SEPTEMBER 2024

MONTHLY CONSTRUCTION WATER QUALITY MONITORING REPORT

September 2024
Project No: 3200-0645
Project: Transgrid Maragle 500/330 kV Substation
Private & Confidential

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ABBREVIATIONS

Acronym	Full Form
℃	degrees Celsius
µS/cm	micro Siemens per centimetre
%	percent
Ag	Silver
Al	Aluminium
ALS	ALS Limited
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZG	Australian and New Zealand Guidelines
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
As	Arsenic
Baseline Report	'Baseline Water Quality Report' (NGH, 2024)
$CaCO_3$	Total Hardness
Cd	Cadmium
COA	'Certificate of Analysis' (ALS, 2024a)
Cr	Chromium
Cu	Copper
DGV	Default Guideline Values
DO	Dissolved Oxygen
EC	Electrical Conductivity
EIS	Environmental Impact Statement
EPL	Environmental Protection Licence
Fe	Iron
Field Sheet	'Water Quality Monitoring Field Data Sheet' (UGL, 2024)
Hg	Mercury
km	kilometres
km/h	kilometres per hour
KNP	Kosciuszko National Park
kV	kilovolt
LOR	limit of reporting
mg/L	milligram per litre
mm	millimetre
Mn	Manganese
mV	millivolt
NATA	National Association of Testing Authorities, Australia
NEM	National Energy Market

ABBREVIATIONS

Acronym	Full Form
NGH	NGH Pty Ltd
Ni	Nickel
NSW	New South Wales
NTU	Nephelometric Turbidity Unit
Pb	Lead
ppm	parts per million
Pty Ltd	Proprietary Limited
QA/QC Assessment	'QA/QC Compliance Assessment to assist with Quality Review' (ALS, 2024b)
QCR	'Quality Control Report' (ALS, 2024c)
RS	Reference Site
Snowy 2.0	Snowy Scheme expansion project (EPBC 2018/8322)
Snowy Hydro	Snowy Hydro Limited
Snowy Scheme	Snowy Mountains Hydro-electric Scheme
SPC	specific conductance
SSGV	Site Specific Guideline Values
SW	surface water
SWQ	surface water quality
TDS	Total Dissolved Solids
The Methodology	'Pre-construction Water Quality Monitoring Program and Methodology' (NGH, 2022)
The Project	Construction of a 330 kV substation and overhead transmission lines between Nurenmerenmong, NSW and Cabramurra, NSW
TKN	Total Kjeldahl Nitrogen
TN	Total Nitrogen
TP	Total Phosphorus
Transgrid	The Trustee for the NSW Electricity Operations Trust
TSS	Total Suspended Solids
UGL	UGL Limited
WQO	water quality objectives
Zn	Zinc

1. BACKGROUND

In 2020 Snowy Hydro Limited (Snowy Hydro) obtained approval (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 (Snowy 2.0).

To connect Snowy 2.0 to the National Energy Market (NEM), a new transmission connection was required. The Trustee for the New South Wales (NSW) Electricity Operations Trust (TransGrid) is constructing a 330 kilovolt (kV) substation and overhead transmission lines (the Project) to facilitate the connection of Snowy 2.0 to the existing electrical transmission network. The Project is located within Kosciuszko National Park (KNP) between Nurenmerenmong and Cabramurra, NSW, approximately 27 kilometres (km) east of Tumbarumba, NSW (Figure 1). UGL Limited (UGL) has been engaged on behalf of Transgrid to undertake the Project.

2. INTRODUCTION

The Project is adjacent to, and forms part of, the Snowy 2.0 project area and is located within KNP, an area of high conservation value. A total of 22 mapped waterways, tributaries of Yarrangobilly River and Tumut River, transect the Project Boundary (Figure 1).

One of the conditions of approval to meet the requirements outlined in the 'Environmental Impact Statement' (EIS) (Jacobs, 2020) and the Project's Environmental Protection Licence (EPL 21753) is to undertake regular surface water quality (SWQ) monitoring to mitigate environmental impacts on SWQ.

Pre-construction SWQ monitoring was undertaken by NGH Pty Ltd (NGH) between March 2022 and February 2024 to determine site specific baseline values for SWQ parameters prior to Project construction works. The pre-construction SWQ monitoring was undertaken using the 'Pre-construction Water Quality Monitoring Program and Methodology' (the Methodology) developed by NGH in 2022 (refer Section 3). Two years of pre-construction SWQ monitoring was analysed and summarised in the 'Baseline Water Quality Report' (Baseline Report) (NGH, 2024). The results were used to determine seasonal Site Specific Guideline Values (SSGV) for ongoing SWQ monitoring during the construction phase.

Construction for the Project commenced in March 2024. Construction SWQ monitoring will be undertaken by UGL on a monthly basis as per the revised methodology outlined in Section 3 to identify potential changes to SWQ that may be associated with the Project. SW samples from the construction SWQ monitoring would be analysed and presented in monthly Construction Water Quality Monitoring Reports.

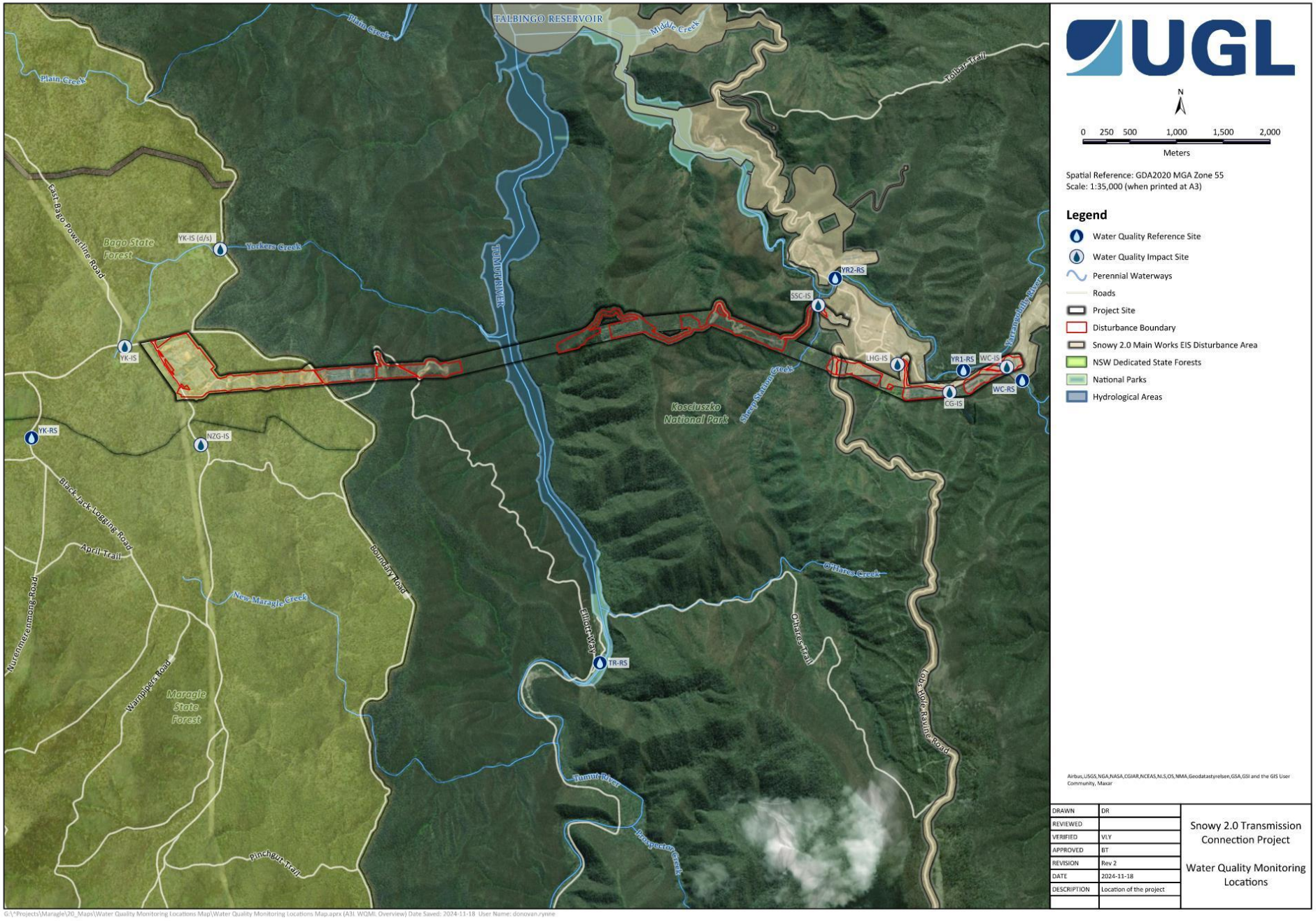

FIGURE 1 LOCALITY OF THE PROJECT AND SWQ MONITORING LOCATIONS

3. METHODOLOGY

The Methodology was prepared by NGH in 2022 to support the pre-construction SWQ monitoring for the Project. The Methodology detailed the water quality objectives (WQO) for the Project, identified the monitoring locations and outlined the methodology for surface water (SW) sampling during the pre-construction phase. The Methodology (NGH, 2022) took into account the Project location within an area of high conservation value where the WQO for physical and chemical stressors, as outlined in the 'Australian and New Zealand Guidelines for Fresh and Marine Water Quality' (ANZG) (ANZG, 2018), includes no change in biodiversity beyond natural variability and where possible, there should also be no change in water/sediment chemical and physical properties, including toxicants.

Monitoring locations are outlined in Table 1. Figure 2 and Figure 3 show the water quality monitoring locations in relation to the Project and Snowy 2.0.

The Methodology (NGH, 2022) has been revised for construction SWQ monitoring by taking into account the seasonal SSGV set out in the Baseline Report (NGH, 2024) (refer to Section 4.2).

Construction SWQ monitoring would be analysed against the seasonal SSGV where available and appropriate. The Default Guideline Values (DGV) for Upland Rivers (ANZG, 2018) would be applied to water quality parameters that were not assessed in the Baseline Report (NGH, 2024) or where a guideline range is more appropriate. Table 2 outlines the seasonal SSGV and DGV used to compare construction SWQ to pre-construction SWQ.

Table 1 Water quality monitoring locations outlined in the Methodology (NGH, 2022)

WATER QUALITY MONITORING LOCATIONS					
ID	**Waterway**	**Site Type**	**Catchment**	**Latitude**	**Longitude**
WC-RS	Wallace Creek	Reference	Yarrangabilly River	-35.794258	148.415253
WC-IS	Wallace Creek	Impact		-35.792982	148.413404
CG-IS	Cave Gully	Impact		-35.795495	148.406665
YR1-IS	Yarrangobilly River	Impact		-35.793358	148.408277
LHG-IS	Lick Hole Gully	Impact		-35.792890	148.400445
YR2-IS	Yarrangobilly River	Impact		-35.784656	148.392921
SSC-IS	Sheep Station Creek	Impact		-35.793243	148.391046
TR-RS	Talbingo Reservoir	Reference	Talbingo Reservoir	-35.822094	148.365690
YK-RS	Yorkers Creek	Reference	Yorkers Creek	-35.801126	148.297979
YK-IS (D/S)	Yorkers Creek	Impact		-35.782684	148.320040
NZG-IS	New Zealand Gully	Impact		-35.801575	148.318051
YK-IS	Yorkers Creek	Impact		-35.792209	148.308878

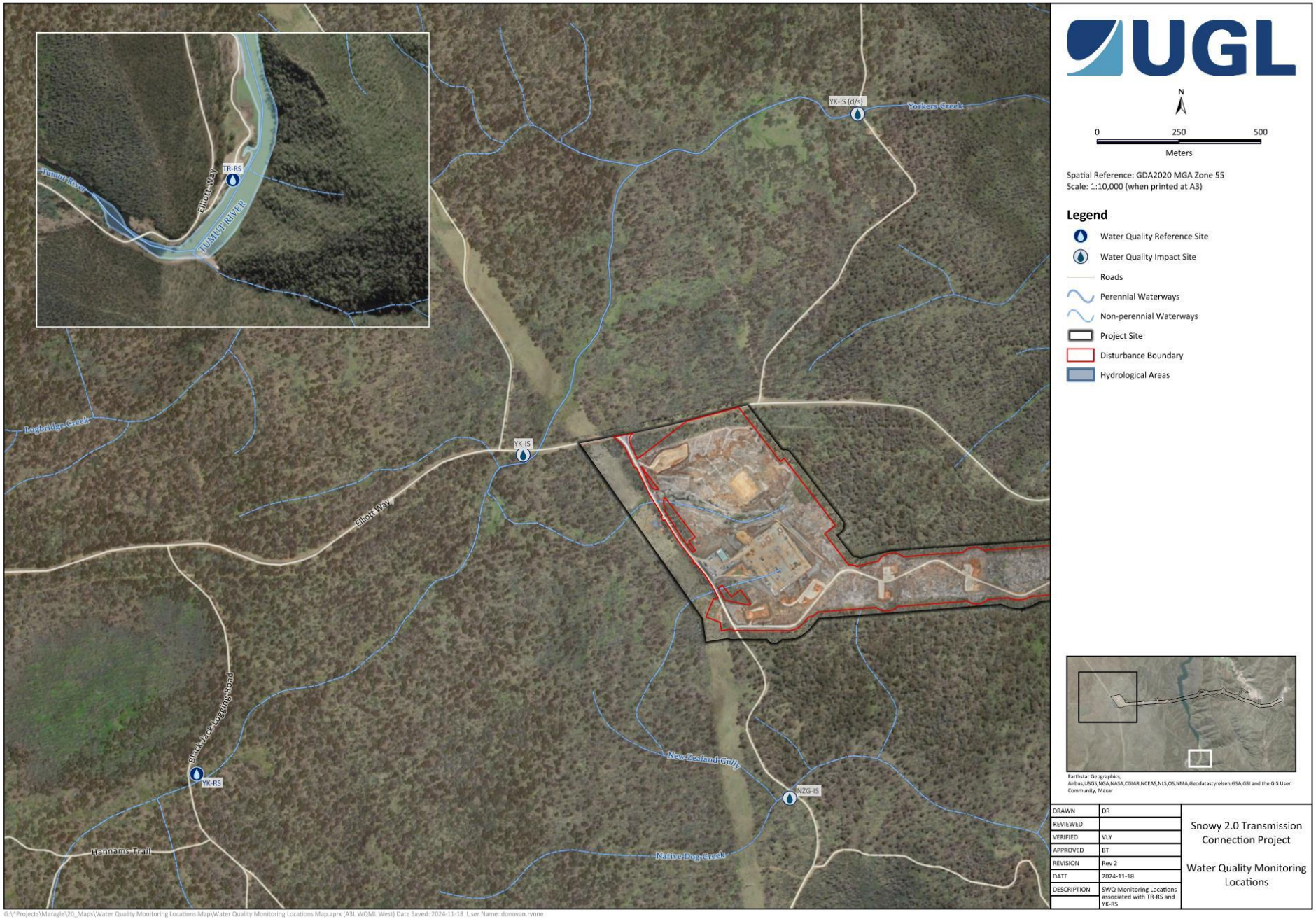

FIGURE 2 WATER QUALITY MONITORING LOCATIONS ASSOCIATED WITH REFERENCE SITE YR-RS AND TR-RS IN RELATION TO THE PROJECT

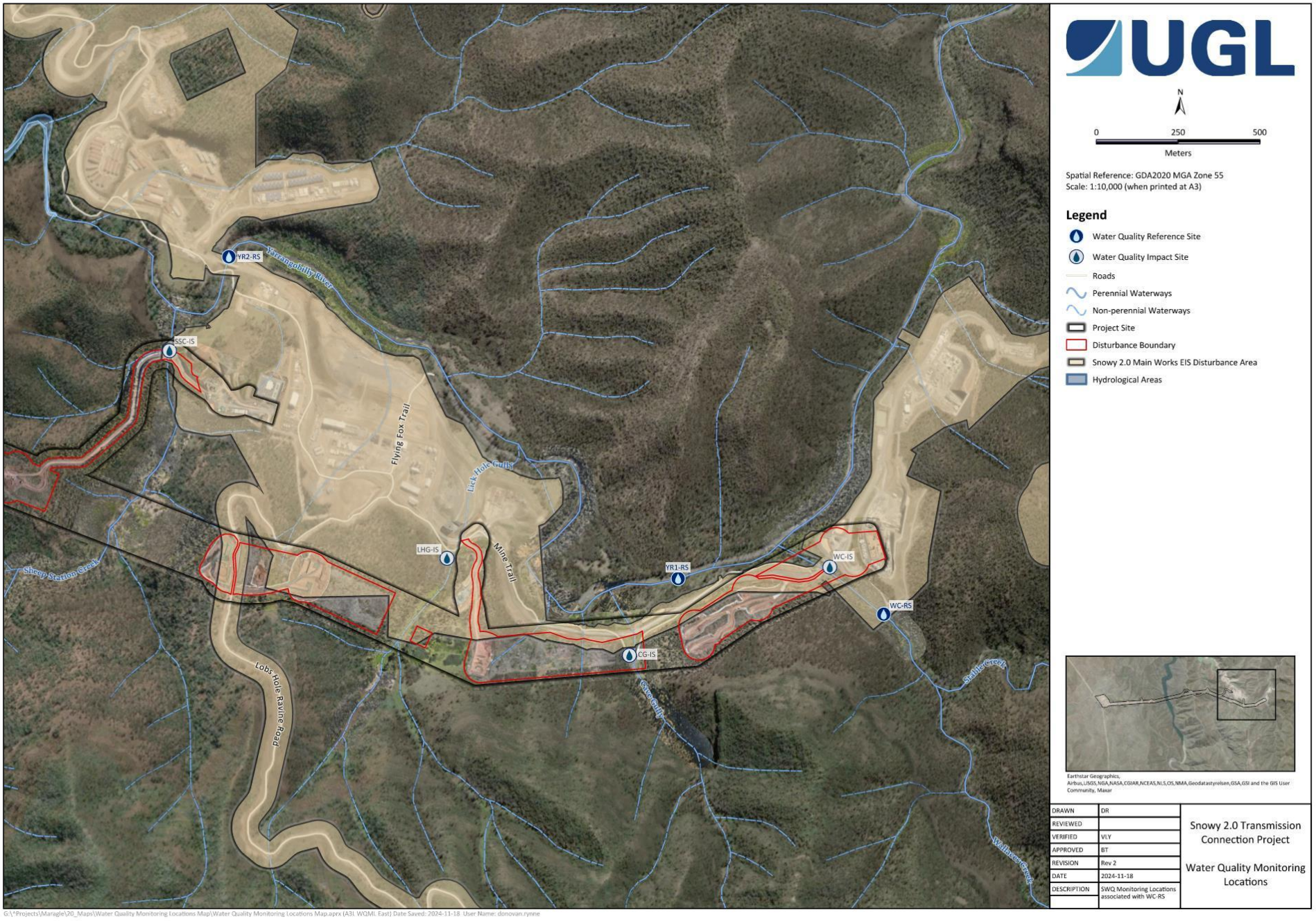

FIGURE 3 WATER QUALITY MONITORING LOCATIONS ASSOCIATED WITH REFERENCE SITE WC-RS IN RELATION TO THE PROJECT

Table 2 Seasonal SSGV (NGH, 2024) and DGV (ANZG, 2018) for water quality parameters

SURFACE WATER QUALITY GUIDELINE VALUES								
Parameter	**Unit**	**WC-RS**		**TR-RS**		**YK-RS**		**DGV**
		SSGV (Summer/Autumn)	**SSGV (Winter/Spring)**	**SSGV (Summer/Autumn)**	**SSGV (Winter/Spring)**	**SSGV (Summer/Autumn)**	**SSGV (Winter/Spring)**	
Temperature	°C*	-	-	-	-	-	-	-
Dissolved Oxygen (DO) ***	%#	96.2	89.7	91.3	95.5	89.6	88.7	90-110
DO	ppm+	9.08	10.28	8.79	11.53	8.35	10.2	-
Specific Electrical Conductivity (EC)***	SPC^ µS/cm^^	115	88	24	38.7	31	27.9	30-350
EC***	µS/cm	93.2	60.85	20.3	26.2	24	20.5	30-350
pH***	-	7.85	7.62	7.59	7.59	6.79	6.61	6.5-8
Redox	mV##	79.1	98.4	91.2	95.4	94.6	106.1	-
Turbidity***	NTU**	0.37	5.12	0.09	1.56	9	7.87	2-25
Dissolved Aluminium (Al)	mg/L++	0.03	0.04	0.03	0.015	0.36	0.32	0.027
Dissolved Arsenic (As)	mg/L	0.003	0.0003	0.003	0.0003	0.003	0.0003	0.0008
Dissolved Cadmium (Cd)	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.0006
Dissolved Chromium (Cr)	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
Dissolved Copper (Cu)	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001
Cyanide	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.004
Dissolved Iron (Fe)	mg/L	0.03	0.02	0.04	0.02	0.41	0.23	0.3
Dissolved Lead (Pb)	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Dissolved Manganese (Mn)	mg/L	0.002	0.002	0.003	0.002	0.005	0.003	1.2
Dissolved Mercury (Hg)	mg/L	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00006

SURFACE WATER QUALITY GUIDELINE VALUES

Parameter	Unit	WC-RS		TR-RS		YK-RS		DGV
		SSGV (Summer/Autumn)	SSGV (Winter/Spring)	SSGV (Summer/Autumn)	SSGV (Winter/Spring)	SSGV (Summer/Autumn)	SSGV (Winter/Spring)	
Dissolved Nickel (Ni)	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.008
Total Nitrogen (TN)	mg/L	0.2	0.2	0.2	0.2	0.2	0.2	0.25
Total Phosphorus (TP)	mg/L	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Dissolved Silver (Ag)	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
Dissolved Zinc (Zn)	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.0024
Ammonia	mg/L	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Nitrogen Oxides	mg/L	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Reactive Phosphorous	mg/L	0.02	0.015	0.02	0.015	0.02	0.02	0.015
Total Hardness ($CaCO_3$)	mg/L	47	30	7.5	8	1	7	-
Total Kjeldahl Nitrogen (TKN)	mg/L	0.2	0.2	0.1	0.2	0.1	0.2	-
Total Dissolved Solids (TDS)	mg/L	52	39	12.5	15	30	10	-
Total Suspended Solids (TSS)	mg/L	0.2	1	0.2	0.2	3	0.2	0.2
Total Al[@]	mg/L	-	-	-	-	-	-	0.027
Total As[@]	mg/L	-	-	-	-	-	-	0.0008
Total Cd[@]	mg/L	-	-	-	-	-	-	0.0006
Total Cr[@]	mg/L	-	-	-	-	-	-	0.00001
Total Cu[@]	mg/L	-	-	-	-	-	-	0.001
Total Pb[@]	mg/L	-	-	-	-	-	-	0.001
Total Mn[@]	mg/L	-	-	-	-	-	-	1.2
Total Ni[@]	mg/L	-	-	-	-	-	-	0.008

SURFACE WATER QUALITY GUIDELINE VALUES

Parameter	Unit	WC-RS		TR-RS		YK-RS		DGV
		SSGV (Summer/Autumn)	SSGV (Winter/Spring)	SSGV (Summer/Autumn)	SSGV (Winter/Spring)	SSGV (Summer/Autumn)	SSGV (Winter/Spring)	
Total Ag[@]	mg/L	-	-	-	-	-	-	0.00002
Total Zn[@]	mg/L	-	-	-	-	-	-	0.0024
Total Fe[@]	mg/L	-	-	-	-	-	-	0.3
Total Hg[@]	mg/L	-	-	-	-	-	-	0.00006

** ℃ = degrees Celsius* *[#] % = percent* *[##] mV = millivolt* *[+] ppm = parts per million* *[^] SPC = specific conductance* *[++] mg/L = milligram per litre*

*** NTU = Nephelometric Turbidity Unit* *[^^] µS/cm = micro Siemens per centimetre* *[@] parameter not analysed by NGH* **** assessed against DGV where guideline range is more appropriate for the parameter*

4. BASELINE WATER QUALITY

4.1. Water Quality Objectives

Water quality objectives are outlined in Section 2.1 of the Baseline Report (NGH, 2024).

4.2. Site Specific Guideline Values

In accordance with the ANZG (ANZG, 2018), SSGV for the three Reference Sites (RS) (WC-RS, TR-RS and YK-RS) were derived from the results collected during the 24 month pre-construction SWQ monitoring period. The SSGV reflect the seasonality observed in the baseline data and are characterised by the drier months of Summer/Autumn (December to May) and wetter months of Winter/Spring (June to November) in accordance with the 'Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000) methodology and derivatives developed to 2018 of the ANZG (ANZG, 2018).

Table 2 outlines the seasonal SSGV provided in the Baseline Report (NGH, 2024).

5. SEPTEMBER 2024 MONITORING

SW sampling was undertaken at 12 monitoring locations on 22 and 23 September 2024. One monitoring location, CG-IS was not sampled as the waterway was dry at the time.

In accordance with the methodology outlined in Section 3, SW samples were either measured in situ using a calibrated YSI ProDSS Sonde Multiparameter Digital Water Quality Meter (refer to Appendix D) or analysed by National Association of Testing Authorities, Australia (NATA) accredited ALS Limited (ALS) laboratory. However, the following parameters were not measured:

- DO (ppm)
- EC (µS/cm)
- Redox (mV)

The 'Water Quality Monitoring Field Data Sheet' (Field Sheet) (UGL, 2024) is provided in Appendix A. The 'Certificate of Analysis' (COA) (ALS, 2024a), 'QA/QC Compliance Assessment to assist with Quality Review' (QA/QC Assessment) (ALS, 2024b) and 'Quality Control Report' (QCR) (ALS, 2024c) are attached in Appendix B.

5.1. Observations

Field observations during sampling are summarised in Table 3.

Table 3 Field observations during sampling

FIELD OBSERVATIONS		
Date	22.09.2024 and 23.09.2024	
Weather	Conditions were partly cloudy for both days of sampling, with considerable winds ranging from 28 kilometres per hour (km/h) to 61 km/h on 22 September and 17 m/h to 52 km/h on 23 September. Notable rainfall was observed on 7 September (11.6 millimetre (mm)), 12 September (24.2 mm), and 21 September (11.8 mm).	
ID	**Observations**	**Photo**
WC-RS	• Clear water and high flow rate • Vegetation along banks • Bubbles of air on the surface	

FIELD OBSERVATIONS

Date	22.09.2024 and 23.09.2024
Weather	Conditions were partly cloudy for both days of sampling, with considerable winds ranging from 28 kilometres per hour (km/h) to 61 km/h on 22 September and 17 m/h to 52 km/h on 23 September. Notable rainfall was observed on 7 September (11.6 millimetre (mm)), 12 September (24.2 mm), and 21 September (11.8 mm).

ID	Observations	Photo
WC-IS	• Clear water and high flow rate • Strong weed/vegetation growth on northern bank • Greater depth than normal • Bubbles of air on the surface	
CG-IS	• Creek dry, no water present	
YR1-IS	• High flow rate, clear water • No sediment observed	

FIELD OBSERVATIONS

Date	22.09.2024 and 23.09.2024
Weather	Conditions were partly cloudy for both days of sampling, with considerable winds ranging from 28 kilometres per hour (km/h) to 61 km/h on 22 September and 17 m/h to 52 km/h on 23 September. Notable rainfall was observed on 7 September (11.6 millimetre (mm)), 12 September (24.2 mm), and 21 September (11.8 mm).

ID	Observations	Photo
LHG-IS	• High silt deposition on bottom of the waterbody • Vegetation growing in and around gully • Low flow rate	
YR2-IS	• High flow rate, high volume flow • Clear water • Settled fine sediment	
SSC-IS	• Very minimal depth, not flowing • Slight yellow/brown colouration • Sticks and debris in the waterway • Vegetation along both banks	

FIELD OBSERVATIONS

Date	22.09.2024 and 23.09.2024
Weather	Conditions were partly cloudy for both days of sampling, with considerable winds ranging from 28 kilometres per hour (km/h) to 61 km/h on 22 September and 17 m/h to 52 km/h on 23 September. Notable rainfall was observed on 7 September (11.6 millimetre (mm)), 12 September (24.2 mm), and 21 September (11.8 mm).

ID	Observations	Photo
TR-RS	• High water level, relatively clear • Small bits of debris floating	
YK-IS (D/S)	• Slight milky colouration to water • Thick vegetation cover on either bank • Sticks/small bits of debris floating in water	
NZG-IS	• Thick vegetation cover on either banks • Hoof marks on bank several meters up from the sampling point	

FIELD OBSERVATIONS

Date	22.09.2024 and 23.09.2024	
Weather	Conditions were partly cloudy for both days of sampling, with considerable winds ranging from 28 kilometres per hour (km/h) to 61 km/h on 22 September and 17 m/h to 52 km/h on 23 September. Notable rainfall was observed on 7 September (11.6 millimetre (mm)), 12 September (24.2 mm), and 21 September (11.8 mm).	
ID	**Observations**	**Photo**
YK-IS	• Relatively clear water • Sticks/debris along Creek • Vegetation present along both banks • Some flora growing on rocks underwater	
YK-RS	• Relatively clear water, very slight yellow/brown colouration • Grasses/vegetation on either bank • Fine sediment settled at the bottom	

5.2. Results

The results from the construction SWQ monitoring program have been reported for each respective catchment: Yarrangobilly River, Talbingo Reservoir, and Yorkers Creek.

- **Yarrangobilly River catchment** monitoring includes the reference site at Wallace Creek and impact sites at Yarrangobilly River, Wallace Creek, Cave Gully, Lick Hole Gully, and Sheep Station Creek.
- **Yorkers Creek catchment** monitoring includes the reference site at Yorkers Creek and impact sites at Yorkers Creek and New Zealand Gully.
- **Talbingo Reservoir** features a reference site located upstream within the reservoir, serving as an overall reference for monitoring sites in the Yarrangobilly River and Yorkers Creek catchments.

This reference site provides a baseline for the SWQ monitoring program.

The SWQ monitoring results for key physical and chemical parameters, along with site-specific trigger values, are detailed in Section 5.2.1. Results for dissolved and total metals, including site-specific trigger values, are covered in Sections 5.2.2 and 5.2.3. Upon review of the data, observations were noted between the reference and impact sites.

The complete table of results is attached in Appendix C.

5.2.1. Key Physical and Chemical Parameters

See below for results of key physical and chemical parameters.

Temperature

In September 2024, temperatures in the Yarrangobilly catchment showed a gradual increase compared to the previous month, ranging from 9.7 °C to 13.4 °C, refer to Figure 4. In contrast, temperatures in the Talbingo Reservoir decreased from 12.7 °C in August 2024 to 10.2 °C in September 2024, refer to Figure 5. Meanwhile, temperatures in the Yorkers Creek catchment ranged from 8.2 °C to 12.3 °C during September 2024, refer to Figure 6.

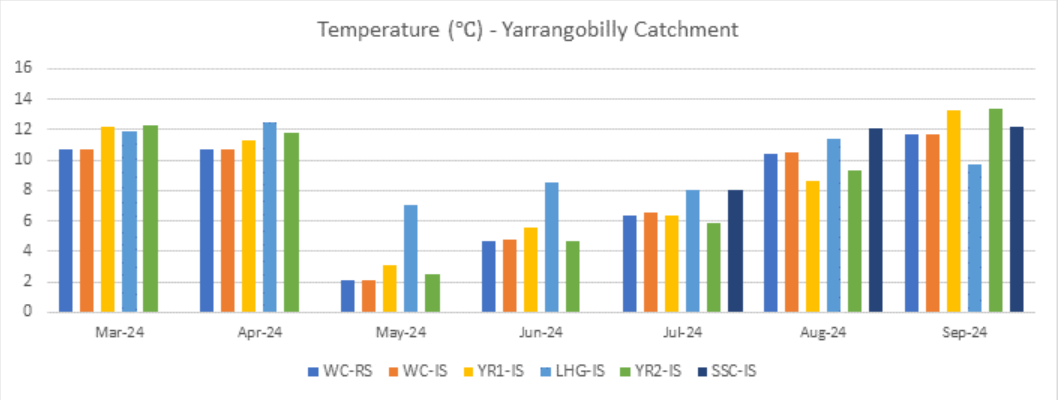

FIGURE 4 : TEMPERATURE FOR YARRANGOBILLY CATCHMENT

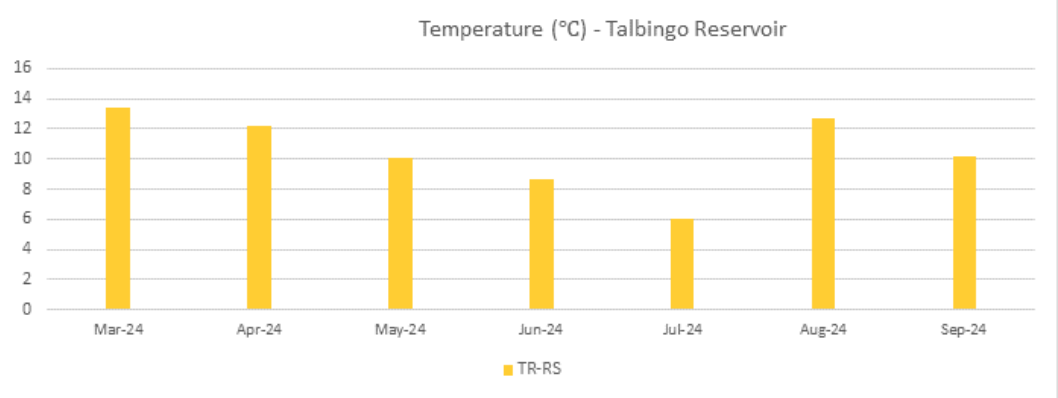

FIGURE 5: TEMPERATURE FOR TALBINGO RESERVOIR

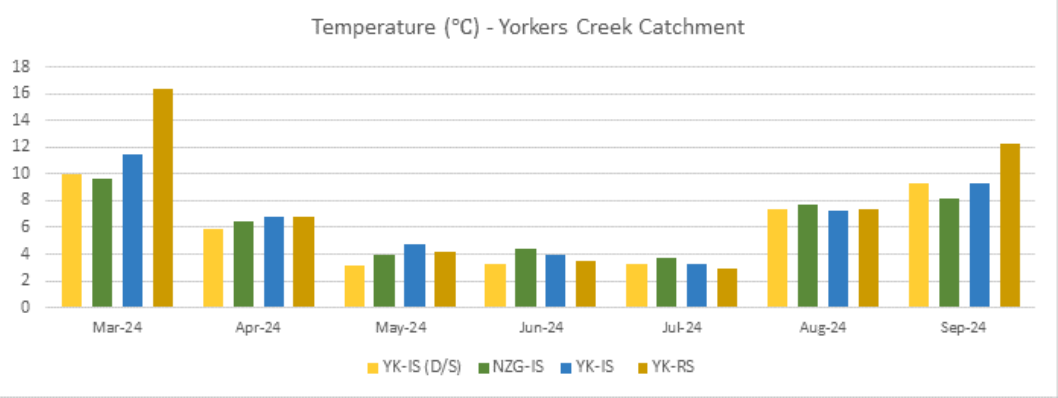

FIGURE 6: TEMPERATURE FOR YORKERS CREEK CATCHMENT

pH

In September 2024, pH values across all sites remained within the SSGV range of 6.5 to 8.0. In the Yarrangobilly catchment, pH values showed a declining trend compared to the previous month, while both the Talbingo Reservoir and Yorkers Creek catchment exhibited an upward trend over the same period, refer Figure 7 to Figure 9.

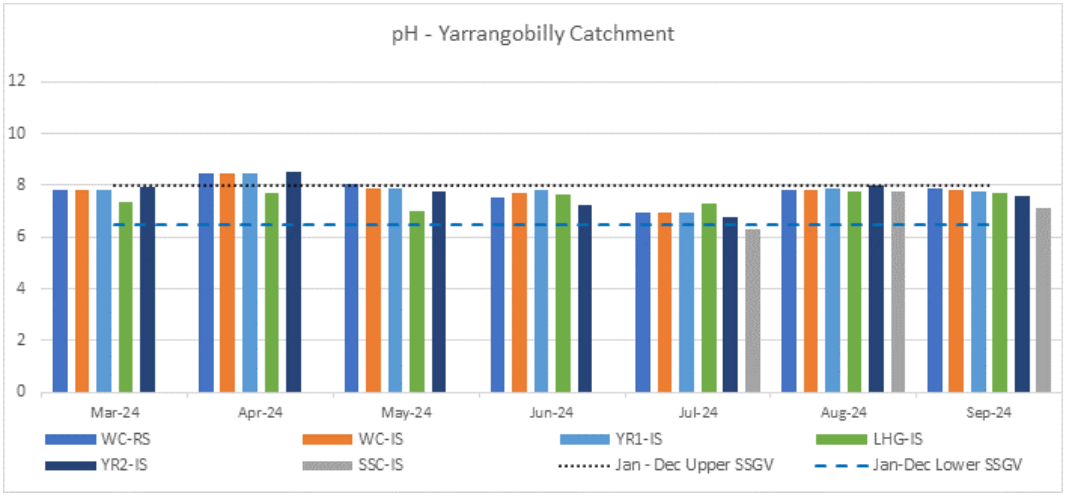

FIGURE 7: PH FOR YARRANGOBILLY CATCHMENT

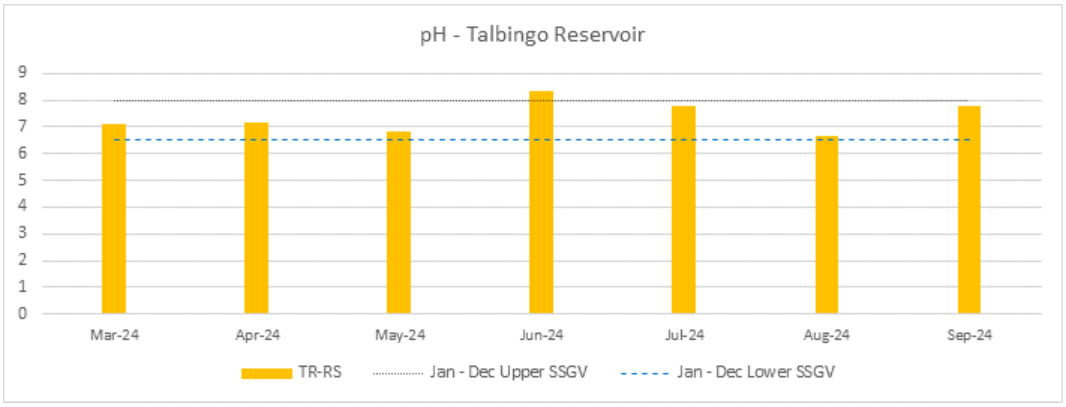

FIGURE 8: PH FOR TALBINGO RESERVOIR

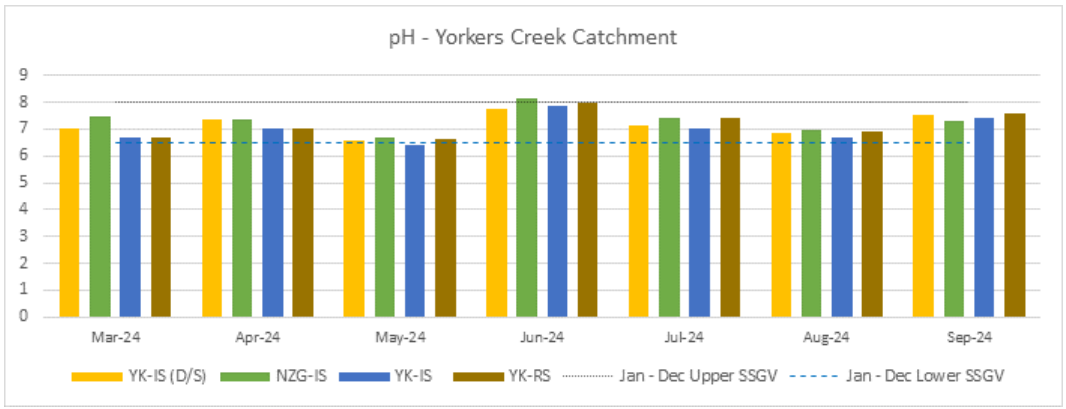

FIGURE 9: PH FOR YORKERS CREEK CATCHMENT

Dissolved Oxygen

In September 2024, DO (%) levels in the Yarrangobilly catchment were within the SSGV range (90 to 100), except at LHG-IS, which increased to 87.3%, and SSC-IS, which experienced a moderate decrease to 84.1% from 94% in August 2024, refer Figure 10. In the Talbingo Reservoir, DO values remained within the SSGV range, refer Figure 11. For the Yorkers Creek catchment, all DO results continued to fall below the SSGV, consistent with baseline monitoring trends for this period, refer Figure 12.

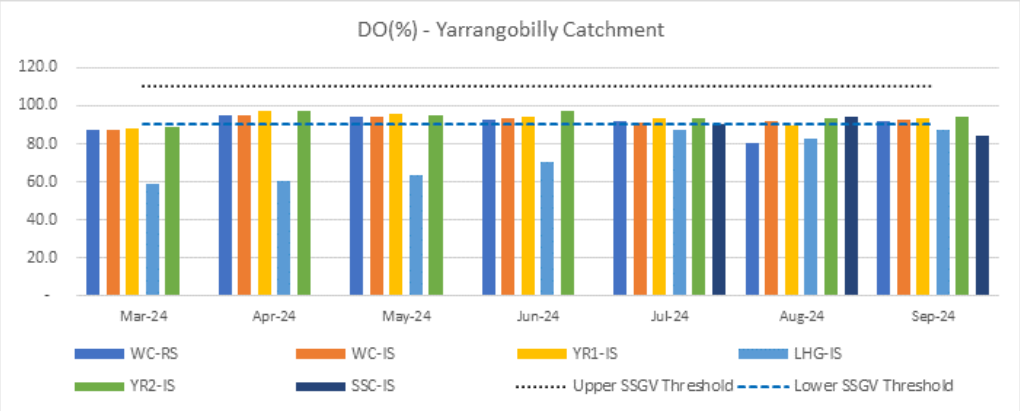

FIGURE 10: DO FOR YARRANGOBILLY CATCHMENT

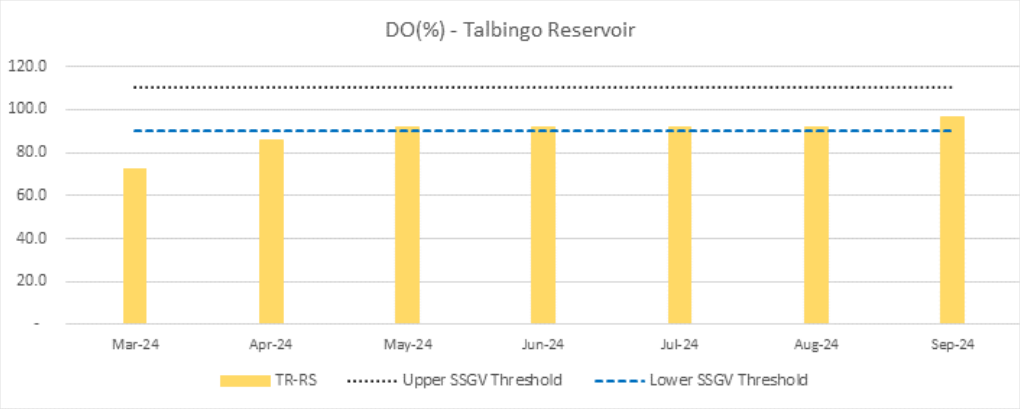

FIGURE 11: DO FOR TALBINGO RESERVOIR

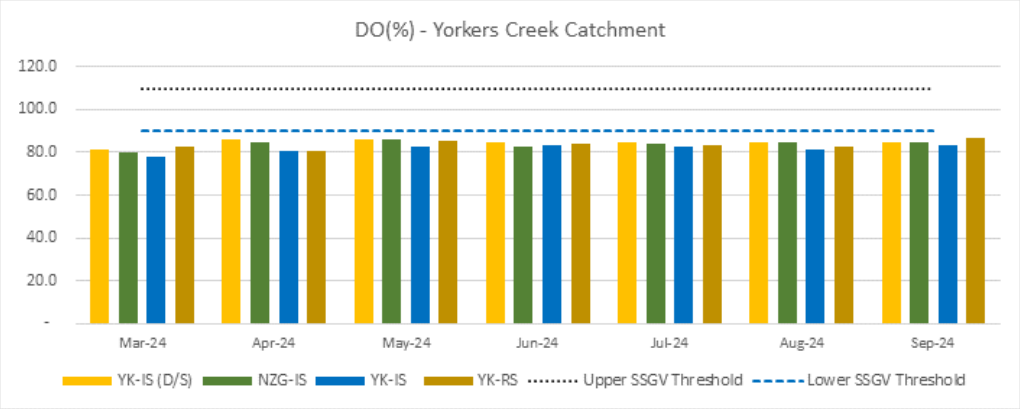

FIGURE 12: DO FOR YORKERS CREEK CATCHMENT

Specific Conductance

SPC (µS/cm) results for the Yarrangobilly catchment showed that all sites were within the June to November SSGV threshold (88 µS/cm), except SSC-IS, which slightly exceeded the SSGV at 122.2 µS/cm, and LHG-IS, which was significantly above the SSGV at 424.6 µS/cm, aligning with baseline data, refer Figure 13. In the Talbingo Reservoir, SPC was below the June to November SSGV (38.7 µS/cm), recording 25.0 µS/cm in September 2024, refer Figure 14. Similarly, specific conductance in the Yorkers Creek catchment remained below the June to November SSGV (27.9 µS/cm), except at NZG-IS, which recorded 38.2 µS/cm in September 2024, refer to Figure 15.

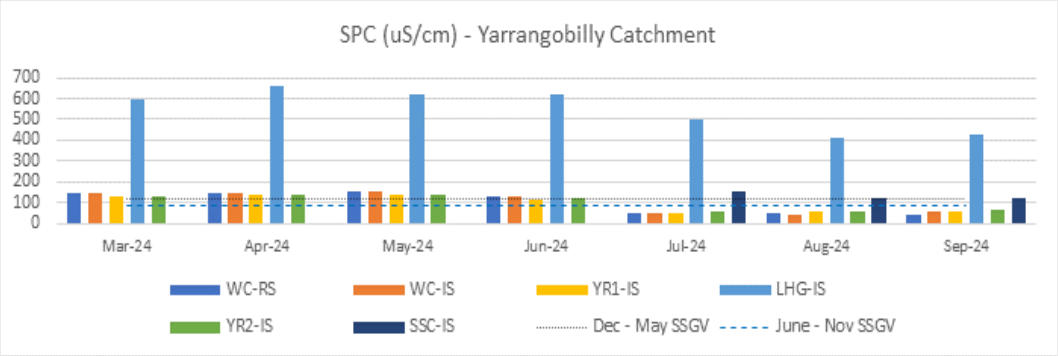

FIGURE 13: SPC FOR YARRANGOBILLY CATCHMENT

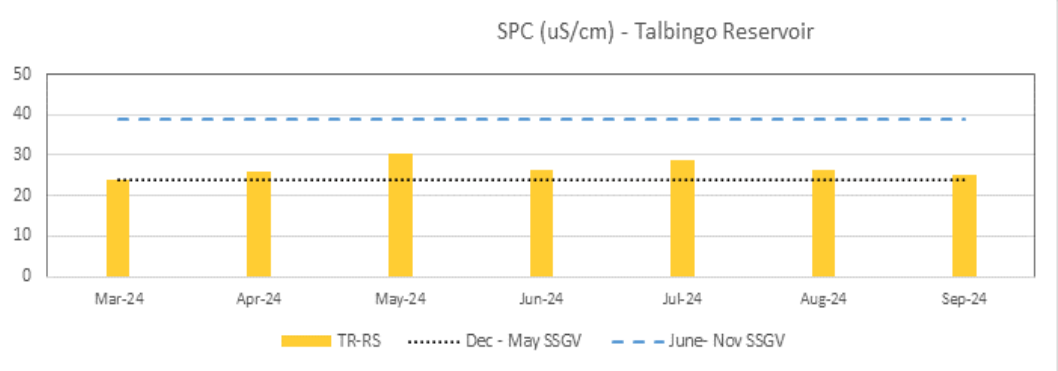

FIGURE 14: SPC FOR TALBINGO RESERVOIR

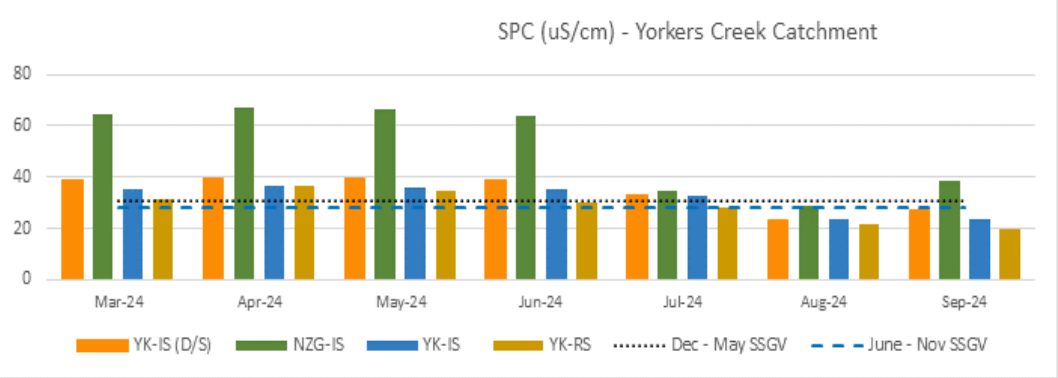

FIGURE 15: SPC FOR YORKERS CREEK CATCHMENT

Turbidity

Turbidity (NTU) levels in the Yarrangobilly catchment were below the June to November SSGV threshold (5.12) at all sites, except for WC-IS (5.5) and LHG-IS (6.13), which were slightly above the SSGV, refer Figure 16. Turbidity in both the Talbingo Reservoir and Yorkers Creek catchment remained within the SSGV guidelines, with the exception of the reference site at Yorkers Creek (YK-RS), which marginally exceeded the SSGV, refer Figure 17 and Figure 18.

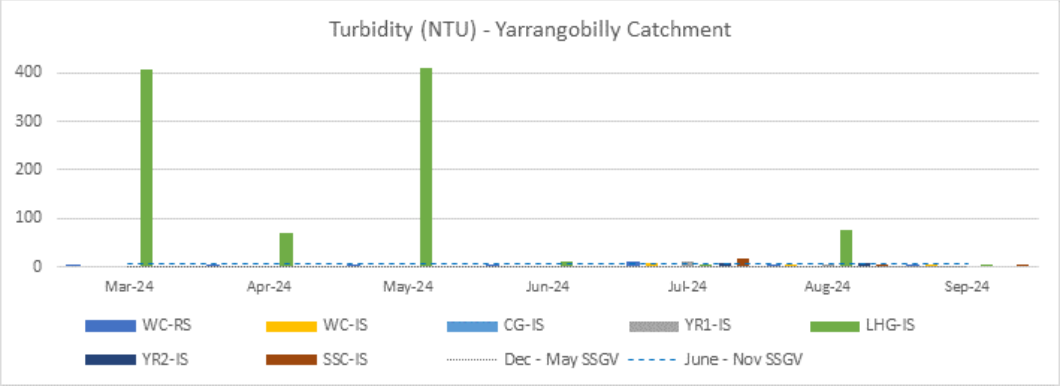

FIGURE 16: TURBIDITY FOR YARRANGOBILLY CATCHMENT

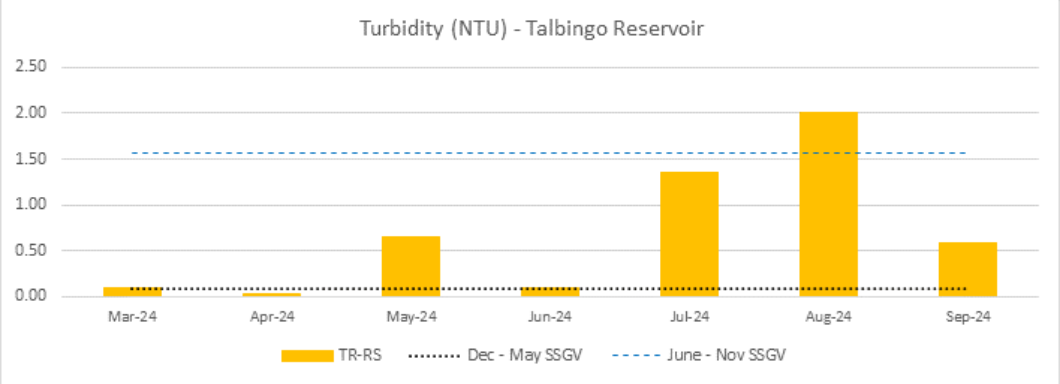

FIGURE 17: TURBIDITY FOR TALBINGO RESERVOIR

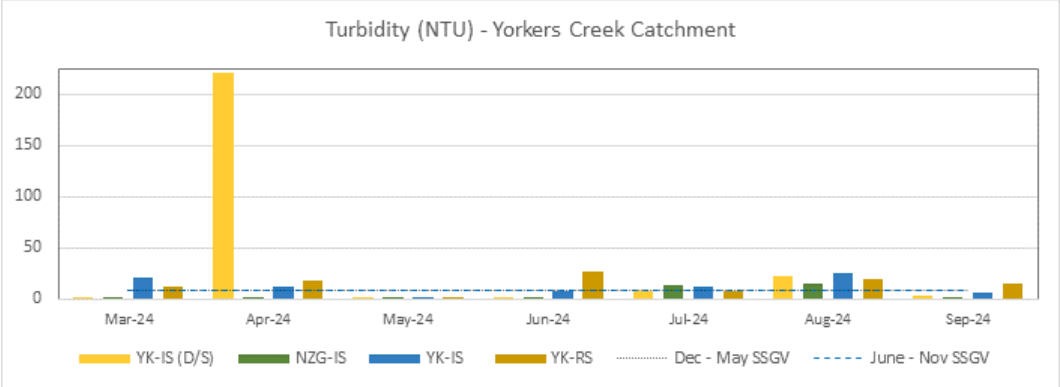

FIGURE 18: TURBIDITY FOR YORKERS CREEK CATCHMENT

Total Suspended Solids

TSS (mg/L) levels exceeded the June to November SSGV at all monitored sites. LHG-IS recorded a value of 10 mg/L, moderately exceeding the SSGV threshold of 1.0 mg/L. In contrast, the reference site at Yorkers Creek (YK-RS) recorded a significantly higher value of 19 mg/L, well above the SSGV of 0.2 mg/L, refer to Figure 19 to Figure 21.

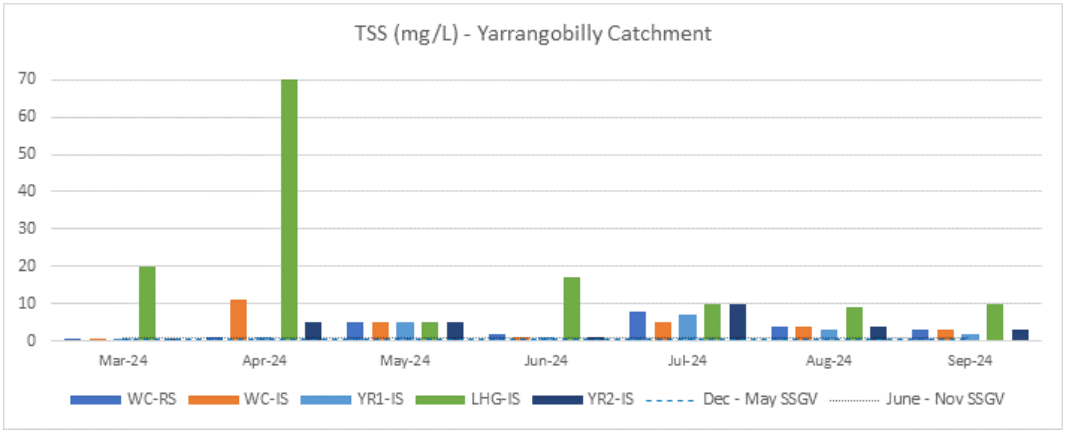

FIGURE 19: TSS FOR YARRANGOBILLY CATCHMENT

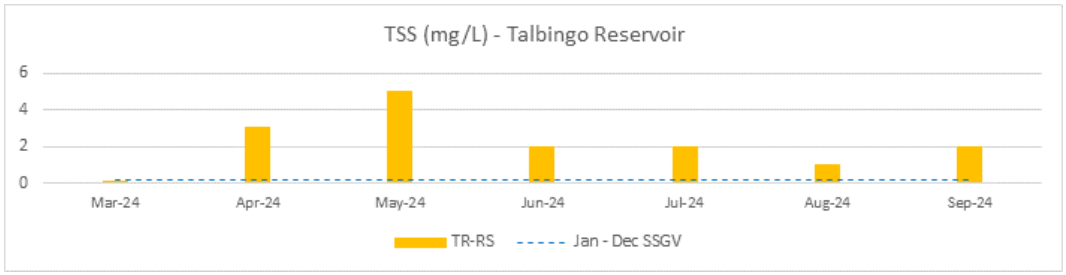

FIGURE 20: TSS FOR TALBINGO RESERVOIR

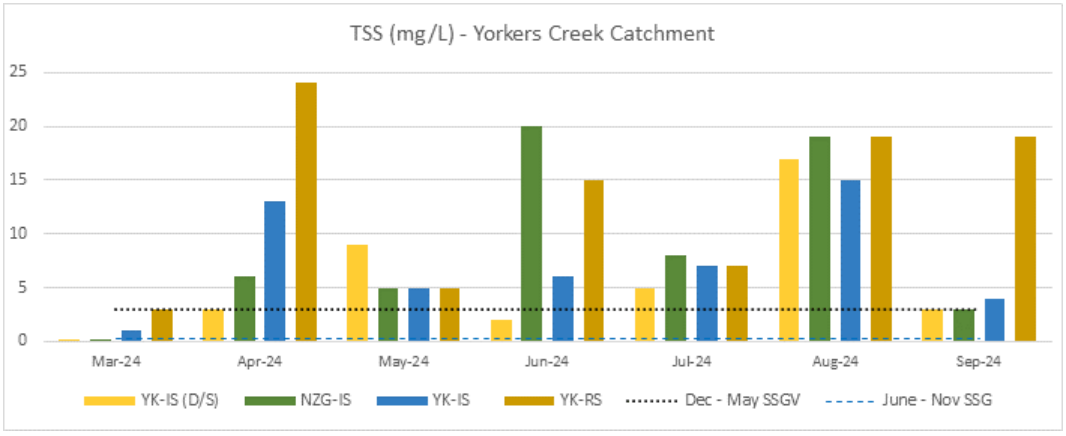

FIGURE 21: TSS FOR YORKERS CREEK CATCHMENT

Ammonia

Ammonia (mg/L) levels were below the limit of reporting (LOR) at all sites, except for the Yarrangobilly reference site (WC-RS), which recorded a value of 0.04 mg/L, significantly exceeding the SSGV threshold of 0.013 mg/L. Additionally, YK-IS showed a moderate exceedance of the SSGV, with a value of 0.020 mg/L, refer Figure 22 to Figure 24.

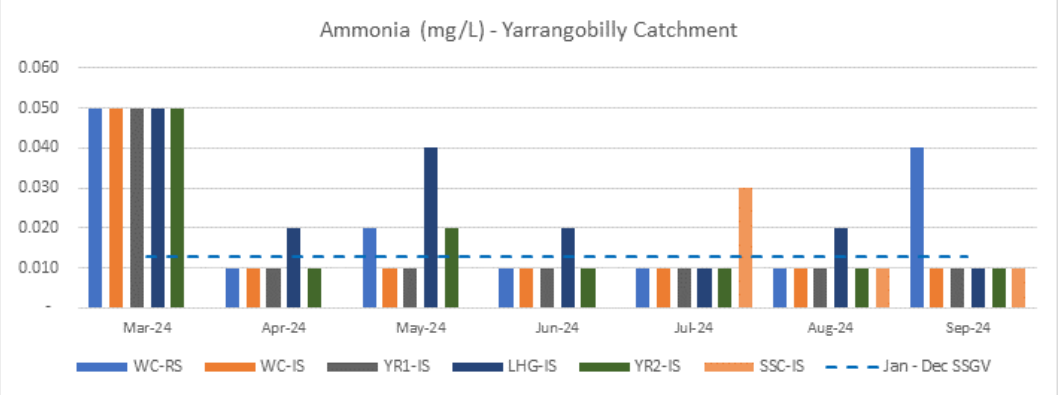

FIGURE 22: AMMONIA FOR YARRANGOBILLY CATCHMENT

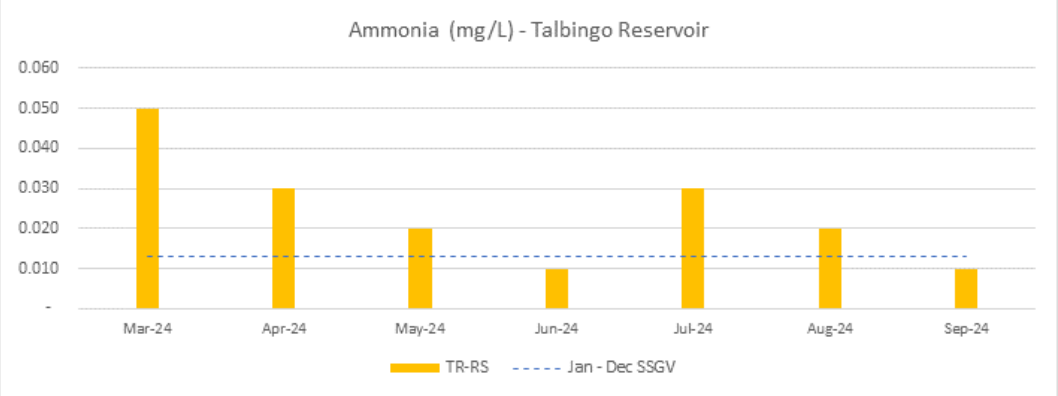

FIGURE 23: AMMONIA FOR TALBINGO RESERVOIR

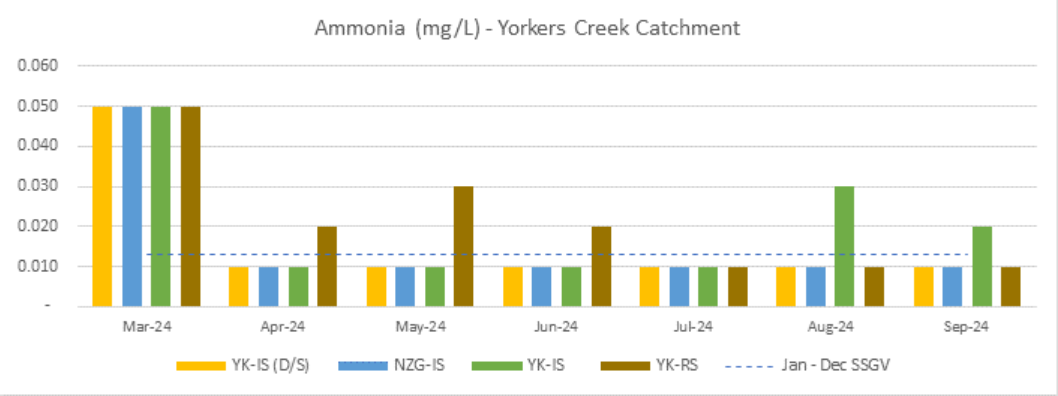

FIGURE 24: AMMONIA FOR YORKERS CREEK CATCHMENT

Nitrogen Oxides

Nitrogen Oxides (mg/L) levels exceeded the June to November SSGV threshold (0.015 mg/L) at all reference sites and several impact sites. WC-IS recorded a significant increase, with a value of 7.21 mg/L in September, compared to 0.03 mg/L in August, refer to Figure 25 to Figure 27.

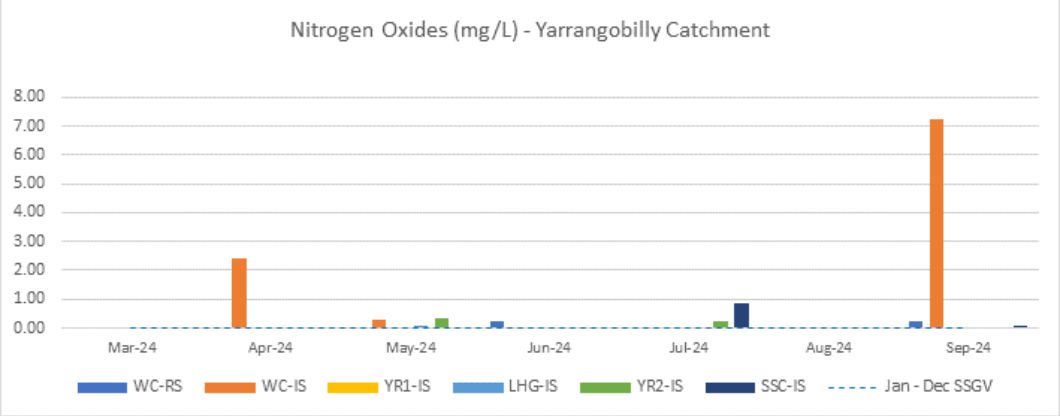

FIGURE 25: NITROGEN OXIDES FOR YARRANGOBILLY CATCHMENT

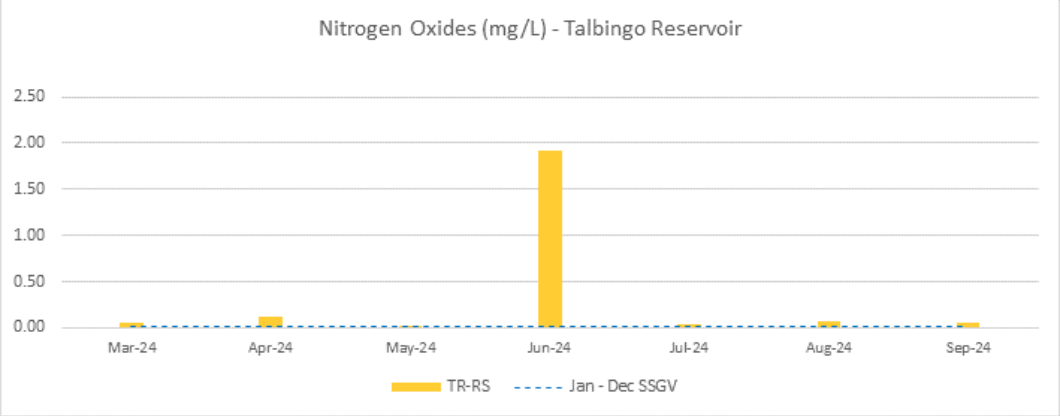

FIGURE 26: NITROGEN OXIDES FOR TALBINGO RESERVOIR

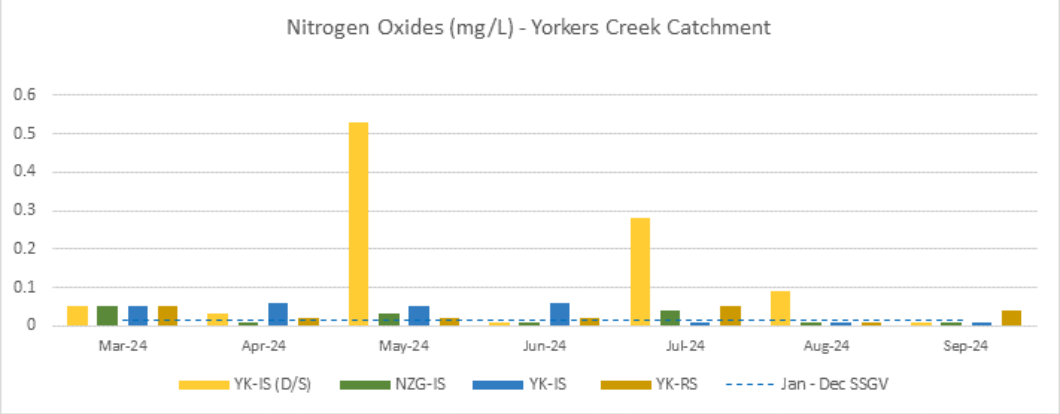

FIGURE 27: NITROGEN OXIDES FOR YORKERS CREEK CATCHMENT

Total Kjeldahl Nitrogen

TKN (mg/L) levels were below the LOR at all sites, except for WC-IS and SSC-IS, which exceeded the June to November SSGV threshold of 0.2 mg/L, recording values of 0.4 mg/L and 0.6 mg/L, respectively, refer Figure 28 to Figure 30.

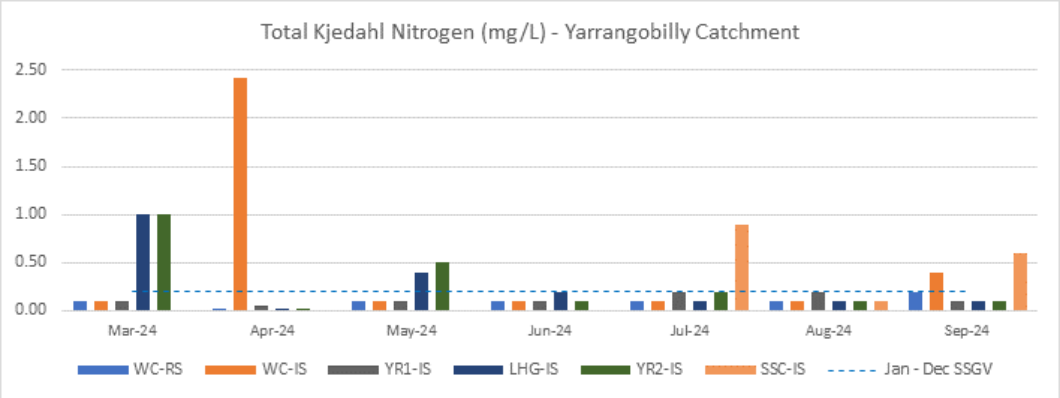

FIGURE 28: TOTAL KJEDAHL NITROGEN FOR YARRANGOBILLY CATCHMENT

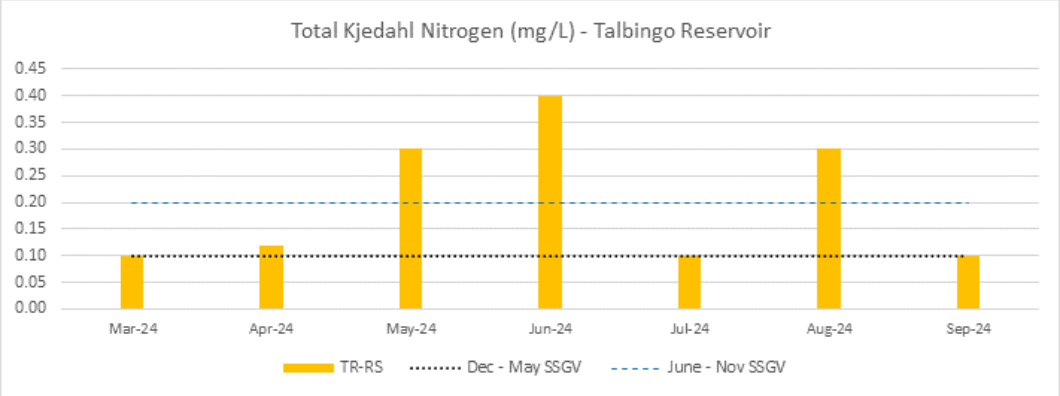

FIGURE 29: TOTAL KJEDAHL NITROGEN FOR TALBINGO RESERVOIR

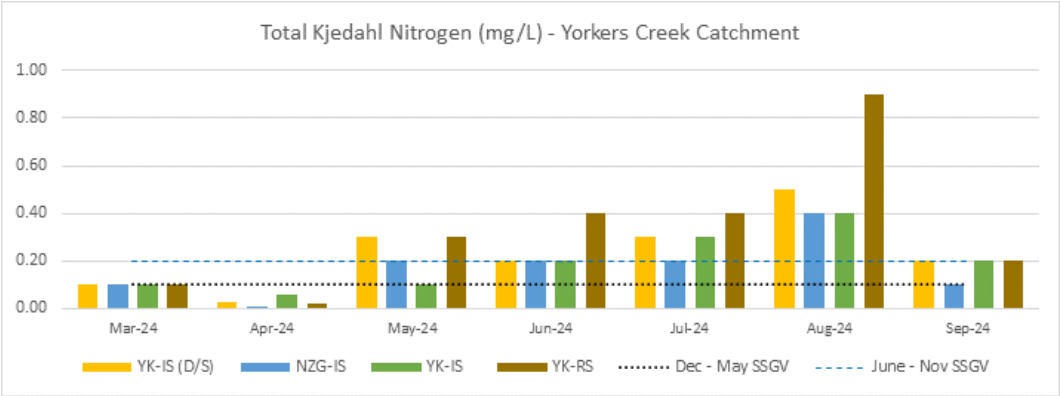

FIGURE 30: TOTAL KJEDAHL NITROGEN FOR YORKERS CREEK CATCHMENT

Total Hardness

$CaCO_3$ (mg/L) levels exceeded the June to November SSGV at all sites. LHG-IS recorded a significantly high value of 294 mg/L, consistent with previous months. In the Talbingo Reservoir, $CaCO_3$ levels exceeded the SSGV for the second consecutive month, with a slight increase to 14 mg/L from 12 mg/L in August 2024. At Yorkers Creek, most sites remained consistent with the previous month, except for NZG-IS, which showed a notable increase to 21 mg/L in September, up from 12 mg/L in August 2024, refer to Figure 31 to Figure 33.

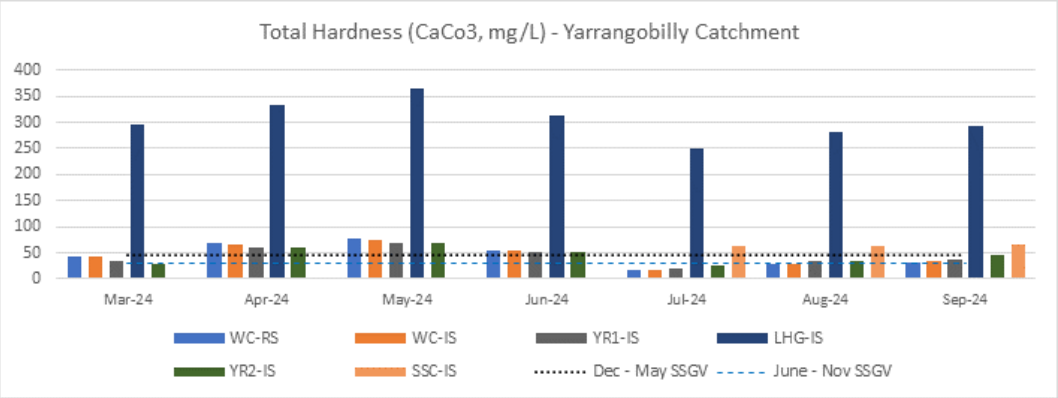

FIGURE 31: TOTAL HARDNESS FOR YARRANGOBILLY CATCHMENT

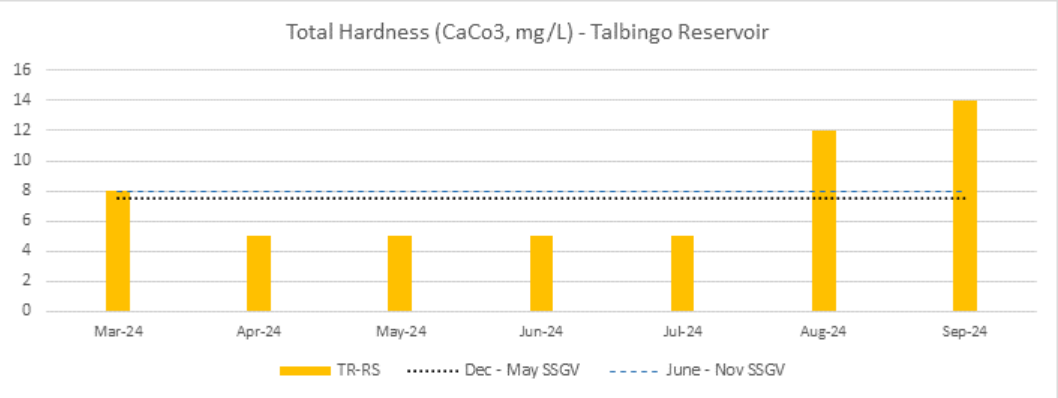

FIGURE 32: TOTAL HARDNESS FOR TALBINGO RESERVOIR

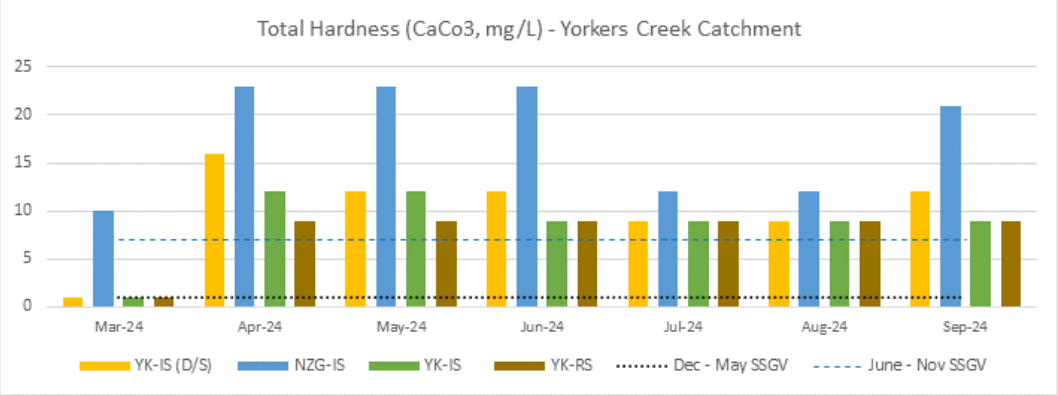

FIGURE 33: TOTAL HARDNESS FOR YORKERS CREEK CATCHMENT

Total Nitrogen

TN (mg/L) levels were either below the LOR or within the June to November SSGV threshold (0.2 mg/L) at most sites, except for the Yarrangobilly reference site (WC-RS) and two impact sites (WC-IS and SSC-IS). WC-IS recorded a significantly elevated value of 7.6 mg/L in September 2024, surpassing the SSGV and all previous months' results. In comparison, the reference site WC-RS and impact site SSC-IS were only slightly above the SSGV, refer Figure 37 to Figure 39.

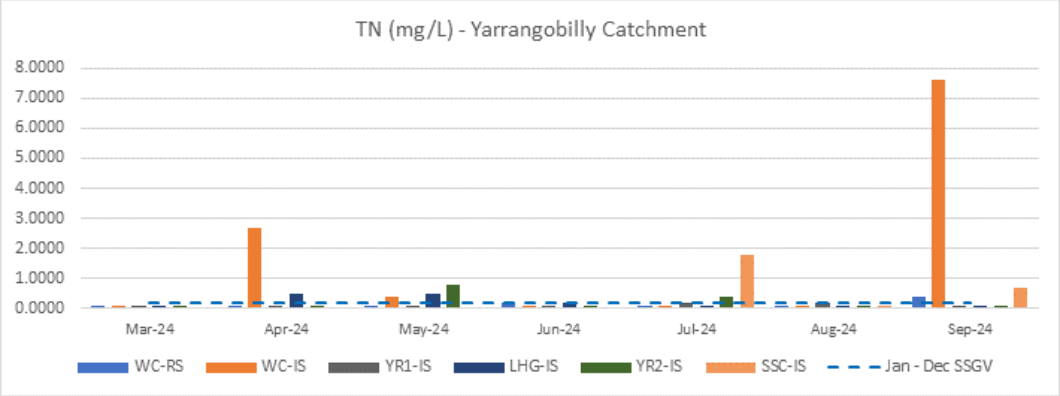

FIGURE 34: TOTAL NITROGEN FOR YARRANGOBILLY CATCHMENT

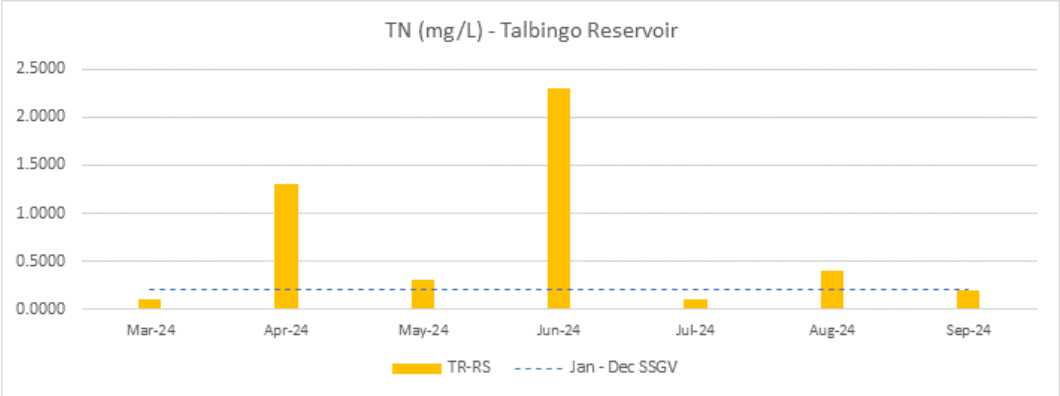

FIGURE 35: TOTAL NITROGEN FOR TALBINGO RESERVOIR

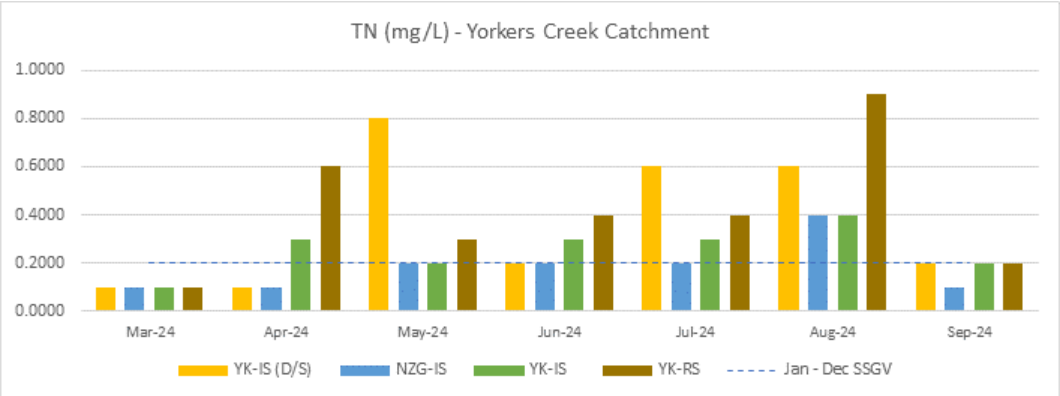

FIGURE 36: TOTAL NITROGEN FOR YORKERS CREEK CATCHMENT

Total Phosphorous

TP (mg/L) levels exceeded the June to November SSGV (0.02 mg/L) at all reference sites and several impact sites, while the remaining sites were either below the LOR or within the SSGV. LHG-IS recorded a significantly higher value of 0.09 mg/L in September 2024, with other sites reporting values ranging from 0.03 mg/L to 0.04 mg/L, refer Figure 37 to Figure 39.

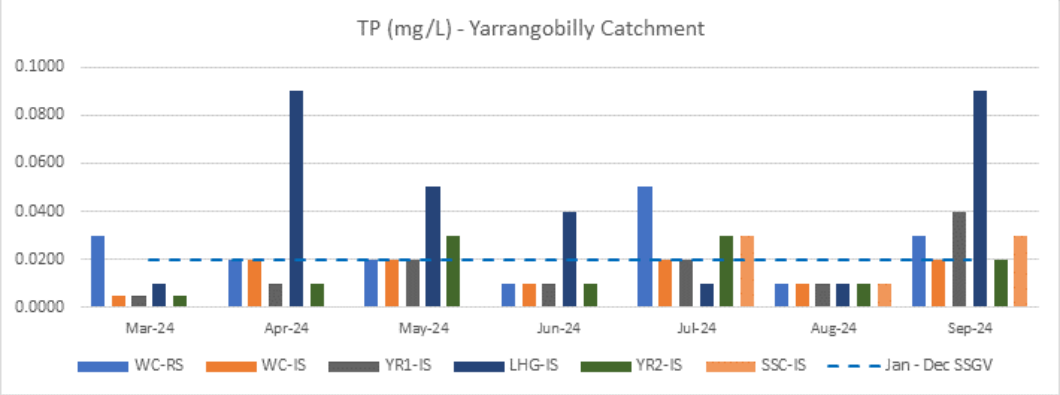

FIGURE 37: TOTAL PHOSPHOROUS FOR YARRANGOBILLY CATCHMENT

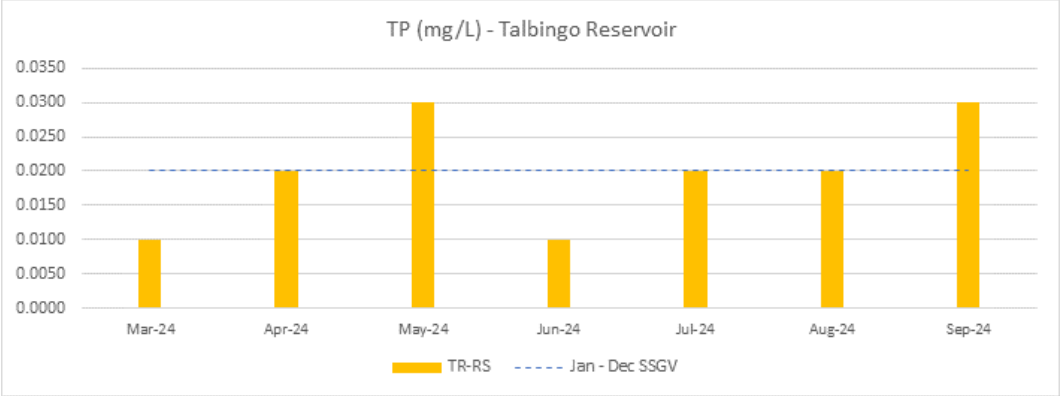

FIGURE 38: TOTAL PHOSPHOROUS FOR TALBINGO RESERVOIR

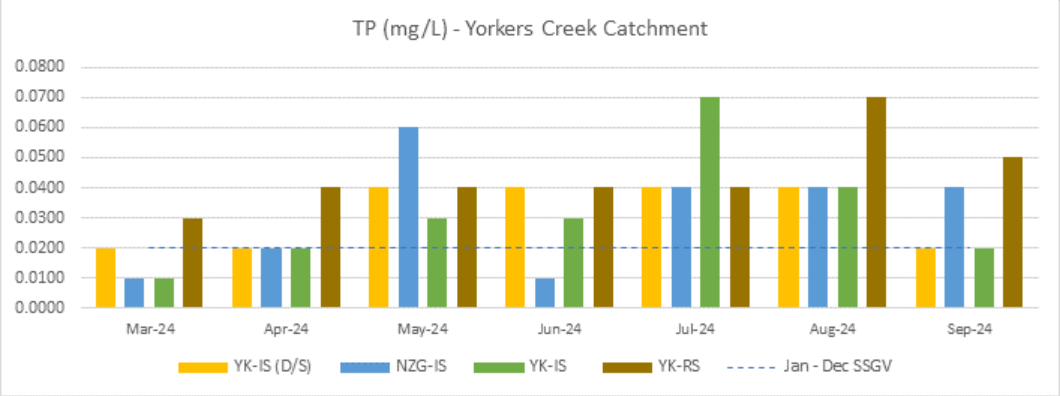

FIGURE 39: TOTAL PHOSPHOROUS FOR YORKERS CREEK CATCHMENT

5.2.2. Dissolved Metals

Dissolved metals exceeding the SSGV are listed in Table 4.

Table 4: Results for Dissolved Metals

DISSOLVED METALS RESULTS				
Analyte	**Site**	**Result (mg/L)**	**SGV (mg/L)**	**Comment**
Al	SSC-IS	0.05	0.04	Al (mg/L) levels were below the June to November SSGV at all sites except SSC-IS and TR-RS, which were both slightly above the SSGV.
	TR-RS	0.02	0.015	
Cu	SSC-IS	0.003	0.0002	Cu (mg/L) values at SSC-IS was above the June to November SSGV.
Fe	LHG-IS	0.06	0.03	Fe (mg/L) levels exceeded the June to November SSGV at LHG-IS, with September 2024 values slightly lower than those recorded in August (0.07 mg/L). All other sites across the catchments were either below the LOR or within their respective SSGV.
Mn	WC-IS	0.005	0.002	Three impact sites within the Yarrangobilly catchment reported values exceeding the June to November SSGV. WC-IS and YR2-IS recorded values slightly above the SSGV, while LHG-IS showed a significant exceedance. Additionally, both the reference site and all impact sites in the Yorkers Creek catchment exceeded the SSGV for Mn (mg/L).
	LHG-IS	0.045		
	YR2-IS	0.005		
	YK-RS	0.013	0.003	
	YK-IS (D/S)	0.008		
	NZG-IS	0.004		
	YK-IS	0.009		
Zn	WC-IS	0.017	0.002	Zn (mg/L) levels exceeded the June to November SSGV at three impact sites in the Yarrangobilly catchment (WC-IS, LHG-IS, and SSC-IS). In the Yorkers Creek catchment, the reference site (YK-RS) and one impact site (YK-IS (D/S)) also surpassed the SSGV. All other sites were either below the LOR or within the SSGV.
	LHG-IS	0.006		
	SSC-IS	0.036		
	YK-RS	0.010		
	YK-IS (D/S)	0.011		

5.2.3. Total Metals

Total metals exceeding the DGV are listed in Table 5.

Table 5: Results for Total Metals

TOTAL METALS RESULTS				
Analyte	**Site**	**Result (mg/L)**	**SGV (mg/L)**	**Comment**
Al	WC-RS	0.04	0.027	Al (mg/L) levels exceeded the DGV at all reference and impact sites, except for WC-IS, which was slightly below the DGV at 0.02 mg/L.
	YR1-IS	0.06		
	LHG-IS	0.06		
	YR2-IS	0.07		
	SSC-IS	0.10		
	TR-RS	0.06		
	YL-RS	0.28		
	YK-IS (D/S)	0.16		
	NZG-IS	0.07		
	YC-IS	0.16		
Cu	SSC-IS	0.003	0.001	Cu (mg/L) levels exceeded the DGV at a single impact site in the Yarrangobilly catchment, identified as SSC-IS.
Zn	SSC-IS	0.028	0.0024	The DGV for Zn (mg/L) was exceeded at SSC-IS.
Fe	YK-RS	0.52	0.3	The reference site at Yorkers Creek (YK-RS) recorded Fe (mg/L) levels exceeding the DGV, while all other sites were either below the LOR or within the DGV.

5.3. Discussion

Below is a summary of key observations and discussion points from the September monitoring results:

- Transmission line bulk earthworks activities recommenced within the Yarrangobilly and Yorkers Creek catchment areas during the first week of September, post the winter shut
- Impact sites within the Yarrangobilly catchment are influenced by other activities associated with the Snowy 2.0 project
- Cave Gully (CG-IS) was dry at the time of sampling and even though Sheep Station Creek (SSC-IS) had water present at the time of sampling, it had ceased to flow
- Horse hoof marks were evident on the bed and banks of the sampling site at New Zealand Gully (NZG-IS) within the Yorkers Creek Catchment
- Many of the results are recorded as below (<) the LOR
- The SSGV/DGV for a number of parameters is lower than the LOR from the laboratory
- Lick Hole Gully (LHG-IS) within the Yarrangobilly catchment was observed as being shallow with high silt deposition and low flow at the time of sampling. LGH-IS consistently recorded higher values across multiple parameters

- August and September showed rising temperatures in the Yarrangobilly catchment, but Talbingo Reservoir temperatures dropped in September after a significant rise in August. Yorkers Creek catchment temperatures consistently increased, with a wider range in September
- As with August, pH values remained within the SSGV range for September
- DO levels in Yarrangobilly improved in September, meeting SSGV at most sites, except LHG-IS and SSC-IS. Talbingo Reservoir remained within SSGV both months, while Yorkers Creek stayed below
- SPC levels remained consistent for most sites, with exceedances at LHG-IS and SSC-IS in Yarrangobilly and slight exceedances at NZG-IS in Yorkers Creek
- Turbidity dropped significantly in September at LHG-IS but remained high at YK-RS. TSS exceeded SSGV consistently across sites, with higher values observed in September at YK-RS
- Nitrogen Oxides spiked in September, especially at WC-IS. TKN and TN remained elevated across sites, particularly in Yorkers Creek, with TP levels rising further in September
- $CaCO_3$ levels consistently exceeded the SSGV, with increases observed at LHG-IS and NZG-IS in September compared to August
- Metal exceedances were consistent with the previous month, with sharper increases in September. Key sites such as SSC-IS and YK-RS showed significant levels of Al, Fe, Mn, and Zn, with notable increases in Fe and Al concentrations.

6. CONCLUSION

The results from the construction SWQ monitoring program were reported for three key catchments: Yarrangobilly River, Talbingo Reservoir, and Yorkers Creek. Each catchment had a reference site, with impact sites also monitored for comparison. Key parameters such as temperature, pH, DO, SPC, turbidity, TSS, ammonia, nitrogen oxides, TKN, $CaCO_3$, TN, TP and metals (both dissolved and total) were analysed.

In September 2024, temperatures in the Yarrangobilly catchment increased compared to the previous month, ranging from 9.7 °C to 13.4 °C. Conversely, Talbingo Reservoir experienced a decrease, with temperatures dropping from 12.7 °C in August to 10.2 °C in September. In the Yorkers Creek catchment, temperatures ranged between 8.2 °C and 12.3 °C during the same period.

pH values across all sites remained within the SSGV range of 6.5 to 8.0. The Yarrangobilly catchment showed a declining trend compared to the previous month, while both Talbingo Reservoir and Yorkers Creek catchments exhibited slight increases.

DO levels in the Yarrangobilly catchment were within the SSGV range of 90 to 100%, except at LHG-IS (87.3%) and SSC-IS (84.1%). In the Talbingo Reservoir, DO levels were consistent with the SSGV, while all sites in the Yorkers Creek catchment remained below the SSGV, aligning with baseline monitoring trends.

SPC results for the Yarrangobilly catchment were within the June to November SSGV (88 µS/cm), except for SSC-IS (122.2 µS/cm) and LHG-IS (424.6 µS/cm), the latter aligning with baseline data. Talbingo Reservoir and most Yorkers Creek sites were below their respective SSGVs, except for NZG-IS, which slightly exceeded the threshold.

Turbidity levels were below the Jun-Nov SSGV (5.12 NTU) at most sites, except for WC-IS (5.5 NTU) and LHG-IS (6.13 NTU). TSS exceeded the SSGV (1.0 mg/L) at all monitored sites, with LHG-IS recording 10 mg/L and YK-RS in the Yorkers Creek catchment reaching 19 mg/L.

Ammonia levels were below the LOR at most sites, except for WC-RS (0.04 mg/L) and YK-IS (0.020 mg/L), both exceeding the SSGV. Nitrogen Oxides exceeded the SSGV (0.015 mg/L) at all reference sites, with WC-IS showing a significant increase to 7.21 mg/L. TKN levels were generally low but exceeded the SSGV (0.2 mg/L) at WC-IS (0.4 mg/L) and SSC-IS (0.6 mg/L). TN and TP exceeded their respective SSGVs at multiple sites, with WC-IS recording 7.6 mg/L for TN and LHG-IS reporting 0.09 mg/L for TP.

$CaCO_3$ levels exceeded the SSGV at all sites, with LHG-IS recording a notably high value of 294 mg/L. Talbingo Reservoir recorded a slight increase to 14 mg/L, while NZG-IS in Yorkers Creek showed a sharp rise from 12 mg/L to 21 mg/L.

Dissolved metals exceeded SSGVs at several sites. Notable exceedances included Al at SSC-IS and TR-RS, Cu at SSC-IS, Fe at LHG-IS, and Mn at various sites in both catchments. Total metals also showed exceedances for Al, Cu, Zn, and Fe, with SSC-IS exceeding thresholds for multiple metals and YK-RS recording the highest Fe levels (0.52 mg/L).

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Appendix A: Field Sheet (UGL, 2024)

Water Quality Monitoring Field Data Sheet

UGL

ate: 22nd & 23rd September **Sample Run:** 7C **Sampling Purpose:** Monthly water quality monitoring **Samplers:** Lachlan Whitehead

Sample ID	Sample Location	Time	Temp (°C)	Water Pressure (mmHg)	Dissolved Oxygen (%)	Conductivity (SPC-µS/cm)	pH	Turbidity FNU	TSS (mg/L)	Water level	Description
SSC-IS	East	1400	12.2		84.1	122.1	7.10	3.53			Slight yellow/brown tinge to water. Leaves & debris settled
YR2-IS	East	1420	13.4		93.8	66.7	7.62	1.56			High flow rate, elevated volume. Settled fine sediment
WC-RS	East	1440	11.7		92.0	43.0	7.86	0.50			High volume & flow from previous days weather. Bubbles of air on surface
WC-IS	East	1500	11.7		92.9	54.4	7.83	6.97			"
YR1-IS	East	1530	13.3		93.1	61.4	7.77	~~0.84~~ 0.79			High flow rate. No observed sediment. Air bubbles on surface
G6-IS	East	1600									DRY
LHG-IS	East	1620	9.7		87.3	~~426~~ 424.6	7.68	6.13			High levels of silt deposition. Low volume. Minimal flow
TR-RS	~~East~~ Reserve	1720	10.2		96.2	25.0	7.78	0.58			Higher water levels than usual, floating small debris
YR-RS	West	1530	12.3		86.5	19.5	7.58	15.51			Slight tinge to water, fine sediment on base, soft structure of beds indicating rainfall & rising water levels
YR-IS	West	1600	9.3		~~83.4~~ 83.4	23.8	7.41	6.24			Algae in water & slurry green. Relatively clear water
YR-IS(db)	West	1620	9.3		84.5	26.9	7.52	3.34			Bubbles of air on the surface, debris like sticks in water
NZG-IS	West	1645	8.2		84.6	38.2	7.32	2.02			Clear water, animal tracks on banks

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Appendix B: COA (ALS, 2024a), QA/QC Assessment (ALS, 2024b) and QCR (ALS, 2024c)

CERTIFICATE OF ANALYSIS

Work Order	: **ES2431566**	Page	: 1 of 8
Client	: **UGL LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: CAMILLE PALMER	Contact	: Customer Services ES
Address	: Level 4, 40 Miller Street North Sydney 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 3200-0645 TransGrid Maragle 500/330kV Station. (Event 7C)	Date Samples Received	: 26-Sep-2024 09:00
Order number	: 4501837828	Date Analysis Commenced	: 26-Sep-2024
C-O-C number	: ----	Issue Date	: 03-Oct-2024 17:34
Sampler	: Lachlan Whiteford		
Site	: Maragle/Lobs Hole		
Quote number	: ES24UGLLIM0001_V3		
No. of samples received	: 11		
No. of samples analysed	: 11		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.
- Sample 3 ID on the COC is YR1-RS, received as YR1 - IS, Please confirm which is the correct ID.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	WC-RS	WC-IS	YR1-RS YR1-IS	LHG-IS	YR2-RS YR2-IS
			Sampling date / time	22-Sep-2024 14:20	22-Sep-2024 14:40	22-Sep-2024 15:15	22-Sep-2024 15:45	22-Sep-2024 16:05
Compound	CAS Number	LOR	Unit	ES2431566-001	ES2431566-002	ES2431566-003	ES2431566-004	ES2431566-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**65**	**113**	**----**	**----**	**----**
Total Dissolved Solids @180°C	----	10	mg/L	**----**	**----**	**68**	**394**	**68**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	1	mg/L	**3**	**3**	**2**	**10**	**3**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.1**	**0.9**	**1.6**	**4.4**	**1.3**
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	**31**	**33**	**38**	**294**	**46**
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.01**	**0.04**	**0.04**	<0.01	**0.04**
Manganese	7439-96-5	0.001	mg/L	**0.002**	**0.005**	**0.002**	**0.045**	**0.005**
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	**0.06**	<0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.04**	**0.02**	**0.06**	**0.06**	**0.07**
Manganese	7439-96-5	0.001	mg/L	**0.005**	**0.002**	**0.003**	**0.051**	**0.006**
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	**0.19**	**0.07**
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.002	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.04**	<0.01	<0.01	<0.01	<0.01
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.22**	**7.21**	**0.02**	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	WC-RS	WC-IS	YR1-RS YR1-IS	LHG-IS	YR2-RS YR2-IS
				Sampling date / time	22-Sep-2024 14:20	22-Sep-2024 14:40	22-Sep-2024 15:15	22-Sep-2024 15:45	22-Sep-2024 16:05
Compound	CAS Number	LOR	Unit		ES2431566-001	ES2431566-002	ES2431566-003	ES2431566-004	ES2431566-005
					Result	Result	Result	Result	Result
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser - Continued									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.22**	**7.21**	**0.02**	<0.01	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.2**	**0.4**	<0.1	**0.1**	<0.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**0.4**	**7.6**	<0.1	**0.1**	<0.1
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.03**	**0.02**	**0.04**	**0.09**	**0.02**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TR-RS	YK-IS(d/s)	NZG-IS	YK-IS	YK-RS
			Sampling date / time	22-Sep-2024 16:55	23-Sep-2024 14:45	23-Sep-2024 15:45	23-Sep-2024 15:15	23-Sep-2024 14:45
Compound	CAS Number	LOR	Unit	ES2431566-006	ES2431566-007	ES2431566-008	ES2431566-009	ES2431566-010
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**27**	**29**	**41**	**26**	**28**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	1	mg/L	**2**	**3**	**3**	**4**	**19**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.3**	**3.6**	**2.8**	**6.1**	**8.4**
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	**14**	**12**	**21**	**9**	**9**
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	**0.07**	**0.06**	**0.09**	**0.09**
Manganese	7439-96-5	0.001	mg/L	**0.002**	**0.008**	**0.004**	**0.009**	**0.013**
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	7439-89-6	0.05	mg/L	<0.05	**0.10**	**0.08**	**0.13**	**0.16**
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.06**	**0.16**	**0.07**	**0.16**	**0.28**
Manganese	7439-96-5	0.001	mg/L	**0.006**	**0.012**	**0.006**	**0.012**	**0.023**
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	7439-89-6	0.05	mg/L	**0.07**	**0.26**	**0.15**	**0.26**	**0.52**
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.002	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	<0.01	**0.02**	<0.01
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.06**	**0.01**	<0.01	<0.01	**0.04**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.06**	**0.01**	<0.01	<0.01	**0.04**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TR-RS	YK-IS(d/s)	NZG-IS	YK-IS	YK-RS
				Sampling date / time	22-Sep-2024 16:55	23-Sep-2024 14:45	23-Sep-2024 15:45	23-Sep-2024 15:15	23-Sep-2024 14:45
Compound	CAS Number	LOR	Unit		ES2431566-006	ES2431566-007	ES2431566-008	ES2431566-009	ES2431566-010
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.1**	**0.2**	**0.1**	**0.2**	**0.2**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**0.2**	**0.2**	**0.1**	**0.2**	**0.2**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.03**	**0.02**	**0.04**	**0.02**	**0.05**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SSC-IS	----	----	----	----
				Sampling date / time	22-Sep-2024 14:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2431566-011	--------	--------	--------	--------
					Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		**108**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	1	mg/L		**5**	----	----	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		**4.4**	----	----	----	----
ED093F: SAR and Hardness Calculations									
Total Hardness as CaCO3	----	1	mg/L		**65**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		**0.05**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		**0.002**	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Iron	7439-89-6	0.05	mg/L		<0.05	----	----	----	----
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		**0.10**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		**0.004**	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Iron	7439-89-6	0.05	mg/L		**0.08**	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.002	mg/L		<0.002	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.01**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		**0.07**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.07**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SSC-IS	----	----	----	----
				Sampling date / time	22-Sep-2024 14:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2431566-011	--------	--------	--------	--------
					Result	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.6**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**0.7**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.03**	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	----	----	----	----

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2431566**	Page	: 1 of 10
Client	: **UGL LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: CAMILLE PALMER	Telephone	: +61-2-8784 8555
Project	: 3200-0645 TransGrid Maragle 500/330kV Station. (Event 7C)	Date Samples Received	: 26-Sep-2024
Site	: Maragle/Lobs Hole	Issue Date	: 03-Oct-2024
Sampler	: Lachlan Whiteford	No. of samples received	: 11
Order number	: 4501837828	No. of samples analysed	: 11

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

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

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA025: Total Suspended Solids dried at 104 ± 2°C						
Clear Plastic Bottle - Natural						
YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS	----	----	----	30-Sep-2024	29-Sep-2024	1
EA045: Turbidity						
Clear Plastic Bottle - Natural						
WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	----	----	----	27-Sep-2024	24-Sep-2024	3
Clear Plastic Bottle - Natural						
YK-IS(d/s), NZG-IS, YK-IS, YK-RS	----	----	----	27-Sep-2024	25-Sep-2024	2
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	----	----	----	26-Sep-2024	24-Sep-2024	2
Clear Plastic Bottle - Natural						
YK-IS(d/s), NZG-IS, YK-IS, YK-RS	----	----	----	26-Sep-2024	25-Sep-2024	1
EK071G: Reactive Phosphorus as P by discrete analyser						
Clear Plastic Bottle - Natural						
WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	----	----	----	26-Sep-2024	24-Sep-2024	2
Clear Plastic Bottle - Natural						
YK-IS(d/s), NZG-IS, YK-IS, YK-RS	----	----	----	26-Sep-2024	25-Sep-2024	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	**22-Sep-2024**	**----**	----	----	**27-Sep-2024**	29-Sep-2024	✓
Clear Plastic Bottle - Natural (EA015H) YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**----**	----	----	**27-Sep-2024**	30-Sep-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025) WC-RS, WC-IS	**22-Sep-2024**	**----**	----	----	**27-Sep-2024**	29-Sep-2024	✓
Clear Plastic Bottle - Natural (EA025) YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS	**22-Sep-2024**	**----**	----	----	**30-Sep-2024**	29-Sep-2024	×
Clear Plastic Bottle - Natural (EA025) SSC-IS	**22-Sep-2024**	**----**	----	----	**27-Sep-2024**	29-Sep-2024	✓
Clear Plastic Bottle - Natural (EA025) YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**----**	----	----	**30-Sep-2024**	30-Sep-2024	✓
EA045: Turbidity							
Clear Plastic Bottle - Natural (EA045) WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	**22-Sep-2024**	**----**	----	----	**27-Sep-2024**	24-Sep-2024	×
Clear Plastic Bottle - Natural (EA045) YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**----**	----	----	**27-Sep-2024**	25-Sep-2024	×
ED093F: SAR and Hardness Calculations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	**22-Sep-2024**	**----**	----	----	**02-Oct-2024**	20-Oct-2024	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**----**	----	----	**02-Oct-2024**	21-Oct-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020B-F)							
WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	**22-Sep-2024**	**----**	----	----	**02-Oct-2024**	21-Mar-2025	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020B-F)							
YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**----**	----	----	**02-Oct-2024**	22-Mar-2025	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020B-T)							
WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	**22-Sep-2024**	**01-Oct-2024**	21-Mar-2025	✓	**01-Oct-2024**	21-Mar-2025	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020B-T)							
YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**01-Oct-2024**	22-Mar-2025	✓	**01-Oct-2024**	22-Mar-2025	✓
EK026SF: Total CN by Segmented Flow Analyser							
Black Opaque Plastic Bottle - NaOH (EK026SF)							
WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	**22-Sep-2024**	**----**	----	----	**03-Oct-2024**	06-Oct-2024	✓
Black Opaque Plastic Bottle - NaOH (EK026SF)							
YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**----**	----	----	**03-Oct-2024**	07-Oct-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	**22-Sep-2024**	**----**	----	----	**30-Sep-2024**	20-Oct-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**----**	----	----	**30-Sep-2024**	21-Oct-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	**22-Sep-2024**	**----**	----	----	**26-Sep-2024**	24-Sep-2024	×
Clear Plastic Bottle - Natural (EK057G)							
YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**----**	----	----	**26-Sep-2024**	25-Sep-2024	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	**22-Sep-2024**	**----**	----	----	**30-Sep-2024**	20-Oct-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**----**	----	----	**30-Sep-2024**	21-Oct-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	**22-Sep-2024**	**30-Sep-2024**	20-Oct-2024	✓	**30-Sep-2024**	20-Oct-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**30-Sep-2024**	21-Oct-2024	✓	**30-Sep-2024**	21-Oct-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	**22-Sep-2024**	**30-Sep-2024**	20-Oct-2024	✓	**30-Sep-2024**	20-Oct-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**30-Sep-2024**	21-Oct-2024	✓	**30-Sep-2024**	21-Oct-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural (EK071G) WC-RS, WC-IS, YR1-RS - YR1-IS, LHG-IS, YR2-RS - YR2-IS, TR-RS, SSC-IS	**22-Sep-2024**	**----**	----	----	**26-Sep-2024**	24-Sep-2024	×
Clear Plastic Bottle - Natural (EK071G) YK-IS(d/s), NZG-IS, YK-IS, YK-RS	**23-Sep-2024**	**----**	----	----	**26-Sep-2024**	25-Sep-2024	×

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids	EA025	3	18	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	14	**28.57**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids	EA025	6	18	**33.33**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	11	**54.55**	**12.50**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	14	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Suspended Solids	EA025	2	18	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	11	**18.18**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	14	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	14	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids	EA025	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM Schedule B(3)
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C&O / ASTM D7511 / ISO 14403. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)

QUALITY CONTROL REPORT

Work Order	: **ES2431566**	Page	: 1 of 7
Client	: **UGL LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: CAMILLE PALMER	Contact	: Customer Services ES
Address	: Level 4, 40 Miller Street North Sydney 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 3200-0645 TransGrid Maragle 500/330kV Station. (Event 7C)	Date Samples Received	: 26-Sep-2024
Order number	: 4501837828	Date Analysis Commenced	: 26-Sep-2024
C-O-C number	: ----	Issue Date	: 03-Oct-2024
Sampler	: Lachlan Whiteford		
Site	: Maragle/Lobs Hole		
Quote number	: ES24UGLLIM0001_V3		
No. of samples received	: 11		
No. of samples analysed	: 11		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6083917)									
ES2431566-001	WC-RS	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	65	62	4.7	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6085742)									
ES2431566-003	YR1-RS YR1-IS	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	68	66	3.0	No Limit
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6083914)									
ME2401549-001	Anonymous	EA025: Suspended Solids (SS)	----	1	mg/L	3	4	38.8	No Limit
ES2431155-001	Anonymous	EA025: Suspended Solids (SS)	----	1	mg/L	189	208	9.9	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6085743)									
ES2431566-003	YR1-RS YR1-IS	EA025: Suspended Solids (SS)	----	1	mg/L	2	2	0.0	No Limit
EA045: Turbidity (QC Lot: 6084804)									
ES2431501-001	Anonymous	EA045: Turbidity	----	0.1	NTU	1.3	1.4	0.0	0% - 50%
ES2431501-010	Anonymous	EA045: Turbidity	----	0.1	NTU	1.4	1.4	0.0	0% - 50%
EA045: Turbidity (QC Lot: 6084805)									
ES2431566-003	YR1-RS YR1-IS	EA045: Turbidity	----	0.1	NTU	1.6	1.6	0.0	0% - 50%
ES2431636-001	Anonymous	EA045: Turbidity	----	0.1	NTU	6.8	6.9	0.0	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6086627)									
EN2411768-001	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
ES2431566-007	YK-IS(d/s)	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6086629)									
ES2431559-002	Anonymous	EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.231	0.234	1.2	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6086629) - continued									
ES2431559-002	Anonymous	EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
ES2431566-007	YK-IS(d/s)	EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.008	0.008	0.0	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.07	0.08	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.10	0.11	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6089470)									
ES2431494-001	Anonymous	EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
ES2431566-001	WC-RS	EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.005	0.006	0.0	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.04	0.04	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.05	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6089471)									
ES2431566-001	WC-RS	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
ES2431566-011	SSC-IS	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6089472)									
ES2431590-002	Anonymous	EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.223	0.224	0.0	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.12	0.16	26.3	0% - 50%
		EG020A-T: Iron	7439-89-6	0.05	mg/L	1.17	1.16	0.0	0% - 20%
ES2431566-011	SSC-IS	EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.10	0.10	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.08	0.07	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 6092822)									
ES2431566-001	WC-RS	EK026SF: Total Cyanide	57-12-5	0.004 (0.002) *	mg/L	<0.002	<0.002	0.0	No Limit
ES2431566-011	SSC-IS	EK026SF: Total Cyanide	57-12-5	0.004 (0.002) *	mg/L	<0.002	<0.002	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6087006)									
ES2431566-001	WC-RS	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.01	87.2	No Limit
ES2431566-010	YK-RS	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6082934)									
ES2431520-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2431566-001	WC-RS	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6087007)									
ES2431566-001	WC-RS	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.22	0.21	6.1	0% - 20%
ES2431566-010	YK-RS	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.04	0.04	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6087011)									
ES2431566-001	WC-RS	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6087011) - continued									
ES2431566-011	SSC-IS	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.6	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6087010)									
ES2431566-001	WC-RS	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.03	0.0	No Limit
ES2431566-011	SSC-IS	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.03	0.0	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 6082936)									
ES2431566-010	YK-RS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2431566-001	WC-RS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6083917)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	97.2	87.0	109
				<10	293 mg/L	107	75.2	126
				<10	2410 mg/L	97.4	83.0	124
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6085742)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	101	87.0	109
				<10	293 mg/L	122	75.2	126
				<10	2410 mg/L	103	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6083914)								
EA025: Suspended Solids (SS)	----	1	mg/L	<1	150 mg/L	95.3	83.0	129
				<1	1000 mg/L	96.4	81.0	111
				<1	879 mg/L	96.0	83.0	118
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6085743)								
EA025: Suspended Solids (SS)	----	1	mg/L	<1	150 mg/L	111	83.0	129
				<1	1000 mg/L	93.3	81.0	111
				<1	879 mg/L	102	83.0	118
EA045: Turbidity (QCLot: 6084804)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	98.8	91.0	105
EA045: Turbidity (QCLot: 6084805)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	99.5	91.0	105
EG020F: Dissolved Metals by ICP-MS (QCLot: 6086627)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	85.0	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 6086629)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	91.4	80.0	116
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	90.3	82.0	110
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	97.3	82.0	112
EG020T: Total Metals by ICP-MS (QCLot: 6089470)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	99.0	82.0	120
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.2	85.0	113
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	85.0	117
EG020T: Total Metals by ICP-MS (QCLot: 6089471)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	87.3	70.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 6089472)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	82.0	120
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	102	85.0	113
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	108	85.0	117
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 6092822)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	109	73.0	133
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6087006)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	98.2	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6082934)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.3	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6087007)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	98.5	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6087011)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	91.8	69.0	123
				<0.1	1 mg/L	93.1	70.0	123
				<0.1	5 mg/L	94.0	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6087010)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	96.5	71.3	126
				<0.01	0.442 mg/L	94.6	71.3	126
				<0.01	1 mg/L	98.6	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 6082936)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	102	85.0	117

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 6086629)							
ES2431559-003	Anonymous	EG020A-F: Manganese	7439-96-5	2 mg/L	93.8	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6089470)							
ES2431501-001	Anonymous	EG020A-T: Manganese	7439-96-5	1 mg/L	97.8	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6089472)							
ES2431566-006	TR-RS	EG020A-T: Manganese	7439-96-5	1 mg/L	103	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 6092822)							
ES2431566-001	WC-RS	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	110	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6087006)							
ES2431566-001	WC-RS	EK055G: Ammonia as N	7664-41-7	1 mg/L	103	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6082934)							
ES2431520-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	112	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6087007)							
ES2431566-001	WC-RS	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	103	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6087011)							
ES2431566-002	WC-IS	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	93.4	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6087010)							
ES2431566-002	WC-IS	EK067G: Total Phosphorus as P	----	1 mg/L	98.0	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 6082936)							
ES2431566-001	WC-RS	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	116	70.0	130

Appendix C: September 2024 SWQ Monitoring Results

Parameter		Sheen/ oil/ grease	Temp. (°C)	Dissolved Oxygen (DO %)	DO (ppm)	Specific EC (SPC uS/cm)	EC (uS/cm)	pH	Redox (mV)	Turbidity (NTU)	Dissolved Al (mg/L)	Dissolved As (mg/L)	Dissolved Cd (mg/L)	Dissolved Cr (mg/L)	Dissolved Cu (mg/L)	Cyanide (mg/L)	Dissolved Fe (mg/L)	Dissolved Pb (mg/L)	Dissolved Mn (mg/L)	Dissolved Hg (mg/L)	Dissolved Ni (mg/L)	TN (mg/L)	TP (mg/L)
YARRANGOBILLY CATCHMENT																							
Default Guideline Value (DGV)		No	-	90-110	-	30-350	30-350	6.5-8	-	2-25	0.027	0.0008	0.0006	0.00001	0.001	0.004	0.3	0.001	1.2	0.00006	0.008	0.25	0.02
Limit of Reporting (LOR)				-	-	-	-	-	-	0.1	0.01	0.001	0.0001	0.001	0.001	0.002	0.05	0.001	0.001	0.0001	0.001	0.1	0.01
Dec - May Site Specific Guideline Value (SSGV)				90-110	9.08	115	93.2	6.5-8	79.1	0.37	0.03	0.0003	0.00002	0.00001	0.0002	0.002	0.03	0.001	0.002	0.00003	0.001	0.2	0.02
June - Nov SSGV				90-110	10.28	88	60.85	6.5-8	98.4	5.12	0.04	0.0003	0.00002	0.00001	0.0002	0.002	0.02	0.001	0.002	0.00003	0.001	0.2	0.02
WC-RS	Mar-24	No	10.7	87.5	9.72	143.6	104.3	7.8	25.9	*0.1*	0.02	*0.00015*	*0.00001*	*0.00001*	0.002	*0.001*	*0.03*	0.002	0.003	*0.00002*	*0.001*	*0.1*	0.03
	Apr-24	No	10.7	94.8	-	145.6	-	8.44	-	1.05	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.11	*0.001*	0.007	*0.0001*	*0.001*	*0.1*	0.02
	May-24	No	2.1	93.8	-	155	-	8.05	-	0.39	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	0.004	*0.05*	*0.001*	0.009	*0.0001*	*0.001*	*0.1*	0.02
	Jun-24	No	4.7	92.9	-	126.8	-	7.51	-	0.56	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.005	*0.0001*	*0.001*	0.2	*0.01*
	Jul-24	No	6.4	91.9	-	46.6	-	6.96	-	9.24	0.07	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*	*0.1*	0.05
	Aug-24	No	10.4	80.6	-	47.1	-	7.8	-	1.6	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*	*0.1*	*0.01*
	Sep-24	No	11.7	92.0	-	43	-	7.86	-	0.5	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*	0.4	0.03
WC-IS	Mar-24	No	10.7	87.1	9.68	145.9	105.9	7.83	41.9	*0.1*	0.03	*0.00015*	*0.00001*	*0.00001*	0.002	*0.001*	*0.03*	0.002	0.003	*0.00002*	*0.0005*	*0.1*	*0.005*
	Apr-24	No	10.7	95.0	-	145.2	-	8.45	-	0.9	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.07	*0.001*	0.006	*0.0001*	*0.001*	2.7	0.02
	May-24	No	2.1	94.1	-	154.9	-	7.86	-	0.3	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	0.004	*0.05*	*0.001*	0.007	*0.0001*	*0.001*	0.4	0.02
	Jun-24	No	4.8	93.3	-	126.7	-	7.72	-	0.35	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.004	*0.0001*	*0.001*	*0.1*	*0.01*
	Jul-24	No	6.6	91.2	-	46.6	-	6.96	-	7.65	0.07	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*	*0.1*	0.02
	Aug-24	No	10.5	91.5	-	45.6	-	7.83	-	5.85	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	*0.001*	*0.0001*	*0.001*	*0.1*	*0.01*
	Sep-24	No	11.7	92.9	-	54.4	-	7.83	-	5.5	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.005	*0.0001*	*0.001*	7.6	0.02
CG-IS	Mar-24	No Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Apr-24	No Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	May-24	No Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Jun-24	No Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Jul-24	No Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Aug-24	No Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sep-24	No Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YR1-IS	Mar-24	No	12.2	88.2	9.47	129.4	97.7	7.81	53.8	*0.1*	0.05	*0.00015*	*0.00001*	*0.000005*	0.002	*0.001*	*0.03*	*0.0005*	0.002	*0.000015*	*0.001*	*0.1*	*0.005*
	Apr-24	No	11.3	97.4	-	136.1	-	8.49	-	1.23	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*	*0.1*	*0.01*
	May-24	No	3.1	95.6	-	138.8	-	7.91	-	0.42	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	0.004	*0.05*	*0.001*	0.002	*0.0001*	*0.001*	*0.1*	0.02
	Jun-24	No	5.6	94.3	-	112.4	-	7.8	-	1.94	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.14	*0.001*	0.003	*0.0001*	*0.001*	*0.1*	*0.01*
	Jul-24	No	6.4	93.0	-	51.5	-	6.93	-	10.05	0.18	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.11	*0.001*	0.002	*0.0001*	*0.001*	0.2	0.02
	Aug-24	No	8.6	89.8	-	55.8	-	7.87	-	3.62	0.07	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	*0.001*	*0.0001*	*0.001*	0.2	*0.01*
	Sep-24	No	13.3	93.1	-	61.4	-	7.77	-	0.79	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*	*0.1*	0.04
LHG-IS	Mar-24	Yes	11.9	59.2	6.38	596	447.2	7.35	-17.2	408.5	0.2	*0.00015*	*0.00001*	*0.001*	0.003	*0.001*	0.18	0.005	0.040	*0.000015*	0.003	*0.1*	*0.01*
	Apr-24	No	12.5	60.1	-	658	-	7.69	-	69.72	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.34	*0.001*	0.184	*0.0001*	*0.001*	0.5	0.09
	May-24	No	7	63.3	-	618	-	7	-	1003.7	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	0.004	0.71	*0.001*	0.184	*0.0001*	*0.001*	0.5	0.05
	Jun-24	No	8.5	70.4	-	616	-	7.65	-	10.05	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.48	*0.001*	0.158	*0.0001*	*0.001*	0.2	0.04
	Jul-24	No	8	87.5	-	503	-	7.3	-	5.44	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.07	*0.001*	0.025	*0.0001*	*0.001*	*0.1*	*0.01*
	Aug-24	No	11.4	83.0	-	408.8	-	7.74	-	76.59	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.07	*0.001*	0.020	*0.0001*	*0.001*	*0.1*	*0.01*
	Sep-24	No	9.7	87.3	-	424.6	-	7.68	-	6.13	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.06	*0.001*	0.045	*0.0001*	*0.001*	*0.1*	0.09
YR2-IS	Mar-24	No	12.3	88.5	9.47	130.8	99.1	7.93	43.2	*0.1*	0.03	*0.00015*	*0.00001*	*0.000005*	*0.001*	*0.001*	*0.02*	0.005	*0.001*	*0.000015*	*0.001*	*0.1*	*0.005*
	Apr-24	No	11.8	97.1	-	139.7	-	8.52	-	1.16	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.003	*0.0001*	*0.001*	*0.1*	*0.01*
	May-24	No	2.5	94.7	-	142.1	-	7.77	-	0.343	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	0.024	*0.05*	*0.001*	0.004	*0.0001*	*0.001*	0.8	0.03
	Jun-24	No	4.7	97.1	-	118.6	-	7.24	-	*0*	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.003	*0.0001*	*0.001*	*0.1*	*0.01*
	Jul-24	No	5.9	93.5	-	58.4	-	6.78	-	8.87	0.17	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.12	*0.001*	0.002	*0.0001*	*0.001*	0.4	0.03
	Aug-24	No	9.3	93.5	-	58.5	-	7.98	-	6.97	0.06	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*	*0.1*	*0.01*
	Sep-24	No	13.4	93.8	-	66.7	-	7.62	-	1.56	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.005	*0.0001*	*0.001*	*0.1*	0.02
SSC-IS	Mar-24	No Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Apr-24	No Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	May-24	No Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Jun-24	No Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Jul-24	No	8	90.1	-	152.6	-	6.29	-	17.88	0.1	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.07	*0.001*	0.002	*0.0001*	*0.001*	1.8	0.03
	Aug-24	No	12.1	94.0	-	120.9	-	7.78	-	3.9	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	*0.001*	*0.0001*	*0.001*	*0.1*	*0.01*
	Sep-24	No	12.2	84.1	-	122.2	-	7.1	-	3.53	0.05	*0.001*	*0.0001*	*0.001*	0.003	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*	0.7	0.03

Parameter		Dissolved Ag (mg/L)	Dissolved Zn (mg/L)	Ammonia (mg/L)	Nitrogen Oxides (mg/L)	Reactive Phosphorous (mg/L)	Total Hardness (mg/L) (CaCO3)	Total Kjedahl Nitrogen (mg/L) (TKN)	TDS (mg/L)	TSS (mg/L)	Total Al (mg/L)	Total As (mg/L)	Total Cd (mg/L)	Total Cr (mg/L)	Total Cu (mg/L)	Total Pb (mg/L)	Total Mn (mg/L)	Total Ni (mg/L)	Total Ag (mg/L)	Total Zn (mg/L)	Total Fe (mg/L)	Total Hg (mg/L)
YARRANGOBILLY CATCHMENT																						
Default Guideline Value (DGV)		0.00002	0.0024	0.013	0.015	0.015	-	-	-	0.2	0.027	0.0008	0.0006	0.00001	0.001	0.001	1.2	0.008	0.00002	0.0024	0.3	0.00006
Limit of Reporting (LOR)		0.001	0.005	0.010	0.010	0.010	1	0.1	10	1	0.01	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.05	0.0001
Dec - May Site Specific Guideline V.		0.00002	0.002	0.013	0.015	0.020	47	0.2	52	0.2												
June - Nov SSGV		0.00002	0.002	0.013	0.015	0.015	30	0.2	39	1												
WC-RS	Mar-24	0.00001	0.001	0.050	0.05	0.005	42	0.1	70	0.1												
	Apr-24	0.001	0.005	0.010	0.01	-	70	0.01	-	1	0.02	0.001	0.0001	0.001	0.001	0.001	0.01	0.001	0.001	0.005	0.05	0.0001
	May-24	0.001	0.005	0.020	0.01	0.01	77	0.1	102	5	0.01	0.001	0.0001	0.001	0.001	0.001	0.007	0.001	0.001	0.005	0.05	0.0001
	Jun-24	0.001	0.005	0.010	0.23	0.01	53	0.1	81	2	0.01	0.001	0.0001	0.001	0.001	0.001	0.007	0.001	0.001	0.005	0.05	0.0001
	Jul-24	0.001	0.005	0.010	0.01	0.01	17	0.1	38	8	0.09	0.001	0.0001	0.001	0.001	0.001	0.01	0.001	0.001	0.005	0.09	0.0001
	Aug-24	0.001	0.032	0.010	0.01	0.01	28	0.1	51	4	0.06	0.001	0.0001	0.001	0.001	0.001	0.007	0.001	0.001	0.005	0.07	0.0001
	Sep-24	0.001	0.005	0.040	0.22	0.01	31	0.2	65	3	0.04	0.001	0.0001	0.001	0.001	0.001	0.005	0.001	0.001	0.005	0.05	0.0001
WC-IS	Mar-24	0.00001	0.001	0.050	0.05	0.005	42	0.1	88	0.1												
	Apr-24	0.001	0.005	0.010	2.42	-	67	2.42	-	11	0.15	0.001	0.0001	0.001	0.001	0.001	0.022	0.004	0.001	0.005	0.22	0.0001
	May-24	0.001	0.005	0.010	0.31	0.01	75	0.1	106	5	0.01	0.001	0.0001	0.001	0.001	0.001	0.006	0.001	0.001	0.005	0.05	0.0001
	Jun-24	0.001	0.005	0.010	0.02	0.04	53	0.1	81	1	0.01	0.001	0.0001	0.001	0.001	0.001	0.005	0.001	0.001	0.005	0.05	0.0001
	Jul-24	0.001	0.005	0.010	0.01	0.01	17	0.1	42	5	0.11	0.001	0.0001	0.001	0.001	0.001	0.011	0.001	0.001	0.005	0.1	0.0001
	Aug-24	0.001	0.006	0.010	0.03	0.01	28	0.1	45	4	0.06	0.001	0.0001	0.001	0.001	0.001	0.006	0.001	0.001	0.005	0.06	0.0001
	Sep-24	0.001	0.017	0.010	7.21	0.01	33	0.4	113	3	0.02	0.001	0.0001	0.001	0.001	0.001	0.002	0.001	0.001	0.005	0.05	0.0001
CG-IS	Mar-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Apr-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	May-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Jun-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Jul-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Aug-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sep-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YR1-IS	Mar-24	0.00001	0.001	0.050	0.05	0.005	34	0.1	66	0.1												
	Apr-24	0.001	0.005	0.010	0.05	-	61	0.05	-	1	0.01	0.001	0.0001	0.001	0.001	0.001	0.002	0.001	0.001	0.005	0.05	0.0001
	May-24	0.001	0.005	0.010	0.01	0.01	68	0.1	95	5	0.01	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.05	0.0001
	Jun-24	0.001	0.005	0.010	0.01	0.03	51	0.1	68	1	0.03	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.05	0.0001
	Jul-24	0.001	0.005	0.010	0.01	0.01	19	0.2	48	7	0.17	0.001	0.0001	0.001	0.001	0.001	0.009	0.001	0.001	0.005	0.15	0.0001
	Aug-24	0.001	0.005	0.010	0.01	0.01	33	0.2	55	3	0.12	0.001	0.0001	0.001	0.001	0.001	0.004	0.001	0.001	0.005	0.09	0.0001
	Sep-24	0.001	0.005	0.010	0.02	0.01	38	0.1	68	2	0.06	0.001	0.0001	0.001	0.001	0.001	0.003	0.001	0.001	0.005	0.05	0.0001
LHG-IS	Mar-24	0.00001	0.006	0.050	0.05	0.005	297	1	330	20												
	Apr-24	0.001	0.005	0.020	0.02	-	332	0.02	-	70	0.25	0.003	0.0001	0.001	0.002	0.001	0.51	0.006	0.001	0.009	2.22	0.0001
	May-24	0.001	0.005	0.040	0.06	0.01	365	0.4	402	5	0.07	0.001	0.0001	0.001	0.001	0.001	0.177	0.001	0.001	0.005	1.09	0.0001
	Jun-24	0.001	0.005	0.020	0.02	0.01	313	0.2	339	17	0.38	0.002	0.0001	0.001	0.001	0.001	0.282	0.001	0.001	0.005	1.54	0.0001
	Jul-24	0.001	0.005	0.010	0.01	0.01	250	0.1	324	10	0.53	0.001	0.0001	0.001	0.002	0.001	0.033	0.001	0.001	0.005	0.16	0.0001
	Aug-24	0.001	0.006	0.020	0.01	0.01	282	0.1	360	9	0.09	0.001	0.0001	0.001	0.001	0.001	0.026	0.001	0.001	0.005	0.17	0.0001
	Sep-24	0.001	0.006	0.010	0.01	0.01	294	0.1	394	10	0.06	0.001	0.0001	0.001	0.001	0.001	0.051	0.001	0.001	0.005	0.19	0.0001
YR2-IS	Mar-24	0.00001	0.001	0.050	0.05	0.005	27	1	58	0.1												
	Apr-24	0.001	0.005	0.010	0.01	-	61	0.01	-	5	0.02	0.001	0.0001	0.001	0.001	0.001	0.004	0.001	0.001	0.005	0.05	0.0001
	May-24	0.001	0.007	0.020	0.34	0.01	68	0.5	98	5	0.01	0.001	0.0001	0.001	0.001	0.001	0.002	0.001	0.001	0.007	0.05	0.0001
	Jun-24	0.001	0.005	0.010	0.01	0.01	51	0.1	76	1	0.03	0.001	0.0001	0.001	0.001	0.001	0.002	0.001	0.001	0.005	0.05	0.0001
	Jul-24	0.001	0.005	0.010	0.24	0.01	26	0.2	46	10	0.17	0.001	0.0001	0.001	0.001	0.001	0.012	0.001	0.001	0.007	0.16	0.0001
	Aug-24	0.001	0.005	0.010	0.01	0.01	33	0.1	59	4	0.11	0.001	0.0001	0.001	0.001	0.001	0.005	0.001	0.001	0.005	0.09	0.0001
	Sep-24	0.001	0.005	0.010	0.01	0.01	46	0.1	68	3	0.07	0.001	0.0001	0.001	0.001	0.001	0.006	0.001	0.001	0.005	0.07	0.0001
SSC-IS	Mar-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Apr-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	May-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Jun-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Jul-24	0.001	0.024	0.030	0.85	0.01	62	0.9	110	1	0.09	0.001	0.0001	0.001	0.001	0.001	0.006	0.001	0.001	0.025	0.4	0.0001
	Aug-24	0.001	0.005	0.010	0.01	0.01	62	0.1	110	5	0.21	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.09	0.0001
	Sep-24	0.001	0.036	0.010	0.07	0.01	65	0.6	108	5	0.10	0.001	0.0001	0.001	0.003	0.001	0.004	0.001	0.001	0.028	0.08	0.0001

Parameter		Sheen/ oil/ grease	Temp. (°C)	Dissolved Oxygen (DO %)	DO (ppm)	Specific EC (SPC uS/cm)	EC (uS/cm)	pH	Redox (mV)	Turbidity (NTU)	Dissolved Al (mg/L)	Dissolved As (mg/L)	Dissolved Cd (mg/L)	Dissolved Cr (mg/L)	Dissolved Cu (mg/L)	Cyanide (mg/L)	Dissolved Fe (mg/L)	Dissolved Pb (mg/L)	Dissolved Mn (mg/L)	Dissolved Hg (mg/L)	Dissolved Ni (mg/L)	TN (mg/L)	TP (mg/L)
TALBINGO RESERVOIR																							
DGV		No	-	90-110	-	30-350	30-350	6.5-8	-	2-25	0.027	0.0008	0.0006	0.00001	0.001	0.004	0.3	0.001	1.2	0.00006	0.008	0.25	0.02
LOR				-	-	-	-	-	-	0.1	0.01	0.001	0.0001	0.001	0.001	0.002	0.05	0.001	0.001	0.0001	0.001	0.1	0.01
Dec - May SSGV				90-100	8.79	24.0	20.3	6.5-8	91.2	0.09	0.03	0.003	0.00002	0.00001	0.0002	0.002	0.04	0.001	0.003	0.00003	0.001	0.2	0.02
June - Nov SSGV				90-100	11.53	38.7	26.2	6.5-8	95.4	1.56	0.015	0.0003	0.00002	0.00001	0.0002	0.002	0.02	0.001	0.002	0.00003	0.001	0.2	0.02
TR-RS	Mar-24	No	13.4	72.5	7.57	24	18.7	7.1	55	*0.10*	0.015	*0.00015*	*0.00001*	*0.000005*	*0.0001*	*0.001*	*0.05*	0.005	0.005	*0.000015*	*0.0005*	*0.1*	*0.01*
	Apr-24	No	12.2	85.9	-	25.9	-	7.17	-	*0.02*	*0.01*	*0.001*	*0.0001*	*0.001*	0.005	*0.002*	*0.05*	*0.001*	0.026	*0.0001*	*0.001*	1.3	0.02
	May-24	No	10.1	91.5	-	30.2	-	6.8	-	0.65	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	0.004	*0.05*	*0.001*	0.002	*0.0001*	*0.001*	0.3	0.03
	Jun-24	No	8.7	91.6	-	26.4	-	8.32	-	*0.10*	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.010	*0.0001*	*0.001*	2.3	*0.01*
	Jul-24	No	6	92.1	-	28.7	-	7.76	-	1.35	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.003	*0.0001*	*0.001*	*0.1*	0.02
	Aug-24	No	12.7	91.5	-	26.3	-	6.67	-	2.0	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*	0.4	0.02
	Sep-24	No	10.2	96.2	-	25	-	7.78	-	0.58	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*	0.2	0.03
YORKERS CREEK CATCHMENT																							
DGV		No	-	90-110	-	30-350	30-350	6.5-8	-	2-25	0.027	0.0008	0.0006	0.00001	0.001	0.004	0.3	0.001	1.2	0.00006	0.008	0.25	0.02
LOR				-	-	-	-	-	-	0.1	0.01	0.001	0.0001	0.001	0.001	0.002	0.05	0.001	0.001	0.0001	0.001	0.1	0.01
Dec - May SSGV				90-110	8.35	31	24	6.5-8	94.6	9	0.36	0.003	0.00002	0.00001	0.002	0.002	0.41	0.001	0.005	0.00003	0.001	0.2	0.02
June - Nov SSGV				90-110	10.2	27.9	20.5	6.5-8	106.1	7.87	0.32	0.0003	0.00002	0.00001	0.0002	0.002	0.23	0.001	0.003	0.00003	0.001	0.2	0.02
YK-RS	Mar-24	Yes	16.3	82.5	8.09	31.5	26.2	6.69	64.5	12.24	0.6	*0.00015*	*0.00001*	*0.000005*	*0.001*	*0.001*	0.66	0.002	0.013	*0.000015*	*0.0005*	*0.1*	0.03
	Apr-24	No	6.8	80.7	-	36.5	-	7.04	-	17.27	0.10		*0.0001*	*0.001*	*0.001*	*0.002*	0.12	*0.001*	0.014	*0.0001*	*0.001*	0.6	0.04
	May-24	No	4.2	85.1	-	34.7	-	6.62	-	0.3	0.10	*0.001*	*0.0001*	*0.001*	*0.001*	0.004	0.17	*0.001*	0.026	*0.0001*	*0.001*	0.3	0.04
	Jun-24	No	3.5	84.2	-	30.1	-	7.99	-	26.48	0.09	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.18	*0.001*	0.021	*0.0001*	*0.001*	0.4	0.04
	Jul-24	No	2.9	83.1	-	27.8	-	7.4	-	7.97	0.19	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.21	*0.001*	0.010	*0.0001*	*0.001*	0.4	0.04
	Aug-24	No	7.3	82.7	-	21.6	-	6.89	-	19.36	0.33	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.29	*0.001*	0.017	*0.0001*	*0.001*	0.9	0.07
	Sep-24	No	12.3	86.5	-	19.5	-	7.58	-	15.51	0.09	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.16	*0.001*	0.013	*0.0001*	*0.001*	0.2	0.05
YK-IS (D/S)	Mar-24	No	10	81.6	9.21	39.1	27.9	7.02	63.2	*0.1*	*0.0065*	*0.00015*	*0.00001*	*0.000005*	*0.0001*	*0.001*	0.26	*0.0005*	0.006	*0.000015*	*0.0005*	*0.1*	0.02
	Apr-24	No	5.9	86.0	-	39.4	-	7.33	-	221.78	0.05	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.11	*0.001*	0.014	*0.0001*	*0.001*	*0.1*	0.02
	May-24	No	3.1	85.9	-	39.6	-	6.59	-	0.8	0.09	*0.001*	*0.0001*	*0.001*	*0.001*	0.004	0.15	*0.001*	0.021	*0.0001*	*0.001*	0.8	0.04
	Jun-24	No	3.2	84.6	-	38.9	-	7.76	-	2.46	0.06	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.1	*0.001*	0.009	*0.0001*	*0.001*	0.2	0.04
	Jul-24	No	3.2	85.0	-	32.8	-	7.11	-	8.29	0.28	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.22	*0.001*	0.005	*0.0001*	*0.001*	0.6	0.04
	Aug-24	No	7.3	84.7	-	23.2	-	6.85	-	22.38	0.51	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.34	*0.001*	0.011	*0.0001*	*0.001*	0.6	0.04
	Sep-24	No	9.3	84.5	-	26.9	-	7.52	-	3.34	0.07	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.1	*0.001*	0.008	*0.0001*	*0.001*	0.2	0.02
NZG-IS	Mar-24	No	9.6	80.2	9.13	64.2	45.3	7.45	31.1	*0.1*	0.14	*0.00015*	*0.00001*	*0.000005*	*0.0001*	*0.001*	0.18	*0.0005*	0.004	*0.000015*	*0.0005*	*0.1*	*0.01*
	Apr-24	No	6.4	84.9	-	67.1	-	7.38	-	0.96	0.03		*0.0001*	*0.001*	*0.001*	*0.002*	0.08	*0.001*	0.006	*0.0001*	*0.001*	*0.1*	0.02
	May-24	No	3.9	85.8	-	66.6	-	6.68	-	0.2	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	0.004	0.07	*0.001*	0.007	*0.0001*	*0.001*	0.2	0.06
	Jun-24	No	4.4	82.7	-	64.1	-	8.14	-	0.89	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.07	*0.001*	0.005	*0.0001*	*0.001*	0.2	*0.01*
	Jul-24	No	3.7	83.9	-	34.8	-	7.44	-	13.66	0.2	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.18	*0.001*	0.004	*0.0001*	*0.001*	0.2	0.04
	Aug-24	No	7.7	84.4	-	28.9	-	6.95	-	15.47	0.44	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.31	*0.001*	0.008	*0.0001*	*0.001*	0.4	0.04
	Sep-24	No	8.2	84.6	-	38.2	-	7.32	-	2.02	0.06	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.08	*0.001*	0.004	*0.0001*	*0.001*	*0.1*	0.04
YK-IS	Mar-24	No	11.4	78.0	8.53	35	25.9	6.7	41.1	21.44	0.45	*0.00015*	*0.00001*	*0.000005*	*0.001*	*0.001*	0.4	*0.0005*	0.018	*0.000015*	*0.0005*	*0.1*	*0.01*
	Apr-24	No	6.8	80.7	-	36.5	-	7.04	-	12.37	0.09	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.15	*0.001*	0.016	*0.0001*	*0.001*	0.3	0.02
	May-24	No	4.7	82.7	-	35.8	-	6.43	-	0.2	0.06	*0.001*	*0.0001*	*0.001*	*0.001*	0.004	0.1	*0.001*	0.015	*0.0001*	*0.001*	0.2	0.03
	Jun-24	No	3.9	83.1	-	35.1	-	7.88	-	7.99	0.08	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.15	*0.001*	0.010	*0.0001*	*0.001*	0.3	0.03
	Jul-24	No	3.2	82.8	-	32.5	-	7	-	11.9	0.31	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.25	*0.001*	0.008	*0.0001*	*0.001*	0.3	0.07
	Aug-24	No	7.2	81.3	-	23.5	-	6.7	-	25.12	0.67	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.46	*0.001*	0.015	*0.0001*	0.002	0.4	0.04
	Sep-24	No	9.3	83.4	-	23.8	-	7.41	-	6.24	0.09	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.13	*0.001*	0.009	*0.0001*	*0.001*	0.2	0.02

	Reference Site exceeds SSGV
	Impact Site Result exceeds SSGV or DGV
italics	Result exceeds the Limit of Reporting

Parameter		Dissolved Ag (mg/L)	Dissolved Zn (mg/L)	Ammonia (mg/L)	Nitrogen Oxides (mg/L)	Reactive Phosphorous (mg/L)	Total Hardness (mg/L) (CaCO3)	Total Kjedahl Nitrogen (mg/L) (TKN)	TDS (mg/L)	TSS (mg/L)	Total Al (mg/L)	Total As (mg/L)	Total Cd (mg/L)	Total Cr (mg/L)	Total Cu (mg/L)	Total Pb (mg/L)	Total Mn (mg/L)	Total Ni (mg/L)	Total Ag (mg/L)	Total Zn (mg/L)	Total Fe (mg/L)	Total Hg (mg/L)
TALBINGO RESERVOIR																						
DGV		0.00002	0.0024	0.013	0.015	0.015	-	-	-	0.2	0.027	0.0008	0.0006	0.00001	0.001	0.001	1.2	0.008	0.00002	0.0024	0.3	0.00006
LOR		0.001	0.005	0.010	0.010	0.01	1	0.1	10	1	0.01	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.05	0.0001
Dec - May SSGV		0.00002	0.002	0.013	0.015	0.02	7.5	0.1	12.5	0.2												
June - Nov SSGV		0.00002	0.002	0.013	0.015	0.015	8	0.2	15	0.2												
TR-RS	Mar-24	*0.00001*	*0.001*	0.050	0.05	*0.005*	8	*0.1*	44	*0.1*												
	Apr-24	*0.001*	0.066	0.030	0.12	-	5	0.12	-	3	0.02	*0.001*	*0.0001*	*0.001*	0.006	*0.001*	0.039	0.002	*0.001*	0.067	0.07	*0.0001*
	May-24	*0.001*	0.023	0.020	0.03	*0.01*	5	0.3	35	5	0.03	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.033	*0.001*	*0.001*	0.012	0.06	*0.0001*
	Jun-24	*0.001*	*0.005*	*0.010*	1.92	*0.01*	5	0.4	17	2	0.03	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.056	*0.001*	*0.001*	*0.005*	0.07	*0.0001*
	Jul-24	*0.001*	*0.005*	0.030	0.04	*0.01*	5	*0.1*	17	2	0.05	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.014	*0.001*	*0.001*	*0.005*	0.06	*0.0001*
	Aug-24	*0.001*	0.011	0.020	0.07	*0.01*	12	0.3	30	*1*	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.004	*0.001*	*0.001*	0.008	*0.05*	*0.0001*
	Sep-24	*0.001*	*0.005*	*0.010*	0.06	*0.01*	14	*0.1*	27	2	0.06	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.006	*0.001*	*0.001*	*0.005*	0.07	*0.0001*
YORKERS CREEK CATCHMENT																						
DGV		0.00002	0.0024	0.013	0.015	0.015	-	-	-	0.2	0.027	0.0008	0.0006	0.00001	0.001	0.001	1.2	0.008	0.00002	0.0024	0.3	0.00006
LOR		0.001	0.005	0.010	0.010	0.01	1	0.1	10	1	0.01	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.05	0.0001
Dec - May SSGV		0.00002	0.002	0.013	0.015	0.02	1	0.1	30	3												
June - Nov SSGV		0.00002	0.002	0.013	0.015	0.02	7	0.2	10	0.2												
YK-RS	Mar-24	*0.00001*	*0.003*	0.050	0.05	*0.005*	*1*	*0.1*	30	3												
	Apr-24	*0.001*	0.013	0.020	0.02	-	9	*0.02*	-	24	0.15	*0.001*	*0.0001*	*0.001*	0.007	*0.001*	0.021	0.006	*0.001*	0.016	0.46	*0.0001*
	May-24	*0.001*	*0.005*	0.030	0.02	*0.01*	9	0.3	37	5	0.10	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.027	*0.001*	*0.001*	*0.005*	0.34	*0.0001*
	Jun-24	*0.001*	*0.005*	0.020	0.02	0.03	9	0.4	21	15	0.23	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.032	*0.001*	*0.001*	*0.005*	0.50	*0.0001*
	Jul-24	*0.001*	0.007	*0.010*	0.05	*0.01*	9	0.4	41	7	0.59	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.017	*0.001*	*0.001*	*0.005*	0.53	*0.0001*
	Aug-24	*0.001*	0.012	*0.010*	*0.01*	*0.01*	9	0.9	34	19	1.82	*0.001*	*0.0001*	0.003	*0.001*	*0.001*	0.076	*0.001*	*0.001*	*0.005*	1.77	*0.0001*
	Sep-24	*0.001*	0.010	*0.010*	0.04	*0.01*	9	0.2	28	19	0.28	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.023	*0.001*	*0.001*	*0.005*	0.52	*0.0001*
YK-IS (D/S)	Mar-24	*0.00001*	*0.002*	0.050	0.05	*0.005*	*1*	*0.1*	15	*0.1*												
	Apr-24	*0.001*	*0.005*	*0.010*	0.03	-	16	*0.03*	-	3	0.1	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.016	0.003	*0.001*	0.006	0.26	*0.0001*
	May-24	*0.001*	*0.005*	*0.010*	0.53	*0.01*	12	0.3	39	9	0.12	*0.001*	*0.0001*	0.003	*0.001*	*0.001*	0.035	0.002	*0.001*	*0.005*	0.61	*0.0001*
	Jun-24	*0.001*	*0.005*	*0.010*	*0.01*	*0.01*	12	0.2	25	2	0.48	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.027	*0.001*	*0.001*	*0.005*	0.66	*0.0001*
	Jul-24	*0.001*	0.007	*0.010*	0.28	*0.01*	9	0.3	52	5	0.3	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.011	*0.001*	*0.001*	*0.005*	0.32	*0.0001*
	Aug-24	*0.001*	*0.005*	*0.010*	0.09	*0.01*	9	0.5	70	17	1.02	*0.001*	*0.0001*	0.005	*0.001*	*0.001*	0.026	*0.001*	*0.001*	*0.005*	0.89	*0.0001*
	Sep-24	*0.001*	0.011	*0.010*	*0.01*	*0.01*	12	0.2	29	3	0.16	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.012	*0.001*	*0.001*	*0.005*	0.26	*0.0001*
NZG-IS	Mar-24	*0.00001*	*0.002*	0.050	0.05	*0.005*	10	*0.1*	22	*0.1*												
	Apr-24	*0.001*	*0.005*	*0.010*	*0.01*	-	23	*0.01*	-	6	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.012	*0.001*	*0.001*	*0.005*	0.24	*0.0001*
	May-24	*0.001*	0.007	*0.010*	0.03	*0.01*	23	0.2	60	5	0.06	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.021	*0.001*	*0.001*	*0.005*	0.35	*0.0001*
	Jun-24	*0.001*	*0.005*	*0.010*	*0.01*	*0.01*	23	0.2	38	20	0.12	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.037	*0.001*	*0.001*	*0.005*	0.67	*0.0001*
	Jul-24	*0.001*	*0.005*	*0.010*	0.04	*0.01*	12	0.2	52	8	0.22	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.009	*0.001*	*0.001*	*0.005*	0.26	*0.0001*
	Aug-24	*0.001*	*0.005*	*0.010*	*0.01*	*0.01*	12	0.4	44	19	0.92	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.023	*0.001*	*0.001*	*0.005*	0.85	*0.0001*
	Sep-24	*0.001*	*0.005*	*0.010*	*0.01*	*0.01*	21	*0.1*	41	3	0.07	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.006	*0.001*	*0.001*	*0.005*	0.15	*0.0001*
YK-IS	Mar-24	*0.00001*	*0.004*	0.050	0.05	*0.005*	*1*	*0.1*	21	*1*												
	Apr-24	*0.001*	*0.005*	*0.010*	0.06	-	12	*0.06*	-	13	0.15	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.024	*0.001*	*0.001*	*0.005*	0.52	*0.0001*
	May-24	*0.001*	*0.005*	*0.010*	0.05	*0.01*	12	*0.1*	48	5	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.014	*0.001*	*0.001*	*0.005*	0.16	*0.0001*
	Jun-24	*0.001*	*0.005*	*0.010*	0.06	*0.01*	9	0.2	19	6	0.32	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.014	*0.001*	*0.001*	*0.005*	0.42	*0.0001*
	Jul-24	*0.001*	0.009	*0.010*	*0.01*	*0.01*	9	0.3	52	7	0.8	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.015	*0.001*	*0.001*	*0.005*	0.62	*0.0001*
	Aug-24	*0.001*	*0.005*	0.030	*0.01*	*0.01*	9	0.4	62	15	1.22	*0.001*	*0.0001*	0.003	*0.001*	*0.001*	0.026	*0.001*	*0.001*	*0.005*	0.99	*0.0001*
	Sep-24	*0.001*	*0.005*	0.020	*0.01*	*0.01*	9	0.2	26	4	0.16	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.012	*0.001*	*0.001*	*0.005*	0.26	*0.0001*

	Reference Site exceeds SSGV
	Impact Site Result exceeds SSGV or DGV
italics	Result exceeds the Limit of Reporting

Appendix D: Calibration Certificate

Head Office Perth
Tel: +61 8 9328 2900
eco@ecoenvironmental.com.au
www.ecoenvironmental.com.au

CALIBRATION CERTIFICATE - WATER

Invoice No: 13203

Equipment Received:

Handheld S/N 23H104391

Cable S/N: 23L10231

Included Items:

SENSOR CALIBRATION DETAILS

	Pre Calibration	Post Calibration	Accuracy	Pass	Fail
pH		4	+/- 0.2 %	✔	
pH		7	+/- 0.2%	✔	
ORP		230.0 @ 24.8 C	+/- 30 ORPmV	✔	
Conductivity		12.90 Ms/cm	+/- 0.5 %	✔	
DO		100% 758mmHg	+/- 0.2%	✔	
Turbidity		0 NTU	+/- 5 NTU	✔	
Turbidity		124 NTU	+/- 20 NTU	✔	
			+/-		
			+/-		
			+/-		
			+/-		

Findings/ Recommendations /Comments:

1/ New Equipment

2/

3/

4/

This is to certify that where possible, this instrument has been calibrated in accordance with the manufacturer's calibration procedure as recommended in the instrument service manual.

Regards,

Nicolas Galarce

Equipment Specialist
ECO Environmental Holdings

28-Nov-2023