monitoring

Water quality monitoring will be broken into two (2) distinct phases:

1. Pre-development (Baseline) Monitoring
    a. Ambient monitoring; and
    b. Event monitoring.
2. Construction / Operational Monitoring
    a. Ambient monitoring; and
    b. Event monitoring

Baseline monitoring is necessary to characterise the receiving waters prior to disturbance and characterise the baseline. Results of the baseline monitoring can be used to compare water quality results during construction and operational phases.

6.3. Objectives

The objectives of the Marine Water Quality Monitoring Program are:

- to ensure that there are no negative impacts on Great Barrier Reef World Heritage Area and National Heritage Place, and Great Barrier Reef Marine Park water quality to protect environmental values of ecosystems, habitats and species on which they rely;
- identify suitable monitoring locations for potentially impacted sites and control/ reference sites;
- describe the pre-development baseline condition of the water quality in the receiving environment at both the potentially impacted locations and control locations;
- identify water quality threshold levels that may result in a negative impact on the water quality values;

- identify water quality objectives, which are suitable for protecting the environmental values of the receiving waters;
- detail an appropriate monitoring methodology which includes robust statistical assessment and quality assurance and control;
- identify the threshold levels that will require a management response; and
- include details of ongoing monitoring to be implemented.

6.4. Proposed Monitoring Parameters

Water quality parameters that will be measured at each monitoring location during each monitoring event, are based on the listed contaminants of concern in the foregoing information and are related to the possible contaminants from the construction and operation of the development. Parameters to be analysed are specified in Table 7.

Table 7 Parameters to be analysed

Parameter		Units	Analysis
Physical	Temperature	°C	In-situ/Automatic
	pH	pH	
	Total Suspended Solids	mg/L	
	Dissolved Oxygen	%	
	Electrical Conductivity/Salinity	EC	
	Turbidity	NTU	In-situ
	Secchi Depth	m	
Chemical	Total Dissolved Solids	mg/L	Laboratory
	Total Nitrogen	mg/L	
	Ammonia	mg/L	
	Oxidised Nitrogen	mg/L	
	Total Phosphorus	mg/L	
	Reactive Phosphorus	mg/L	
	Organophosphorus Pesticides	µg/L	
Biological	Faecal Coliforms	CFU/100 mL	Laboratory
	HPC	CFU/100 mL	
	Total Coliforms	CFU/100 mL	
	E. coli	CFU/100 mL	

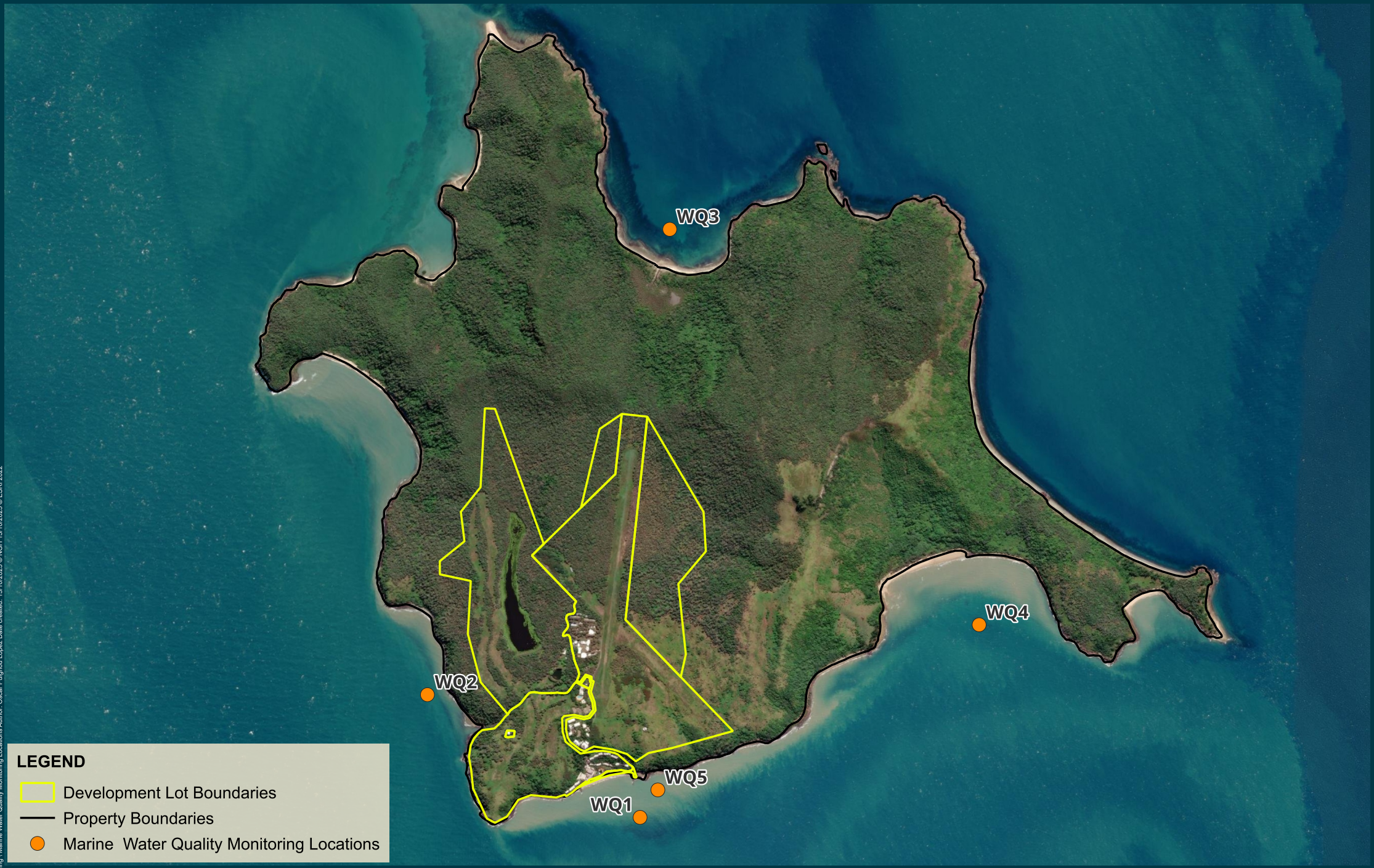
6.5. Sampling Locations

The sampling locations for the baseline pre-development (ambient) water quality monitoring and the construction/operational phase monitoring have been selected to capture water quality data within the most sensitive receiving environment (fringing coral reefs).

The sampling locations are shown Figure 7 and outlined in Table 8.

Table 8 Marine Sampling Locations

Sampling Point	Description	Treatment	Method	Latitude	Longitude
WQ1	Approx. 200m off Home Beach over the fringing coral reef	Impact	Grab	-20.460800°	149.040717°
WQ2	Approx. 70m off the western Lindeman Island coast	Impact	Grab	-20.455917°	149.031700°
WQ3	Approx. 100m off Gap Beach	Control	Grab	-20.437400°	149.041967°
WQ4	Approximately 300m off unnamed beach 1.7km from the existing resort	Control	Grab	-20.453133°	149.055100°
WQ5	Resort Access Jetty approx. 100m from Home Beach	Impact	Automatic	-20.459717°	149.041450°



Datum: WGS 84

0 250 500 750 1,000 m

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A FYFE Company

Lindeman Island Water Monitoring

Figure 7 - Marine Water Quality Monitoring Locations

Ref: Lindeman Island Water Monitoring \ Marine Water Quality Monitoring Locations Author: Oscar Puignou Lopez Date created: 13/10/2025 © NGH 13/10/2025 © ESRI 2022

6.6. Sampling Frequency

The sampling frequency for the MWQMP is to be divided into Pre-development (Baseline) Monitoring, and Construction/Operational Phase Monitoring. The sampling frequencies for both phases have been summarised in Table 9 and Table 10.

Table 9 Marine Monitoring Frequency - Predevelopment

Parameter	Method	Interval
Temperature	Fixed Continuous	Hourly
Electrical Conductivity		
Temperature	Grab/in-situ	Monthly 2x High Rainfall Event Monitoring Post-Cyclonic Event
pH		
Total Suspended Solids		
Electrical Conductivity		
Dissolved Oxygen		
Turbidity		
Secchi		
Total Dissolved Solids		
Total Nitrogen		
Ammonia		
Nitrite and Nitrate		
Oxidised Nitrogen		
Total Phosphorus		
Reactive Phosphorus		
Faecal Coliforms		Quarterly 2x High Rainfall Event Monitoring Post-Cyclonic Event
HPC		
Total Coliforms		
E. coli		
Organophosphorus pesticides		

Table 10 Marine Monitoring Frequency – Construction/Operational

Parameter	Method	Interval
Temperature	Fixed Continuous	Hourly
Electrical Conductivity		
Temperature	Grab/in-situ	Quarterly 2x High Rainfall Event Monitoring Post-Cyclonic Event
pH		
Total Suspended Solids		
Electrical Conductivity		
Dissolved Oxygen		
Turbidity		
Secchi		
Total Dissolved Solids		
Total Nitrogen		
Ammonia		
Nitrite and Nitrate		
Oxidised Nitrogen		
Total Phosphorus		
Reactive Phosphorus		
Faecal Coliforms		
HPC		
Total Coliforms		
E. coli		
Organophosphorus pesticides		

6.6.1. Pre-Development Sampling

Ambient sampling will be conducted:

- monthly for physical parameters and nutrients; and
- quarterly for pesticides and biological parameters.

The pre-development baseline monitoring program will be conducted for at least 12 months prior to the commencement of construction.

Construction means construction of any infrastructure, any preparatory works required to be undertaken including clearing vegetation, the erection of any onsite temporary structures and the use of heavy-duty equipment for the purpose of breaking the ground for buildings or infrastructure. Construction excludes erecting fences, signage, and upgrade of the jetty.

6.6.2. Event Sampling

Rainfall Events

High rainfall events will be monitored to determine the direct impact that rainfall events have on receiving waters. Consideration is given to the determination of rainfall events which are likely to generate adequate flows and runoff to enable samples to be collected. The objective is to ensure enough sampling of runoff events occurs to adequately characterise event flows and impacts during pre-development baseline conditions.

Given the remoteness and difficulty for accessing the site to conduct water quality monitoring, collection of samples during every rainfall event is not technically feasible. Monitoring will be undertaken in relation to at least two separate high rainfall events each year.

For the classification of a 'high rainfall event', it is expected that site-based experience will provide further information. However, for the baseline study, the intensity and duration of rainfall to be classified as an event, has been determined using the Bureau of Meteorology's 2016 Intensity–Frequency–Duration (IFD) data system. The IFD data system calculates design rainfalls using a database comprising rainfall data from the BOM's network of weather stations and subjects the data to a variety of statistical analyses.

For the calculation of the Lindeman Great Barrier Reef Resort design rainfall, the following conditions were applied to the IFD data system:

- Design rainfall – Very Frequent being "design rainfalls with probabilities from 2 to 12 exceedances per year".
- Standard duration – 24 hours
- 6 exceedances per year (EY) being "the number of times an event is likely to occur or be exceeded within any given year."[18]

Using the above conditions, the Design Rainfall has been determined as 52.1mm. Therefore, high rainfall event monitoring will be undertaken for at least two separate non-cyclonic rainfall events that produce >52.1 mm of

[18] Australian Government – Bureau of Meteorology, 2018, Intensity, Frequency, Duration – 2016 IFDs(new):Frequently Asked Questions, Available Online, http://www.bom.gov.au/water/designRainfalls/ifd/ifd-faq.shtml#sec1q5, Accessed 22/08/2018.

precipitation over a 24-hour period. A total of two **non-cyclonic** rainfall events are to be monitored during the calendar year.

Environmental personnel will monitor weather reports from Bureau of Meteorology's Hamilton Island weather station (Station 033255). If a rainfall event >52.1mm/24hrs is identified from weather data, event sampling will be triggered. When safe to do so, environmental personnel will attend the development site and sample the receiving environment monitoring locations (Figure 7).

Cyclonic Events

It is acknowledged that event rainfall is not the only contributing factor to receiving water quality. In the wet tropics, Tropical Cyclones are a frequent occurrence. The Australian Bureau of Meteorology (BOM) classifies Tropical Cyclones as non-frontal low-pressure systems of synoptic scale, which express an organised clockwise wind convection and a mean wind speed of 34 knots or greater, extending more than halfway around near the centre, persisting for greater than six (6) hours[19]. The BOM monitor each tropical low and will issue a tropical cyclone warning if the criteria above are fulfilled. Cyclones often will express a sporadic path, and it is historically difficult to track and predict cyclonic direction and speed.

Given that cyclones deliver very intense rainfall and wind over a relatively short timeframe, event sampling will be required for **each cyclonic event**. Cyclonic event sampling will occur when:

- the development is directly impacted by a cyclone; or
- the development is within the convectional cloud mass and subject to intense rainfall, yet not subject to the associated cyclonic winds (34 knots or greater).

Environmental personnel will monitor live rainfall data and wind conditions leading up to, and during cyclonic events from a safe location. If it is determined that the development is directly or indirectly influenced by a cyclone, event monitoring will be scheduled. **When safe to do so**, environmental personnel will attend the development site, and sample the receiving environment monitoring locations, usually within 7 days of the cyclones passing.

As cyclones are associated with destructive winds, there is a risk that in-situ equipment may be damaged. Therefore, the automatic multiparameter sonde established at WQ5, will be removed prior to the cyclone potentially impacting the development. Construction/Operational Staff are to be trained in the retrieval and disconnection of the Sonde. The Sonde will be stored in a safe location until the storm dissipates. The multiparameter sonde will be re-established by environmental technicians during the event sampling event if it is safe to do so. In addition, In-situ analysis also will occur at WQ5 during sonde recommissioning.

6.6.3. Ambient Salinity Monitoring

Sample point WQ5 is to be established to analyse physical parameters including salinity, temperature, and electrical conductivity automatically at set intervals. Analysis is to be conducted automatically via a calibrated automatic water quality analysis sonde. The sonde will be established to a fixed structure to ensure its survival during extreme climatic conditions. With the Lindeman Jetty positioned within the receiving environment between the fringing reef and the shoreline, it has been determined as the event monitoring location.

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[19] Australian Government Bureau of Meteorology, 2018, About Tropical Cyclones – What is a Tropical Cyclone? Available Online, http://www.bom.gov.au/cyclone/about/, Accessed 21/08/2018.

Prior to establishment, a suitably qualified environmental professional will calibrate and format the device to sample at the preferred interval (Table 9; Table 10). The sonde will be protected by PVC casing and attached to the Jetty. Installation will be conducted by a fully qualified environmental professional during the first sampling event of the pre-development phase monitoring. The installation will consist of the following:

- The depth of the sonde will be determined as 1m off the sea bed.
- PVC casing of appropriate diameter shall be cut to the appropriate length (top of jetty to 1m below the maximum low tide mark).
- Slots will be cut at approximately 30mm intervals, perpendicular to the PVC orientation for 1m upwards from the base of the PCV casing.
- The slotted PVC casing shall be attached to the jetty using appropriate fastening devices.
- The sonde will be lowered into the PVC casing to commence monitoring.
- A GPS location of monitoring point shall be taken.

Analysis retrieval will be via a transmitter/data receiver fixed to the top of the jetty. Data will be collected using a handheld data receiver during monthly/quarterly sampling events.

6.6.4. Incident Monitoring

If construction and/or operational staff suspect or observe any of the contaminants (including contaminants listed in Section 6.4) entering waterways within the development area, the project manager will be notified immediately. Personnel shall contain the contamination as per the allocated incident response procedures. Once the damage to waterways has been mitigated, a qualified environmental professional will conduct a site inspection to determine the potential for adverse effects on the receiving environments. This inspection shall involve additional sampling of the receiving waters directly affected by potential contamination. Parameters to be monitored are dependent on the type of incident contaminant and shall also include parameters not included in routine monitoring procedures which may have been affected.

Ongoing monitoring is to continue until such a time that it is determined that contamination is no longer present or an evaluation by a suitably qualified person determines that monitoring in relation to the incident is no longer required.

In the event of an incident, the incident reporting procedures in accordance with section 10.3 of this plan are to be followed.

6.7. Sampling and Analysis Methodology

6.7.1. Sample Collection

Water sampling is to be undertaken in accordance with the methods specified in the Australian Standard for

Water Quality Sampling – AS/NZS 5667.1:1998 and the Department of Environment and Heritage Protection's Monitoring and Sampling Manual 2018 (or subsequent versions as updated from time to time) for monitoring locations WQ1 - 4.

Grab Sampling

For samples requiring in-situ and laboratory analysis, manual grab samples will be taken using a suitable sampling container. Sampling will be undertaken using the following methodology derived from the Department of Environment and Heritage Protection (DEHP) Monitoring and Sampling Manual 2009:

1. Remove the lid from a 1 L sample bottle and attach the bottle to the end of a sampling pole.
2. Extend the sampling pole into water. Submerge the bottle to a depth of at least 0.3 m, keeping the mouth end pointing down.
3. Whilst submerged, rotate the sampling pole 180 degrees to bring the mouth of the bottle facing up, and allow the bottle to fill with water; and retrieve bottle.
4. Replace the lid and shake the bottle ensuring the inside of the bottle and the lid come into contact with the liquid. Discard the rinse liquid down current of where you are sampling. Be sure to keep hands away from the mouth of the bottle and the underside of the lid.
5. Repeat steps 3 to 4 so that the sample bottle and its lid are rinsed twice with sea water then proceed to step 6.
6. Repeat step 1 to 3 to fill the bottle. If samples require in-situ analysis, samples can be directly analysed from battle using calibrated water quality meters/sondes. If samples require laboratory analysis, sample bottles are to be sealed and stored appropriately. If sample requires freezing, ensure you leave 10–20 per cent space free.

6.7.2. In-situ Parameter Analysis

In-situ water quality will be sampled using a hand-held electronic multi-parameter water quality meter. In-situ parameters will include at a minimum, the parameters listed in Table 7 identified as in-situ. In-situ water quality measurements will be collected in a scientifically robust manner. Users will be familiar with the equipment, and the calibration methods for each meter. Calibration of water quality meters will be conducted in accordance with best practice and manufacturers instruction. Meters will be checked, maintained and calibration recorded before deploying meters for sampling.

6.7.3. Storage and Transportation

All samples are to be stored in a clean cooler box on ice or equivalent refrigerated conditions at approximately 4°C. All samples will be delivered to the NATA accredited Laboratory within the recommended holding times as specified by the laboratory. Any non-conformance must be documented on the Chain of Custody document.

6.7.4. Laboratory Analysis

Once samples requiring laboratory analysis are collected, stored and transported offsite, the samples will be taken to a NATA accredited laboratory for analysis. Samples will be analysed by accredited laboratory as per their analysis methodologies.

6.7.5. Quality Assurance

Quality assurance and quality control procedures will be implemented to ensure that samples and monitoring data is collected in a scientifically robust manner. Quality assurance procedures are required to consider appropriate laboratory holding times for sample delivery, ensuring that sample integrity is maintained.

6.7.6. Field QA/QC

Quality assurance and quality control measures will be generally in accordance with DEHP's Monitoring and Sampling Manual (2009), and Australian Standard for water quality sampling – AS/NZS 5667.1:1998.

The following specific methods will be employed in field sampling to ensure quality assurance and quality control (QA/QC) measures are implemented throughout all monitoring.

- sampling will be conducted by suitably qualified and experienced environmental staff who are competent in sampling and making field measurements (e.g. experience undertaking field tests);
- prior to sampling – laboratory pre-cleaning of all sample containers, and cleaning of sample equipment;
- all equipment and field instruments will be appropriately maintained, and calibrations and preventative maintenance will be recorded carefully;
- samples will be collected in appropriately cleaned, pre-treated (if required), and labelled sample containers that are provided by the analytical laboratory;
- during field sampling, a register will be filled out, which contains the following information:
    - sample number;
    - sample site;
    - sample technique;
    - time;
    - weather;
    - issues with sample;
    - contamination;
    - date; and
    - technician.
- transportation of samples will occur under a chain of custody documentation procedure;
- chain-of-custody (COC) forms that list all sample numbers and locations will accompany each sample to the laboratory. At each stage of handling, samples are to be checked against the COC forms; and
- where holding times are breached, these instances will be documented.

Field quality control samples

Replicates, and quality control samples will be in accordance with the Australian Standard for water quality sampling – AS/NZS 5667.1:1998.

Field replicate

To determine potential errors in the methodology or cross contamination issues during the sampling and/ or during the transport process, a replicate sample will be randomly selected to be taken during each sampling exercise. This provides the experimental sampling error and thus a measure of the sampling precision.

A replicate sample is defined as the collection of a separate sample from the same location, at the same time.

Sample contamination blanks

Field and transport blanks will be collected once per calendar year to assess sample contamination which may occur during the collection, transportation, or storage of the sample. If sample contamination is identified, additional sample contamination assessment will be conducted.

6.7.7. Laboratory QA/QC

Laboratory QA/QC procedures will be carried out in accordance with the Queensland Monitoring and Sampling Manual 2009 - Environmental Protection (Water) Policy 2009.

Laboratory QA/QC procedures will be appropriate for the potentially low concentration of some water quality parameters and ensure satisfactory limits of reporting to enable detection of limits consistent with the water quality objectives.

In addition to the laboratories own internal procedures, one laboratory blank sample will be analysed with each sample submission to ensure quality assurance.

7. Analysis

Environmental impacts on water quality are often measured in two distinct ways:

1. Assessment of concentrations against receiving environment water quality objectives or trigger values; and
2. Assessment of whether contaminants have reached a level beyond those within the natural (variable) range.

Data from the sampling program will be analysed against the guideline's values but also analysed by statistical analysis for determining environmental impacts during construction and operations.

7.1. Derive Trigger Values

Following the completion of baseline studies, trigger values will be derived and compared with the existing water quality objectives. The site-specific trigger values will then be used to compare construction and operation water quality values and trigger management action.

Results of the 12-month baseline monitoring and associated baseline determinations of trigger levels will be reviewed by an independent expert. A copy of the independent peer review and the revised plan shall be provided to the Department of the Environment and Energy, prior to the commencement of construction activities. The independent peer review will include a review of baseline data, trigger levels for corrective actions, corrective actions and any proposed changes to monitoring methodologies.

The revised plan will identify threshold levels and duration of change in water quality values of the receiving environment that would constitute a significant impact on identified water quality values.

The revised plan and peer review shall be published on the White Horse Australia website.

7.2. Statistical Test of Impact

The purpose of the statistical analysis, aside from analysing the basic statistics from the monitoring program, is to inform an impact assessment to measure the difference between the impacted and control locations. In simple terms, an impact requires there to be a greater difference between the impacted and control locations than is generally among the controls.

7.3. Statistical Design and Methods for the Monitoring Program

The statistical analysis will be conducted using a three-factor mixed model being phase, treatment, and site:

1. Phase
    a. Fixed with two levels of analysis being before and after. Analysis will be unbalanced levels of replication (i.e. number of surveys done during Baseline is likely to be less than number done during operation due to the ongoing nature of the project).
2. Treatment- fixed, two levels:
    a. MWQMP Control (sites WQ3, WQ4) and Impact (WQ1, WQ2, WQ5).
    b. TWQMP Control (LIND02) and Impact (sites LIND01, LIND03, LIND04, LIND05, LIND06)
3. Site- random
    a. MWQMP 5 levels, nested in Treatment (i.e. 2 in control, 3 in impact)
    b. TWQMP 7 levels nested in Treatment (i.e. 1 in 6 in impact)

The advantage of including the ‘site’ factor is that smaller scale spatial trends would be able to be examined. For example, an impact (increase in some variable more than 10% above baseline) may not be picked within one treatment group but may be detectable on a particular site within the group.

Replication will be achieved by a combination of having multiple sites in each treatment group and/or by surveying multiple times.

Frequency may be refined after the baseline – factoring in how variable the data appears to be, logistics and preliminary analyses of temporal patterns. Depending on the data, the analysis may also include a ‘season’ attribute for each sample, as this may be useful in teasing out temporal patterns once discharge is occurring – e.g. impact may only be significant in the dry season, but not during the wet season or vice versa. The design of the analysis will also be reviewed by the independent expert at the 12-month review.

7.4. Suitability of the Statistical Design

The sampling program is considered to be sufficient to identify significant changes. In the event that the analysis shows the results are not significant, it does not mean that the disturbance has had no effect. Instead it indicates that whatever effects have occurred from the discharge are too small to cause any adverse impacts to water quality and therefore the associated environmental values identified as requiring monitoring.

The proposed statistical analysis is robust enough to calculate the differences between the mean concentrations in the impact and control locations and to analyse the difference from before to after in the means of these differences. In the event that the interaction between the difference in the means in the impact and control locations is significant compared to before and after discharge, an environmental impact will be evident.

8. Management Response Plan

Following the pre-development baseline monitoring program, during construction and operation, a reactive monitoring risk response program will be implemented to provide corrective actions against water quality objective exceedances (either locally derived values or set WQOs).

In the event of exceeding water quality triggers, or water quality controls being influenced or impacted by the resort activities, an investigative program will be undertaken to determine the source of non-compliance and implement corrective actions. To guide the decision-making process, the following flow chart will be used (Figure 8).

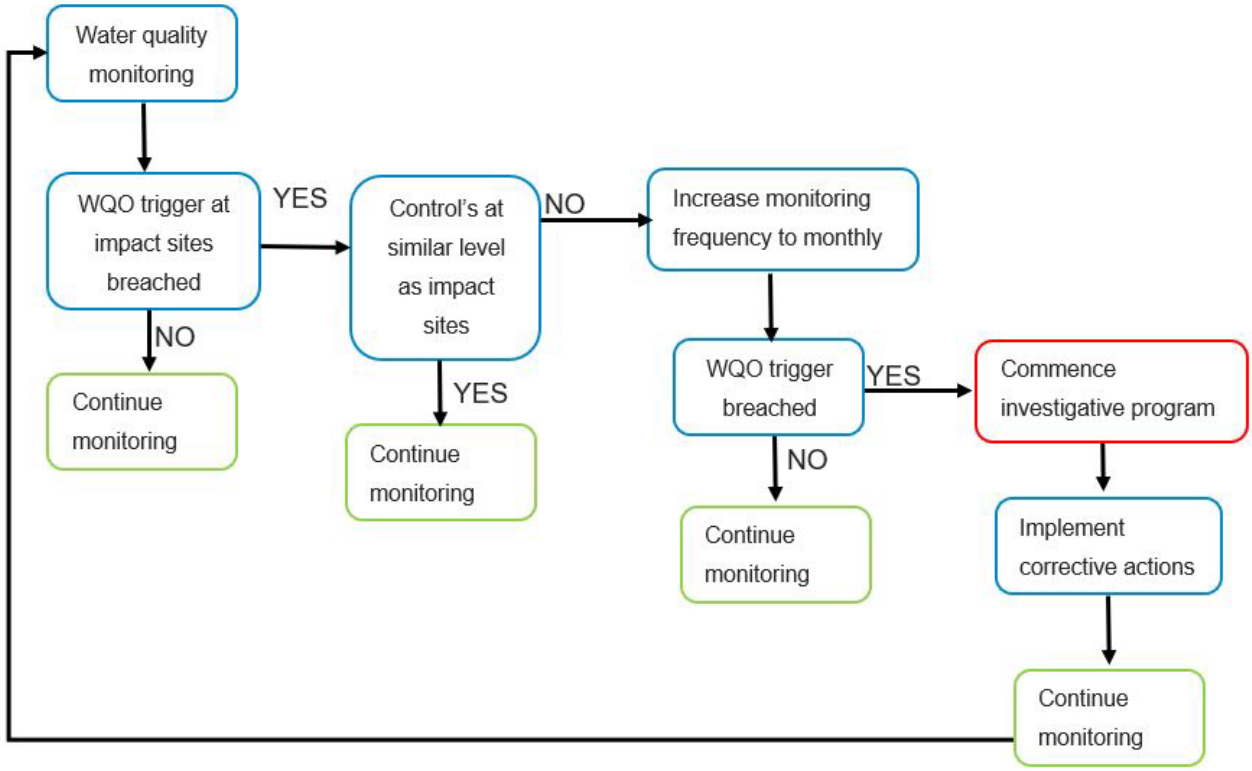

Figure 8 Management Response Framework

8.1. Investigative Program

In the event of exceedance of the nominated trigger values during water quality monitoring, the following investigative/ corrective actions will be undertaken within 72 hours, or as soon as the following can be conducted safely:

- Complete the site inspection form;
- Report on non-conformance;
- Implement necessary corrective actions.

Ideally, inspect the full perimeter of the site, but as a minimum, any current active stages of construction. Corrective actions shall be undertaken immediately in accordance with the recommendations of the results from the inspection form (Figure 9).

Non-compliance with the trigger limits and or water quality objectives will lead notify relevant government authorities. A review of non-compliances and corrective actions will be conducted at the 12-month review.

8.2. Corrective Actions

In the case that the WQMP does not achieve performance targets, corrective actions will be taken. Corrective action will be triggered if the Project does not achieve specified performance targets / outcomes.

Non-compliance with the trigger limits and or water quality objectives will lead to the following corrective actions:

- notify relevant government authorities;
- identification of source of non-compliance; and
- rectification of source of non-compliance if possible.

The Lindeman Island Resort Team is responsible for implementing the corrective actions and notification to the Department of Environment.

SITE INSPECTION FORM

LOCATION . . . . . .

INSPECTION OFFICER . . . . . .**DATE** . . . . . .

SIGNATURE . . . . . .

Legend: ☐ OK ☐ Not OK N/A Not applicable

Item	Performance criteria	Assessment
	Site establishment	
1	All erosion and sediment control structures in proper working order as per approved ESCP?	. . . . .
2	All stormwater management controls implemented and working effectively?	. . . . .
3	The construction site is clear of litter and unconfined rubbish.	. . . . .
5	Site dust is being adequately controlled.	. . . . .
6	Appropriate drainage and sediment controls have been installed prior to new areas being cleared or disturbed.	. . . . .
7	Up-slope “clean” water is being appropriately diverted around/through the site.	. . . . .
54	Drainage lines are free of soil scour and sediment deposition.	. . . . .
55	No areas of exposed soil need erosion control.	. . . . .
56	Earth batters are free of “rill” erosion.	. . . . .
58	Long-term soil stockpiles are protected from wind, rain and stormwater flow with appropriate drainage and erosion controls.	. . . . .
60	Sediment-laden stormwater is not simply flowing “around” the sediment fences or other sediment traps.	. . . . .
63	The settled sediment layer within a sediment basin is clearly visible through the supernatant prior to discharge such water.	. . . . .
67	The site is adequately prepared for imminent storms.	. . . . .
	Site and vegetation management	

Vegetation and/or landscape management plan is being appropriately implemented?	.....
Landscaping chemicals (fertilisers and pesticides) are stored appropriately.	.....
Adequate records being kept on chemical usage.	.....
Material and waste management	
Chemicals and petroleum products are appropriately stored on site.	.....
Adequate waste and litter receptors exist on site.	.....
Waste water from construction activities such as wash water, de-watering operations, and dust control is being captured and treated.	.....
No uncontrolled discharge from sewage treatment facility?	.....

Comments and Action Plan

Figure 9 Site Inspection Form

9. Environmental Management Roles and Responsibilities

9.1. Roles and Responsibilities

The following roles may be subject to change once the project design and implementation is finalised. Position descriptions contain the responsibilities and accountabilities for environmental compliance and management for the WQMP.

9.1.1. Lindeman Island Resort Team

White Horse Australia Management Team refers to the General Manager, Construction Manager, Site Manager, or similar positions which may be filled from time to time.

The key role of the White Horse Australia Team is to review and endorse the WQMP and to ensure that adequate resources are available to comply with the monitoring requirements outlined in the WQMP. Generally, responsibilities include:

- where applicable, supervising the monitoring procedures recommended and implemented by the environmental personnel conducting monitoring;
- assign authorities and responsibilities for environmental compliance and management in accordance with the WQMP;
- ensure compliance with all legal requirements including requirements for development permits, and all other approvals;
- prioritise minimisation of potential impacts wherever possible; and
- taking ultimate responsibility for environmental impacts arising from the development and operation of the Project.

9.1.2. Project Environmental Advisor

The key role of the Project Environmental Consultant is to prepare, review, and assist with the implementation of the WQMP in line with any relevant approval conditions. Key responsibilities include:

- provide advice to White Horse Australia Management teams and personnel in relation to the environmental requirements under the WQMP;
- assist with the integration of WQMP into work procedures and practices;
- conduct induction training and tool box talks on environmental issues if required;
- conduct audits and compliance checks of environmental performance of the project in relation to the WQMP;
- manage monitoring and technical studies relating to the baseline and ongoing monitoring;
- raise corrective actions for any non-compliance with the WQMP or approval conditions, or in response to incident investigations;
- conduct incident investigations, report to White Horse Australia on environmental performance including compliance, non-compliance, and incidents and near misses with potential or actual environmental harm;
- compile environmental reports;

- advise White Horse Australia on changes to environmental legislation, policy, or other obligations and ensure these are incorporated into environmental compliance and management measures, and communicated to the project team from time to time;
- assist with any investigation into the potential causes of the exceedance and potential mitigation strategies; and
- review and update this WQMP from time to time in accordance with permitted conditions and generally in accordance with an adaptive management framework.

9.2. Environmental Training

Appropriate training and induction shall include, but not necessarily be limited to:

- training monitoring personnel to ensure that they are suitably trained and competent person to conduct the monitoring;
- sampling personnel are to be informed of any necessary precautions to be taken in sampling operations and have the appropriate training;
- raising awareness of onsite environmental management issues; and
- training on how to report on project compliance issues.

9.3. Emergency Contacts

Name: White Horse General Manager

Ph: TBA

E: TBA

10. Reporting

10.1. Annual Compliance Reporting

In accordance with EPBC 2015/7461, "*within three (3) months of every 12-month anniversary of the approval, the approval holder must publish a report on its website addressing compliance with each of the conditions of this approval, including implementation of monitoring plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published*".

An annual report will be prepared summarising the water quality monitoring results and details of the sampling and analysis undertaken.

10.2. Audit of Compliance

Upon the direction of the Minister, an independent audit of compliance with the conditions of approval must be conducted. This audit is to be conducted by an independent auditor and the audit criteria is to be approved by the minister prior to the audit commencement. Records maintained by WHAL, may be requested by the Department

and/or an independent auditor in accordance with Section 458 of the EPBC Act or used to verify compliance with the conditions of approval.

10.3. Incident Reporting

If the construction/operations of the development results in a significant impact to water quality, White Horse Australia will notify the Department of the Environment and Energy within seven (7) days of the incident.

Incident response procedures are to be finalised and provided to the Department of Environment and Energy upon revision of this plan.

10.4. Review

Within 12 months of the completion of the pre-development baseline water quality monitoring, an updated version if this WQMP will be published on the White Horse Australia Website and provided to the Department of Environment and Energy. The amended WQMP will include but not be limited to:

- the results of the pre-development baseline monitoring program;
- identification of the significant impact thresholds as well as justification; and

identification of the level of change in water quality which trigger a management response.

11. Conclusion

This WQMP provides a comprehensive and scientifically robust water quality monitoring framework for the Lindeman Great Barrier Reef Resort. The WQMP provides a framework which describes monitoring of water quality compliance with the Water Quality Objectives to be determined as a part of the baseline (background) monitoring, for the listed environmental values. The program also provides a statistically defensible methodology for determining and quantifying potential impacts to the receiving environment.

The WQMP provides succinct details on the following:

- environmental values;
- potential impacts;
- contaminants of concern;
- parameters to be monitored;
- monitoring frequency;
- monitoring locations;
- sampling and analysis methodology;
- quality control;
- environmental Management responsibilities; and
- reporting requirements.

The WQMP details a baseline monitoring program consisting of at least 12 months sampling to be conducted prior to the commencement of construction and complies with the required number of monitoring locations for both the impact site and control sites.

Finally, the WQMP provides a comprehensive reporting and review process which is aimed to ensure the WQMP is adaptive and responsive to any potential issues or changes which may be required from time to time, including but not limited to independent audits and annual compliance reporting as required by EPBC 2015/7461 conditions.

Appendix A – Terrestrial Water Quality Monitoring Program

Terrestrial Water Quality Monitoring Program

The Terrestrial Water Quality Monitoring Program (TWQMP) has been prepared to facilitate the monitoring requirements of the Coordinator Generals Report (See Coordinator Generals Report Section 5.1.4 – Water Quality). This document is the **Preliminary** TWQMP and is not to be included as a part of the Marine Water Quality Monitoring Program.

A.1 Monitoring Program Design

The Program adopts a long term before-after, control-impact (BACI) design and includes a combination of replicated sampling in time and replicated sampling at appropriate spatial scales to determine impacts and consider natural variation. The BACI design will measure change using statistical analysis, which is sufficient to deal with the often non-normally distributed data. The proposed BACI design introduces methods to estimate the natural variability and measure the potential or actual changes in the receiving environment.

The program design is prepared to examine the interactions in time between the potential impact sites (BAC**I**) and a set of control (BA**C**I) locations. The statistical analysis will demonstrate whether the interactions between the impacted sites and control sites, are statistically different from the naturally occurring interactions in time among the control sites. The purpose of the analysis of natural variation in space and time is to identify whether a small impact is or is not within the bounds of what occurs naturally. In the event that there is evidence of an impact that is outside of natural variability, it will act as a trigger for management or remedial action in accordance with the reporting framework identified later in this WQMP.

A.2 Baseline vs Construction/Operation Monitoring

Water quality monitoring will be broken into two (2) distinct phases:

1. Pre-development (Baseline) Monitoring
    a. Ambient monitoring; and
    b. Event monitoring.
2. Construction/ Operational Monitoring
    a. Ambient monitoring; and
    b. Event monitoring.

Baseline monitoring is necessary to characterise the receiving waters prior to disturbance and characterise the baseline. Results of the baseline monitoring can be used to compare water quality results during construction and operational phases.

A.3 Objectives

The objectives of the Terrestrial Water Quality Monitoring Program will be to:

- identify suitable monitoring locations for potentially impacted sites and control/ reference sites;
- describe the baseline condition of the water quality in the terrestrial environment at both the potentially impacted locations and control locations;
- identify water quality threshold levels that may result in a negative impact on the water quality values;

- identify water quality objectives, which are suitable for protecting the environmental values of the receiving waters;
- detail an appropriate monitoring methodology which includes robust statistical assessment and quality assurance and control; and
- include details of ongoing monitoring to be implemented.

A.4 Contaminants of Concern

The contaminants of concern as a part of this Terrestrial Water Quality Monitoring Program are identical to those listed in the Marine Water Quality Monitoring Program. The contaminants of concern are displayed in Table 7.

A.5 Proposed Analytical Parameters

In order to determine the parameters of runoff discharging into the receiving environment, the parameters to be monitored as a part of this TWQMP are to be as per Table 7.

A.6 Sampling Locations

The sampling locations have been adopted from the Water Quality Assessment published as a part of the EIS with three exceptions: LIND02, LIND03 and LIND06. The Sampling Locations are detailed in Table 11 and displayed in Figure 10.

- LIND02 has been relocated to the east of the airstrip. The relocation of LIND02 allows it to be utilised as a control point as it is approximately 91m horizontally and 1m vertically from the development disturbance.
- LIND03 has been relocated 90 metres downstream of the original location on the same steep bedrock confined waterway on the western side of the island. The relocation was necessary for safe access to the site.
- LIND06 has been relocated approximately 140 metres to the south southeast. The relocation was necessary as original location failed to identify a defined waterway as the landscape is steep (>30%) with overland flow occurring as undefined sheetwash. The absence of a defined watercourse renders it difficult to collect a representative water sample of runoff from the golf course. A defined watercourse was identified that also receives runoff from the golf course and is in the same topographic setting.

Table 11 Terrestrial Sampling Locations

Sampling Point	Description	Latitude	Longitude
LIND01	Existing Dam	-20.454192	149.035560
LIND02	East of Airstrip	Sample Area Boundary	Sample Area Boundary
LIND03	Downstream of Golf Course	Sample Area Boundary	Sample Area Boundary
LIND04	Adjacent to Lindeman Jetty	Sample Area Boundary	Sample Area Boundary
LIND05	Downstream of Cleared Area and Airstrip	Sample Area Boundary	Sample Area Boundary
LIND06	Downstream of Golf Course	Sample Area Boundary	Sample Area Boundary

Datum: WGS 84

0 100 200 300 400 m

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Lindeman Island Water Monitoring

Figure 10 - Terrestrial Water Quality Monitoring Locations

Ref: Lindeman Island Water Monitoring \ Marine Water Quality Monitoring Locations Author: Oscar Puignou Lopez Date created: 13/10/2025 © NGH 13/10/2025 © ESRI 2022

A.7 Sampling Frequency

The sampling frequency for the TWQMP is to be divided into Pre-development (Baseline) Monitoring and Construction/Operational Phase Monitoring. The sampling frequencies for both phases are summarised in Table 12 and Table 13.

Table 12 Terrestrial Monitoring Frequency – Predevelopment

Parameter	LIND01 Interval	LIND02-06 Interval
Temperature	Monthly	When Possible
pH		
Total Suspended Solids		
Electrical Conductivity		
Dissolved Oxygen		
Turbidity		
Secchi		
Total Dissolved Solids		
Total Nitrogen		
Ammonia		
Nitrite and Nitrate		
Oxidised Nitrogen		
Total Phosphorus		
Reactive Phosphorus		
Faecal Coliforms	Quarterly	
HPC		
Total Coliforms		
E. coli		
Organophosphorus pesticides		

Table 13 Terrestrial Monitoring Frequency – Construction/Operational

Parameter	LIND01 Interval	LIND02-06 Interval
Temperature	Quarterly	When Possible
pH		
Total Suspended Solids		
Electrical Conductivity		
Dissolved Oxygen		
Turbidity		
Secchi		
Total Dissolved Solids		
Total Nitrogen		
Ammonia		
Nitrite and Nitrate		
Oxidised Nitrogen		
Total Phosphorus		
Reactive Phosphorus		
Faecal Coliforms		
HPC		
Total Coliforms		
E. coli		
Organophosphorus pesticides		

A.8 LIND01 (Lake) Sampling and Analysis Methodology

A8.1 Sample Collection

Water sampling is to be undertaken in accordance with the methods specified in the Australian Standard for water quality sampling – AS/NZS 5667.1:1998 and the Department of Environment and Heritage Protection's Monitoring and Sampling Manual 2009.

For samples requiring in-situ and laboratory analysis, manual grab samples will be taken using a suitable sampling container. Sampling will be undertaken using the following methodology derived from the Department of Environment and Heritage Protection (DEHP) Monitoring and Sampling Manual 2009:

1. Remove the lid from a 1 L sample bottle and attach the bottle to the end of a sampling pole.
2. Extend the sampling pole into water. Submerge the bottle to a depth of at least 0.3 m, keeping the mouth end pointing down.
3. Whilst submerged, rotate the sampling pole 180 degrees to bring the mouth of the bottle facing up, and allow the bottle to fill with water; and retrieve bottle.
4. Replace the lid and shake the bottle ensuring the inside of the bottle and the lid come into contact with the liquid. Discard the rinse liquid down current of where you are sampling. Be sure to keep hands away from the mouth of the bottle and the underside of the lid.
5. Repeat steps 3 to 4 so that the sample bottle and its lid are rinsed twice with sea water then proceed to step 6.
6. Repeat step 1 to 3 to fill the bottle. If samples require in-situ analysis, samples can be directly analysed from battle using calibrated water quality meters/sondes. If samples require laboratory analysis, sample bottles are to be sealed and stored appropriately. If sample requires freezing, ensure you leave 10–20 per cent space free.

A8.2 In-situ Parameter Analysis

In-situ water quality will be sampled using a hand-held electronic multi-parameter water quality meter. In-situ parameters will include at a minimum, the parameters listed in Table 7. In-situ water quality measurements will be collected in a scientifically robust manner. Users will be familiar with the equipment, and the calibration methods for each meter. Calibration of water quality meters will be conducted in accordance with best practice and manufacturers instruction. Meters will be checked, maintained and calibration recorded before deploying meters for sampling.

A8.3 Storage and Transportation

All samples are to be stored in a clean cooler box on ice or equivalent refrigerated conditions at approximately 4°C. All samples will be delivered to the NATA accredited Laboratory within the recommended holding times as specified by the laboratory. Any non-conformance must be documented on the Chain of Custody document.

A8.4 Laboratory Analysis

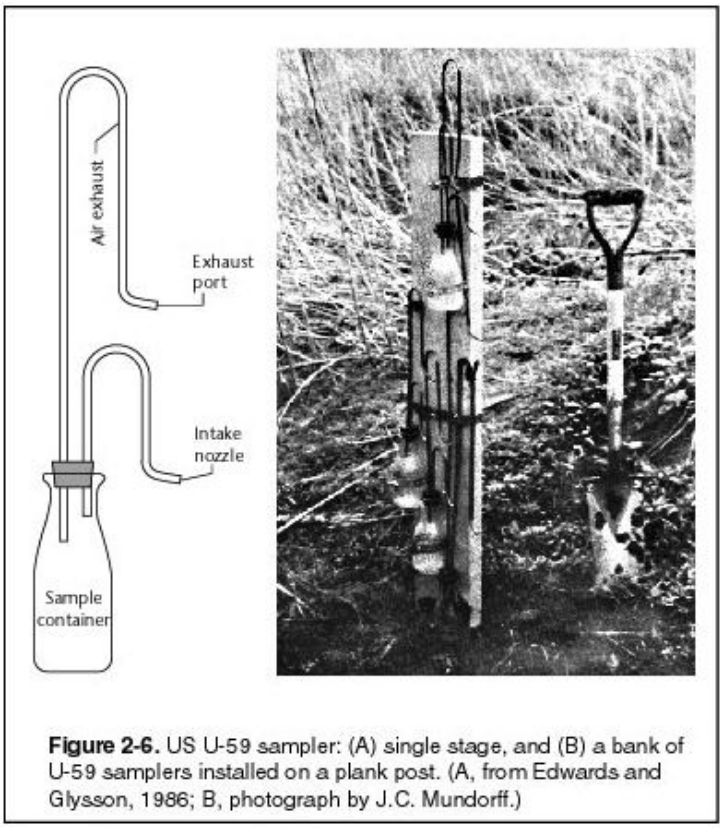
Once samples requiring laboratory analysis are collected, stored and transported offsite, the samples will be taken to a NATA accredited laboratory for analysis. Samples will be analysed by accredited laboratory as per their analysis methodologies.

A.9 LIND02-06 Sampling and Analysis Methodology

The streams to be monitored as a part of this WQMP (LIND02-06), are ephemeral in nature with runoff occurring dependant on seasonal rainfall. Therefore, the implementation of in-situ analysis with set sampling frequencies is not appropriate.

A9.1 Automatic Samplers

Automatic samplers allow for the automatic collection of water samples from intermittent streams at remote or not accessible sites[20]. There are two types of samplers which can be implemented when sampling ephemeral streams: (1) powered automatic samplers; and (2) rising stage samplers (Figure 11). The chosen method will be determined following a site visit and budget considerations.



Powered Automatic Sampler

Rising Stage Sampler

Figure 11 Examples of Automatic Samplers

[20] Hyquest Solutions, 2018, Rising Stage Sampler, Available Online, https://www.hyquestsolutions.com/products-services/products-hardware/sediment-sampling/rising-stage-sampler/.

A9.2 Powered Automatic Water Samplers

Powered automatic samplers consist of a number of sample bottles held within a refrigerated housing unit and a water sampler which can either be manually activated when linked to a depth recorder and triggered to collect samples at specified stage heights or frequencies after a minimum stage height was achieved[21]. When triggered, the sampler with sample water which is then held within the internal bottles. These samples will remain chilled until the environmental supervisor or site manager can access the sample sites. This method of sampling allows for accurate samples to be collected while the refrigeration allows the samples to remain within the holding time requirements. However, this method of automated sampling is more expensive than alternatives.

A9.3 Rising Stage Samplers

Rising stage samplers are consisted of sets of samplers which can be erected at set intervals along a support, to capture water quality at different stages of runoff (initial flush etc.). These samples are low cost are requiring no electricity to operate. The stage sampler is erected within the streambed at set heights. The nozzle of the sampler is to face downstream to prevent sediment from accumulating within the sampler. When a rainfall event runoff occurs, water flows into the sample bottle while air is purged out of the exhaust pipe. The samplers will continue to fill until either runoff ceases, or the sample bottle is full. An environmental professional or site supervisor is to attend the sampling locations once the rainfall event has ceased. In-situ analysis (see Section 11.10) and sub sampling for transportation to an accredited laboratory (See Sections Section 11.11 and Section 11.12) will then be undertaken. Although low cost, due to the lack of capacity to refrigerate collected samples, the samples must be transported as soon as possible to the accredited laboratory. If this cannot occur, the analysis result may not be compliant with sample holding times.

A9.4 Depth Loggers

In conjunction with the rising stage sampler, a depth logger is to be installed at each sampling location. At any level within the water column, water will exert equal pressure which increases linearly as depth increases. The difference between atmospheric pressure and the water surrounding around the depth logger's sensor head exerts a force on the sensor diaphragm of which is converted to a proportional electrical value. Pressure exerted on the sensor is the difference in the pressure difference between the water and atmospheric pressure. This difference in pressure is directly proportional to the height of the vertical column of water above the sensor[22].

Depending on the style of depth logger, a barometric logger may be installed within a depth logger arrangement, above the maximum height of the water level (Figure 12). Barometric loggers calculate the absolute pressure which is then used to compensate for atmospheric fluctuations. The result is an accurate measurement of the water level.

---

[21] Smith R et al, 2004, Review of Methods for Water Quality Assessment of Temporary Stream and Lake Systems, Australian Centre for Mining Environment Research, Kenmore, Australia.

[22] Dataflow Systems Pty Ltd, Odyssey Pressure & Temperature Water Depth Logger, Available Online, http://odysseydatarecording.com/download/Odyssey%20Pressure%20Depth%20Logger.pdf

These loggers can measure the depth and temperature fluctuations the ephemeral stream, without the requirement of electricity or personnel attending the site. The loggers are to be installed by a qualified environmental professional as per the following methodology:

- PVC casing is to be anchored to a secure above stream location and anchored to the base of the stream bed;
- Slots are to be cut into the PVC at right angles to the flow direction to prevent the accumulation of water within the casing and incorrect data collection;
- The depth logger is to be attached to a steel cable and lowered to the desired depth;
- The depth logger and end of the steel cable is to be secured to the PVC cap;
- A barometric logger is attached to another steel cable and lowered into the casing yet, above the maximum water level; and

The barometric logger and end of the steel cable is to be secured to the PVC cap.

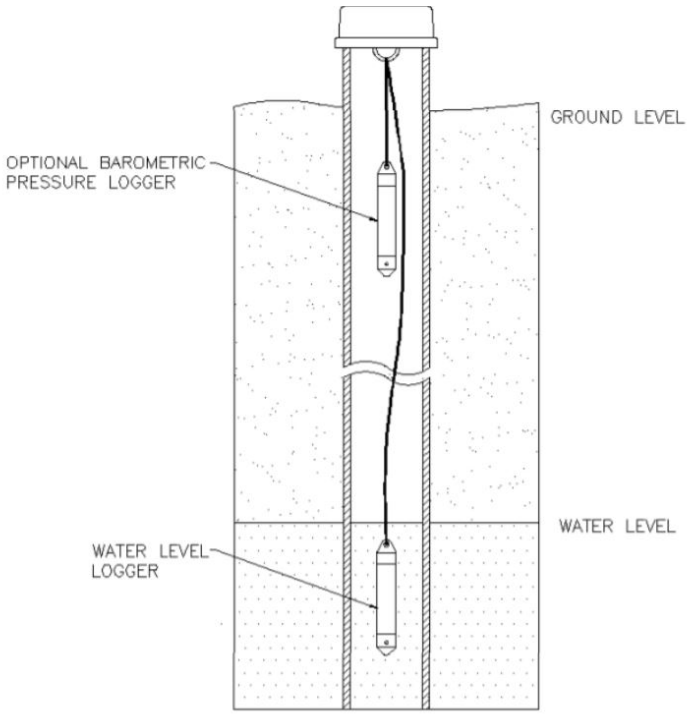


Figure 12 Schematic of Depth and Barometric Logger Design

A.10 In-situ Analysis

In-situ water quality will be analysed using a hand-held electronic multi-parameter water quality meter.

In-situ parameters will include at a minimum:

- temperature;
- pH;
- dissolved oxygen; and
- electrical conductivity
- turbidity

- Total Dissolved Solids
- Salinity

In-situ water quality measurements will be collected in a scientifically robust manner. Users will be familiar with the equipment, and the calibration methods for each meter. Calibration of water quality meters will be conducted in accordance with best practice and manufacturers instruction. Meters will be checked, maintained and calibration recorded before deploying meters for sampling.

A.11 Storage and Transportation

All samples are to be stored in a clean cooler box on ice or equivalent refrigerated conditions at approximately 4°C. All samples will be delivered to the NATA-accredited Laboratory within the recommended holding times as specified by the laboratory. Any non-conformance must be documented on the Chain of Custody document.

A.12 Laboratory Analysis

Once samples requiring laboratory analysis (chemical parameters) are collected, stored and transported offsite, the samples will be taken to a NATA-accredited laboratory for analysis. Samples will be analysed by accredited laboratory as per their analysis methodologies.

A.13 Quality Assurance

Quality assurance and quality control procedures are necessary to ensure that samples and monitoring data is collected in a scientifically robust manner. The quality assurance procedures are to be identical to the MWQMP, outlined in Section 6.7.5 of this report.

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