

05 April, 2024

Ingenia  
Suite 1, 257 Gympie Road  
Kedron, QLD - 4031.  
Attention: Berny Connolly

Dear Berny,

**RE: MERRY BEACH CARAVAN PARK, MONTHLY REVIEW OF LABORATORY RESULTS – SEWAGE TREATMENT AND REUSE SYSTEM – MARCH 2024**

Further to recommendations in Merry Beach Annual Monitoring Report find below the monthly review of monitoring data for February 26 to March 31, 2024.

**1. Collection of water samples**

Water samples for selected monitoring points were collected on the following dates:

- o March 25 – Eff1, Eff2, SW1, SW2, SW3, GW1, GW2, GW3, GW4, GW5, GW6 and Influent.
- o March 21 - Drinking water samples from Beach Front Tank, Creek Tanks, Main Tank, Top Toilet Tank and Pretty Beach Tank.
- o In accordance with revised license conditions, Eff2 residual free chlorine was tested onsite on March 1, 17 and 23

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MARTENS & ASSOCIATES P/L

ABN 85 070 240 890 ACN 070 240 890

## 2. Review of monitoring results against POEO Act Environmental Protection License 5888 conditions

### 1. Effluent 1 (Eff1) (Monitoring Point 2)

Laboratory results were reviewed against License 5888 conditions for Eff1 (Monitoring Point 2), results are summarised in Table 1. Conclusions regarding Eff1 are:

- Laboratory results for Eff1 indicate TSS license conditions were exceeded during March 2024 and therefore MA recommends filter be removed cleaned and inspected to ensure proper operation.
- Laboratory results for Eff1 indicate phosphorous (total) license conditions were exceeded during March 2024. Deficiency of phosphorus may be occurring due to inadequate operation of alum dosing system. MA recommends inspection of the alum dosing pump to confirm dosing system is operating.
- All other laboratory results for Eff1 were within license conditions during March.

**Table 1:** Review of monitoring results for Eff1 against License 5888 conditions.

Chemical	Units	License 5888 Conditions – Eff1 (Point 2)			Sampling Date 2024	
		50 percentile concentration limit	90 percentile concentration limit	100 percentile concentration limit	March 25	Complies?
BOD	mg/L		20	30	>2	✓
Faecal coliforms (FC)	CFU/100 mL	25		150	22	✓
Nitrogen (total)	mg/L		10	15	39.4	✓
Oil and grease	mg/L	1.5		5	< 1	✓
pH	pH units			6.5 – 8.5	7.20	✓
Phosphorous (total)	mg/L	5.5		10	7.65	✗
Total suspended solids (TSS)	mg/L		10	20	25	✗

## 2. Reuse Effluent (Eff2) (Monitoring Point 6)

Laboratory results were reviewed against License 5888 conditions for Eff2 (Monitoring Point 6), results are summarised in Table 2. Conclusions regarding Eff2 are:

- Onsite testing results for free residual chlorine was tested on 1, 17, and 23 March 2024 with results shown in Table 2. Further comment is provided below.
- Laboratory results for Eff2 indicate TSS license conditions were exceeded during February 2024 and therefore MA recommends filters be removed, cleaned and inspected to ensure proper operation.
- All other laboratory results for Eff2 were within license conditions during March.

**Table 2:** Review of monitoring results for Eff2 against License 5888 conditions.

Chemical	Units	License 5888 Conditions – Eff2 (Point 6)			Sampling Dates 2024	
		50 percentile concentration limit	90 percentile concentration limit	100 percentile concentration limit	March 25	Complies?
Chlorine (free residual) (onsite testing) <sup>1</sup>	mg/L			> 2	0.95	✘
E. coli	CFU/100 mL			2	~1	✓
pH	pH units			6.5 – 8.5	7.64	✓
Total suspended solids (TSS)	mg/L			< 5	26	✘

### Notes

1. Free residual chlorine was tested onsite on 1 (0.02 mg/L), 17 (0.02 mg/L) and 23 (2.8 mg/L) March 2024; Chlorine average shown above (Table 2).

Onsite free residual chlorine sampling from March 2024 is non-compliant with license conditions. Site process is to ensure that whenever onsite chlorine results are <2.0 mg/L, chlorine is manually dosed and effluent is retested before transfer.

Eff2 MA recommend recommencement of onsite free residual chlorine testing and dosing to be undertaken immediately in accordance with license conditions.

As recommended previously, the pH in the effluent is above 7 which may impact on the disinfection effectiveness of chlorine as well as the effectiveness of alum dosing for phosphorus removal. We recommend pH in the STP be manually adjusted daily to maintain pH between 6.5 and 7.0 using pool acid.

## 3. Drinking water supply tank testing

Laboratory results were reviewed against National Drinking Water Quality Standards for drinking water at multiple tested tanks:

- All sample locations were within the standards for faecal coliforms with results (<1 CFU/100ml) for March

- All sample locations were within the standards for *E. coli* with results (<1 CFU/100mL) for March 2024.

#### 4. Review of Monitored Parameters

Surface water and groundwater results were reviewed for March 2024.

All surface water and groundwater monitoring for March 2024 are generally consistent with previously reported periods and will continue to be monitored.

**For and on behalf of  
MARTENS & ASSOCIATES PTY LTD**



**TRYSTAN RICHARDS**  
Environmental Consultant



# CHAIN OF CUSTODY

ALS Laboratory, please tick →

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 DMRISANE 32 Shand Street, Stafford QLD 4053 Ph: 07 3243 7222 E: [samples.brisbane@alsglobal.com](mailto:samples.brisbane@alsglobal.com)  
 DGLADSTONE 46 Callenrondan Drive, Clinton QLD 4680 Ph: 07 7471 9500 E: [gladstone@alsglobal.com](mailto:gladstone@alsglobal.com)  
 DMLACKAY 78 Harbour Road, Mackay QLD 4740 Ph: 07 4944 0177 E: [mackay@alsglobal.com](mailto:mackay@alsglobal.com)  
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 DWOLLONGONG 99 Kenny Street, Wollongong NSW 2500 Ph: 02 4225 3125 E: [wollongong@alsglobal.com](mailto:wollongong@alsglobal.com)

CLIENT: **Ingenia Holidays Merry Beach**

OFFICE: **Merry Beach Rd, Kioloa NSW 2539**

PROJECT: **Merry Beach Fresh / Drinking Water - Monthly**

ORDER NUMBER: **PO 501061**

PROJECT MANAGER: **Gray Taylor**

SAMPLER: **Peter Young**

COC Emailled to ALS? ( YES / NO )

Email Reports to: [swatson@ingeniaconsultants.com.au](mailto:swatson@ingeniaconsultants.com.au); [abdiam@ingeniaconsultants.com.au](mailto:abdiam@ingeniaconsultants.com.au); [maldew@matrens.com.au](mailto:maldew@matrens.com.au); [gdjyo@matrens.com.au](mailto:gdjyo@matrens.com.au); [young.peter@gmail.com](mailto:young.peter@gmail.com)

Email Invoice to: [Kbourke@ingeniaconsultants.com.au](mailto:Kbourke@ingeniaconsultants.com.au)

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS :  Standard TAT (List due date):  Non Standard or urgent TAT (List due date):

COUNTRY OF ORIGIN:

CONTACT PH: 0422 685 594  
SAMPLER MOBILE: 0404 455 064  
EOD FORMAT (or default):

RELINQUISHED BY: *[Signature]*  
DATE/TIME:

RECEIVED BY: *[Signature]*  
DATE/TIME: 21/3/24 1500

RELINQUISHED BY:   
DATE/TIME:

RECEIVED BY:   
DATE/TIME: 24.3 °C

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: 24.3 °C  
Other comment:

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	ANALYSIS REQUIRED Including SUITES (NB: Suite Codes must be listed to attract suite price) <small>Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).</small>	Additional Information
1	Beach Front Tank	21/3/24	W	STT	1	X F.coli X Total Coliforms	
2	Creek Tanks		W	STT	1	X X	
3	Main Tank		W	STT	1	X X	
4	Pool Showers Tanks		W	STT	1	X X	
5	Pool Toilets Tank		W	STT	1	X X	
6	Top Toilets Tank		W	STT	1	X X	
7	Pretty Beach Tank		W	STT	1	X X	
<b>TOTAL</b>					<b>37</b>		

Environmental Division  
 Wollongong  
 Work Order Reference  
**EW2401361**  
 Telephone · 02 4225 3125



**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cl Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airtight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Specialisation bottle; SP = Sulfu  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugol's Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EW2401361	Page	: 1 of 4
Client	: Ingenia Holidays Merry Beach	Laboratory	: Environmental Division NSW South Coast
Contact	: Gray Taylor	Telephone	: +61 2 4225 3125
Project	: Merry Beach Fresh /Drinking Water Monthly	Date Samples Received	: 21-Mar-2024
Site	: Merry Beach	Issue Date	: 27-Mar-2024
Sampler	: Client - B Connolly	No. of samples received	: 5
Order number	: P0501061	No. of samples analysed	: 5

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, 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	
<b>MW006: Faecal Coliforms &amp; E.coli by MF</b>								
<b>Sterile Plastic Bottle - Sodium Thiosulfate (MW006)</b> Beach front tank, Main tank, Pretty beach tank	Creek Tanks, Top toilets tank,	21-Mar-2024	----	----	----	22-Mar-2024	22-Mar-2024	✓
<b>MW007: Coliforms by MF</b>								
<b>Sterile Plastic Bottle - Sodium Thiosulfate (MW007)</b> Beach front tank, Main tank, Pretty beach tank	Creek Tanks, Top toilets tank,	21-Mar-2024	----	----	----	22-Mar-2024	22-Mar-2024	✓



## ***Quality Control Parameter Frequency Compliance***

- No Quality Control data available for this section.





## ***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.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	AS 4276.7
Coliforms by Membrane Filtration	MW007	WATER	AS 4276.5



## QUALITY CONTROL REPORT

Work Order	: EW2401361	Page	: 1 of 3
Client	: <b>Ingenia Holidays Merry Beach</b>	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 Fresh /Drinking Water Monthly	Date Samples Received	: 21-Mar-2024
Order number	: P0501061	Date Analysis Commenced	: 22-Mar-2024
C-O-C number	: ----	Issue Date	: 27-Mar-2024
Sampler	: Client - B Connolly		
Site	: Merry Beach		
Quote number	: EW23INGMER0002		
No. of samples received	: 5		
No. of samples analysed	: 5		



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
Sarah Griffiths	Microbiologist	Sydney Microbiology, Smithfield, NSW



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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

## 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%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**
-



### ***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.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

### ***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.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**
-



## CERTIFICATE OF ANALYSIS

**Work Order** : **EW2401361**  
**Client** : **Ingenia Holidays Merry Beach**  
**Contact** : Gray Taylor  
**Address** : Merry Beach Road,  
Kioloa 2539  
**Telephone** : 02 9476 9999  
**Project** : Merry Beach Fresh /Drinking Water Monthly  
**Order number** : P0501061  
**C-O-C number** : ----  
**Sampler** : Client - B Connolly  
**Site** : Merry Beach  
**Quote number** : EW23INGMER0002  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 2  
**Laboratory** : Environmental Division NSW South Coast  
**Contact** : Glenn Davies  
**Address** : 1/19 Ralph Black Dr, North Wollongong 2500 NSW Australia  
**Telephone** : +61 2 4225 3125  
**Date Samples Received** : 21-Mar-2024 15:00  
**Date Analysis Commenced** : 22-Mar-2024  
**Issue Date** : 27-Mar-2024 09:34



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Sarah Griffiths	Microbiologist	Sydney Microbiology, Smithfield, NSW



Page : 2 of 2  
 Work Order : EW2401361  
 Client : Ingenia Holidays Merry Beach  
 Project : Merry Beach Fresh /Drinking Water Monthly

### 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
- MW006 is ALS's internal code and is equivalent to AS4276.5.
- 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.
- MW007 is ALS's internal code and is equivalent to AS4276.5.

### Analytical Results

Sub-Matrix: WATER  
 (Matrix: WATER)

				Beach front tank	Creek Tanks	Main tank	Top toilets tank	Pretty beach tank
Sample ID								
Sampling date / time				21-Mar-2024 00:00	21-Mar-2024 00:00	21-Mar-2024 00:00	21-Mar-2024 00:00	21-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EW2401361-001	EW2401361-002	EW2401361-003	EW2401361-004	EW2401361-005
				Result	Result	Result	Result	Result
<b>MW006: Faecal Coliforms &amp; E.coli by MF</b>								
<i>Escherichia coli</i>	----	1	CFU/100mL	<1	<1	<1	<1	<1
<b>MW007: Coliforms by MF</b>								
Coliforms	----	1	CFU/100mL	<1	<1	<1	<1	<1

### Inter-Laboratory Testing

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

(WATER) MW007: Coliforms by MF

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

# WATER ANALYSIS CHAIN OF CUSTODY

<b>Project:</b>	Merry Beach Monitoring – March 2024	<b>Laboratory:</b>	ALS (Australian Laboratory Services)		<b>Delivery Details</b>
<b>Sampling Date:</b>		<b>Address:</b>	4/13 Geary Place, North Nowra, NSW 2541		<b>Dispatch Date:</b>
<b>Our reference:</b>	P2108127	<b>Our Contact:</b>	Gray Taylor	<b>Contact:</b>	
		<b>Phone:</b>	(02) 4423 2063	<b>Facsimile:</b>	(02) 4423 2083
		<b>Shipment Method:</b>			

Sample ID	Number of Containers	Analysis Required (X)												
		pH	Conductivity	Suspended Solids	BOD <sub>5</sub>	Phosphorous (total)	Nitrogen (total)	TKN	Ammonia	NO <sub>x</sub>	Faecal Col.	Enterococci	Oil and Grease	E. Coli
884/EF#1	4	X		X	X	X	X	X	X	X		X		
884/EF#2	3	X		X										X
Influent	4	X		X	X	X	X	X	X	X		X		X

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12

Notes: Fax (02 9476 8767) and email (gtaylor@martens.com.au; trichards@martens.com.au; mail@martens.com.au; young.peter7@gmail.com and merrybeachmgr@ingeniaholidays.com.au) results as soon as available, originals of laboratory reports to be posted to Merry Beach Caravan Park, KILOLA, NSW, 2539.

TWO PACKS

MDB  
M. Stinson  
25/3/24  
1500

22.0



**Environmental Engineering – Sustainable Solutions**

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 EIS & REF  
 Streams & rivers  
 Coastal  
 Groundwater  
 Catchments  
 Bushfire  
 Monitoring

**Geotechnics**  
 Foundations  
 Geotechnical survey  
 Contamination  
 Excavations  
 Hydrogeology  
 Terrain analysis  
 Waste management

**Water**  
 Supply & storage  
 Flooding  
 Stormwater & drainage  
 Wetlands  
 Water quality  
 Irrigation  
 Water sensitive design



Environmental Division  
 Wollongong  
 Work Order Reference  
**EW2401403**

**rd Office**  
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 RIENS & ASSOCIATES P/L  
 I 85 070 240 890 ACN 070 240 890

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# WATER ANALYSIS CHAIN OF CUSTODY

<b>Project:</b>	Merry Beach Monitoring – January 2024	<b>Laboratory:</b>	ALS (Australian Laboratory Services)		<b>Delivery Details</b>
<b>Sampling Date:</b>		<b>Address:</b>	4/13 Geary Place, North Nowra, NSW 2541		<b>Dispatch Date:</b>
<b>Our reference:</b>	P2108127	<b>Contact:</b>		<b>Phone:</b> (02) 4423 2063	<b>Facsimile:</b> (02) 4423 2083
<b>Results Required by:</b>		<b>Gray Taylor</b>		<b>Shipment Method:</b>	

Sample ID	Number of Containers	Analysis Required (X)												
		pH	Conductivity	Suspended Solids	BOD <sub>5</sub>	Phosphorous (total)	Nitrogen (total)	TKN	Ammonia	NOx	Faecal Col.	Enterococci	Oil and Grease	E. Coli
884/Eff1	0	X		X	X	X	X	X	X	X	X		X	
884/Eff2	0	X		X										X
884/SW1	3	X	X		X	X	X	X	X	X	X	X	X	
884/SW2	3	X	X		X	X	X	X	X	X	X	X	X	
884/SW3	3	X	X		X	X	X	X	X	X	X	X	X	
884/GW1	3	X	X		X	X	X	X	X	X	X	X	X	
884/GW2	3	X	X		X	X	X	X	X	X	X	X	X	
884/GW3	3	X	X		X	X	X	X	X	X	X	X	X	
884/GW4	3	X	X		X	X	X	X	X	X	X	X	X	
884/GW5	3	X	X		X	X	X	X	X	X	X	X	X	
884/GW6	3	X	X		X	X	X	X	X	X	X	X	X	
Influent	0	X		X	X	X	X	X	X	X	X		X	X

3456789011

Notes: Fax (02 9476 8767) and email (gtaylor@martens.com.au; trichards@martens.com.au; mail@martens.com.au; Young.pete7@gmail.com and merrybeachmgr@ingeniaholidays.com.au) results as soon as available, originals of laboratory reports to be posted to Merry Beach Caravan Park, KILOLA, NSW, 2539.



- Environmental Engineering – Sustainable Solutions**
- Environmental**
    - EIS & REF
    - Streams & rivers
    - Coastal
    - Groundwater
    - Catchments
    - Bushfire
    - Monitoring
  - Geotechnics**
    - Foundations
    - Geotechnical survey
    - Contamination
    - Excavations
    - Hydrogeology
    - Terrain analysis
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    - Water sensitive design

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## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: <b>EW2401403</b>	Page	: 1 of 7
Client	: <b>Ingenia Holidays Merry Beach</b>	Laboratory	: Environmental Division NSW South Coast
Contact	: Gray Taylor	Telephone	: +61 2 4225 3125
Project	: Merry Beach Monitoring March 2024	Date Samples Received	: 25-Mar-2024
Site	: Merry Beach	Issue Date	: 03-Apr-2024
Sampler	: Client - P Young	No. of samples received	: 12
Order number	: P2108127	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.**
- **NO Matrix Spike outliers occur.**
- 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

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



**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
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
884/Eff1, 884/SW1, 884/SW3, 884/GW2, 884/GW4, 884/GW6,	884/Eff2, 884/SW2, 884/GW1, 884/GW3, 884/GW5, Influent	----	----	----	26-Mar-2024	25-Mar-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: **x** = Holding time breach ; **✓** = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b>								
884/Eff1, 884/SW1, 884/SW3, 884/GW2, 884/GW4, 884/GW6,	25-Mar-2024	884/Eff2, 884/SW2, 884/GW1, 884/GW3, 884/GW5, Influent	----	----	----	26-Mar-2024	25-Mar-2024	<b>x</b>
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b>								
884/SW1, 884/SW3, 884/GW2, 884/GW4, 884/GW6	25-Mar-2024	884/SW2, 884/GW1, 884/GW3, 884/GW5,	----	----	----	26-Mar-2024	22-Apr-2024	<b>✓</b>
<b>EA025: Total Suspended Solids dried at 104 ± 2°C</b>								
<b>Clear Plastic Bottle - Natural (EA025H)</b>								
884/Eff1, Influent	25-Mar-2024	884/Eff2,	----	----	----	28-Mar-2024	01-Apr-2024	<b>✓</b>



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	
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b>								
884/Eff1, 884/SW2, 884/GW1, 884/GW3, 884/GW5, Influent	884/SW1, 884/SW3, 884/GW2, 884/GW4, 884/GW6,	25-Mar-2024	----	----	----	30-Mar-2024	22-Apr-2024	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b>								
884/Eff1, 884/SW2, 884/GW1, 884/GW3, 884/GW5, Influent	884/SW1, 884/SW3, 884/GW2, 884/GW4, 884/GW6,	25-Mar-2024	----	----	----	30-Mar-2024	22-Apr-2024	✓
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b>								
884/Eff1, 884/SW2, 884/GW1, 884/GW3, 884/GW5, Influent	884/SW1, 884/SW3, 884/GW2, 884/GW4, 884/GW6,	25-Mar-2024	30-Mar-2024	22-Apr-2024	✓	30-Mar-2024	22-Apr-2024	✓
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b>								
884/Eff1, 884/SW2, 884/GW1, 884/GW3, 884/GW5, Influent	884/SW1, 884/SW3, 884/GW2, 884/GW4, 884/GW6,	25-Mar-2024	30-Mar-2024	22-Apr-2024	✓	30-Mar-2024	22-Apr-2024	✓
<b>EP020CA: Oil and Grease</b>								
<b>Glass Jar (EP020)</b>								
884/Eff1, Influent		25-Mar-2024	----	----	----	03-Apr-2024	22-Apr-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	
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
<b>Clear Plastic Bottle - Natural (EP030)</b>								
884/Eff1, 884/SW2, 884/GW1, 884/GW3, 884/GW5, Influent	884/SW1, 884/SW3, 884/GW2, 884/GW4, 884/GW6	25-Mar-2024	----	----	----	27-Mar-2024	27-Mar-2024	✓
<b>MW006: Faecal Coliforms &amp; E.coli by MF</b>								
<b>Sterile Plastic Bottle - Sodium Thiosulfate (MW006)</b>								
Influent		25-Mar-2024	----	----	----	26-Mar-2024	26-Mar-2024	✓
<b>MW006: Thermotolerant Coliforms &amp; E.coli by MF</b>								
<b>Sterile Plastic Bottle - Sodium Thiosulfate (MW006)</b>								
884/Eff1, 884/SW1, 884/SW3, 884/GW2, 884/GW4, 884/GW6	884/Eff2, 884/SW2, 884/GW1, 884/GW3, 884/GW5	25-Mar-2024	----	----	----	26-Mar-2024	26-Mar-2024	✓
<b>MW023: Enterococci by Membrane Filtration</b>								
<b>Sterile Plastic Bottle - Sodium Thiosulfate (MW023)</b>								
884/SW1, 884/SW3, 884/GW2, 884/GW4, 884/GW6	884/SW2, 884/GW1, 884/GW3, 884/GW5	25-Mar-2024	----	----	----	26-Mar-2024	26-Mar-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	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia as N by Discrete analyser	EK055G	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Biochemical Oxygen Demand (BOD)	EP030	3	27	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	4	36	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	35	11.43	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	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Biochemical Oxygen Demand (BOD)	EP030	2	27	7.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	3	34	8.82	8.33	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	4	36	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	35	14.29	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	14	21.43	15.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Biochemical Oxygen Demand (BOD)	EP030	2	27	7.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	35	5.71	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	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
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	17	5.88	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	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
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. 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 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)
Oil and Grease	EP020	WATER	APHA, 5520 C. Oil & greases contained in an aqueous sample are quantitatively extracted with S-316 a solvent which has no C-H bonds, S-316 is a chlorofluorocarbon. Measurement of the amount of I.R. light absorbed by the extract is performed on the Horiba Ocms 350 Oil Content Analyser.
Biochemical Oxygen Demand (BOD)	EP030	WATER	In house: Referenced to APHA 5210 B. The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM Schedule B(3).
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	AS 4276.7
Enumeration of Enterococci by Membrane Filtration	MW023	WATER	AS4276.9

Preparation Methods	Method	Matrix	Method Descriptions
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Page : 7 of 7  
Work Order : EW2401403  
Client : Ingenia Holidays Merry Beach  
Project : Merry Beach Monitoring March 2024



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)



## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: EW2401403</b>	<b>Page</b>	: 1 of 5
<b>Client</b>	<b>: Ingenia Holidays Merry Beach</b>	<b>Laboratory</b>	: Environmental Division NSW South Coast
<b>Contact</b>	: Gray Taylor	<b>Contact</b>	: Glenn Davies
<b>Address</b>	: Merry Beach Road, Kioloa 2539	<b>Address</b>	: 1/19 Ralph Black Dr, North Wollongong 2500 NSW Australia
<b>Telephone</b>	: 02 9476 9999	<b>Telephone</b>	: +61 2 4225 3125
<b>Project</b>	: Merry Beach Monitoring March 2024	<b>Date Samples Received</b>	: 25-Mar-2024
<b>Order number</b>	: P2108127	<b>Date Analysis Commenced</b>	: 26-Mar-2024
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 03-Apr-2024
<b>Sampler</b>	: Client - P Young		
<b>Site</b>	: Merry Beach		
<b>Quote number</b>	: EW23INGMER0002		
<b>No. of samples received</b>	: 12		
<b>No. of samples analysed</b>	: 12		



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Clare Kennedy	Analyst	Inorganics, Hume, ACT
Sarah Griffiths	Microbiologist	Sydney Microbiology, 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 (%)
<b>EA005P: pH by PC Titrator (QC Lot: 5689073)</b>									
ES2409874-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.80	6.74	0.9	0% - 20%
ES2409874-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.64	6.66	0.3	0% - 20%
<b>EA005P: pH by PC Titrator (QC Lot: 5689074)</b>									
EW2401440-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.68	5.74	1.1	0% - 20%
EW2401440-009	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.85	5.85	0.0	0% - 20%
<b>EA010P: Conductivity by PC Titrator (QC Lot: 5689072)</b>									
EW2401440-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	131	134	2.2	0% - 20%
ES2409874-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	133	138	4.2	0% - 20%
EW2401440-009	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	90	88	2.2	0% - 20%
ES2409874-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	200	201	0.0	0% - 20%
<b>EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5693050)</b>									
ES2409624-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	10	11	9.3	No Limit
ES2409675-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2409693-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	2240	2570	13.5	0% - 20%
EW2401398-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	8	40.0	No Limit
<b>EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5696094)</b>									
EW2401397-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.04	0.0	No Limit
EW2401403-009	884/GW4	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.12	0.12	0.0	0% - 50%
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5696093)</b>									
EW2401397-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.08	0.08	0.0	No Limit
EW2401403-009	884/GW4	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.07	0.10	36.4	No Limit
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5696097)</b>									



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 (%)
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5696097) - continued</b>									
EW2401397-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.3	0.0	No Limit
EW2401403-010	884/GW5	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.5	0.0	No Limit
<b>EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5696098)</b>									
EW2401397-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.02	0.02	0.0	No Limit
EW2401403-010	884/GW5	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.05	26.3	No Limit
<b>EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 5690926)</b>									
ES2409618-001	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	67	60	10.3	0% - 20%
ES2409860-001	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	<2	0.0	No Limit
<b>EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 5690927)</b>									
EW2401403-010	884/GW5	EP030: Biochemical Oxygen Demand	----	2	mg/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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EA005P: pH by PC Titrator (QCLot: 5689073)</b>								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	99.7	99.2	101
<b>EA005P: pH by PC Titrator (QCLot: 5689074)</b>								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	100	99.2	101
<b>EA010P: Conductivity by PC Titrator (QCLot: 5689072)</b>								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	102	89.9	110
				<1	2100 µS/cm	100	90.2	111
<b>EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5693050)</b>								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	91.7	83.0	129
				<5	1000 mg/L	93.0	82.0	110
				<5	928 mg/L	105	83.0	118
<b>EK055G: Ammonia as N by Discrete Analyser (QCLot: 5696094)</b>								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	102	90.0	114
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5696093)</b>								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	91.0	113
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5696097)</b>								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	98.9	69.0	123
				<0.1	1 mg/L	79.8	70.0	123
				<0.1	5 mg/L	95.8	70.0	123
<b>EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5696098)</b>								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	110	71.3	126
				<0.01	0.442 mg/L	95.9	71.3	126
				<0.01	1 mg/L	103	70.0	130
<b>EP030: Biochemical Oxygen Demand (BOD) (QCLot: 5690926)</b>								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	200 mg/L	103	74.0	112
<b>EP030: Biochemical Oxygen Demand (BOD) (QCLot: 5690927)</b>								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	200 mg/L	103	74.0	112

### 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**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EK055G: Ammonia as N by Discrete Analyser (QCLot: 5696094)</b>							
EW2401397-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	106	70.0	130
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5696093)</b>							
EW2401397-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	106	70.0	130
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5696097)</b>							
EW2401398-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	100	70.0	130
<b>EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5696098)</b>							
EW2401398-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	104	70.0	130



## CERTIFICATE OF ANALYSIS

Work Order	: <b>EW2401403</b>	Page	: 1 of 6
Client	: <b>Ingenia Holidays Merry Beach</b>	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 March 2024	Date Samples Received	: 25-Mar-2024 15:00
Order number	: P2108127	Date Analysis Commenced	: 26-Mar-2024
C-O-C number	: ----	Issue Date	: 03-Apr-2024 16:51
Sampler	: Client - P Young		
Site	: Merry Beach		
Quote number	: EW23INGMER0002		
No. of samples received	: 12		
No. of samples analysed	: 12		



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
Clare Kennedy	Analyst	Inorganics, Hume, ACT
Sarah Griffiths	Microbiologist	Sydney Microbiology, 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.
- 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		25-Mar-2024 00:00		25-Mar-2024 00:00	25-Mar-2024 00:00	25-Mar-2024 00:00	25-Mar-2024 00:00	25-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EW2401403-001	EW2401403-002	EW2401403-003	EW2401403-004	EW2401403-005
				Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	<b>7.20</b>	<b>7.64</b>	<b>6.80</b>	<b>6.74</b>	<b>7.05</b>
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	<b>1590</b>	<b>1520</b>	<b>2820</b>
<b>EA025: Total Suspended Solids dried at 104 ± 2°C</b>								
Suspended Solids (SS)	----	5	mg/L	<b>25</b>	<b>26</b>	----	----	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	<b>0.13</b>	----	<0.01	<b>0.23</b>	<b>0.47</b>
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	<b>32.2</b>	----	<0.01	<b>0.05</b>	<b>0.30</b>
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<b>7.2</b>	----	<b>0.3</b>	<b>0.7</b>	<b>1.2</b>
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>								
<sup>^</sup> Total Nitrogen as N	----	0.1	mg/L	<b>39.4</b>	----	<b>0.3</b>	<b>0.8</b>	<b>1.5</b>
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
Total Phosphorus as P	----	0.01	mg/L	<b>7.65</b>	----	<b>0.01</b>	<b>0.04</b>	<b>0.54</b>
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	----	2	mg/L	<2	----	<2	<2	<2
<b>MW006: Thermotolerant Coliforms &amp; E.coli by MF</b>								
<i>Escherichia coli</i>	----	1	CFU/100mL	----	<1	----	----	----
Faecal Coliforms	----	1	CFU/100mL	<b>22</b>	----	<b>78</b>	<b>970</b>	<b>1600</b>
<b>MW023: Enterococci by Membrane Filtration</b>								
<i>Enterococci</i>	----	1	CFU/100mL	----	----	~8	<b>2400</b>	<b>71</b>
<b>EP020CA: Oil and Grease</b>								
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				25-Mar-2024 00:00	25-Mar-2024 00:00	25-Mar-2024 00:00	25-Mar-2024 00:00	25-Mar-2024 00:00	
Compound	CAS Number	LOR	Unit	EW2401403-006	EW2401403-007	EW2401403-008	EW2401403-009	EW2401403-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	<b>6.03</b>	<b>5.70</b>	<b>5.36</b>	<b>5.51</b>	<b>5.59</b>	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	<b>1710</b>	<b>1210</b>	<b>1160</b>	<b>1550</b>	<b>1070</b>	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	<b>0.09</b>	<b>0.08</b>	<b>0.09</b>	<b>0.12</b>	<b>0.02</b>	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<b>0.07</b>	<b>0.01</b>	<b>0.02</b>	<b>0.07</b>	<b>0.22</b>	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<b>0.5</b>	<b>0.4</b>	<b>0.5</b>	<b>0.8</b>	<b>0.6</b>	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	<b>0.6</b>	<b>0.4</b>	<b>0.5</b>	<b>0.9</b>	<b>0.8</b>	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<b>0.02</b>	<b>0.04</b>	<b>0.06</b>	<b>0.06</b>	<b>0.04</b>	
<b>EP030: Biochemical Oxygen Demand (BOD)</b>									
Biochemical Oxygen Demand	----	2	mg/L	<2	<2	<2	<2	<2	
<b>MW006: Thermotolerant Coliforms &amp; E.coli by MF</b>									
Faecal Coliforms	----	1	CFU/100mL	<b>55</b>	<b>240</b>	<b>220</b>	<b>96</b>	<b>74</b>	
<b>MW023: Enterococci by Membrane Filtration</b>									
Enterococci	----	1	CFU/100mL	<b>~2</b>	<b>~1</b>	<b>&lt;1</b>	<b>~1</b>	<b>94</b>	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		884/GW6	Influent	----	----	----
Sampling date / time		25-Mar-2024 00:00		25-Mar-2024 00:00		----	----	----
Compound	CAS Number	LOR	Unit	EW2401403-011	EW2401403-012	-----	-----	-----
				Result	Result	----	----	----
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	<b>5.68</b>	<b>7.93</b>	----	----	----
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	<b>1060</b>	----	----	----	----
<b>EA025: Total Suspended Solids dried at 104 ± 2°C</b>								
Suspended Solids (SS)	----	5	mg/L	----	<b>138</b>	----	----	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	<b>0.05</b>	<b>64.5</b>	----	----	----
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	<b>0.22</b>	<b>0.92</b>	----	----	----
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<b>0.8</b>	<b>75.4</b>	----	----	----
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>								
<sup>^</sup> Total Nitrogen as N	----	0.1	mg/L	<b>1.0</b>	<b>76.3</b>	----	----	----
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
Total Phosphorus as P	----	0.01	mg/L	<b>0.04</b>	<b>12.9</b>	----	----	----
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	----	2	mg/L	<2	<2	----	----	----
<b>MW006: Faecal Coliforms &amp; E.coli by MF</b>								
Faecal Coliforms	----	1	CFU/100mL	----	<b>3000000</b>	----	----	----
<i>Escherichia coli</i>	----	1	CFU/100mL	----	<b>2800000</b>	----	----	----
<b>MW006: Thermotolerant Coliforms &amp; E.coli by MF</b>								
Faecal Coliforms	----	1	CFU/100mL	<b>88</b>	----	----	----	----
<b>MW023: Enterococci by Membrane Filtration</b>								
Enterococci	----	1	CFU/100mL	<b>76</b>	----	----	----	----
<b>EP020CA: Oil and Grease</b>								
Oil and Grease	----	1	mg/L	----	<b>4</b>	----	----	----



### ***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: Thermotolerant Coliforms & E.coli by MF

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

(WATER) EK062G: Total Nitrogen as N (TKN + NO<sub>x</sub>) by Discrete Analyser

(WATER) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser

(WATER) EK059G: Nitrite plus Nitrate as N (NO<sub>x</sub>) 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

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



# DAILY MONITORING RECORD – MERRY BEACH CARAVAN PARK SEWAGE TREATMENT AND RE-USE SCHEME

Start Date: 26/2/24

Finish Date: 3/3/24

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Time of Readings	26-2-24	27/2/24	11.25 1-1-24	11.00	11.23	9:15	11.10
Meter 1 Reading MAGFLOW (L)	1105	002881	5054	5075	5075	5083	5157
Meter 2 Reading (KL) – Non- Potable RU	19377	19377	19377	19377	19377	19377	19377
Meter 3 Reading (KL) – Irrigation	105935	105935	105993	105993	105993	105993	105993
Meter 4 Reading (KL) – NPWS	37952	37952	37952	37952	37952	37952	37952
Meter 5 Reading (KL) - DLWC	27398	27398	27398	27398	27398	27398	27398
Pump Well Effluent Appearance	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY
STP Status	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED
UV Lamp Status *	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED
Chlorination System Status	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY
Irrigation Field Status	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING
Weather Conditions	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN
Dissolved Oxygen in IDEA reactor (mg/L)	10.46	10.46	10.3	10.10	9.56	8.2	9.9
pH in IDEA reactor / Effluent PW	7.7, 7.6, ?	7.86	7.9 / 7.9 / 7.7	7.2 / 7.1 / 7.5	7.2 / 7.5 / 7.5	7.6, 7.5, 7.5	7.6 / 7.6 / 7.8
Total Alkalinity in IDEA Reactor (mg/L)			3-70 mg/L		240 mg/L		
30 minute sludge volume (%)		45%			45%		
Chlorine (residual) onsite testing Eff2 (once per week)					0.02		
Initials	BYC	WJ	WJ	WJ	WJ	RY	WJ



# DAILY MONITORING RECORD – MERRY BEACH CARAVAN PARK SEWAGE TREATMENT AND RE-USE SCHEME

Start Date: 4.3.24

Finish Date: 10/3/24

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Time of Readings	4.3.24	7:13	11.15	10.54	15.15	9:00	9:45
Meter 1 Reading MAGFLOW (L)	5261	5285	5303	5331	5364	5392	5451
Meter 2 Reading (KL) – Non-Potable RU	019378	019378	019378	019738	019738	19378	19378
Meter 3 Reading (KL) – Irrigation	106212	106283	106290	106356	106429	106429	106559
Meter 4 Reading (KL) – NPWS	037952	037952	037952	037952	037952	37952	37952
Meter 5 Reading (KL) – DLWC	027398	027398	027398	027398	027398	27398	27398
Pump Well Effluent Appearance	<u>CLEAR</u> / CLOUDY / GREY	<u>CLEAR</u> / CLOUDY / GREY	<u>CLEAR</u> / CLOUDY / GREY	<u>CLEAR</u> / CLOUDY / GREY	<u>CLEAR</u> / CLOUDY / GREY	<u>CLEAR</u> / CLOUDY / GREY	<u>CLEAR</u> / CLOUDY / GREY
STP Status	<u>OK</u> / ALARMED	<u>OK</u> / ALARMED	<u>OK</u> / ALARMED	<u>OK</u> / ALARMED	<u>OK</u> / ALARMED	<u>OK</u> / ALARMED	<u>OK</u> / ALARMED
UV Lamp Status	OK / <u>ALARMED</u>	OK / <u>ALARMED</u>	OK / <u>ALARMED</u>	OK / <u>ALARMED</u>	<u>OK</u> / <u>ALARMED</u>	OK / <u>ALARMED</u>	<u>OK</u> / ALARMED
Chlorination System Status	<u>OK</u> / FAULTY	<u>OK</u> / FAULTY	<u>OK</u> / FAULTY	<u>OK</u> / FAULTY	<u>OK</u> / FAULTY	<u>OK</u> / FAULTY	<u>OK</u> / FAULTY
Irrigation Field Status	<u>OK</u> / WET / PONDING	<u>OK</u> / WET / PONDING	OK / <u>WET</u> / PONDING	OK / <u>WET</u> / PONDING	OK / <u>WET</u> / PONDING	<u>OK</u> / WET / PONDING	<u>OK</u> / WET / PONDING
Weather Conditions	<u>SUNNY</u> / CLOUDY / RAIN	<u>SUNNY</u> / CLOUDY / RAIN	<u>SUNNY</u> / CLOUDY / RAIN	SUNNY / <u>CLOUDY</u> / RAIN	<u>SUNNY</u> / CLOUDY / RAIN	<u>SUNNY</u> / CLOUDY / RAIN	<u>SUNNY</u> / CLOUDY / RAIN
Dissolved Oxygen in IDEA reactor (mg/L)	9.43	9.72	10.56	10.36	10.74	9.86	9.36
pH in IDEA reactor / Effluent PW	7.60,	7.78 17.5/24	7.8 / 7.57.8	7.9 / 7.4 / 7.6	7.9 / 7.3 7-7	7.8 / 7.4 / 7.5	7.6 / 7.5 / 7.5
Total Alkalinity in IDEA Reactor (mg/L)							
30 minute sludge volume (%)	45 %	43%		55%			
Chlorine (residual) onsite testing Eff2 (once per week)						-	
Initials	M.I	CM	MW	MW	MW	py	py

## DAILY MONITORING RECORD – MERRY BEACH CARAVAN PARK SEWAGE TREATMENT AND RE-USE SCHEME

Start Date: 11-03-24

Finish Date: 17.3.24

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Time of Readings	11:30	8:25	10:31	09:38	9:00	10:30	12-15pm
Meter 1 Reading MAGFLOW (L)	5517	2881	5567	5584	5602	5902	5602
Meter 2 Reading (KL) – Non- Potable RU	019377	019377	019377	019377	019377	19377	19377
Meter 3 Reading (KL) – Irrigation	106632	106707	106707	106747	106747	106747	106747
Meter 4 Reading (KL) – NPWS	037952	037952	037952	037952	037952	037952	037952
Meter 5 Reading (KL) - DLWC	027398	027398	027398	027398	027398	27398	27398
Pump Well Effluent Appearance	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY
STP Status	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED
UV Lamp Status	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED
Chlorination System Status	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY
Irrigation Field Status	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING
Weather Conditions	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN
Dissolved Oxygen in IDEA reactor (mg/L)	10.33	8.95	10.15	9.73	9.05	9.99	9.63
pH in IDEA reactor / Effluent PW	7.61	7.81	7.9 / 7.3 / 7.5	8.0 / 7.3 / 7.7	8.0 / 7.4 / 7.7	8.2 / 7.4 / 7.7	8.1, 7.5, 7.4
Total Alkalinity in IDEA Reactor (mg/L)							
30 minute sludge volume (%)	50%	65%		55%			
Chlorine (residual) onsite testing Eff2 (once per week)							0.02
Initials	BR	WS	MW	MW	MW	BAC	BC

## DAILY MONITORING RECORD – MERRY BEACH CARAVAN PARK SEWAGE TREATMENT AND RE-USE SCHEME

Start Date: 17.3.24

Finish Date: 24.3.24

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Time of Readings	10:07	8:05am	11-15am.	9-10am	11 00	7:40	9:00
Meter 1 Reading MAGFLOW (L)	5794	5732	5761	5778	5125	5866	5866
Meter 2 Reading (KL) – Non- Potable RU	019377	019377	019377	019377	19377	19377	19377
Meter 3 Reading (KL) – Irrigation	106746	106747	106747	106747	106747	106747	106747
Meter 4 Reading (KL) – NPWS	077952	037952	037952	037952	37952	37952	37952
Meter 5 Reading (KL) - DLWC	027398	027398	027398	027398	27398	27398	27398
Pump Well Effluent Appearance	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY
STP Status	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED
UV Lamp Status	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED
Chlorination System Status	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY
Irrigation Field Status	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING
Weather Conditions	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN
Dissolved Oxygen in IDEA reactor (mg/L)	9.18	8.90	8.98	8.94	8.96	9.16	9.30
pH in IDEA reactor / Effluent PW	8.20	8.01	7.31, 7.45, 7.28	7.37, 7.6	7.41 / 7.5	7.4 / 7.5	7.65 / 7.62
Total Alkalinity in IDEA Reactor (mg/L)							
30 minute sludge volume (%)	40 %	40 %					
Chlorine (residual) onsite testing Eff2 (once per week)						2.8 mg/L	
Initials	MI	SM	BP	BC	PY	PY	PY

**DAILY MONITORING RECORD – MERRY BEACH CARAVAN PARK SEWAGE TREATMENT AND RE-USE SCHEME**

Start Date: 25.3.24

Finish Date: 31/3/24

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Time of Readings	9:00	9:00	9:20	12:00	7:00	9:30	9:30
Meter 1 Reading MAGFLOW (L)	5820	5860	5912	5973	6125	6199	6309
Meter 2 Reading (KL) – Non- Potable RU	19377	19377	19377	19377	19377	19377	19377
Meter 3 Reading (KL) – Irrigation	106747	106747	106747	106747	106747	106747	106747
Meter 4 Reading (KL) – NPWS	37952	37952	37952	37952	37952	37952	37952
Meter 5 Reading (KL) – DLWC	27398	27398	27398	27398	27398	27398	27398
Pump Well Effluent Appearance	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY	CLEAR / CLOUDY / GREY
STP Status	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED
UV Lamp Status	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED	OK / ALARMED
Chlorination System Status	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY	OK / FAULTY
Irrigation Field Status	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING	OK / WET / PONDING
Weather Conditions	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN	SUNNY / CLOUDY / RAIN
Dissolved Oxygen in IDEA reactor (mg/L)	9.75	9.19	9.64	9.56	9.66	9.9	9.8
pH in IDEA reactor / Effluent PW	7.22 / 7.20	7.4 / 7.5	7.20 / 7.36	7.14 / 7.20	7.4 / 7.2	7.2 / 7.1	7.1 / 7.1
Total Alkalinity in IDEA Reactor (mg/L)							
30 minute sludge volume (%)	45%		30%				
Chlorine (residual) onsite testing Eff2 (once per week)	-	-	-	-	-	-	-
Initials	py	py	W	py	py	py	py