



Pre-construction Water Quality Monitoring Report

Event 5 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 objectives 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.

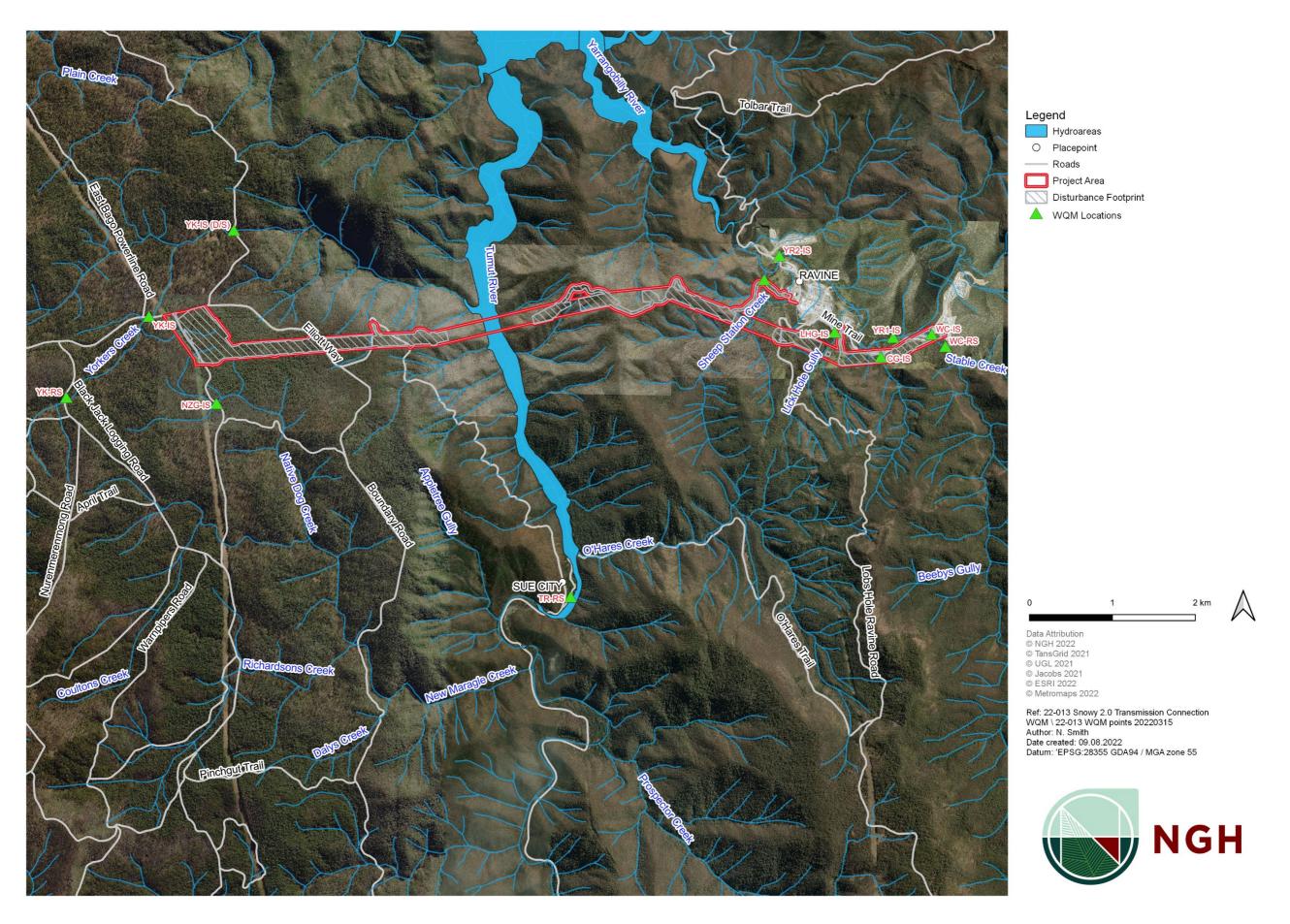


Figure 2-1 WQM locations

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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 5

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

NGH Environmental Scientist, Nicola Smith, conducted monitoring event with UGL a representative on 27 and 28 July 2022. The weather was mild with sunshine and a breeze. Data from the Cabramurra SMHEA automatic weather station on 27 July 2022 (Station ID 072161) indicates that wind speeds were from the west at 22km/hr in the morning dropping to 13km/hr in the afternoon. Temperatures on the day included a low of -3.1°C and a high of 2.8°C. Data from the Tumbarumba weather station for 29 June 2022 (Station ID 072043) indicates that the day was calm with a low of 1.0°C and a high of 12.0°C.

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. However, turbidity was observed to have decreased compared to Event 3 (Figure 3-1 to Figure 3-3).



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 Talbingo Reservoir and the four locations within Bago State Forest (Yorkers Creek sites and New Zealand Gully), refer to Figure 3-4. Temperatures at all locations were higher than in Event 4.

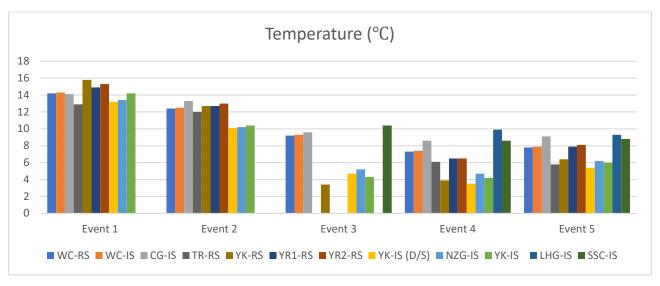


Figure 3-4 Temperature

All DO (%) measurements for Event 5 were within the DGV range or close to the minimum DGV value with the lowest value of 88.7% at YK-RS. The highest values of DO (%) were recorded during Event 5 compared with previous events with TR-RS 103.9% and YR1-RS 102.6%, refer to Figure 3-5.

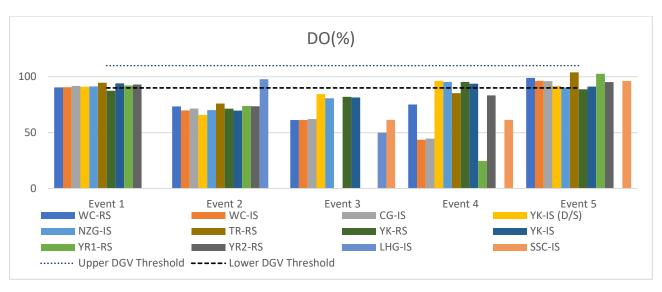


Figure 3-5 Dissolved oxygen (DO%)

The DO (ppm) values and pattern for Event 5 is similar to Event 4 except for the peak of 19.18ppm at YR2-RS in Event 4 was reduced to 11.26ppm during Event 5, refer to Figure 3-6. TR-RS returned the highest value of 13.01ppm for Event 5.

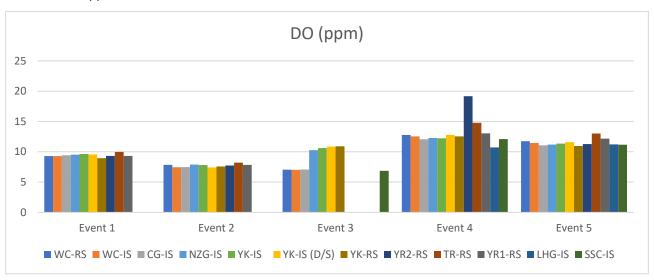


Figure 3-6 Dissolved Oxygen (ppm)

Specific conductance for some sites from Event 4 to Event 5 including CG-IS, WC-IS and YR1-RS. The pattern of specific conductance between sites remains similar with CG-IS having the highest specific conductance, recorded as 473μ S/cm for Event 5, refer to Figure 3-7. LHG-IS also returned a high reading of 434μ S/cm for Event 5.

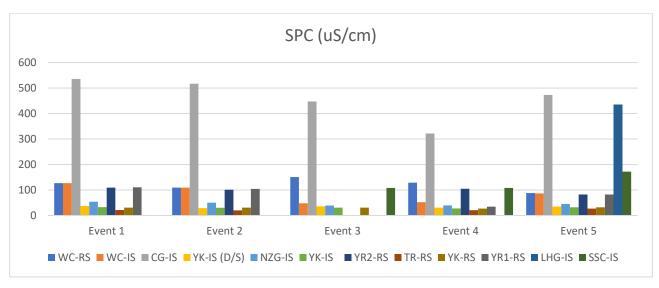


Figure 3-7 Specific Conductance (SPC µS/cm)

Conductivity at CG-IS for Event 5, compared to Event 4, has decreased from 349μ S/cm to 305μ S/cm, refer to Figure 3-8. LHG-IS has a similar reading of 304μ S/cm for Event 5. This is considered likely a result of the geology upstream. The pattern between sites is mostly reflective of the pattern for specific conductance. Other notable increases in conductivity include WC-RS, WC-IS and YR1-RS.

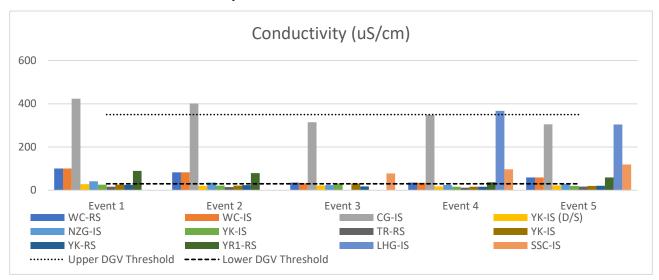


Figure 3-8 Conductivity (µS/cm)

Turbidity values across all sites for Event 5 are within the lower half of the DGV range of 2-25 NTU. The three highest values correspond with the three sampling points within Yorkers Creek in Bago State Forest, refer to Figure 3-9.

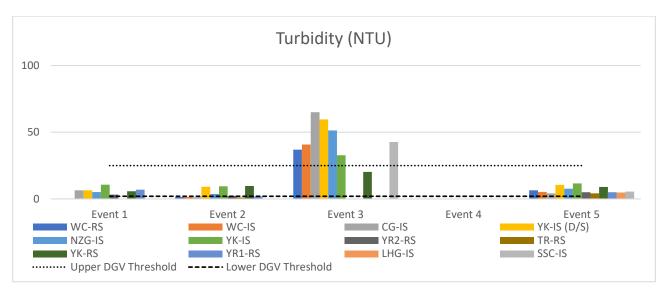


Figure 3-9 Turbidity

The results of total suspended solids across some sites had increased from Event 4 to Event 5, refer to Figure 3-10. The highest value for Event 5 was at YK-IS (D/S) of 8mg/L compared to a value of <0.2mg/L during Event 4.

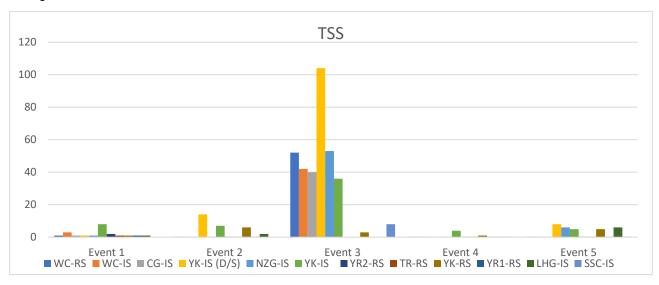


Figure 3-10 Total Suspended Solids

Values of pH for Event 5 have increased from the values recorded during Event 4. Values of pH are within the DGV range of 6.5 to 8 pH units except for TR-RS, which recorded a value of 8.1 pH units, refer to Figure 3-11. The YK-IS, YK-IS (D/S), YK-RS and NZG-IS sites, which are within in a different catchment, have recorded lower pH values than those in the Yarrangobilly River catchment during Event 5.

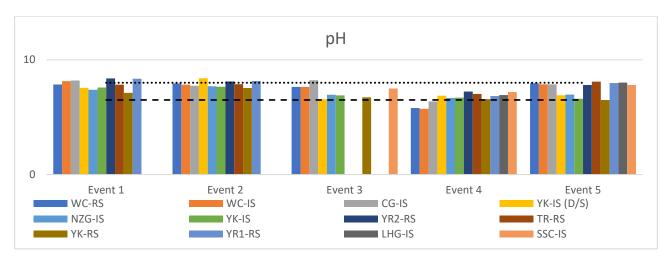


Figure 3-11 Potential of Hydrogen (pH)

The values for the oxygen redox potential during Event 5 have increased from Event 4 at most sites except for WC-RS and WC-IS, refer to Figure 3-12. WC-RS and WC-IS returned reduced values of 65.8mV from 128.4mV in Event 4 and 104.3mV from 115.9mV in Event 4, respectively.

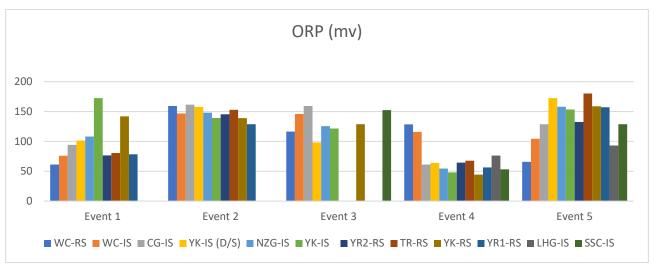


Figure 3-12 Oxygen Redox Potential (ORP)

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.

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 quality monitoring results for Event 5 were similar to the results of Event 4. Values of pH and oxygen reduction potential increased at most sites from Event 4 to Event 5.

Laboratory results for Event 5 were generally consistent with the results of the previous monitoring events with the majority of analytes reported below the Limit of Reporting. Total suspended solids remained low. However, most values were above the DGV of 0.2mg/L. 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.

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 W		Sheen/ oll/	Temp. ()	Dissolved Oxygen (D	DO (ppm)	Specific EC (SPC uS/cm)	EC (uS/cm) pH	Redox (mV)	Turbidity (NTU)	Al (mg/L)	As (mg/L)	Cd (mg/L)	Cr (mg/L)	Cu (mg/L)	Cyanide (mg/L)	Fe (mg/L)	Pb (mg/L)	Mn (mg/L)	Hg (mg/L)	Ni (mg/L)	TN (mg/L)	TP (mg/L)	Ag (mg/L)	TDS mg/L	TSS (mg/L)	Zn (mg/L)
DGV (Default Guideline Va WC-RS Eve	Value) vent 1	No No	14.2	90-110 90.5	9.28	126.8	30-350 6.5-8 100.7 7.85	61.2	2:25	0.027	0.0008	0.00006	0.00001 0.000005	0.001	0.004	0.3	0.001	1.2 0.011	0.00006 0.000015	0.008	0.25	0.02	0.00002	12	0.2	0.0024
Eve	vent 3	but on sedime No	12.4 9.2	73.5 61.3	7.84 7.05	109 151	83.1 7.95 36 7.64	159.4 116.3	1.49 36.96	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	0.001 0.0005	0.000015 0.000015	0.0005 0.0005	0.1 0.1	0.005 0.005	0.00001 0.00001	1 50	0.25 52	0.001 0.001
	vent 5	No No	7.3 7.8 7.30	75.1 98.9 61.30	12.78 11.76 7.05	128.9333333 88 88.00	35.3 5.8 59 7.96 35.30 5.80	128.4 65.8 61.20	6.45 0.37	0.015 0.015	0.00015 0.00015	0.00001 0.00001	0.000005 0.000005	0.0001	0.001	0.005 0.005	0.0005 0.0005	0.0005 0.0005	0.000015 0.000015	0.0005	0.1 0.1	0.005 0.005	0.00001	19 56	0.25 0.25	0.001
N M	Max Vean		14.20 10.18	98.90 79.86	7.05 12.78 9.74	151.00 120.75	35.30 5.80 100.70 7.96 62.82 7.44	159.40 106.22	36.96 11.32	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	3.00 0.68	0.01	0.00	56.00 27.60	52.00 10.75	0.00
Co St.	Count t. Dev		5.00	5.00 14.86	5.00 2.47	5.00 23.61	5.00 5.00 28.89 0.93	5.00 42.08	4.00 17.30	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00 1.30	5.00	5.00	5.00 24.15	5.00 23.06	5.00
Eve	vent 1 vent 2	No No	14.3 12.5	90.6 69.9	9.28 7.44	126.7 109	100.8 8.14 83.3 7.84	76 146.8	0.32 1.39	0.01 0.015	0.00015 0.00015	0.00001 0.00001	0.000005 0.000005	0.0001 0.0001	0.001 0.001	0.03 0.005	0.0005 0.0005	0.011 0.002	0.000015 0.000015	0.0005 0.0005	0.1	0.005 0.005	0.00001 0.00001	80 63	0.25	0.001 0.001
Eve	vent 3 vent 4	No No	9.3 7.4	61.2 43.7	7.03 12.55	48 52.3	33 7.64 35 5.73 59 7.86	145.8 115.9	40.77	0.015 0.015	0.00015 0.00015	0.00001	0.000005 0.000005	0.0001	0.001	0.005 0.005	0.0005 0.0005	0.0005 0.0005	0.000015 0.000015	0.0005	0.1 0.1	0.02 0.02	0.00001	41 27	42 0.25	0.001
N	went 5 Min Max	No	7.9 7.40 14.30	96.4 43.70 96.40	7.03 12.55	48.00 126.70	59 7.86 33.00 5.73 100.80 8.14	104.3 76.00 146.80	5.24 0.32 40.77	0.015	0.00015	0.00	0.00000S 0.00	0.0001	0.001 0.00 0.00	0.005 0.01	0.0005	0.0005	0.00015	0.000	0.10	0.005	0.0001	48 27.00 80.00	0.25 0.25 42.00	0.001
MA Co	Mean		10.28 5.00	72.36 5.00	9.55 5.00	84.60 5.00	62.22 7.44 5.00 5.00	117.76 5.00	11.93 4.00	0.02 0.01 5.00	0.00 5.00	0.00	0.00 5.00	0.00	0.00	0.01 5.00	0.00 5.00	0.00	0.00 5.00	0.00 5.00	0.24 5.00	0.01 5.00	0.00 5.00	51.80 5.00	9.15 5.00	0.00
	t. Dev vent 1	No	3.00 14.1	21.58 91.8	2.42 9.43	34.48 536	29.74 0.97 423.6 8.19	29.82 94.3	19.34 6.47	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.31	0.01	0.00	20.41 317	18.40	0.00
Eve Eve	vent 2 vent 3	No No	13.3 9.6	71.6 62.1	7.48 7.07	517 447	401.2 7.73 315 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	317 293 270	0.25 40	0.001
Eve Eve	vent 4	No No	9.1	96.1	12.06 11.07	321.3 473	349 6.37 305 7.86	61.1 128.7	4.22	0.015 0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.00S 0.00S	0.0005	0.0005	0.000015	0.0005	0.1	0.05	0.00001	266 293	0.25 0.25	0.001
N M	Max Vean		14.10 10.94	96.10 73.23	12.06 9.42	536.00 458.86	423.60 8.22 358.76 7.67	161.40 120.94	1.36 65.10 19.29	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.10	0.05	0.00	317.00 287.80	40.00 8.35	0.00
Co St.	Count t. Dev		5.00 2.56	5.00 21.31	5.00 2.18	5.00 84.55	5.00 5.00 52.22 0.76	5.00 43.16	4.00 30.61	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00 20.61	5.00 17.70	5.00
Eve	vent 1 vent 2	No No	14.9 12.7	92.2 73.8	9.31 7.83	110.7 104	89.3 8.35 79.2 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 0.0001	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	1 0.25	0.001 0.001
Eve	vent 4	No sample No	6.5	24.6	13.05	34.7	36.9 6.84	56.3		0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.1	0.005	0.00001	33	0.25	0.001
N	went 5 Min Max	No	7.9 6.50 14.90	102.6 24.60 102.60	12.18 7.83 13.05	82 34.70 110.70	59 7.97 36.90 6.84 89.30 8.35	157.1 56.30 157.10	1.85	0.015	0.00015	0.00	0.000005	0.0001	0.001	0.00S 0.01	0.0005	0.0005	0.00015	0.0005	0.10	0.005	0.00001	53 33.00 69.00	0.25	0.001
M Co	Mean		10.50	73.30 4.00	10.59 4.00	82.85 4.00	66.10 7.83 4.00 4.00	105.13 4.00	4.60 3.00	0.02	0.00 0.00 4.00	0.00 4.00	0.00	0.00	0.00	0.05 0.02 4.00	0.00	0.00	0.00 0.00 4.00	0.00	0.10	0.01 0.01 4.00	0.00 0.00 4.00	51.25 4.00	0.44 4.00	0.00
St.	t. Dev vent 1	No	3.96	34.58	2.44	34.36	23.19 0.68	46.06	2.57	0.01	0.00 0.00015	0.000	0.00	0.00	0.00	0.03 0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.75	0.38	0.00
Eve Eve	vent 2 vent 3	No No sample								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	353	2	0.001
Eve	vent 4 vent 5	No No	9.9 9.3	0 97.8	10.71 11.22	0 434	366.9 6.93 304 8.01	76.3 93.1	4.75	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	0.01 0.005	0.00001 0.00001	295 319	0.25 6	0.001 0.001
	Min Max Vean		9.30 9.90	0.00 97.80	10.71 11.22	0.00 434.00	304.00 6.93 366.90 8.01	76.30 93.10	4.75 4.75	0.01	0.00	0.00	0.00	0.00	0.00	0.01 0.02	0.00	0.00	0.00	0.00	0.10 2.00	0.01 0.01	0.00	295.00 353.00	0.25 6.00	0.00
Co	Count t. Dev		2.00	2.00	2.00	217.00	335.45 7.47 2.00 2.00 44.48 0.76	2.00	1.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
YR2-RS Eve	vent 1	No No	15.3 13	93.1 73.6	9.32 7.74	109.4 101	89.2 8.38 78.3 8.11	76.5 145.4	3.28 2.29	0.01	0.00015 0.00015	0.00001	0.000005	0.0001	0.001	0.06 0.005	0.0005 0.0005	0.003 0.002	0.000015 0.000015	0.0005	0.1	0.005	0.00001	74 39	0.25	0.001
Eve Eve	vent 3	No sample No	6.5	83.35	19.18	105.2	38.4 7.24	64.5		0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.000015	0.0005	0.1	0.005	0.00001	38	0.25	0.001
Eve M	went 5 Min	No	8.1 6.50	95.2 73.60	11.26 7.74	82 82.00	55 7.81 38.40 7.24	132.6 64.50	5.05 2.29	0.015 0.01	0.00015	0.000	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.00015	0.0005	0.10	0.02 0.01	0.00	57 38.00	0.25 0.25	0.001
	Max Vlean		15.30 10.73	95.20 86.31	19.18 11.88	109.40 99.40	89.20 8.38 65.23 7.89	145.40 104.75	5.05 3.54	0.02	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.10 0.10	0.02 0.01	0.00	74.00 52.00	2.00 0.69	0.00
St. St.	t. Dev	No flow	4.12	9.92	5.08	12.10	22.88 0.49	40.19	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.00	17.07	0.88	0.00
Eve	vent 2 vent 3	No flow No	10.4	61.4	6.87	108	78 7.5	152.2	42.72	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	84	8	0.001
Eve Eve	vent 4 vent 5	No No	8.6 8.8	61.4 96.2	12.09 11.17	108 172	96.9 7.19 119 7.81	53.1 128.7	5.49	0.00015 0.00015	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 0.01	0.00001 0.00001	69 84	0.25 0.25	0.001 0.001
N N	Min Max		8.60 10.40	61.40 96.20	6.87 12.09	108.00 172.00	78.00 7.19 119.00 7.81	53.10 152.20	5.49 42.72	0.00	0.00	0.00	0.00	0.00	0.00	0.01 0.01	0.00	0.00	0.00	0.00	0.10 0.10	0.01 0.01	0.00	69.00 84.00	0.25 8.00	0.00
Co	ount t Day	_	9.27 3.00	73.00 3.00	10.04 3.00	129.33 3.00	97.97 7.50 3.00 3.00	111.33 3.00	24.11 2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.10 3.00	3.00	3.00	79.00 3.00	2.83 3.00	3.00
TR-RS Eve	vent 1 vent 2	No No	12.9	94.6	9,99 8.2	21.1	16.2 7.83 15 7.87	80.5 153	0.07	0.01	0.00015	0.00001	0.000005	0.0001	0.001	0.03	0.0005	0.003	0.000015	0.0005	0.1	0.005	0.00001	43 12	1 0.25	0.001
Eve	vent 3 vent 4	No Sample No	6.1	85.3	14.78	20.55	12.3 7.03	67.6		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
Eve M	went 5 Min	No	5.8 5.80	103.9 76.00	13.01 8.20	27 20.00	17 8.1 12.30 7.03	180.3 67.60	4.15 0.07	0.015 0.01	0.00015	0.000	0.000005	0.0001	0.001	0.005	0.0005	0.0005	0.00015	0.0005	0.10	0.005 0.01	0.00	20 7.00	0.25 0.25	0.001
	Max Vlean		9.20	103.90 89.95	14.78 11.50	27.00 22.16	17.00 8.10 15.13 7.71	180.30 120.35	4.15 1.75	0.02	0.00 0.00 4.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00 0.00 4.00	1.10 0.35	0.01	0.00	43.00 20.50	1.00 0.44	0.00
St.	t. Dev vent 1	No	4.00 3.77	4.00 12.01	4.00 2.96 9.56	4.00 3.26	4.00 4.00 2.05 0.47 28.6 7.55	4.00 54.87	2.13 6.42	4.00 0.00	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	0.00 0.00	4.00 0.00	0.00	0.50	4.00 0.00	4.00 0.00	15.93	4.00 0.38	0.00
Eve Eve	vent 2 vent 3	No No	10.1 4.7	65.9 84.4	7.42 10.85	29 36	20.5 8.39 22 6.56	157.8 98.2	9.1 59.63	0.015 0.015	0.00015 0.00015	0.00001	0.00000S 0.00000S	0.0001	0.001	0.15	0.0005 0.0005	0.001 0.0005	0.000015	0.000S 0.000S	0.2	0.005 0.17	0.00001	44	14 104	0.001
Eve Eve	vent 4 vent 5	No No	3.5 5.4	96.4 91.8	12.79 11.6	30.8 35	18.2 6.87 22 6.91	64 172.4	10.56	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 0.06	0.0005 0.0005	0.0005 0.0005	0.000015 0.000015	0.000S 0.000S	0.1	0.03 0.005	0.00001 0.00001	18 31	0.25 8	0.001 0.001
	Min Max Vean		3.50 13.20	65.90 96.40	7.42 12.79 10.44	29.00 36.90 33.54	18.20 6.56 28.60 8.39 22.26 7.26	64.00 172.40 118.76	6.42 59.63	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.10 2.00	0.01	0.00	1.00 44.00	0.25 104.00	0.00
Co	Vlean Count t. Dev		7.38 5.00 4.11	85.92 5.00 11.98	10.44 5.00 2.06	33.54 5.00 3.45	22.26 7.26 5.00 5.00 3.87 0.73	118.76 5.00 45.07	21.43 4.00 25.53	0.06 5.00	0.00 5.00 0.00	0.00 5.00 0.00	0.00 5.00	0.00 5.00	0.00 5.00	0.12 5.00 0.16	0.00 5.00	5.00 0.00	0.00 5.00 0.00	0.00 5.00 0.00	0.50 5.00	0.04 5.00	0.00 5.00	23.20 5.00 15.93	25.45 5.00 44.27	5.00
NZG-IS Eve	vent 1	No No	13.4 10.2	91.3 70.2	9.54 7.89	53.8	41.8 7.39 36 7.69	108.1 148	5.14 3.67	0.14	0.00015 0.00015	0.00001	0.000005 0.000005	0.0001	0.001	0.21	0.0005 0.0005	0.005	0.000015	0.000S 0.000S	3 0.1	0.005 0.005	0.00001 0.00001	43 52	1 0.25	0.001
Eve	vent 3 vent 4	No No	5.2 4.7	80.8 95.4	10.27 12.28	39 39.8	24 6.95 24.4 6.67	125.4 54.6	51.33	0.015 0.015	0.00015 0.00015	0.00001 0.00001	0.000005 0.000005	0.0001 0.0001	0.001 0.001	0.00S 0.00S	0.0005 0.0005	0.0005 0.0005	0.000015 0.000015	0.000S 0.000S	0.1 0.1	0.005 0.03	0.00001 0.00001	48 22	53 0.25	0.001 0.001
N	went 5 Min	No	6.2 4.70	90.4 70.20	11.19 7.89	45 39.00	29 6.97 24.00 6.67	158 54.60	7.68 3.67	0.015	0.00015	0.0001	0.000005	0.0001	0.001	0.005 0.01	0.0005	0.000S 0.00	0.00015	0.0005	0.10	0.005 0.01	0.00001	31 22.00	6 0.25	0.001
	Max Vlean Count		13.40 7.94	95.40 85.62	12.28 10.23	53.80 45.52	41.80 7.69 31.04 7.13 5.00 5.00	158.00 118.82	51.33 16.96	0.14 0.04	0.00	0.00	0.00	0.00	0.00	0.21 0.05	0.00	0.01	0.00	0.00	3.00 0.68	0.03	0.00	52.00 39.20	53.00 12.10	0.00
St.	t. Dev vent 1	No	3.74 14.2	5.00 10.15 94	5.00 1.66 9.63	5.00 6.41 32.9	5.00 5.00 7.72 0.40 26.1 7.58	5.00 40.83 172.4	4.00 22.98 10.66	5.00 0.06	0.00	0.00	0.00	0.00	0.00	5.00 0.09	0.00	0.00 0.011	0.00	0.00	1.30	5.00 0.01	0.00	5.00 12.44	5.00 22.99	0.00
Eve	vent 2 vent 3	No No	10.4 4.3	69.7 81.5	7.8 10.6	30 31	26.1 7.58 21.4 7.65 31 6.9	172.4 139.3 121.6	9.44 32.77	0.015 0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.2	0.0005 0.0005	0.001	0.000015 0.000015	0.0005 0.0005	0.1	0.005 0.005	0.00001	24 46	7 36	0.001
Dun	vent 4 vent 5 Min	No No	4.2 6	93.8 91.2	12.23 11.35	27.6 32	16.6 6.7 20 6.6	48.1 153.5	11.62	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	0.000S 0.000S	0.000015 0.000015	0.0005	0.1	0.005 0.005	0.00001	14 19	4 5	0.001 0.001
N M	Min Max		4.20 14.20	69.70 94.00	7.80 12.23	27.60 32.90	16.60 6.60 31.00 7.65	48.10 172.40	9.44 32.77	0.02 0.41	0.00	0.00	0.00	0.00	0.00	0.01 0.49	0.00	0.00 0.01	0.00	0.00	0.10 2.00	0.01 0.01	0.00	14.00 46.00	4.00 36.00	0.00
	Mean Count t. Dev		7.82 5.00 4.36	86.04 5.00	10.32 5.00 1.70	30.70 5.00 2.04	23.02 7.09 5.00 5.00	126.98 5.00 47.88	16.12 4.00 11.13	0.09 5.00	0.00 5.00	0.00 5.00 0.00	0.00 5.00	0.00 5.00	0.00 5.00	0.14 5.00	0.00 5.00	0.00 5.00	0.00 5.00	0.00 5.00	0.48 5.00	0.01 5.00	0.00 5.00	24.60 5.00 12.48	12.00 5.00	0.00 5.00
YK-RS Eve	vent 1	No No	4.36 15.8 12.7	10.46 87.5 71.4	1.70 8.96 7.58	30.5	5.62 0.50 25.1 7.12 24 7.54	47.88 142 138.9	11.13 5.71 9.77	0.18	0.00	0.00001	0.000005	0.0001	0.001	0.21 0.45 0.19	0.0005	0.005	0.000015	0.0005	0.85	0.005	0.0001	12.48 20	13.51	0.001
Eve	vent 2 vent 3 vent 4	No No	3.4 3.9	71.4 82 95.3	7.58 10.91 12.53	31 31 26.9	24 7.54 18 6.73 16.1 6.58	138.9 128.8 44.2	9,77 20.28	0.015 0.015	0.00015 0.00015	0.00001	0.00000S 0.00000S	0.0001	0.001	0.005 0.005	0.0005 0.0005	0.002 0.0005 0.0005	0.000015 0.000015	0.000S 0.000S	0.1	0.005 0.005	0.00001 0.00001	40 15	3	0.001
	vent 5 Min	No	6.4 3.40	93.3 88.7 71.40	10.95 7.58	32 26.90	21 6.5 16.10 6.50	158.8 44.20	8.97 5.71	0.015	0.00015	0.00001	0.000005	0.0001	0.001	0.05	0.0005	0.0005	0.000015	0.0005	0.1	0.005	0.00001	25 15.00	5 1,00	0.001
M M	Max Vlean		15.80 8.44	95.30 84.98	12.53 10.19	32.00 30.28	25.10 7.54 20.84 6.89	158.80 122.54	20.28 11.18	0.35 0.08	0.00	0.00	0.00	0.00	0.00	0.45 0.14	0.00	0.01 0.00	0.00	0.00	0.10 0.10	0.01 0.01	0.00	40.00 26.00	6.00 3.20	0.00
Co St.	count t. Dev		5.00 5.53	5.00 8.94	5.00 1.93	5.00 1.97	5.00 5.00 3.83 0.43	5.00 45.10	4.00 6.31	5.00 0.15	5.00 0.00	5.00 0.00	5.00 0.00	5.00 0.00	5.00	5.00 0.19	5.00	5.00	5.00 0.00	5.00 0.00	5.00 0.00	5.00 0.00	5.00 0.00	5.00 9.62	5.00 2.28	5.00 0.00
Values coloured blue and italicise	ed are half the L	lmit of reporting	for statistical use (LC	08/2)																						

APPENDIX B OBSERVATIONS AND FIELD DATA

m\$/cm mSkm

22-013 Pre-cons	struction WQM	Grease/oil/ sheen	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (ppm)	Specific Conductivity (SPC uS/cm)	Gonductivity (uS/cm)	рН	Oxidation Reduction Potential (mV)	Turbidity (NTU)
	Month	NO 101101 C	7.8°C	98.9 1000 /a	11.76	6.088 1 2ll	0.059	7.96	65.8	6,45
WC-RS	Comment	No che No or	per us	of UNL	and it	0141.	DUP			
	Month	No	7,9	96.4	11.45	F80.0	0.059	7.86	104,3	5.24
WC-IS		13 C	2 reve							
	Comment								·	
	Month	ΛJo	9.1	96.1	11.07	0.437	0,305	8,17	128. 2	4.22
		As al		3 3 3						
CG-IS	Comment									
	Month	JP.	7.9	102.6	12.18	0.082	0.055	7.97	157.1	5,00
		as a	UPIC							
YR₁⊣S	Comment									

Marke II							e May			*	
3	22-013 Pre-cons	truction WQM	Grease/oil/ sheen	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (ppm)	Specific Conductivity (SPC uS/cm)	Conductivity (uS/cm)	pΗ	Oxidation Reduction Potential (mV)	Turbidity (NTU)
S.		Month	No	9,3	97.8	11.22	0.434	0.304	8,01	93.1	4.75
	EHG-IS	Comment	Decent 2018	ole from	jand n	no-cal					
		Month	No	8.1	95.2	11.76	0.082	0,055	7.81	132.6	5.05
	YR2-IS	Comment				:					
	ssc is	Month Comment	No	8.8	96.2	1 11.17	0,172	0.119	7.81	128.7	5.49
		Month	No	5.8	103.9	13.01	0.027	0,017	8.10	180,3	4.15
	TR-RS	Comment	Secumen	b plume	close f	e looke -	evas avo	C. C. Simbol .		- Aginari	
		Month	No	5. 4	91.8	11.60	0.035	6.622	6-91	1724	10,56
	YK-IS (D/S)	Comment									۸.

22-013 Pre-cons	truction WQM _e	Grease/oil/ sheen	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (ppm)	Specific Conductivity (SPC uS/cm)	Gonductivity (uS/cm)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)
	Month	1/0	6.2 hout en	90.4	11.19	0.045	0.029	6.97	/58	7.48
		Horse	hoer en	voccor of	Some a	wolff				1.000
NXG18	Comment									
				T 2.3	# 000 Automatic			T / /	I for the same	
	Month	No	6.0	11.2	11.35	0.032	0.020	6,6	153.6	11.62
			•							
YK-IS	Comment	,								
	Month	Llo	6.4	88.7	10.95	0.032	0.021	615	158.8	8.97
) ······		*	w.	·				
YK-RS	Comment									

APPENDIX C LABORATORY CERTIFICATES



CLIENT:	NGH Pty Ltd								-	ANAL	YTES	REQU	IRED	Compl	lete & t	ick as i	require	d		
CONTACT:	Nicola Smith								spi	<u>s</u>	As, i, Zn,		54 65							
ADDRESS:	35 Kincaid Street Wagga Wagga NSW 2650 ABN: 31 124 444 6	522			4	gen	Phosphorus		Total Suspended Solids	Total Dissolved Solids	Dissolved Metals (AI, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn,							9-		
TELEPHONE:	0410 411		E-mail	nicola.s@ngl	nconsulting.com.au		Phos	de	Susp	Diss	lved r, Cu									
SAMPLE IDENTIFICATION	NATURE OF SAMPLE	DATE SAMPLED	TIME SAMPLED	CONTAINER TYPE	NUMBER OF CONTAINERS	Total	Total	Cyanide	Total	Total	Disso Cd, C									
WC-RS	Water	27.7.12		1 Botto	3	X	X	X	X	X	×									
WC-IS	.(27.7.22		и	3	X	X	X	X	×	X									
CG-IS	u	2747.22		9	3	X	X	X	X	X	X									
YR1-IS	C(27.7-22		ч	3	X	X	X	X	×	X									
LHG-IS	IJ	27.7-22		4	3	X	×	X	X	X	×									
YR2-IS	11	27.7.72		4	3	X	X	X	×	X	X	1								
SSC-IS	10	27.7.22		t/	3	X	X	X	X	×	X									
TR-RS	11	28.7.27		И	3	X	X	X	X	X	×	3								
YK-IS (d/s)	li.	28.7.72		U	3	×	×	X	X	X	X	-	3							
NZG-IS	. 11	28.7.22		И	3	X	X	X	X	×	×				4				8	
YK-IS	(1	28.7.22		· le	3	×	×	×	×	×	X									
YK-RS	- 11	28.7.22		11	3	X	X	×	×	×	×	7								
DUPOI	Water	27,7.22		1 botto	1						X									
		74																		

	NAME	SIGNATURE	ORGANISATION	DATE TIME
RELINQUISHED BY:	Nicola Smith	A	NGH Pty Ltd	29/7/22
Mode of Transport				
Include Consignment Note # if applicable	Delivery			
RECEIVED BY:				



Locked Bag 588 Wagga Wagga NSW 2678

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

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

NGH Environmental

Suite 1/39 Fitzmaurice Strret

Wagga Wagga NSW 2650

Attention: Nicole Isles

Wednesday, September 28, 2022



NATA Accredited Laboratory

Number: 9597

Accredited for compliance with ISO/IEC 17025 - Testing

REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086 Page 1 of 15

For all enquiries related to this report please quote document number: 2207-0086

Facility: Order # Date Analysis Commenced

29-July-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith29-July-2022

EAL ID	Client ID. Date/Time sampl	<u>Test</u> e taken	Result	(units)	Method Reference	<u>Limit of</u> <u>Reporting</u>
22Jul-0278	WC-RS 27.07.22					
		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	56	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

22Jul-0279 **WC-IS** 27.07.22

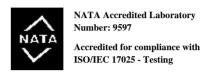


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Wednesday, September 28, 2022



NGH Environmental

Suite 1/39 Fitzmaurice Strret

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Attention: Nicole Isles

REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086 Page 2 of 15

For all enquiries related to this report please quote document number: 2207-0086

<u>Facility:</u> <u>Order #</u> <u>Date Analysis Commenced</u>

29-July-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith29-July-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0279	WC-IS 27.07.22					
		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	48	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

22Jul-0280 **CG-IS**

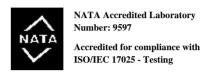


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Attention: Nicole Isles

REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086 Page 3 of 15

For all enquiries related to this report please quote document number: 2207-0086

<u>Facility:</u> <u>Order #</u> <u>Date Analysis Commenced</u>

29-July-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith29-July-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0280	CG-IS 27.07.22					
		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	293	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

22Jul-0281 YR1-IS

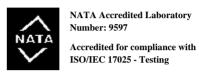


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Attention: Nicole Isles

REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086 Page 4 of 15

For all enquiries related to this report please quote document number: 2207-0086

<u>Facility:</u> <u>Order #</u> <u>Date Analysis Commenced</u>

29-July-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith29-July-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0281	YR1-IS 27.07.22					
		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	53	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

22Jul-0282 **LHG-IS**



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Attention: Nicole Isles

Wednesday, September 28, 2022



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Number: 9597

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REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086 Page 5 of 15

For all enquiries related to this report please quote document number: 2207-0086

Facility: Order # Date Analysis Commenced

29-July-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith29-July-2022

						•
EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0282	LHG-IS 27.07.22					
		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)	0.010	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	319	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

22Jul-0283 YR2-IS

27.07.22



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Attention: Nicole Isles

Wednesday, September 28, 2022

NATA Accredited Laboratory

Number: 9597

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REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086 Page 6 of 15

For all enquiries related to this report please quote document number: 2207-0086

<u>Facility:</u> <u>Order #</u> <u>Date Analysis Commenced</u>

29-July-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith29-July-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0283	YR2-IS 27.07.22					
		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	57	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

22Jul-0284 SSC-IS

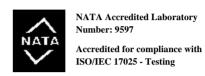


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Attention: Nicole Isles

REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086 Page 7 of 15

For all enquiries related to this report please quote document number: 2207-0086

Facility: Order # Date Analysis Commenced
29-July-2022

, . . . **.**

 Sample Type
 Collected By
 Date Received

 Water
 N. Smith
 29-July-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0284	SSC-IS 27.07.22					
		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	84	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

22Jul-0285 **TR-RS**

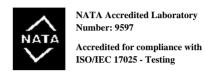


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REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086 Page 8 of 15

For all enquiries related to this report please quote document number: 2207-0086

<u>Facility:</u> <u>Order #</u> <u>Date Analysis Commenced</u>

29-July-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith29-July-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0285	TR-RS 28.07.22					
		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	20	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

22Jul-0286 **YK-IS(d/s)**



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Wednesday, September 28, 2022

Number: 9597

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REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086 Page 9 of 15

For all enquiries related to this report please quote document number: 2207-0086

<u>Facility:</u> <u>Order #</u> <u>Date Analysis Commenced</u>

29-July-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith29-July-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0286	YK-IS(d/s) 28.07.22					
		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)	0.06	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	31	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	8	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	< 0.002	mg/L	APHA 3030 B/3120 B	0.002

22Jul-0287 **NZG-IS**



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Report Number: 2207-0086 Page 10 of 15

For all enquiries related to this report please quote document number: 2207-0086

Facility: Order # **Date Analysis Commenced**

29-July-2022

Sample Type Collected By **Date Received** Water N. Smith 29-July-2022

EAL ID	Client ID. Date/Time sampl	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0287	NZG-IS 28.07.22					
		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	34	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	4	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	<0.002	mg/L	APHA 3030 B/3120 B	0.002

22Jul-0288

YK-IS

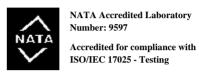


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Wednesday, September 28, 2022



NGH Environmental

Suite 1/39 Fitzmaurice Strret

Wagga Wagga NSW 2650

Attention: Nicole Isles

REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number: 2207-0086 Page 11 of 15

For all enquiries related to this report please quote document number: 2207-0086

Facility: Order # **Date Analysis Commenced** 29-July-2022

> Collected By **Date Received**

Water 29-July-2022 N. Smith

EAL ID	Client ID. Date/Time sample	<u>Test</u> : taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0288	YK-IS 28.07.22					
	20.07.22	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	0.03	mg/L	LTM-W-030	0.01
		Silver (dissolved)	<0.00002	mg/L	* APHA 3030 E/3120 B	0.002
		Total Dissolved Solids	30	mg/L	LTM-W-035	2
		Total Kjeldahl Nitrogen	<0.2	mg/L	LTM-W-034	2
		Total Suspended Solids	11	mg/L	APHA 2540 D	0.2
		Zinc (dissolved)	<0.002	mg/L	APHA 3030 B/3120 B	0.002

22Jul-0289

Sample Type



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Suite 1/39 Fitzmaurice Strret

Wagga Wagga NSW 2650

Attention: Nicole Isles

Wednesday, September 28, 2022



NATA Accredited Laboratory

Number: 9597

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REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086 Page 12 of 15

For all enquiries related to this report please quote document number: 2207-0086

Facility: Order # Date Analysis Commenced

29-July-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith29-July-2022

						•
EAL ID	Client ID. Date/Time sampl	<u>Test</u> e taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0289	YK-RS 28.07.22					
		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)	0.05	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	25	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

22Jul-0290 **DUP01**



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Attention: Nicole Isles

Wednesday, September 28, 2022



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Number: 9597

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REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086 Page 13 of 15

For all enquiries related to this report please quote document number: 2207-0086

Facility: Order # Date Analysis Commenced

29-July-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith29-July-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0290	DUP01 27.07.22					
		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
22Jul-0293	Water Blank 27.07.22	•				
		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



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Attention: Nicole Isles

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Wednesday, September 28, 2022

Number: 9597

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REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086

Page 14 of 15

For all enquiries related to this report please quote document number: 2207-0086

<u>Facility:</u> <u>Order #</u> <u>Date Analysis Commenced</u>

29-July-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith29-July-2022

EAL ID	Client ID. Date/Time sample	<u>Test</u> taken	Result	(units)	Method Reference	Limit of Reporting
22Jul-0293	Water Blank 27.07.22					
		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	4	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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Wednesday, September 28, 2022

REPLACEMENT LABORATORY ANALYSIS REPORT This Report Replaces Report Sent on 19/08/2022

Report Number:2207-0086 Page 15 of 15

For all enquiries related to this report please quote document number: 2207-0086

Facility: Order # Date Analysis Commenced

29-July-2022

Sample TypeCollected ByDate ReceivedWaterN. Smith29-July-2022

 EAL ID
 Client ID.
 Test
 Result (units)
 Method Reference
 Limit of

 Date/Time sample taken
 Reporting

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

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	eptable Ran	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
	F			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
	F			RPD%	- Acceptable	Range		1	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Event 7			_																		
				-																		
	Event 8																					
	EAGIII 0																					
	Event 1	Nothing above LOR						<0.02	< 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 2							<0.02	<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 3	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		
/ater Blan	Event 4				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
	Event 5				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
	Event 6			NO	uning above	-OK		1		~0.03	~0.0003	~0.00002	~0.00001	~0.0002	~0.002	~0.01	~0.001	~0.001	~0.00003	~U.UU1	~0.00002	~U.UUZ
	LYCHIO																					

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

How to calculate the Relative Percent Difference (RPD)

The basic equation for $R = \frac{|D||R^1 - R^2|}{\left(\frac{R^1 + R^2}{2}\right)} \times 100,$

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 Serial No. YSI Pro DSS 20F162071



Air-Met Scientific Pty Ltd 1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	1	
	Fuses	1	
	Capacity	1	
	Recharge OK?	1	
Switch/keypad	Operation	✓.	
Display	Intensity	1	
	Operation	1	
	(segments)		
Grill Filter	Condition	1	
	Seal	1	
PCB	Condition	1	
Connectors	Condition	1	
Sensor	1. pH/ORP	1	
	2. Turbidity	1	
	3. Conductivity	√	
	4. D.O	1	
	5. Temp	1	
	6. Depth	1	
Alarms	Beeper		
	Settings	The second second	
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Bump Test Certificate

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

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. COND		2.76mS		385047	2.76mS
2. Temp		20.0°C		MultiTherm	18.9°C
3. pH 4		pH 4.00		389384	pH 3.97
4. pH 7		pH 7.00		381241	pH 7.15
6. ORP mV		240.0mV		385070/387761	239.8mV
7. DO		0.00%		371864	0,04%
8. Turbidity		100NTU		381476	100.05 NTU

Calibrated by:

Victor T

Calibration date:

8/07/2022

Next calibration due:

7/08/2022