



Pre-construction Water Quality Monitoring Report

Event 6 2022

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1. Introduction

In 2020 Snowy Hydro Limited (Snowy Hydro) obtained approval (application number SSI 9208 and EPBC 2018/8322) to expand the existing Snowy Mountains Hydro-electric Scheme (Snowy Scheme), by linking the existing Tantangara and Talbingo reservoirs through a series of underground tunnels and constructing a new underground hydro-electric power station (referred to as 'Snowy 2.0').

To connect Snowy 2.0 to the National Energy Market (NEM), a new transmission connection is required. NSW Electricity Networks Operations Pty Ltd as a trustee for NSW Electricity Operations Trust (known as TransGrid and the Proponent) will construct a substation and overhead transmission lines (the Project) to facilitate the connection of Snowy 2.0 to the existing electrical transmission network. The Project location is approximately 27 kilometres (km) east of Tumbarumba, New South Wales (NSW). UGL has been engaged on behalf of the Proponent to undertake the Project.

The purpose of the pre-construction water quality monitoring is to address the requirements of the Environmental Impact Statement (EIS) (Jacobs 2020) that was prepared by the Proponent under Part 5, Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* to assess the environmental impacts of the proposed Project. Subsequently, an Amendment Report (TransGrid 2021b) was submitted with the Response to Submissions (TransGrid 2021a) to the Department of Planning and Environment (DPE) with updated mitigation measures for the Project.

The objective of the pre-construction surface water quality monitoring is to collect baseline data prior to Project construction works. Baseline data will be compared to ANZG (2018) guidelines to characterise the existing surface water quality. The data will be compared to the water quality objectives (WQO) for the Project area.

2. Program and methodology

The Pre-construction Water Quality Monitoring Program and Methodology (the Program) (NGH 2022) has been prepared to detail the WQOs for the Project, the location of the monitoring locations and the methodology for water sampling.

The Project area within Kosciuszko National Park is an area of high conservation value. Therefore, the water quality objectives for physical and chemical stressors includes **no change beyond natural variability** (ANZG 2018). The Default Guideline Values (DGV) for Upland Rivers has been provided for physical and chemical stressors and is detailed in the Program (NGH 2022).

The location of the sampling points in relation to the Project footprint is provided in Figure 2-1.

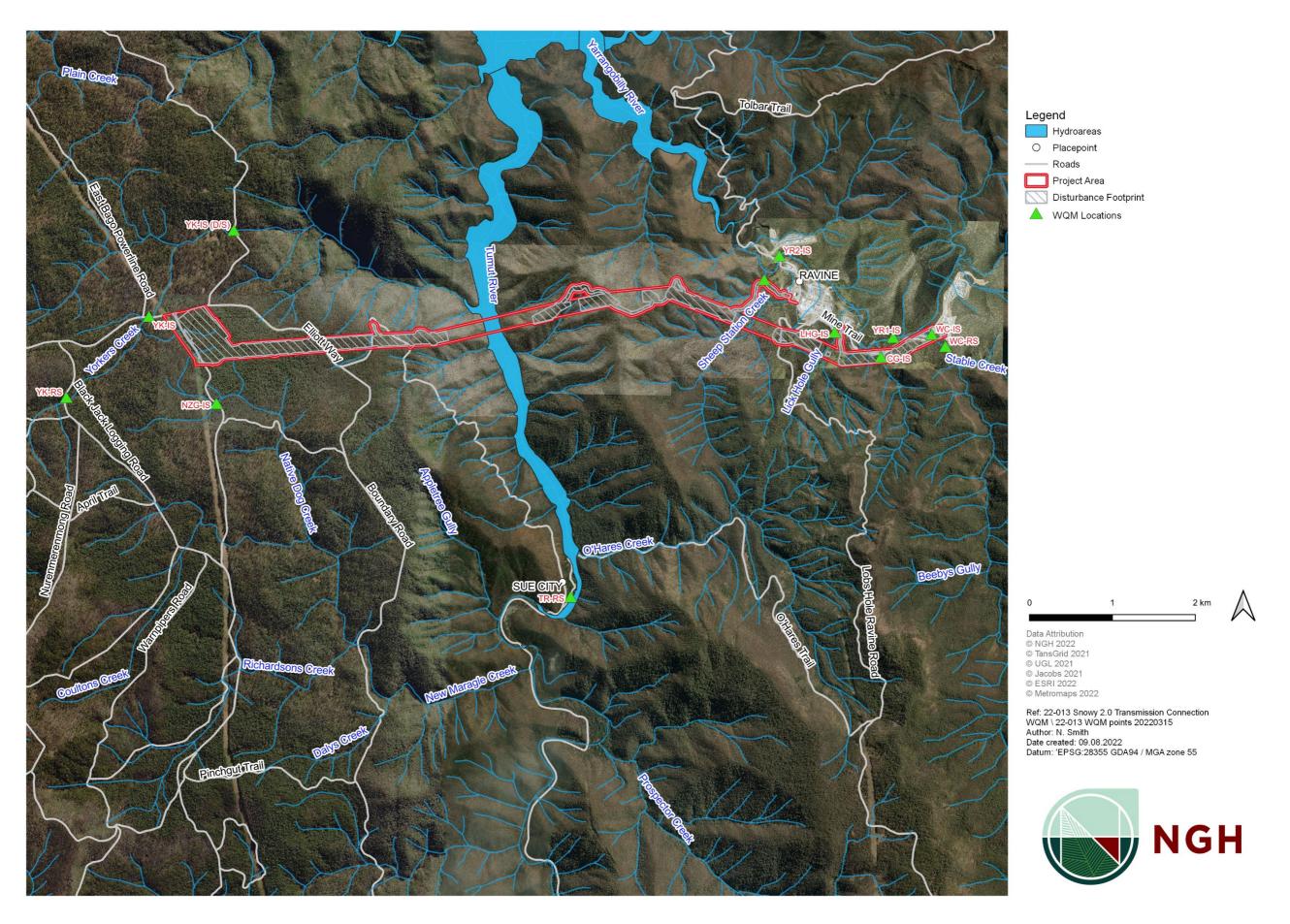


Figure 2-1 WQM locations

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3. Monitoring event observations and results

Water quality results for each site and are provided in Appendix A. Results are highlighted where they exceed the default guideline value (refer to the Program (NGH 2022)). Table 3-1 identifies exceedances of the DGVs for metals, cyanide and nutrients. Physico-chemical results have been provided in Figure 3-4 to Figure 3-12. Field data and observations are provided in Appendix B.

3.1. Event 6

NGH conducted the first, second and third rounds of sampling in March (Event 1), April (Event 2), May and early June (Event 3), late June (Event 4) and July (Event 5) 2022. Reports for each event were prepared following receival of the laboratory results (NGH 2022a; 2022b; 2022c; 2022d; 2022e). The results of Event 1, Event 2, Event 3, Event 4 and Event 5 have been compared in this report to the results of Event 6.

NGH Environmental Scientists, Nicola Smith and Claire Hobbs, conducted monitoring event with a UGL representative on 30 and 31 August 2022. The weather was cool with a breeze. Data from the Cabramurra SMHEA automatic weather station on 30 August 2022 (Station ID 072161) indicates that wind speeds were from the north-west at 39km/hr in the morning tending west of 30km/hr in the afternoon. Temperatures on the day included a low of 1.2°C and a high of 3.6°C. Data from the Tumbarumba weather station for 31 August 2022 (Station ID 072043) indicates that the day was calm with a low of 7.5°C and a high of 16.5°C. The day was mild and sunny.

Generally, water flow was observed to be clear with no hydrocarbon sheen, and no odours were present. The banks of each channel were well vegetated with the vegetation matrix weedier in some locations. Evidence of bank erosion from hooved animals was observed at the New Zealand Gully site, the Yorkers Creek impact site and Yorkers Creek reference site. Flow was observed to have maintained an elevated level compared to Events 1 and 2 in all channels as a result of the wet weather or snow melt.



Figure 3-1 Wallaces Creek (WC-RS)



Figure 3-2 Lick Hole Gully (LHG-IS)



Figure 3-3 Sheep Station Creek (SSC-IS)

3.1.1. Results

The results indicate that the water quality in the locations where samples were taken generally meets the DGVs for Upland Rivers with a 99% species protection level for toxicants. Values recorded at all locations for chemical stressors were all below the DGV for Event 5.

Both CG-IS and LHG-IS display elevated values for total dissolved solids compared to the other sampling locations. Total suspended solids at sites YK-IS (D/S), NZG-IS, YK-IS and YK-RS were above the 0.2mg/L assigned DGV, refer to Figure 3-10 and Appendix A.

Water temperatures ranged from 5.4 - 9.3 degrees Celsius with LHG-IS at 9.3 degrees Celsius and YK-IS (D/S) at 5.4 degrees Celsius.

Many of the results are recorded as below (<) the limit of detection. To enable calculation of the statistics, the *Limit of Detection Divided by Two (LOD/2) Method* (Cohen and Ryan 1989) has been applied. This data is provided in Appendix A.

The following time series, Figure 3-4 to Figure 3-12, display physico-chemical water quality through time for monitoring Event 1 (March), Event 2 (April), Event 3 (May/June), Event 4 (June) and Event 5 (July). Where a DGV is available, these values are shown on the graph and have been included for dissolved oxygen (%), conductivity, pH and turbidity.

Temperatures are lowest at YK-IS(D/S), YK-IS and NZG-IS within Bago State Forest, refer to Figure 3-4. Temperatures at all locations have increased from Event 5.

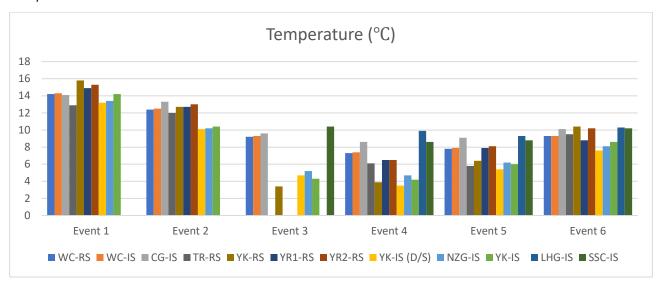


Figure 3-4 Temperature

All DO (%) results for Event 6 were generally below the DGV range. Two locations returned values within the DGV range, which were TR-RS 102.2% and YK-RS 91.9%, refer to Figure 3-5. Results had generally decreased from Event 5.

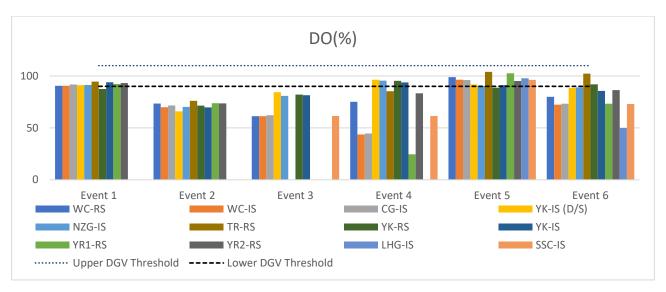


Figure 3-5 Dissolved oxygen (DO%)

The DO (ppm) pattern in the results for Event 6 is similar to Event 5, however, the results are generally lower. The two highest readings of DO (ppm) were recorded at YR2-RS (11.87ppm) and TR-RS (11.66), refer to Figure 3-6.

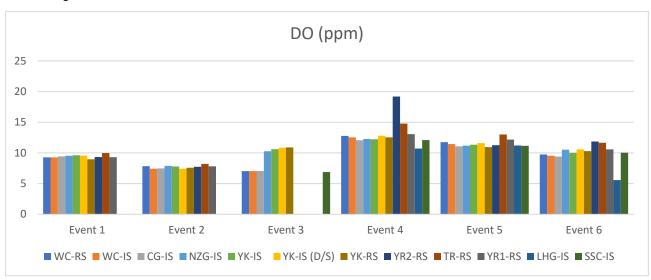


Figure 3-6 Dissolved Oxygen (ppm)

The pattern of specific conductance between sites remains similar between Event 5 and Event 6. CG-IS returned a result of 583µS/cm for Event 6, which is the highest peak between all events. LHG-IS also returned a high reading of 445.4µS/cm for Event 6, refer to Figure 3-7.

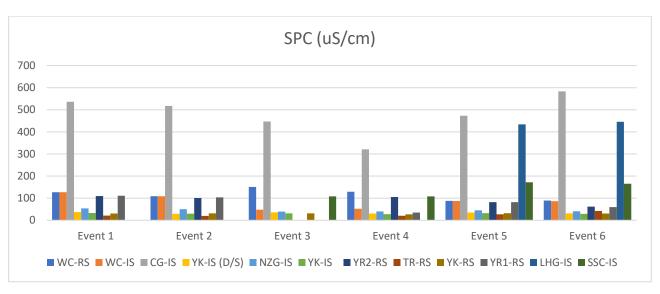


Figure 3-7 Specific Conductance (SPC μS/cm)

Conductivity at CG-IS for Event 6, compared to Event 5, has increased from 305µS/cm to 417.2µS/cm, refer to Figure 3-8. Conductivity at CG-IS is above the upper limit of the DGV range of 350µS/cm. LHG-IS has a similar reading of 320.5µS/cm for Event 6. This is considered likely a result of the geology upstream. The pattern between sites is mostly reflective of the pattern for specific conductance.

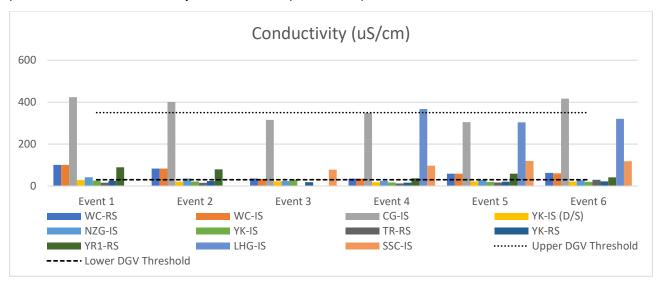


Figure 3-8 Conductivity (µS/cm)

Turbidity values were elevated at CG-IS, YR2-RS, LHG-IS and SSC-IS during Event 6. CG-IS and LHG-IS are above the DGV range of 2 – 25 NTU with 48.5 NTU and 26.33 NTU respectively, refer to Figure 3-9. The lowest value for Event 6 was 0.2 NTU at TR-RS.

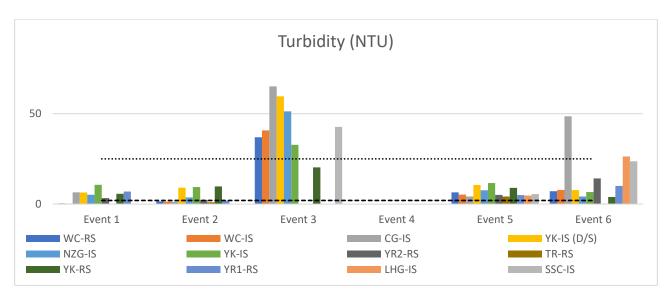


Figure 3-9 Turbidity

Total suspended solids were elevated at CG-IS (55mg/L), YR2-RS (12mg/L) and YR1-RS (13mg/L) during Event 6 compared with Event 5, refer to Figure 3-10. Results returned for total suspended solids for Event 6 were some of the most elevated since Event 3. All results were above the 0.2mg/L DGV except for TR-RS (Talbingo Reservoir reference site).

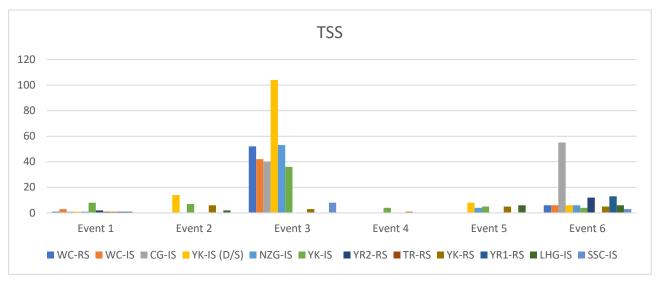


Figure 3-10 Total Suspended Solids

Values of pH for Event 6 have increased from the values recorded during Event 5. Eight of the twelve values of pH exceed the DGV range of 6.5 to 8 pH units and include WC-RS, WC-IS, CG-IS, YR1-RS, YR2-RS, TR-RS, LHG-IS and SSC-IS, refer to Figure 3-11.

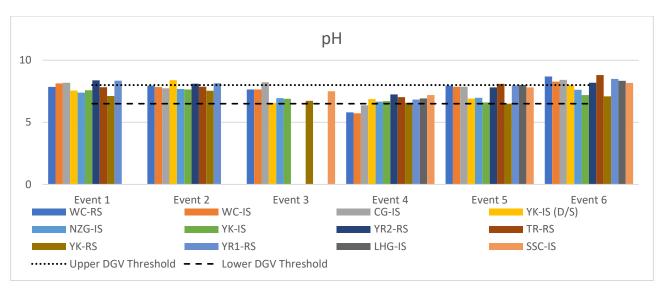


Figure 3-11 Potential of Hydrogen (pH)

The values for the oxygen redox potential during Event 6 have increased from Event 5 and were at their highest values compared to all events, refer to Figure 3-12. YR2-RS returned the peak result of 258.3mV with YK-IS(D/S), TR-RS and SSC-IS also returning elevated figures for Event 6. LHG-IS returned the lowest result of 20.9mV.

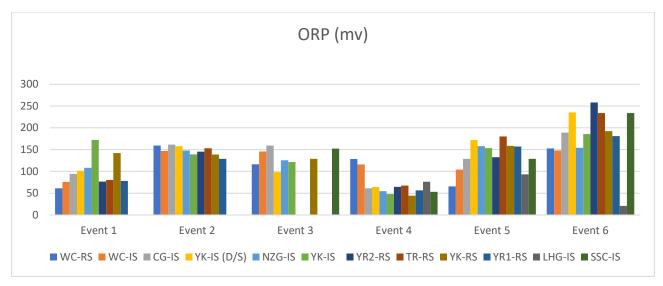


Figure 3-12 Oxygen Redox Potential (ORP)

3.1.2. Quality Assurance / Quality Control

A Quality Assurance and Quality Control (QA/QC) program was undertaken as part of this investigation including:

- A field duplicate sample, at a rate of one per 20 samples, was taken (DUP01) from the WQM site WC-RS on 27 July 2022. DUP01 was analysed for metals and metalloids. The duplicate sample has been compared against the WC-RS sample by Relative Percentage Difference (RPD) and has returned within an acceptable range or less than 30% for inorganic or less than 5 times the laboratory limit of reporting (LOR). The RPD was 0%.
- A water blank was supplied by the laboratory. The water blank sample was analysed for metals and metalloids. There were no exceedances of the sample results above the LORs.

NGH consider the QA/QC program to have been effective and the data reliable and representative to achieve the objectives of the investigation.

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Refer to Appendix C for the laboratory analysis certificate, Appendix D for the RPD Table and Appendix E for the calibration certificates.

4. Conclusion

Water temperatures had increased at all sites compared to the water temperatures of Event 5 and at most locations, are the highest they have been since Event 2 sampling. Water quality monitoring results for Event 6 were generally elevated compared to the results of Event 5. However, results showed dissolved oxygen had decreased at most sites compared to the results of Event 5.

Laboratory results for Event 6 were generally consistent with the results of the previous monitoring events with the majority of analytes reported below the Limit of Reporting. The only result that exceeded the DGV was total suspended solids (0.2mg/L) at WC-RS, WC-IS, CG-IS, YR1-RS, LHG-IS, YR2-RS, SSC-IS, YK-IS(D/S), NZG-IS, YK-IS and YK-RS. Total dissolved solids were elevated at CG-IS and LHG-IS, which is a pattern that has carried through all events.

All results and statistics are provided in Appendix A.

5. References

Jacobs Pty Ltd. 2020. Snowy 2.0 Transmission Connection Project EIS.

NGH Pty Ltd. 2022. Pre-construction Water Quality Monitoring Program and Methodology.

NGH Pty Ltd. 2022a. Pre-construction Water Quality Monitoring Report: Event 1 April 2022.

NGH Pty Ltd. 2022b. Pre-construction Water Quality Monitoring Report: Event 2 April 2022.

NGH Pty Ltd. 2022c. Pre-construction Water Quality Monitoring Report: Event 3 May and June 2022.

NGH Pty Ltd. 2022d. Pre-construction Water Quality Monitoring Report: Event 4 June 2022.

NGH Pty Ltd. 2022e. Pre-construction Water Quality Monitoring Report: Event 5 July 2022.

TransGrid. 2021a. Snowy 2.0 Transmission Connection Project Submissions Report.

TransGrid. 2021b. Snowy 2.0 Transmission Connection Project Amendment Report.

APPENDIX A EVENT DATA TABLE

22-013 Pre-construction WOM DGV (Default Guideline Value)	Sheen/oil/ grease No	Temp.()	Dissolved Oxygen (DO %) 90-110	DO (ppm)	Specific EC (SPC uS/cm)	EC (uS/cm)	pH 6.5-8	Redox (mV)	Turbidity (NTU)	Al (mg/L) 0.027	As (mg/L) 0.0008	Cd (mg/L) 0.00006	Cr (mg/L) 0.00001	Cu (mg/L) 0.001	Cyanide (mg/L) 0.004	Fe (mg/L) 0.3	Pb (mg/L) 0.001	Mn (mg/L)	Hg (mg/L) 0.00006	Ni (mg/L) 0.008	TN (mg/L) 0.25	TP (mg/L) 0.02	Ag (mg/L) 0.00002	TDS mg/L	TSS (mg/L)	Zn (mg/L) 0.0024
DGV (Default Guideline Value) WC-RS Event 1 Event 2 ob Event 3	No but on sedime No	14.2 12.4	90.5 73.5	9.28 7.84 7.05	126.8 109	100.7 83.1 36	7.85 7.95 7.64	61.2 159.4 116.3	0.37 1.49	0.01 0.015	0.00015 0.00015	0.00001	0.000005 0.000005	0.0001 0.0001	0.001 0.001	0.03 0.005	0.0005 0.0005	0.011 0.001	0.000015 0.000015	0.0005 0.0005	3 0.1	0.005 0.005	0.00001 0.00001	12 1	0.25	0.001 0.001
Event 4 Event 5	No No	7.3 7.8	75.1 98.9	12.78 11.76	128.9333333 88	35.3 59	5.8 7.96	128.4 65.8	6.45	0.015 0.015	0.00015 0.00015	0.00001 0.00001	0.000005 0.000005	0.0001 0.0001	0.001 0.001	0.005 0.005	0.0005 0.0005	0.0005 0.0005	0.000015 0.000015	0.0005 0.0005	0.1 0.1	0.005 0.005	0.00001 0.00001	19 56	0.25 0.25	0.001 0.001
Event 6 Min Max	No	9.3 7.30 14.20	79.86 61.30 98.90	9.742 7.05 12.78	89.6 88.00 151.00	62.7 35.30 100.70	5.80 8.69	152.6 61.20 159.40	7.15 0.37 36.96	0.015 0.01 0.02	0.00015 0.00 0.00	0.00001	0.000005 0.00 0.00	0.0001 0.00 0.00	0.001 0.00 0.00	0.005 0.01 0.03	0.0005	0.0005 0.00 0.01	0.000015 0.00 0.00	0.0005 0.00 0.00	0.1 0.10 3.00	0.005 0.01 0.01	0.00001 0.00 0.00	1.00 56.00	0.25 52.00	0.001 0.00 0.00
Mean Count St. Dev		10.03 6.00	79.86 6.00 13.29	9.74 6.00	115.56 6.00	62.80 6.00	7.65 6.00 0.97	113.95 6.00 42.13	10.48 5.00	0.01 6.00	0.00 6.00	6.00	6.00	0.00 6.00	6.00	0.01 6.00	6.00	0.00 6.00	6.00	6.00	0.58 6.00	0.01 6.00	0.00 6.00	30.33 6.00	9.96 6.00	0.00 6.00
WC-IS Event 1 Event 2	No No	2.71 14.3 12.5	13.29 90.6 69.9	9.28 7.44	24.65 126.7 109	25.84 100.8 83.3	0.97 8.14 7.84	42.13 76 146.8	15.10 0.32 1.39	0.01	0.00 0.00015	0.00001	0.00 0.000005	0.0001	0.001	0.01	0.0005 0.0005	0.00	0.00015 0.000015	0.0005	0.1 0.8	0.005	0.00001	22.62 80 63	20.72 3 0.25	0.001
Event 3	No No	9.3 7.4	61.2 43.7 96.4	7.03 12.55	48 52.3	33 35	7.64 5.73	145.8 115.9	40.77	0.015 0.015	0.00015 0.00015	0.00001	0.000005 0.000005	0.0001	0.001 0.001	0.005 0.005	0.0005 0.0005	0.0005 0.0005	0.000015 0.000015	0.0005 0.0005	0.1 0.1	0.02 0.02	0.00001 0.00001	41 27	42 0.25	0.001
Event 5 Event 6 Min	No No	7.9 9.3 7.40	96.4 72.36 43.70 96.40	9.55 7.03	86.6 48.00	59 60.3 33.00	7.86 8.28 5.73	104.3 148 76.00	5.24 7.78 0.32	0.015 0.015 0.01	0.00015 0.00015 0.00	0.00001 0.00001 0.00	0.000005 0.000005 0.00	0.0001 0.0001 0.00	0.001 0.001 0.00	0.005 0.005 0.01	0.0005 0.0005 0.00	0.0005 0.0005 0.00	0.000015 0.000015 0.00	0.0005 0.0005 0.00	0.1 0.1 0.10	0.005 0.005 0.01	0.00001 0.00001 0.00	48 47 27.00	0.25 6 0.25	0.001
Max Mean		14.30 10.12	72.36	12.55 9.55	126.70 84.93	100.80 61.90	8.28 7.58	148.00 122.80	40.77 11.10	0.02	0.00	0.00	0.00	0.00	0.00	0.03 0.01	0.00	0.01	0.00	0.00	0.80 0.22	0.02	0.00	80.00 51.00	42.00 8.63	0.00
Count St. Dev CG-IS Event 1	No	2.71 14.1	6.00 19.30 91.8	2.17 9.43	5.00 30.85 536	423.6	6.00 0.94 8.19	5.00 29.39 94.3	5.00 16.85 6.47	0.00 0.01	0.00 0.00 0.00015	0.00 0.0001	0.00 0.000005	0.00 0.00	0.00 0.001	0.00 0.01 0.005	0.00 0.005	0.00 0.002	0.00 0.00 0.000015	0.00 0.005	0.29 0.1	0.01 0.005	0.00 0.0001	6.00 18.36 317	6.00 16.51	0.00 0.001
Event 2 Event 3 Event 4	No No	13.3 9.6	71.6 62.1	7.48 7.07	517 447	401.2 315 349	7.73 8.22	161.4 159.2	1.36 65.1	0.015 0.015	0.00015 0.00015	0.00001	0.000005 0.000005	0.0001	0.001	0.005 0.005	0.0005 0.0005	0.001 0.0005	0.000015 0.000015	0.0005 0.0005	0.1 0.1	0.005 0.005	0.00001 0.00001	293 270	0.25 40	0.001 0.001
Event 5 Event 6	No No	9.1 10.1	96.1 73.2	12.06 11.07 9.4	321.3 473 583	305 417.2	7.86 8.42	128.7 189.2	4.22 48.5	0.015 0.015	0.00015 0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005 0.0005	0.0005	0.000015 0.000015	0.0005 0.0005	0.1 0.1	0.005	0.00001	293 293	0.25 0.25	0.001 0.001
Min Max		8.60 14.10	44.57 96.10	7.07 12.06	321.30 583.00	305.00 423.60	6.37 8.42	61.10 189.20	1.36 65.10	0.01	0.00	0.00	0.00	0.00 0.01	0.00	0.01 0.01	0.00	0.00	0.00	0.00	0.10 0.10	0.01	0.00	266.00 317.00	0.25 55.00	0.00
Count St. Dev		10.80 6.00 2.32	73.23 6.00 19.06	9.42 6.00 1.95	6.00 91.03	368.50 6.00 52.44	7.80 6.00 0.74	132.32 6.00 47.61	25.13 5.00 29.56	6.00 0.00	6.00 6.00	6.00 0.00	6.00 0.00	6.00 0.00	6.00 0.00	6.00 0.00	6.00 0.00	6.00 0.00	6.00 0.00	6.00 0.00	6.00 0.00	6.00 0.02	6.00 0.00	288.67 6.00 18.55	16.13 6.00 24.76	6.00 0.00
YR1-RS Event 1 Event 2	No No No sample	14.9 12.7	92.2 73.8	9.31 7.83	110.7 104	89.3 79.2	8.35 8.15	78.3 128.8	6.94 1.85	0.03 0.015	0.00015 0.00015	0.00001	0.000005 0.000005	0.0001	0.001 0.001	0.06 0.005	0.0005 0.0005	0.003 0.001	0.000015 0.000015	0.0005 0.0005	0.1 0.1	0.005 0.005	0.00001 0.00001	69 50	0.25	0.001 0.001
Event 3 Event 4 Event 5	No No	6.5 7.9	24.6 102.6	13.05 12.18	34.7 82	36.9 59	6.84 7.97	56.3 157.1	5	0.015	0.00015 0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005 0.0005	0.0005	0.000015 0.000015	0.0005 0.0005	0.1	0.005	0.00001	33 53	0.25 0.25	0.001
Event 6 Min	No	8.8 6.50	73.3 24.60	10.59 7.83	59.7 34.70	59 41.2 36.90 89.30	8.5 6.84 8.50	180.9 56.30	10 1.85	0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005 0.01	0.0005	0.0005	0.000015	0.0005	0.1 0.10	0.005 0.01	0.00001	36 33.00	13 0.25	0.001
Mean Count		10.16 5.00	73.30 5.00	10.59 5.00	78.22 5.00	61.12 5.00	7.96 5.00	120.28 5.00	5.95 4.00	0.02 5.00	0.00 5.00	0.00 5.00	0.00 5.00	0.00 5.00	0.00	0.02 5.00	0.00 5.00	0.00 5.00	0.00 5.00	0.00 5.00	0.10 0.10 5.00	0.01 5.00	0.00 5.00	48.20 5.00	2.95 5.00	0.00 5.00
St. Dev LHG-IS Event 1 Event 2	No No	3.51	29.95	2.11	31.51	22.96	0.66	52.34	3.42	0.01	0.000	0.0001	0.00	0.00	0.001	0.02	0.00 0.0005	0.00 0.001	0.00 0.000015	0.00	0.00	0.00	0.00	14.48 348 353	5.63	0.00
Event 3 Event 4	No sample No	9.9	0	10.71	0	366.9	6.93	76.3		0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.002	0.000015	0.0005	0.1	0.00	0.00001	295	0.25	0.001
Event 5 Event 6	No No	9.3 10.3	97.8 49.9	11.22 5.59	434 445.4	304 320.5	8.01 8.34 6.03	93.1 20.9	4.75 26.33 4.75	0.015 0.015	0.00015 0.00015	0.00001	0.000005	0.0001	0.001	0.005 0.005	0.0005	0.0005 0.0005	0.000015 0.000015	0.0005 0.0005	0.1 0.1	0.005 0.005	0.00001 0.00001	319 268 268 00	6 6	0.001
Max Mean		10.30 9.83	97.80 49.23	11.22 9.17	445.40 293.13	366.90 330.47	8.34 7.76	93.10 63.43	26.33 15.54	0.02	0.00	0.00	0.00	0.00	0.00	0.02 0.01	0.00	0.00	0.00	0.00 0.0005	2.00 0.48	0.01 0.01	0.00	353.00 316.60	6.00 3.05	0.00 0.00
Count St Dev VR2-RS Event 1	Mo	3.00 0.50	3.00 48.90	3.00 3.11	3.00 253.92	3.00 32.61 89.2	3.00 0.74	3.00 37.78	2.00 15.26	5.00 0.00	5.00 0.00	5.00 0.00	5.00 0.00	5.00 0.00	5.00 0.00	5.00 0.01	5.00 0.00	5.00 0.00	5.00 0.00	5.00 0.00	5.00 0.85	0.00	5.00 0.00	5.00 35.87	5.00 2.76	0.00
Event 2 Event 3	No No sample	13	73.6	7.74	101	78.3	8.38 8.11	145.4	2.29	0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.002	0.000015	0.0005	0.1	0.005	0.00001	39	0.25	0.001
Event 4 Event 5 Event 6	No No	6.5 8.1 10.2	83.35 95.2 86.3	19.18 11.26 11.87	105.2 82 62	38.4 55 42.9	7.24 7.81 8.19	64.5 132.6 258.3	5.05	0.015 0.015 0.015	0.00015 0.00015	0.00001 0.00001 0.00001	0.000005 0.000005	0.0001 0.0001	0.001 0.001	0.005 0.005	0.0005 0.0005	0.0005 0.0005 0.0005	0.000015 0.000015 0.000015	0.0005 0.0005	0.1 0.1	0.005	0.00001 0.00001	38 57 47	0.25 0.25	0.001 0.001
Min Max		6.50 15.30	73.60 95.20	7.74 19.18	62.00 109.40	38.40 89.20	7.24 8.38	64.50 258.30	2.29 14.21	0.01	0.00	0.00	0.00	0.00	0.00	0.01 0.06	0.00	0.00	0.00	0.00	0.10 0.10	0.01	0.00	38.00 74.00	0.25 12.00	0.00
Mean Count St Dev		10.62 5.00	86.31 5.00 8.59	11.87 5.00 4.40	91.92 5.00 19.74	5.00 22.18	7.95 5.00 0.44	135.46 5.00 76.99	6.21 4.00 5.46	0.01 5.00	0.00 5.00	0.00 5.00	0.00 5.00	0.00 5.00	5.00 5.00	0.02 5.00	0.00 5.00	0.00 5.00	0.00 5.00	0.00 5.00	0.10 5.00	0.01 5.00	0.00 5.00	51.00 5.00 14.95	2.95 5.00 5.12	0.00 5.00
SSC-IS Event 1 Event 2	No flow No flow	557		470	19.17		0.44	7033	2.70		0.00		0.00	0.00		0.02		0.00		0.00	0.00	0.01	0.50	14.55	5.12	0.00
Event 3 Event 4 Event 5	No No	10.4 8.6 8.8	61.4 61.4 96.2	6.87 12.09 11.17	108 108 172	78 96.9 119	7.5 7.19 7.81	152.2 53.1 128.7	5.49	0.00015 0.00015 0.00015	0.00015 0.00015 0.00015	0.00001 0.00001 0.00001	0.000005 0.000005	0.0001 0.0001 0.0001	0.001 0.001 0.001	0.005 0.005 0.005	0.0005 0.0005 0.0005	0.0005 0.0005 0.0005	0.000015 0.000015 0.000015	0.0005 0.0005 0.0005	0.1 0.1	0.005 0.005 0.01	0.00001 0.00001 0.00001	84 69 84	0.25 0.25	0.001 0.001 0.001
Event 6 Min	No	10.2 8.60	73 61.40	10.04 6.87	165.5 108.00	118.7 78.00	8.17 7.19	233.8 53.10	23.7 5.49	0.00015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.1	0.005	0.00001	81 69.00	3 0.25	0.001
Max Mean Count		9.50 4.00	73.00 4.00	10.04 4.00	138.38 4.00	103.15 4.00	7.67 4.00	141.95 4.00	23.97 3.00	0.00 4.00	0.00 4.00	0.00 4.00	0.00 4.00	0.00 4.00	0.00 4.00	0.01 4.00	0.00 4.00	0.00 4.00	0.00 4.00	0.00 4.00	0.10 0.10 4.00	0.01 4.00	0.00 4.00	79.50 4.00	2.88 4.00	0.00 4.00
St. Dev TR-RS Event 1 Event 2	No No	0.93 12.9	16.40 94.6	2.28 9.99 8.2	35.17 21.1	19.70 16.2 15	7.83 7.87	74.41 80.5	18.62 0.07	0.00	0.00	0.0001	0.00	0.00	0.00	0.00	0.00 0.0005	0.00	0.00 0.000015	0.00 0.0005	0.00	0.00	0.00	7.14 43	3.65	0.00
Event 3 Event 4	No Samole No	6.1	85.3	14.78	20.55	12.3	7.03	67.6	1.02	0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.1	0.01	0.00001	7	0.25	0.001
Event 5 Event 6 Min	No No	5.8 9.5	103.9 102.2 76.00	13.01 11.66 8.20	27 42.4 20.00	17 29.8 12.30	8.1 8.8 7.03	180.3 233.9 67.60	4.15 0.2	0.015 0.015	0.00015 0.00015	0.00001	0.000005	0.0001	0.001	0.005 0.005	0.0005	0.0005 0.0005	0.000015 0.000015	0.0005 0.0005 0.00	0.1 0.1	0.005 0.005	0.00001 0.00001	20 27 7.00	0.25 0.25	0.001
Max Mean		5.80 12.90 9.26	76.00 103.90 92.40	14.78 11.53	42.40 26.21	29.80 18.06	8.80 7.93	233.90 143.06	4.15 1.36	0.02 0.01	0.00 0.00	0.00	0.00	0.00 0.00	0.00	0.03 0.01	0.00	0.00 0.00	0.00	0.00	1.10 0.30	0.01 0.01	0.00 0.00	43.00 21.80	1.00 0.40	0.00 0.00
Count St. Dev YK-IS (D/S) Event 1	No	5.00 3.27 13.2	5.00 11.75 91.1	5.00 2.56 9.56	5.00 9.48 36.9	5.00 6.80 28.6	5.00 0.63 7.55	5.00 69.54 101.4	4.00 1.91 6.42	5.00 0.00	5.00 0.00	5.00 0.00	5.00 0.00 0.000005	5.00 0.00	5.00 0.00	5.00 0.01 0.39	0.00	5.00 0.00	5.00 0.00 0.000015	5.00 0.00	5.00 0.45	0.00	5.00 0.00	5.00 14.10 22	5.00 0.34	5.00 0.00
Event 2 Event 3	No No	10.1 4.7	65.9 84.4	9.56 7.42 10.85	29 36	20.5	8.39 6.56	157.8 98.2	9.1 59.63	0.015 0.015	0.00015 0.00015	0.00001	0.000005	0.0001	0.001	0.15 0.005	0.0005 0.0005	0.001	0.000015 0.000015	0.0005 0.0005	0.2	0.005 0.17	0.00001	1 44	14 104	0.001
Event 4 Event 5 Event 6	No No	3.5 5.4 7.6	96.4 91.8 88.5	12.79 11.6 10.58	30.8 35 31.6	18.2 22 21.1	6.87 6.91 8.02	54 172.4 235.6	10.56 7.75	0.015 0.015 0.015	0.00015 0.00015 0.00015	0.00001 0.00001 0.00001	0.000005 0.000005 0.000005	0.0001 0.0001 0.0001	0.001 0.001 0.001	0.005 0.06 0.005	0.0005 0.0005 0.0005	0.0005 0.0005 0.0005	0.000015 0.000015 0.000015	0.0005 0.0005 0.0005	0.1 0.1 0.1	0.005 0.005	0.00001 0.00001 0.00001	18 31 24	0.25 8 6	0.001 0.001 0.001
Min Max		3.50 13.20	65.90 96.40	7.42 12.79	29.00 36.90	18.20 28.60	6.56 8.39	64.00 235.60	6.42 59.63	0.02 0.26	0.00	0.00	0.00	0.00	0.00	0.01 0.39	0.00	0.00 0.01	0.00	0.00	0.10 2.00	0.01 0.17	0.00	1.00 44.00	0.25 104.00	0.00
Count St. Dev		6.00 3.67	6.00 10.77	6.00 1.84	6.00 3.19	6.00 3.49	6.00 0.72	6.00 62.45	5.00 22.94	6.00 0.10	6.00 0.00	6.00	6.00 0.00	6.00 0.00	6.00	6.00 0.15	6.00	6.00 0.00	6.00	6.00 0.00	6.00 0.77	6.00 0.07	6.00 0.00	6.00 14.25	6.00 40.38	6.00 0.00
NZG-IS Event 1 Event 2	No No	13.4 10.2	91.3 70.2	9.54 7.89	53.8 50	41.8 36	7.39 7.69	108.1 148	5.14 3.67	0.14 0.015	0.00015 0.00015	0.00001 0.00001	0.000005 0.000005	0.0001	0.001 0.001	0.21 0.005	0.0005 0.0005	0.005 0.001	0.000015 0.000015	0.0005 0.0005	0.1	0.005 0.005	0.00001 0.00001	43 52	0.25	0.001
Event 3 Event 4 Event 5	No No	4.7 6.2	95.4 90.4	12.28 11.19	39.8 45	24.4 24.4 29	6.95 6.67 6.97	54.6 158	7.68	0.015 0.015	0.00015 0.00015	0.00001 0.00001	0.000005 0.000005	0.0001 0.0001	0.001 0.001	0.005 0.005	0.0005 0.0005	0.0005 0.0005	0.000015 0.000015	0.0005 0.0005	0.1 0.1	0.03 0.005	0.00001 0.00001	48 22 34	0.25	0.001 0.001
Event 6 Min Mar	No	8.1 4.70	70.20 95.40	10.53 7.89	41 39.00 53.80	27.7 24.00 41.80	7.62 6.67	154.2 54.60 158.00	4.18 3.67 51.33	0.015 0.02 0.14	0.00015	0.00001	0.000005	0.0001 0.00	0.001	0.005 0.01 0.21	0.0005	0.0005 0.00	0.000015 0.00	0.0005	0.1 0.10 3.00	0.01 0.01	0.00001	31 22.00 52.00	0.25 53.00	0.001
Mean Count		7.97 6.00	86.18	10.28 6.00	44.77 6.00	30.48	7.22	124.72 6.00	14.40 5.00	0.04 6.00	0.00 6.00	0.00 6.00	0.00 6.00	0.00 6.00	0.00 6.00	0.04 6.00	0.00 6.00	0.00 6.00	0.00 6.00	0.00 6.00	0.58 6.00	0.01 6.00	0.00 6.00	38.33 6.00	10.75 6.00	0.00 6.00
YK-IS Event 1 Event 2	No No	3.35 14.2 10.4	9.18 94 69.7	1.49 9.63 7.8	6.02 32.9 30	6.00 7.04 26.1 21.4	7.58	39.27 172.4 139.3	20.70 10.66 9.44	0.05 0.41 0.01%	0.00 0.00015 0.00015	0.00 0.00001 0.00001	0.00 0.000005 0.000005	0.00 0.0001 0.0001	0.001	0.08 0.49 0.2	0.00 0.0005 0.0005	0.00 0.011 0.001	0.00 0.000015 0.000015	0.00 0.0005 0.0005	1.18 2 0 1	0.01 0.005 0.005	0.0001 0.00001	11.33 20 24	20.83 8 7	0.00 0.001 0.001
Event 3 Event 4 Event 5	No No	4.3 4.2	81.5 93.8 91.2	10.6 12.23	31 27.6	31 16.6 20	6.0	121.6 48.1 153.5	32.77	0.015 0.015	0.00015 0.00015	0.00001	0.000005 0.000005	0.0001 0.0001	0.001	0.005 0.005	0.0005 0.0005	0.0005 0.0005	0.000015 0.000015	0.0005 0.0005	0.1	0.005 0.005	0.00001 0.00001	46 14	36 4	0.001 0.001
Event 5 Event 6 Min	No No	6 8.6 4.20	91.2 85.6 69.70 94.00	11.35 10 7.80	29	20 19.9 16.60	7.2	153.5 185.8 48.10	11.62 6.67 6.67	0.015 0.015 0.02	0.00015 0.00015	0.00001 0.00001 0.00	0.000005 0.000005	0.0001 0.0001 0.00	0.001 0.001 0.00	0.005 0.005 0.01	0.0005 0.0005 0.00	0.0005 0.0005 0.00	0.000015 0.000015 0.00	0.0005 0.0005 0.00	0.1 0.1 0.10	0.005 0.005 0.01	0.00001 0.00001 0.00	19 34 14.00	5 4 4.00	0.001 0.001 0.00
Max Mean		14.20 7.95	94.00 85.97	12.23 10.27	32.90 30.42	31.00 22.50	7.65 7.11	185.80 136.78	32.77 14.23	0.41	0.00	0.00	0.00	0.00	0.00	0.49 0.12	0.00	0.01	0.00	0.00	2.00 0.42	0.01	0.00	46.00 26.17	36.00 10.67	0.00
Count St. Dev YK-RS Event 1	No	5.00 3.92 15.8	6.00 9.36 87.5	1.53 8.96	5.00 1.96 30.5	6.00 5.18 25.1	6.00 0.45 7.12	5.00 49.10 142	5.00 10.53 5.71	0.16 0.35	0.00 0.00015	0.00 0.00001	0.00 0.000005	0.00 0.0001	0.00 0.001	6.00 0.20 0.45	0.00 0.0005	0.00 0.005	0.00 0.00015	0.00 0.0005	6.00 0.78 0.1	0.00 0.005	6.00 0.00 0.00001	6.00 11.81 20	5.00 12.52	0.00 0.001
Event 2 Event 3	No No	12.7 3.4	87.5 71.4 82	7.58 10.91	31 31	24 18	7.54 6.73	138.9 128.8	9.77 20.28	0.015 0.015	0.00015 0.00015	0.00001	0.000005 0.000005	0.0001 0.0001	0.001 0.001	0.19 0.005	0.0005 0.0005	0.002 0.0005	0.000015 0.000015	0.0005 0.0005	0.1 0.1	0.005 0.005	0.00001 0.00001	30 40	6	0.001 0.001
Event 4 Event 5 Event 6	No No No	3.9 6.4 10.4	95.3 88.7 91.9	12.53 10.95 10.29	26.9 32 30.5	16.1 21 22	6.58 6.5 7.09	44.2 158.8 192.4	8.97 3.93	0.015 0.015 0.015	0.00015 0.00015 0.00015	0.00001 0.00001 0.00001	0.000005 0.000005 0.000005	0.0001 0.0001 0.0001	0.001 0.001 0.001	0.005 0.05 0.005	0.0005 0.0005 0.0005	0.0005 0.0005 0.0005	0.000015 0.000015 0.000015	0.0005 0.0005 0.0005	0.1 0.1 0.1	0.005 0.005 0.005	0.00001 0.00001 0.00001	15 25 18	5 5	0.001 0.001 0.001
Min Max		3.40 15.80	71.40 95.30	7.58 12.53	26.90 32.00	16.10 25.10	6.50 7.54	44.20 192.40	3.93 20.28	0.02 0.35	0.00	0.00	0.00	0.00	0.00	0.01 0.45	0.00	0.00 0.01	0.00	0.00	0.10 0.10	0.01 0.01	0.00	15.00 40.00	1.00 6.00	0.00
Mean Count St. Dev		8.77 6.00 5.01	86.13 6.00 8.48	10.20 6.00 1.73	30 32 6.00 1.76	21.03 6.00 3.46	6.93 6.00 0.40	134.18 6.00 49.41	9.73 5.00 6.36	6.00 0.14	6.00 0.00	6.00 0.00	6.00 0.00	6.00 0.00	6.00 0.00	0.12 6.00 0.18	6.00 0.00	6.00 0.00	6.00 0.00	6.00 0.00	0.10 6.00 0.00	6.00 0.00	6.00 0.00	24.67 6.00 9.20	3.50 6.00 2.17	6.00 0.00
Values coloured blue and italicised are half the Lie	imit of reporting	a for statistical use (LOR	1/21																							

APPENDIX B OBSERVATIONS AND FIELD DATA

Event 6 dus 30 + 31 2022.

Overcast, cool.

22-013 Pre-constru	action WQM	Grease/oil/ sheen	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (ppm)	Specific Conductivity (SPC uS/cm)	Conductivity (uS/cm)	рН	Oxidation Reduction Potential (mV)	Turbidity (NTU)
	Month	No	9.3	55.4	6.37	89.6	62.7	8.69	152.6	7.15
WC-RS	Comment	No 00	don or s	wan.	ich brown					7.0
	Month	No	9.3	49.1	5.64	86.6	60.6	8.28	148.0	7.78
wc-Is	Comment	As a	bove.		11100	god.	is No lost	AL CAS		
	Month	10.T VD		49.3	5.53	583	417.2	8.42	189.2	4815
CG-IS	Comment	month	, probab	ly by o	what V	110-20 c	y up-st	legione ream k	ever de de lange o Coure a	pyre and a
	Month	enage !	8.8	49.7	5.76	59.7	41,2	8.50	180.9	10.0
TRI-15 YRI-RS	Comment	Fast II	owny,	twirel	nd not	brown				

Check DO Avg.

22-013 Pre-const	ruction WQM	Grease/oil/ sheen	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (ppm)	(SPC uS/cm)	Conductivity (uS/cm)	рН	Reduction Potential (mV)	Tur (N
	Month 6	No.	10.3	49.9	5.59	445.4		8.34	20.9	26
LHG-IS	Comment	Howing	last, m	ove wat	er flow	ng Oher	mual	,		
	Month 9 🍇	NO.	8.9	60.1	6.97	62.0	42.9	8.19	258.3	14
Y12-15 482-185	Comment	Tweed	lul	not bh	own. D	is of y	RI-RS.			
	Month &	No	10.2	59.6	6.69	165.5	118.7	8.17	233.8	23
SSC-IS	Comment		talien		ght not	too olyh	erent fro	n bre	nts. Cle	riel
	Month	No	9,5	102.2	11-66	42.4	29.8	8.8	233.9	0
TR-RS	Comment				resevoir.			no oc	ple far	nol
	Month	No	7.6	88,5	10.58	31.6	21.1	8.02	235.6	7.
YK-IS (D/S)	Comment	Fast flo	ruly, Cl	ear ino	odov.					

22-013 Pre-cons	struction WQM	Grease/oil/ sheen	Temperature (℃)	Dissolved Oxygen (%)	Dissolved Oxygen (ppm)	Specific Conductivity (SPC uS/cm)	Conductivity (uS/cm)	рН	Oxidation Reduction Potential (mV)	Turbidity (NTU)
	Month	No	8.1	89.0	10.53	4h0	2427.7	7.62	154.2	4.18
NZG-IS	Comment	lear, l	lowy,	no oda	e ovens					
	Month	No	8.6	85.6	10.0	29.0	19.9	7.2	185.8	6.67
YK-IS	Comment	As alm	ove. Ac		ght up		lest sc		events.	•
	Month	No.	10.4	91.9	10.29	30.5	22.0	7.09	192.4	3.93
YK-RS	Comment	Clear,.	pleury,	Simula	u obser	uctions f	o prevu	en dei	uply ev	erts.
		No odor	N							

mind and a sol

APPENDIX C LABORATORY CERTIFICATES



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Tel: +61 2 6933 2849 Fax: +61 2 6933 2477 Email: eal@csu.edu.au

http://science-health.csu.edu.au/eal

Monday, September 19, 2022 **NGH Environmental**

Suite 1/39 Fitzmaurice Strret

Wagga Wagga NSW 2650

Attention: Nicole Isles

NATA Accredited Laboratory Number: 9597 Accredited for compliance with

ISO/IEC 17025 - Testing

LABORATORY ANALYSIS REPORT

Report Number:2209-0003 Page 1 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # **Date Analysis Commenced**

01-September-2022

Sample Type Collected By **Date Received** Water 01-September-2022 N. Smith

EAL ID	Client ID. Date/Time sampl	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0003	WC-RS 30.08.22					
		Aluminium (dissolved)	<0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	<0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	< 0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	< 0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	< 0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	<0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	<0.01	mg/L	LTM-W-030	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	44	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	6	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	<0.002	mg/L	APHA 3030 B/3120 B	0.002

22Sep-0004 WC-IS



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NGH Environmental

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Attention: Nicole Isles

Monday, September 19, 2022

NATA Accredited Laboratory

Number: 9597

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LABORATORY ANALYSIS REPORT

Report Number:2209-0003 Page 2 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # Date Analysis Commenced

01-September-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith01-September-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0004	WC-IS 30.08.22					
		Aluminium (dissolved)	< 0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	< 0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	< 0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	<0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	0.02	mg/L	LTM-W-030	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	47	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	6	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	< 0.002	mg/L	APHA 3030 B/3120 B	0.002

22Sep-0005 **CG-IS**

30.08.22



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Monday, September 19, 2022



NATA Accredited Laboratory

Number: 9597

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LABORATORY ANALYSIS REPORT

Report Number:2209-0003 Page 3 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # **Date Analysis Commenced**

01-September-2022

Sample Type Collected By **Date Received** Water 01-September-2022 N. Smith

EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0005	CG-IS 30.08.22					
		Aluminium (dissolved)	< 0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	<0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	< 0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	<0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	0.04	mg/L	LTM-W-030	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	293	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	55	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	< 0.002	mg/L	APHA 3030 B/3120 B	0.002

YRI-RS 22Sep-0006



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NATA Accredited Laboratory

Monday, September 19, 2022

Number: 9597

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LABORATORY ANALYSIS REPORT

Report Number:2209-0003 Page 4 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # Date Analysis Commenced

01-September-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith01-September-2022

					•	
EAL ID	Client ID. Date/Time sample	<u>Test</u> le taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0006	YRI-RS 30.08.22					
		Aluminium (dissolved)	<0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	<0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	<0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	<0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	0.02	mg/L	LTM-W-030	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	36	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	13	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	<0.002	mg/L	APHA 3030 B/3120 B	0.002

22Sep-0007 LHG-IS

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Monday, September 19, 2022

Number: 9597

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LABORATORY ANALYSIS REPORT

Report Number:2209-0003 Page 5 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # Date Analysis Commenced

01-September-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith01-September-2022

					•	
EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0007	LHG-IS 30.08.22					
		Aluminium (dissolved)	<0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	<0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	<0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	<0.01	mg/L	LTM-W-030	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	268	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	6	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	<0.002	mg/L	APHA 3030 B/3120 B	0.002

22Sep-0008 YR2-RS

30.08.22



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Monday, September 19, 2022

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LABORATORY ANALYSIS REPORT

Report Number:2209-0003 Page 6 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # Date Analysis Commenced

01-September-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith01-September-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0008	YR2-RS 30.08.22					
		Aluminium (dissolved)	< 0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	<0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	<0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	<0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	0.02	mg/L	LTM-W-030	0.01
		Silver (dissolved)	< 0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	47	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	12	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	< 0.002	mg/L	APHA 3030 B/3120 B	0.002

22Sep-0009 SSC

SSC-IS 30.08.22



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NATA Accredited Laboratory Number: 9597

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Monday, September 19, 2022

LABORATORY ANALYSIS REPORT

Report Number: 2209-0003 Page 7 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # **Date Analysis Commenced**

01-September-2022

Sample Type Collected By **Date Received** Water 01-September-2022 N. Smith

EAL ID	Client ID. Date/Time sample	Test	Result	(units)	Method Reference	Limit of
22Sep-0009	SSC-IS	te taken				
•	30.08.22	Aluminium (dissolved)	<0.03	m o/I	ADUA 2020 B/2120 B	0.02
		,		mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	< 0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	<0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	< 0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	<0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	0.02	mg/L	LTM-W-030	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	81	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	3	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	< 0.002	mg/L	APHA 3030 B/3120 B	0.002

22Sep-0010 TR-RS



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NATA Accredited Laboratory

Monday, September 19, 2022

Number: 9597

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LABORATORY ANALYSIS REPORT

Report Number:2209-0003 Page 8 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # **Date Analysis Commenced**

01-September-2022

Sample Type Collected By **Date Received** Water 01-September-2022 N. Smith

EAL ID	Client ID. Date/Time sample	<u>Test</u> taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0010	TR-RS 31.08.22					
		Aluminium (dissolved)	<0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	ı
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	< 0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	< 0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	<0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	0.08	mg/L	LTM-W-030	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	27	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	<0.2	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	< 0.002	mg/L	APHA 3030 B/3120 B	0.002

22Sep-0011 YK-IS(d/s)

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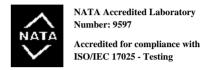
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NGH Environmental Monday, September 19, 2022

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Attention: Nicole Isles



LABORATORY ANALYSIS REPORT

Report Number:2209-0003 Page 9 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # Date Analysis Commenced

01-September-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith01-September-2022

					1	
EAL ID	Client ID. Date/Time sample	<u>Test</u> taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0011	YK-IS(d/s) 31.08.22					
		Aluminium (dissolved)	<0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	<0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	<0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	<0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	0.04	mg/L	LTM-W-030	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	24	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	6	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	< 0.002	mg/L	APHA 3030 B/3120 B	0.002

22Sep-0012 **NZG-IS** 31.08.22

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Monday, September 19, 2022



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LABORATORY ANALYSIS REPORT

Report Number: 2209-0003 Page 10 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # **Date Analysis Commenced**

01-September-2022

Sample Type Collected By **Date Received** Water 01-September-2022 N. Smith

EAL ID	Client ID. Date/Time sample	<u>Test</u> taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0012	NZG-IS 31.08.22					
		Aluminium (dissolved)	<0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	<0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	<0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	<0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	0.01	mg/L	LTM-W-030	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	31	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	6	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	<0.002	mg/L	APHA 3030 B/3120 B	0.002

22Sep-0013

YK-IS



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NGH Environmental

Suite 1/39 Fitzmaurice Strret Wagga Wagga NSW 2650

Attention: Nicole Isles

Monday, September 19, 2022

NATA Accredited Laboratory

Number: 9597

Accredited for compliance with ISO/IEC 17025 - Testing

LABORATORY ANALYSIS REPORT

Report Number:2209-0003 Page 11 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # Date Analysis Commenced

01-September-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith01-September-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0013	YK-IS 31.08.22					
		Aluminium (dissolved)	< 0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	< 0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	<0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	<0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	0.01	mg/L	LTM-W-030	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	19	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	5	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	< 0.002	mg/L	APHA 3030 B/3120 B	0.002

22Sep-0014 **YK-RS**

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Monday, September 19, 2022



NATA Accredited Laboratory

Number: 9597

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NGH Environmental

Suite 1/39 Fitzmaurice Strret

Wagga Wagga NSW 2650

Attention: Nicole Isles

LABORATORY ANALYSIS REPORT

Report Number: 2209-0003 Page 12 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # **Date Analysis Commenced**

01-September-2022

Sample Type Collected By **Date Received** Water 01-September-2022 N. Smith

					•	
EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0014	YK-RS 31.08.22					
		Aluminium (dissolved)	<0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	<0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	< 0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	<0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	<0.01	mg/L	LTM-W-030	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	18	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	5	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	<0.002	mg/L	APHA 3030 B/3120 B	0.002

22Sep-0015 DUP01



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Monday, September 19, 2022



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NGH Environmental Suite 1/39 Fitzmaurice Strret Wagga Wagga NSW 2650 Attention: Nicole Isles

LABORATORY ANALYSIS REPORT

Report Number: 2209-0003 Page 13 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # **Date Analysis Commenced**

01-September-2022

Sample Type Collected By **Date Received** Water 01-September-2022 N. Smith

EAL ID	Client ID. Date/Time sample	<u>Test</u> le taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0015	DUP01 30.08.22					
		Aluminium (dissolved)	< 0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	<0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Zinc (dissolved)	<0.002	mg/L	APHA 3030 B/3120 B	0.002
22Sep-0016	Water Blan	ık				
		Aluminium (dissolved)	<0.03	mg/L	APHA 3030 B/3120 B	0.03
		Arsenic	<0.0003	mg/L	Analysis by Melbourne (acc no: 992)	
		Cadmium (dissolved)	<0.00002	mg/L	APHA 3030 B/3120 B	0.002
		Chromium (dissolved)	<0.00001	mg/L	APHA 3030 B/3120 B	0.002
		Copper (dissolved)	<0.0002	mg/L	APHA 3030 B/3120 B	0.002
		Cyanide	< 0.002	mg/L	* APHA 4500-CN E	0.002
		Iron (dissolved)	<0.01	mg/L	APHA 3030 B/3120 B	0.01

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CRICOS Provider Numbers for Charles Sturt University are 00005F (NSW), 01947G (VIC) and 02960B (ACT). ABN: 83 878 708 551



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Monday, September 19, 2022

ISO/IEC 17025 - Testing

NGH Environmental Suite 1/39 Fitzmaurice Strret Wagga Wagga NSW 2650

Attention: Nicole Isles

NATA Accredited Laboratory Number: 9597

Accredited for compliance with

LABORATORY ANALYSIS REPORT

Report Number:2209-0003 Page 14 of 15

For all enquiries related to this report please quote document number: 2209-0003

Facility: Order # Date Analysis Commenced

01-September-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith01-September-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> taken	Result	(units)	Method Reference	Limit of Reporting
22Sep-0016	Water Blank					
		Lead (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Manganese (dissolved)	< 0.001	mg/L	APHA 3030 B/3120 B	0.001
		Mercury	<0.00003	mg/L	Analysis by ALS Melbourne (acc no: 992)	
		Nickel (dissolved)	<0.001	mg/L	APHA 3030 B/3120 B	0.01
		Nitrogen, total	<0.2	mg/L	* APHA 4500-Norg B + 4110 B	2
		Nitrate/Nitrite as N	<0.1	mg/L	LTM-W-014	0.1
		Phosphorus, Total	<0.01	mg/L	LTM-W-030	0.01
		Silver (dissolved)	< 0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	<2	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	<0.2	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	< 0.002	mg/L	APHA 3030 B/3120 B	0.002

Note:

^{*} NATA Accreditation does not cover the performance of this service.



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NGH Environmental

Suite 1/39 Fitzmaurice Strret

Wagga Wagga NSW 2650

Attention: Nicole Isles

Monday, September 19, 2022

NATA Accredited Laboratory Number: 9597

Accredited for compliance with ISO/IEC 17025 - Testing

LABORATORY ANALYSIS REPORT

Report Number: 2209-0003 Page 15 of 15

For all enquiries related to this report please quote document number: 2209-0003

N. Smith

Facility: Order # **Date Analysis Commenced**

01-September-2022

Sample Type Collected By **Date Received** Water 01-September-2022

EAL ID Method Reference Limit of Client ID. **Test** Result (units) Reporting Date/Time sample taken

Mflir Signed Michael Glazier, Laboratory Manager.

> All samples analysed as received. All soil results are reported on a dry basis. The EAL takes no responsibility for the end use of results within this report. This report shall not be reproduced except in full. This report replaces any previously issued report

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CLIENT:	NGH Pty Ltd					2000000		(1.00 (1.00)		(IVAL)	I/IES	KEWU	IKED	Comp	lote & ti	CIC 45	equire	4 100 ×	110000000000000000000000000000000000000	Maria Sarah	A7966A
CONTACT:	Nicola Smith		···········						spii	ş	Dissolved Metals (AI, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn,										
	35 Kincaid Street								Sol	등	₹ %										ĺ
ADDRESS:	Wagga Wagga						ž		ed	Sp	을 포										l
ADDRESS.	NSW 2650					e e	은		밀	Š	P et										ĺ
	ABN: 31 124 444 6	522		· · · · · · · · · · · · · · · · · · ·		go.	dsc		ğ	So	D 7										ĺ
TELEPHONE:	0410 411		E-mail		hconsulting.com.au	Total Nitrogen	Total Phosphorus	Cyanide	Total Suspended Solids	Total Dissolved Solids	Cr, C										
SAMPLE	NATURE OF SAMPLE	DATE	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	rota	of a	Syar	ota	ota	Sis Cd, (.		
IDENTIFICATION	SAMPLE	SAMPLEU	SAMPLED	, <u>-</u>		X	X	X	X	X	X				Н			-			
WC-RS	Water	30/08/2022		bottle	3	^	^	^	 ^	^`											
110 110						X	X	X	X	X	X										l
WC-IS	Water	30/08/2022		bottle	3		<u> </u>				 	<u> </u>			ļļ						<u> — </u>
					'	X	X	Х	X	X	X										l
CG-IS	Water	30/08/2022		bottle	3	X	X	Х	X	X	X	1			 						\vdash
YR1-RS	Water	30/08/2022		bottle	3	^	^	^	^	^	^										ı
11/1-1/0	vvalei	30/00/2022		Doule		X	X	Х	X	X	X	<u> </u>									Г
LHG-IS	Water	30/08/2022		bottle	3							<u> </u>									
						X	X	X	X	X	X										
YR2-RS	Water	30/08/2022		bottle	3	\ 	L.		- 	V	₩.	ļ					<u> </u>			ļ	├
222.10	10/-4	20/00/0000		bottle	3	X	X	X	Х	X	X			İ							
SSC-IS	Water	30/08/2022		boule		X	X	X	X	X	X	 		-						-	
TR-RS	Water	31/08/2022		bottle	3	^	^`	^	\	\	^										
						X	X	X	X	X	X										
YK-IS (d/s)	Water	31/08/2022		bottle	3				<u></u>			ļ					ļ				<u> </u>
					<u> </u>	X	X	Х	X	X	X										ĺ
NZG-IS	Water	31/08/2022		bottle	3	· -	-	X	X	X	X	 									⊢
V// IC	Water	31/08/2022		bottle	3	Х	X	^	^	^	^										l
YK-IS	vvalei	31/06/2022		Dotte	<u> </u>	X	X	X	Х	X	X										
YK-RS	Water	31/08/2022		bottle	3				<u> </u>		l				1.						乚
		1									X										1
DUP01	Water	30/08/2022		bottle	1	L.,	1.	L.	L.,	ــــــــــــــــــــــــــــــــــــــ	1-	1	<u> </u>		\sqcup			L		<u> </u>	⊢
		1		1		X	X	X	X	X	X						1				
WATER BLANK	Water	1	1	bottle	3	Ι.	1	<u> </u>	<u> </u>	1		1	1	l			<u></u>	L	L	<u> </u>	ᆫ

NAME	SIGNATURE ORGANISAT	TON DATE: TIME
RELINQUISHED BY: Nicola Smith	NGH Pty Ltd	
Mode of Transport Include Consignment Note # frapplicable Delivery		
RECEIVED BY: M. CEAZLE	EM	1 1/9/2 9:00

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APPENDIX D RPD TABLE

										Al	As	Cd	Cr	Cu	Cyanide	Fe	Pb	Mn	Hg	Ni	Ag	Zn
										(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
	Event 1				DUP01					0.03	0.00015	0.00001	0.000005	0.0001	0.001	0.06	0.0005	0.003	0.000015	0.0005	0.00001	0.001
					YR1-IS					0.03	0.00015	0.00001	0.000005	0.0001	0.001	0.06	0.0005	0.003	0.000015	0.0005	0.00001	0.001
				RPD%	- Acceptable	Range				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Event 2				DUP01					< 0.03	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.001	0.000015	0.0005	0.00001	0.001
				WC-IS						< 0.03	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.002	0.000015	0.0005	0.00001	0.001
				RPD% - Acc		ge except M	n			0%	0%	0%	0%	0%	0%	0%	0%	67%	0%	0%	0%	0%
	Event 3				DUP01					0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.00001	0.001
					Yk-IS (D/S					0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.00001	0.001
				RPD%	- Acceptable	Range				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
					DUP01					0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.00001	0.001
DUP01					WC-RS					0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.00001	0.001
		RPD% - Acceptable Range						0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
	Event 4	DUP01					0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.00001	0.001			
		WC-RS					0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.00001	0.001			
				RPD%	- Acceptable	Range				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Event 5				DUP01					0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.00001	0.001
					WC-RS					0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.00001	0.001
				RPD%	- Acceptable	Range				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Event 6				DUP01					0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.00001	0.001
					WC-RS					0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.00001	0.001
				RPD%	- Acceptable	Range				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Event 7																					
	F																					
	Event 8																					
	Event 1											<0.00002		<0.0002					<0.00003	<0.001	<0.00002	
	Event 1				thing above					<0.02	<0.0003		<0.00001		<0.002	<0.01	<0.001	<0.001				<0.002
	Event 3				thing above					<0.03	<0.0003	<0.00002	<0.00001	<0.0002	<0.002	<0.01	<0.001	<0.001	<0.00003	<0.001	<0.00002	<0.002
/ater Blan	Event 4				thing above					<0.03	<0.0003	<0.00002	<0.00001	<0.0002	<0.002 <0.002	<0.01	<0.001	<0.001	<0.00003	<0.001	<0.00002	<0.002
	Event 5	Nothing above LOR Nothing above LOR							<0.03	<0.0003	<0.00002	<0.00001	<0.0002	<0.002	<0.01	<0.001	<0.001	<0.00003	<0.001	<0.00002	<0.002	
	Event 6																					
	Evento			No	thing above	LOR				< 0.03	< 0.0003	< 0.00002	< 0.00001	< 0.0002	< 0.002	< 0.01	< 0.001	< 0.001	< 0.00003	< 0.001	< 0.00002	< 0.002

RPD% |(X2 - X1)|/((X2 + X1)/2)

How to calculate the Relative Percent Difference (RPD)

The basic equation for $R = \frac{|D||R| - R2|}{\left(\frac{R! + R2}{2}\right)} \times 100,$

where

R1 is sample 1, and

R2 is sample 2.

R1 and R2 are your sample and duplicate values. Basically, this equation has you calculate the RPD by dividing the difference between the sample and duplicate by the average of the two. Using absolute value signs ensures the RPD doesn't end up as a negative percentage, which wouldn't make sense when looking for a percent difference.

The equation you plug into Excel looks like this:

=ABS((B3-C3)/AVERAGE(B3:C3)*100)

ABS stands for Absolute Value. Using the cell labels in the equation, as seen above (83, C3), allows you to use the equation down for all your sample/duplicate pairs so you don't have to write a new equation each time. You can do this by clicking on the cell with the equation in it, then click and drag the bottom right corner of the cell down for the rest of your samples.

APPENDIX E CALIBRATION CERTIFICATES

Instrument

YSI Pro DSS

Serial No.

21B104422



Air-Met Scientific Pty Ltd 1300 137 067

ltem	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	1	
·	Recharge OK?	1	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
7.	Operation	✓	
	(segments)	<u> </u>	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH/ORP	✓	
	2. Turbidity	✓	
	3. Conductivity	✓	
180.1 Wallacomer 11.000 to 11.1 to 10.1 to 10.000 to 10.	4. D.O	✓	
	5. Temp	✓	
	6. Depth	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:		et fann	

Certificate of Calibration

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

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle	Instrument Reading
				Number	
1. COND		2.76ms/cm		385041	2.774ms/cm
2. Temp		18.4°C	Ì	MultiTherm	18.8°C
3. pH 4		pH 4.00		389384	pH 4.07
4. pH 7		pH 7.00		381241	pH 7.06
5. ORP mV		242.64		385070/387761	242.6
6. DO		0.00%		379624	-0.2%
7. Turbidity		50NTU		386950	49.94NTU

Calibrated by:

Lauren Soutar

Calibration date:

16/08/2022

Next calibration due:

15/09/2022