ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW2300347**	Page	: 1 of 6
Client	: **Ingenia Holidays Merry Beach**	Laboratory	: Environmental Division NSW South Coast
Contact	: Gray Taylor	Contact	: Glenn Davies
Address	: Merry Beach Road, Kioloa 2539	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 NSW Australia
Telephone	: 02 9476 9999	Telephone	: +61 2 4225 3125
Project	: Merry Beach Monitoring - January 2022	Date Samples Received	: 24-Jan-2023 17:00
Order number	: P2108127	Date Analysis Commenced	: 25-Jan-2023
C-O-C number	: ----	Issue Date	: 02-Feb-2023 16:37
Sampler	: Client - Peter Young		
Site	: Merry Beach		
Quote number	: ----		
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*
Clare Kennedy	Analyst	Inorganics, Fyshwick, ACT
Somlok Chai	Microbiologist	Sydney Microbiology, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	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 work for this work order will be conducted at ALS Sydney.**
- MF = membrane filtration
- CFU = colony forming unit
- Microbiological Comment: In accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (~) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- MW006 is ALS's internal code and is equivalent to AS4276.5.
- According to ALS work instruction for membrane filtration, the suggested volume for filtration of non treated / non-drinking water starts from 10mL or 50mL if the sample is turbid. A result of <10 or <2cfu/100mL is reported when there is no target organism growth from a volume of 10 or 50mL respectively.
- MW023 is ALS's internal code and is equivalent to AS4276.9.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	884/Eff1	884/Eff2	884/SW1	884/SW2	884/SW3
			Sampling date / time	24-Jan-2023 00:00	24-Jan-2023 00:00	24-Jan-2023 00:00	24-Jan-2023 00:00	24-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EW2300347-001	EW2300347-002	EW2300347-003	EW2300347-004	EW2300347-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.32	7.33	6.18	6.26	7.36
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	1850	1820	2930
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	----	<0.01	0.04	0.21
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	12.5	----	<0.01	0.03	0.21
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.9	----	0.4	0.6	1.9
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	15.4	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	12.3	----	0.02	0.02	0.95
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	----	2	mg/L	8	----	<2	<2	3
MW006: Faecal Coliforms & E.coli by MF								
Faecal Coliforms	----	1	CFU/100mL	<1	----	<2	680	3300
Escherichia coli	----	1	CFU/100mL	----	<1	----	----	----
MW023: Enterococci by Membrane Filtration								
Enterococci	----	1	CFU/100mL	----	----	<2	72	64
EP020CA: Oil and Grease								
Oil and Grease	----	1	mg/L	<1	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	884/GW1	884/GW2	884/GW3	884/GW4	884/GW5
			Sampling date / time	24-Jan-2023 00:00	24-Jan-2023 00:00	24-Jan-2023 00:00	24-Jan-2023 00:00	24-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EW2300347-006	EW2300347-007	EW2300347-008	EW2300347-009	EW2300347-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**4.57**	**5.37**	**5.43**	**6.93**	**6.15**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**2530**	**615**	**610**	**632**	**1360**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.22**	**0.03**	**0.02**	**2.83**	<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	<0.01	**0.28**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.0**	**2.8**	**3.8**	**5.2**	**0.7**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**----**	**----**	**3.8**	**5.2**	**1.0**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.08**	**0.40**	**0.40**	**1.81**	**0.03**
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	----	2	mg/L	<2	<2	<2	**5**	<2
MW006: Faecal Coliforms & E.coli by MF								
Faecal Coliforms	----	1	CFU/100mL	**480**	**3000**	**670**	**7300**	<2
MW023: Enterococci by Membrane Filtration								
Enterococci	----	1	CFU/100mL	**17**	**60**	**64**	**310**	**600**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	884/GW6	Influent	----	----	----
			Sampling date / time	24-Jan-2023 00:00	24-Jan-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EW2300347-011	EW2300347-012	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.95	8.40	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1330	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	----	157	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.02	138	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.20	0.54	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.7	198	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.9	198	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.19	26.0	----	----	----
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	----	2	mg/L	<2	323	----	----	----
MW006: Faecal Coliforms & E.coli by MF								
Faecal Coliforms	----	1	CFU/100mL	<2	90000000	----	----	----
Escherichia coli	----	1	CFU/100mL	----	83000000	----	----	----
MW023: Enterococci by Membrane Filtration								
Enterococci	----	1	CFU/100mL	270	NR	----	----	----
EP020CA: Oil and Grease								
Oil and Grease	----	1	mg/L	----	71	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Canberra, NATA accreditation no. 992.

(WATER) EP020CA: Oil and Grease

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EA005P: pH by PC Titrator

(WATER) EP030: Biochemical Oxygen Demand (BOD)

(WATER) EK055G: Ammonia as N by Discrete Analyser

(WATER) MW006: Faecal Coliforms & E.coli by MF

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

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

(WATER) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser

(WATER) EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser

(WATER) EA025: Total Suspended Solids dried at 104 ± 2°C

(WATER) EA010P: Conductivity by PC Titrator

(WATER) MW023: Enterococci by Membrane Filtration