

## CERTIFICATE OF ANALYSIS

**Work Order** : **EW1805174**  
**Client** : **MERRY BEACH CARAVAN PARK**  
**Contact** : Evan Owner  
**Address** : Merry Beach Rd  
 Kioloa NSW 2539

**Telephone** : ----  
**Project** : Merry Beach Monitoring  
**Order number** : P0501061  
**C-O-C number** : ----  
**Sampler** : Peter Young  
**Site** : Merry Beach  
**Quote number** : WO/010/16  
**No. of samples received** : 13  
**No. of samples analysed** : 13

**Page** : 1 of 6  
**Laboratory** : Environmental Division NSW South Coast  
**Contact** : Glenn Davies  
**Address** : 1/19 Ralph Black Dr, North Wollongong 2500  
 4/13 Geary Pl, North Nowra 2541  
 Australia NSW Australia  
**Telephone** : +61 2 4225 3125  
**Date Samples Received** : 08-Jan-2019 15:00  
**Date Analysis Commenced** : 08-Jan-2019  
**Issue Date** : 31-Jan-2019 15:18



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. 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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Dian Dao		Sydney Inorganics, Smithfield, NSW
Duncan McIntosh		Administration - Wollongong, NSW
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong, NSW
Tony DeSouza	Senior Microbiologist	Sydney Microbiology, Smithfield, NSW



## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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 Contact 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.

- Oil and Grease analysis was conducted by ALS Canberra under NATA accreditation number 992.
- 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.
- EK055G: It has been noted that Ammonia is greater than TKN for sample No 5, however this difference is within the limits of experimental variation.
- Field data supplied by ALS Wollongong.
- Field tests completed on day of sampling/receipt.
- Sampling completed by client
- MW023 is ALS's internal code and is equivalent to AS4276.9.
- MW006 is ALS's internal code and is equivalent to AS4276.7.
- O&G (W-TOG\_LL) is conducted by ALS Canberra NATA accreditation no. 992, site no. 1524.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			884/Eff1	884/Eff2	884/SW1	884/SW2	884/SW3	
Client sampling date / time		08-Jan-2019 00:00			08-Jan-2019 00:00			08-Jan-2019 00:00		
Compound	CAS Number	LOR	Unit	EW1805174-001	EW1805174-002	EW1805174-003	EW1805174-004	EW1805174-005		
				Result	Result	Result	Result	Result		
<b>EA005P: pH by PC Titrator</b>										
pH Value	----	0.01	pH Unit	7.91	7.98	7.35	7.01	7.98		
<b>EA010P: Conductivity by PC Titrator</b>										
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	440	1640	2530		
<b>EA025: Suspended Solids</b>										
Suspended Solids (SS)	----	5	mg/L	20	31	----	----	----		
<b>EK010FD - Chlorines</b>										
Free Chlorine	----	0.01	mg/L	----	5.20	----	----	----		
<b>EK055G: Ammonia as N by Discrete Analyser</b>										
Ammonia as N	7664-41-7	0.01	mg/L	77.6	----	0.79	0.83	15.3		
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>										
Nitrite + Nitrate as N	----	0.01	mg/L	13.2	----	<0.01	0.08	0.12		
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>										
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	82.6	----	1.7	1.3	15.0		
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>										
^ Total Nitrogen as N	----	0.1	mg/L	95.8	----	----	----	----		
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>										
Total Phosphorus as P	----	0.01	mg/L	6.77	----	0.10	0.08	1.38		
<b>EP030: Biochemical Oxygen Demand (BOD)</b>										
Biochemical Oxygen Demand	----	2	mg/L	14	----	<2	<2	3		
<b>MW006: Faecal Coliforms &amp; E.coli by MF</b>										
Faecal Coliforms	----	1	CFU/100mL	~21000	----	3000	1400	6000		
<i>Escherichia coli</i>	----	1	CFU/100mL	----	~<1	----	----	----		
<b>MW023: Enterococci by Membrane Filtration</b>										
Enterococci	----	1	CFU/100mL	----	----	~550	360	350		
<b>Subcontracted Analysis</b>										
Oil and Grease	----	1	mg/L	<1	----	----	----	----		



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			884/GW1	884/GW2	884/GW3	884/GW4	884/GW5	
Client sampling date / time		08-Jan-2019 00:00			08-Jan-2019 00:00			08-Jan-2019 00:00		
Compound	CAS Number	LOR	Unit	EW1805174-006	EW1805174-007	EW1805174-008	EW1805174-009	EW1805174-010		
				Result	Result	Result	Result	Result		
<b>EA005P: pH by PC Titrator</b>										
pH Value	----	0.01	pH Unit	3.58	6.02	4.96	7.65	6.26		
<b>EA010P: Conductivity by PC Titrator</b>										
Electrical Conductivity @ 25°C	----	1	µS/cm	5280	15	604	2040	1060		
<b>EK055G: Ammonia as N by Discrete Analyser</b>										
Ammonia as N	7664-41-7	0.01	mg/L	0.61	0.14	0.54	0.26	0.36		
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>										
Nitrite + Nitrate as N	----	0.01	mg/L	0.13	<0.01	0.01	0.99	0.57		
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>										
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	0.2	0.6	2.0	0.6		
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>										
Total Phosphorus as P	----	0.01	mg/L	0.05	0.02	0.05	2.86	0.02		
<b>EP030: Biochemical Oxygen Demand (BOD)</b>										
Biochemical Oxygen Demand	----	2	mg/L	<2	<2	<2	<2	<2		
<b>MW006: Faecal Coliforms &amp; E.coli by MF</b>										
Faecal Coliforms	----	1	CFU/100mL	<1	80	58	170	~1		
<b>MW023: Enterococci by Membrane Filtration</b>										
Enterococci	----	1	CFU/100mL	<1	20	20	15	<2		



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		884/GW6	Spearwater	Influent	----	----
Client sampling date / time		08-Jan-2019 00:00		08-Jan-2019 00:00	08-Jan-2019 00:00	08-Jan-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EW1805174-011	EW1805174-012	EW1805174-013	-----	-----
				Result	Result	Result	----	----
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	6.66	8.33	7.82	----	----
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	1880	2840	----	----	----
<b>EA015: Total Dissolved Solids</b>								
Total Dissolved Solids @180°C	----	1	mg/L	----	1580	----	----	----
<b>EA065: Total Hardness as CaCO3</b>								
Total Hardness as CaCO3	----	1	mg/L	----	63	----	----	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	14	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	441	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	455	----	----	----
<b>ED040F: Dissolved Major Anions</b>								
Silicon	7440-21-3	0.05	mg/L	----	6.72	----	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	16	----	----	----
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	----	603	----	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	----	12	----	----	----
Magnesium	7439-95-4	1	mg/L	----	8	----	----	----
Sodium	7440-23-5	1	mg/L	----	538	----	----	----
Potassium	7440-09-7	1	mg/L	----	3	----	----	----
<b>EG020T: Total Metals by ICP-MS</b>								
Manganese	7439-96-5	0.001	mg/L	----	0.006	----	----	----
Iron	7439-89-6	0.05	mg/L	----	0.58	----	----	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	0.44	----	----	----	----
<b>EK058G: Nitrate as N by Discrete Analyser</b>								
Nitrate as N	14797-55-8	0.01	mg/L	----	0.02	----	----	----
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	0.30	----	<0.01	----	----
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	884/GW6	Spearwater	Influent	----	----
Client sampling date / time				08-Jan-2019 00:00	08-Jan-2019 00:00	08-Jan-2019 00:00	----	----	
Compound	CAS Number	LOR	Unit	EW1805174-011	EW1805174-012	EW1805174-013	-----	-----	
				Result	Result	Result	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	----	255	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	255	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.03	----	72.2	----	----	
<b>EN055: Ionic Balance</b>									
Total Anions	----	0.01	meq/L	----	26.4	----	----	----	
Total Cations	----	0.01	meq/L	----	24.7	----	----	----	
Ionic Balance	----	0.01	%	----	3.32	----	----	----	
<b>EP030: Biochemical Oxygen Demand (BOD)</b>									
Biochemical Oxygen Demand	----	2	mg/L	<2	----	195	----	----	
<b>MW006: Faecal Coliforms &amp; E.coli by MF</b>									
Faecal Coliforms	----	1	CFU/100mL	<1	<1	4100000	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	----	<1	4100000	----	----	
<b>MW023: Enterococci by Membrane Filtration</b>									
Enterococci	----	1	CFU/100mL	10	<1	----	----	----	
<b>Subcontracted Analysis</b>									
Oil and Grease	----	1	mg/L	----	----	2	----	----	