NOVEMBER 2024

MONTHLY CONSTRUCTION WATER QUALITY MONITORING REPORT

November 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.

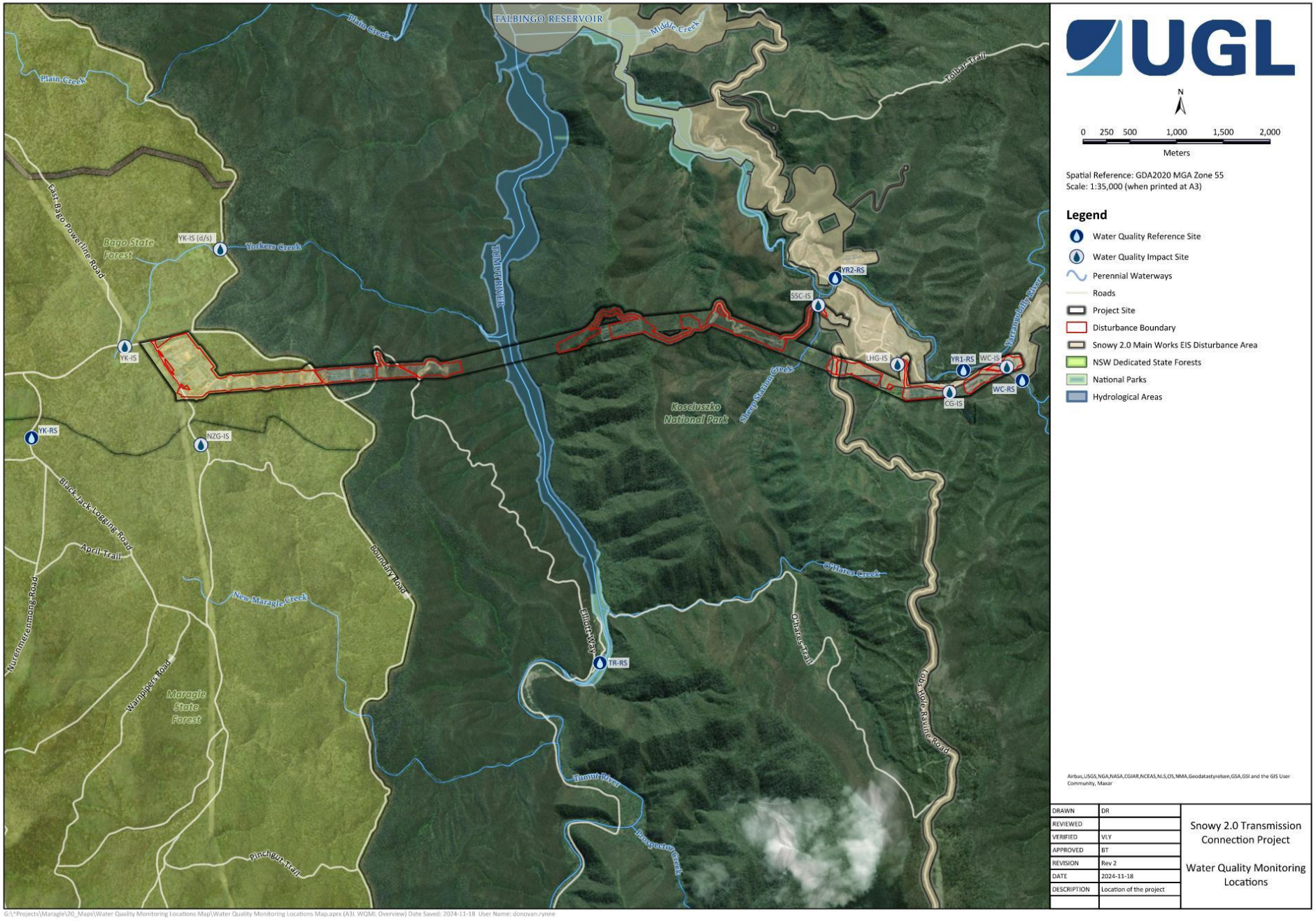

FIGURE 1 LOCALITY OF THE PROJECT AND SWQ MONITORING LOCATIONS

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	Yarrangobilly 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

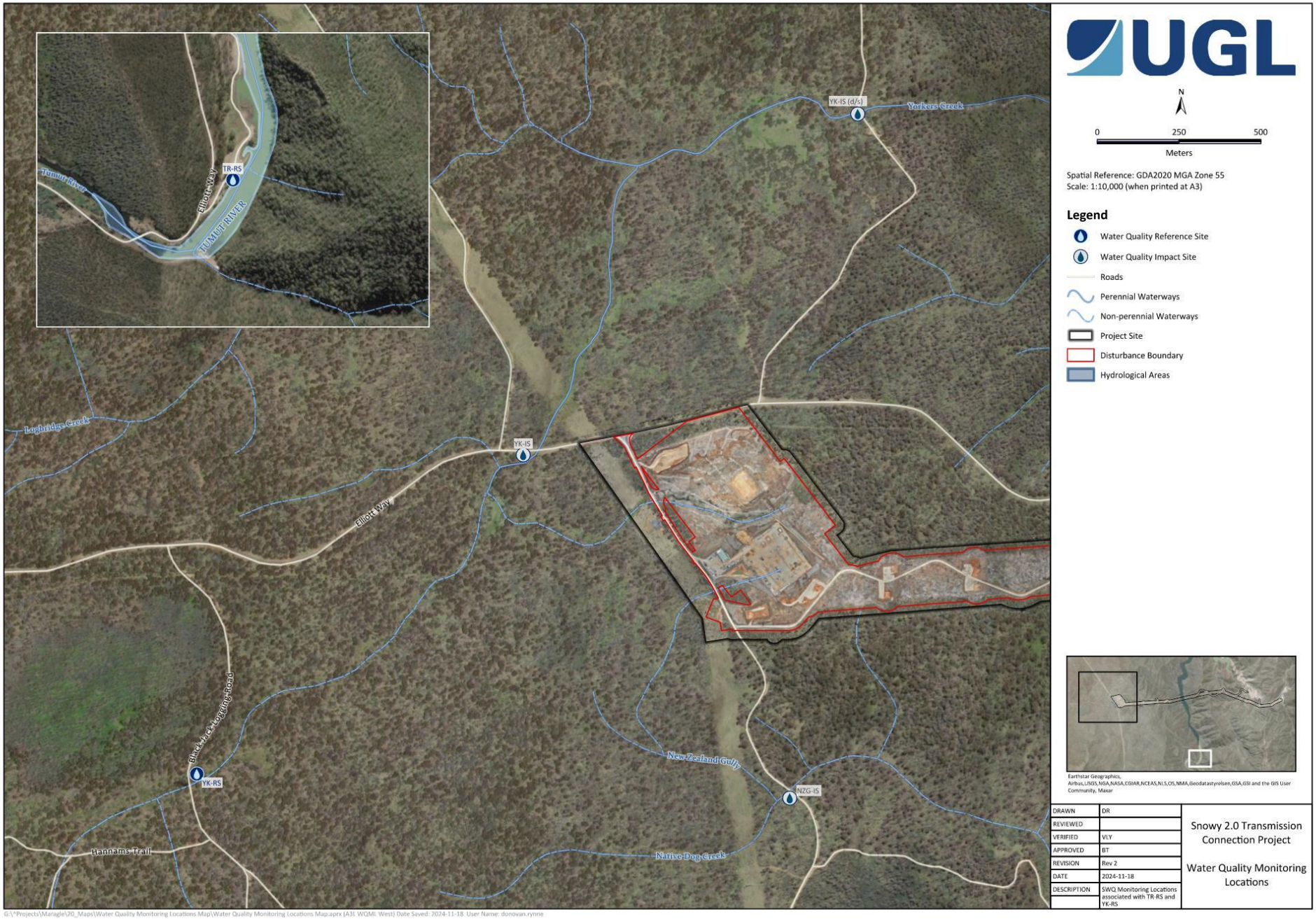

FIGURE 2 WATER QUALITY MONITORING LOCATIONS ASSOCIATED WITH REFERENCE SITE YR-RS AND TR-RS IN RELATION TO THE PROJECT

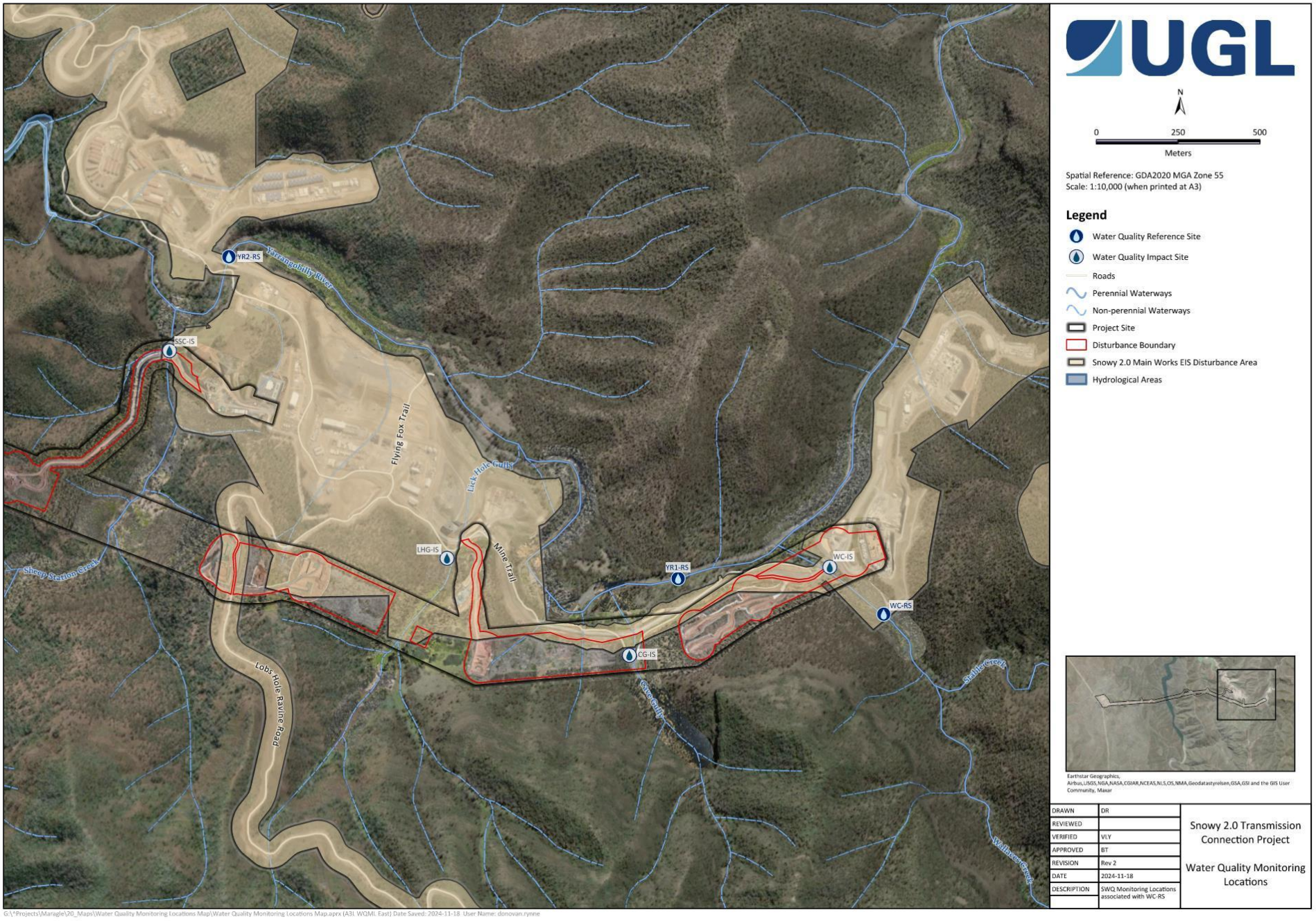

FIGURE 3 WATER QUALITY MONITORING LOCATIONS ASSOCIATED WITH REFERENCE SITE WC-RS IN RELATION TO THE PROJECT

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. NOVEMBER 2024 MONITORING

SW sampling was undertaken at 12 monitoring locations on 12 November 2024. Two monitoring locations, CG-IS and SSC-IS were 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. The following parameters were added into the testing regime in November:

- 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	12.11.2024	
Weather	Sunny conditions on the day of sampling, with minimal rainfall (1.4 millimetre (mm) cumulative) observed during November up until sampling. Elevated winds were experienced during sampling, ranging from 0 to 46 kilometres per hour (km/h).	
ID	**Observations**	**Photo**
WC-RS	• Clear water and high flow rate • Vegetation along banks • Sticks a debris along the banks • Oxygen bubbling on surface	

FIELD OBSERVATIONS

Date	12.11.2024
Weather	Sunny conditions on the day of sampling, with minimal rainfall (1.4 millimetre (mm) cumulative) observed during November up until sampling. Elevated winds were experienced during sampling, ranging from 0 to 46 kilometres per hour (km/h).

ID	Observations	Photo
WC-IS	• Clear water and high flow rate • Strong weed/vegetation growth on northern bank • Bubbles of air on the surface • Gravel and other fine sediment collecting on the bottom • Build up of sticks and debris at sampling point	
CG-IS	• Creek dry, no water present	
YR1-IS	• Very clear, high flow rate • Algae present on some submerged rocks • Some very fine sediment settled on the bottom	

FIELD OBSERVATIONS

Date	12.11.2024	
Weather	Sunny conditions on the day of sampling, with minimal rainfall (1.4 millimetre (mm) cumulative) observed during November up until sampling. Elevated winds were experienced during sampling, ranging from 0 to 46 kilometres per hour (km/h).	
ID	**Observations**	**Photo**
LHG-IS	• High silt deposition on bottom of the waterbody • Vegetation growing in and around gully, orange/brown colouration to water in areas with high density of flora • Very little flow	
YR2-IS	• High flow rate, high volume flow • Slight milky colouration • Small bits of foam on the surface • Some fine sediment and gravel sized particles present on the bottom	
SSC-IS	• Creek dry, no water present	

FIELD OBSERVATIONS

Date	12.11.2024
Weather	Sunny conditions on the day of sampling, with minimal rainfall (1.4 millimetre (mm) cumulative) observed during November up until sampling. Elevated winds were experienced during sampling, ranging from 0 to 46 kilometres per hour (km/h).

ID	Observations	Photo
TR-RS	• Very low water level relative to previous months • Fine sediment visible in flowing water • Very slight milky colouration to water	
YK-IS (D/S)	• Slight milky colouration to water, low intensity flow • Some moss and small flora present underwater • Thick vegetation cover on either bank	
NZG-IS	• Thick vegetation cover on either banks • Visible sediment on the bottom of the creek • Hoof marks on bank several meters up from the sampling point	

FIELD OBSERVATIONS

Date	12.11.2024
Weather	Sunny conditions on the day of sampling, with minimal rainfall (1.4 millimetre (mm) cumulative) observed during November up until sampling. Elevated winds were experienced during sampling, ranging from 0 to 46 kilometres per hour (km/h).

ID	Observations	Photo
YK-IS	• Sediment evident on the bottom, water above this relatively clear with slight milky colouration • Sticks/debris along Creek • Vegetation present along both banks • Silt upstream	
YK-RS	• Slight milky colouration • Grasses/vegetation on either bank • Fine sediment settled at the bottom, visible sand size particles and metals	

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 0 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 November 2024, temperatures in the Yarrangobilly catchment rose compared to the previous month, ranging from 12.1 °C to 15.7 °C, refer to Figure 4. Similarly, temperatures in the Talbingo Reservoir increased from 9.5 °C in October to 15.6 °C in November 2024, refer to Figure 5. In the Yorkers Creek catchment, temperatures ranged from 12.4 °C to 19.3 °C during November 2024, as illustrated in Figure 6.

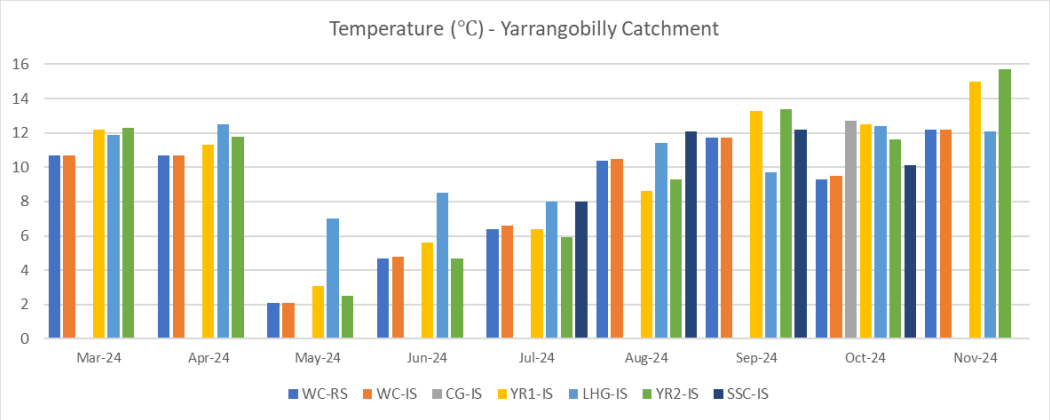

FIGURE 4 : TEMPERATURE FOR YARRANGOBILLY CATCHMENT

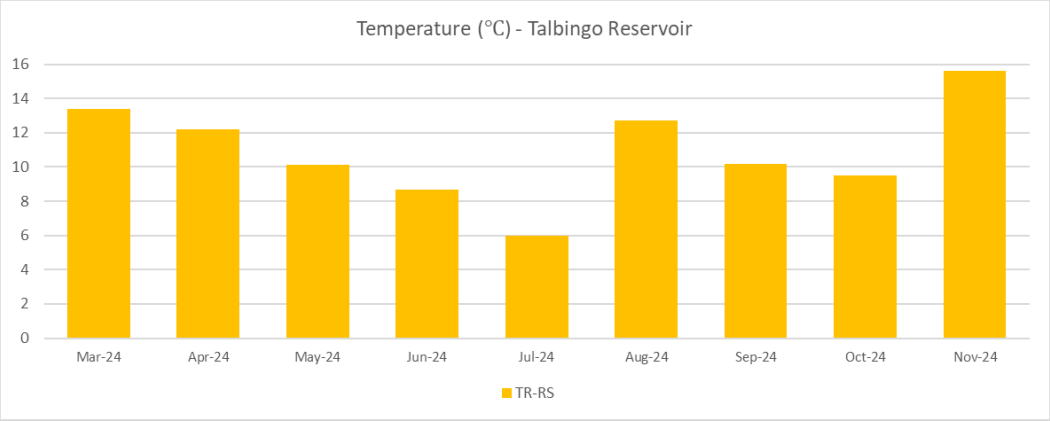

FIGURE 5: TEMPERATURE FOR TALBINGO RESERVOIR

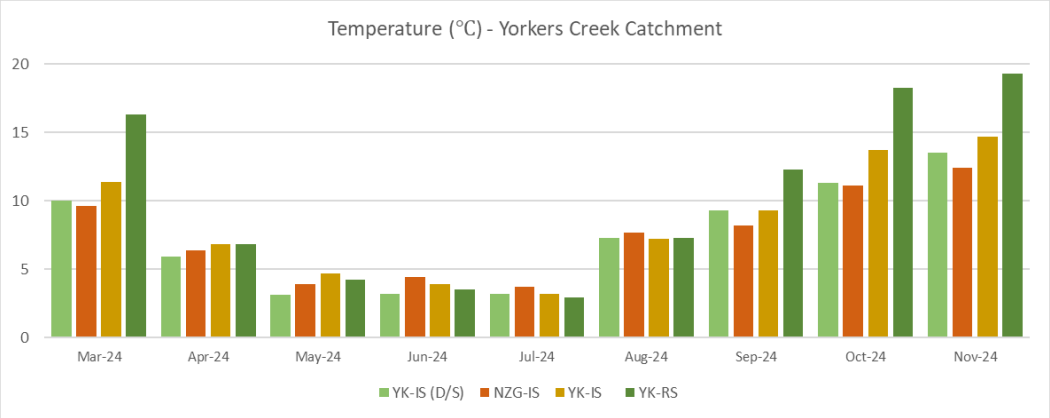

FIGURE 6: TEMPERATURE FOR YORKERS CREEK CATCHMENT

pH

pH values across all sites exceeded their respective June to November SSGV, refer Figure 7 to Figure 9.

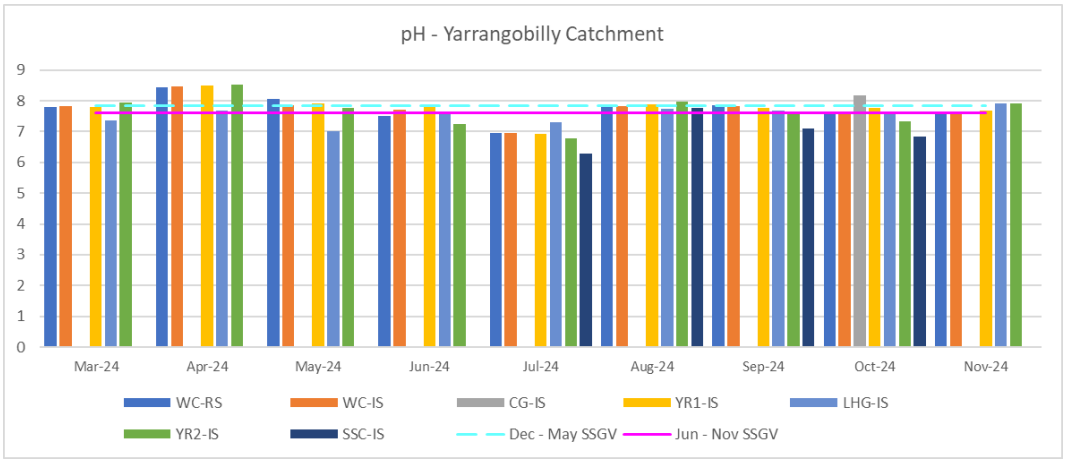

FIGURE 7: PH FOR YARRANGOBILLY CATCHMENT

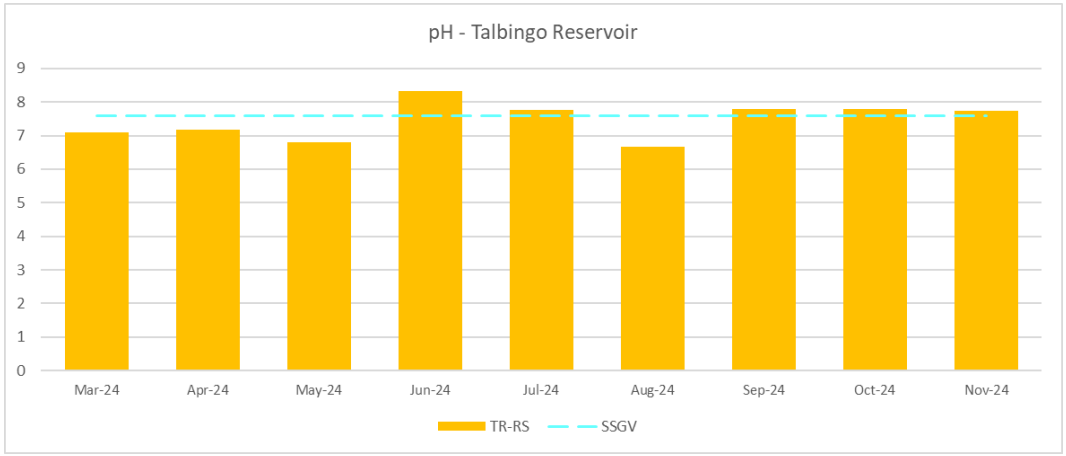

FIGURE 8: PH FOR TALBINGO RESERVOIR

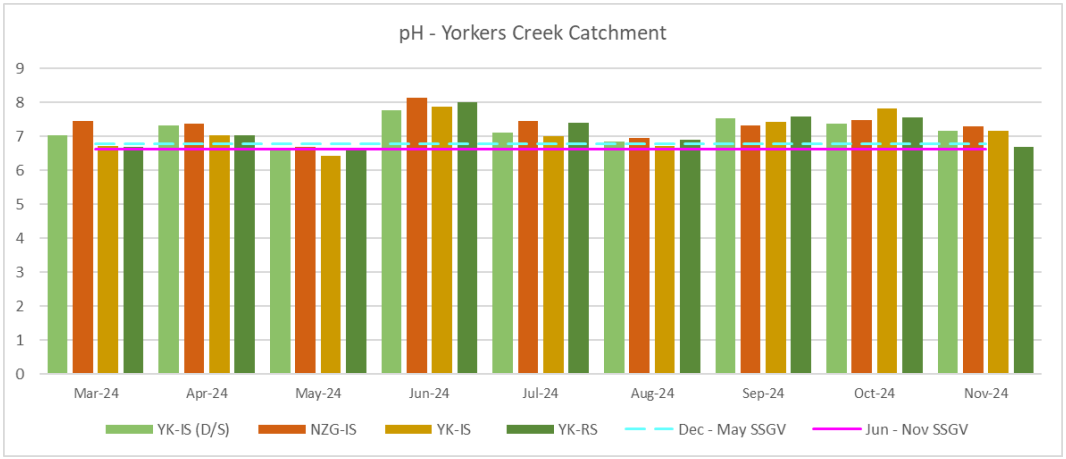

FIGURE 9: PH FOR YORKERS CREEK CATCHMENT

Dissolved Oxygen

DO (%) levels in the Yarrangobilly catchment were predominantly above the June to November SSGV of 89.7%, except for LHG-IS which recorded a value of 83.1%, reflecting a decrease from the previous month, refer Figure 10. Contrarily, Talbingo Reservoir and the Yorkers Creek catchment were all below their respective SSGV, refer to Figure 11 and Figure 12.

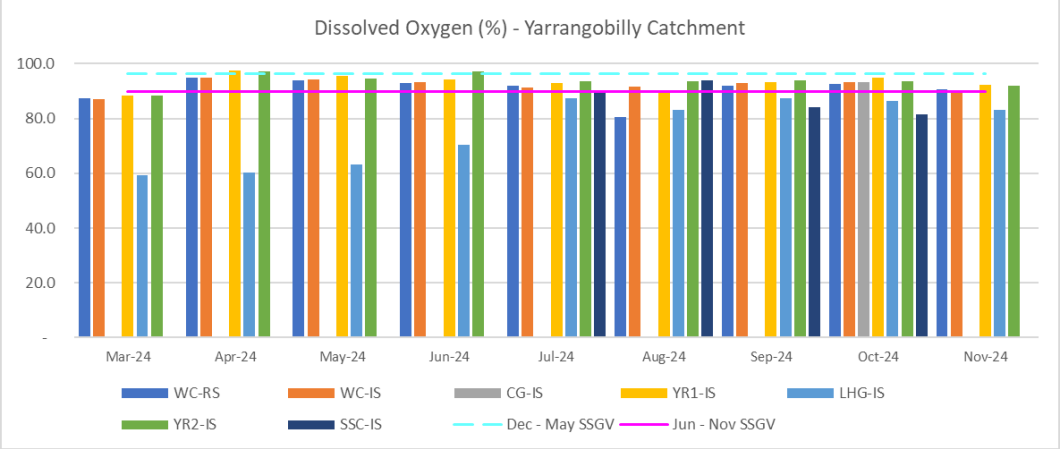

FIGURE 10: DO FOR YARRANGOBILLY CATCHMENT

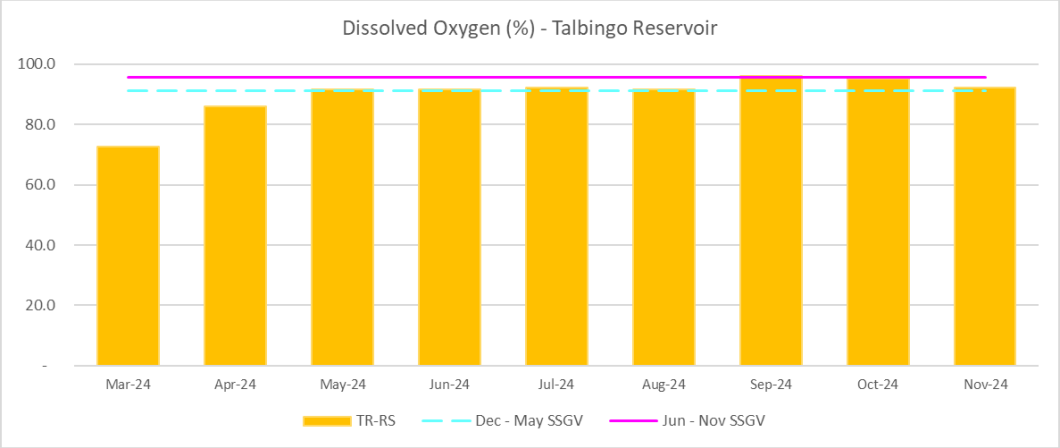

FIGURE 11: DO FOR TALBINGO RESERVOIR

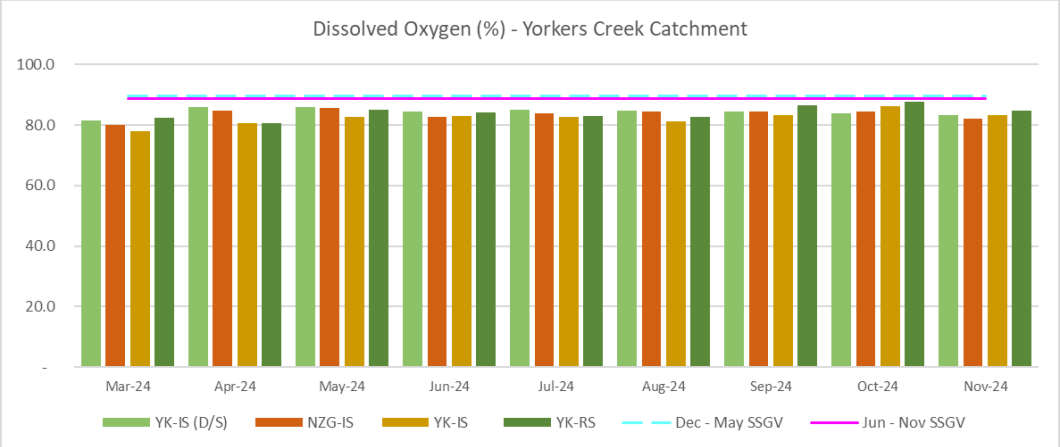

FIGURE 12: DO FOR YORKERS CREEK CATCHMENT

Specific Conductance

SPC (µS/cm) levels in the Yarrangobilly catchment exceeded the June to November SSGV (88 µS/cm) at YR1-IS and LHG-IS. LHG-IS in particular recorded a significantly higher value of 537 µS/cm, consistent with baseline data, refer Figure 13. Talbingo Reservoir and most sites within the Yorkers Creek catchment exceeded their respective June to November SSGV, except for YK-IS, refer to Figure 14 and Figure 15.

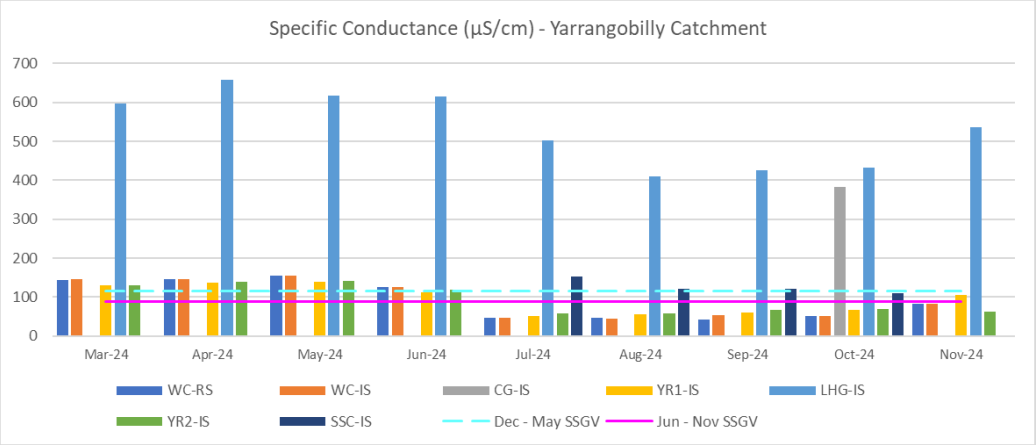

FIGURE 13: SPC FOR YARRANGOBILLY CATCHMENT

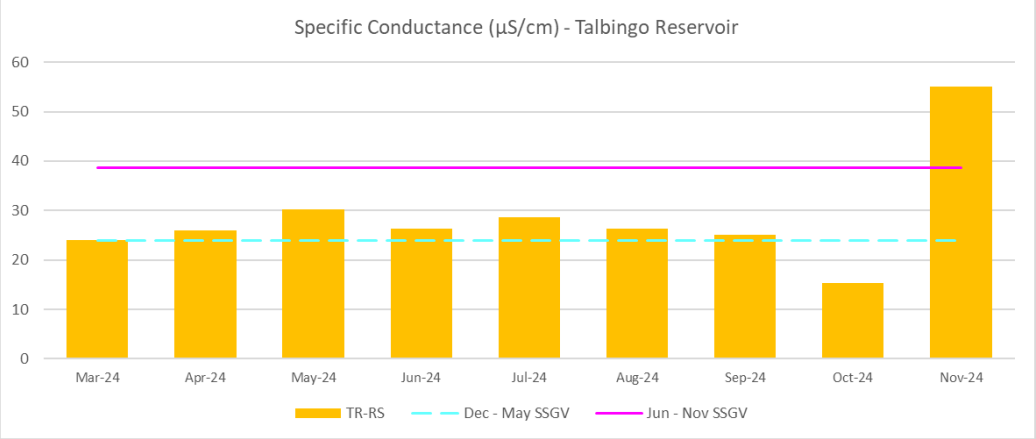

FIGURE 14: SPC FOR TALBINGO RESERVOIR

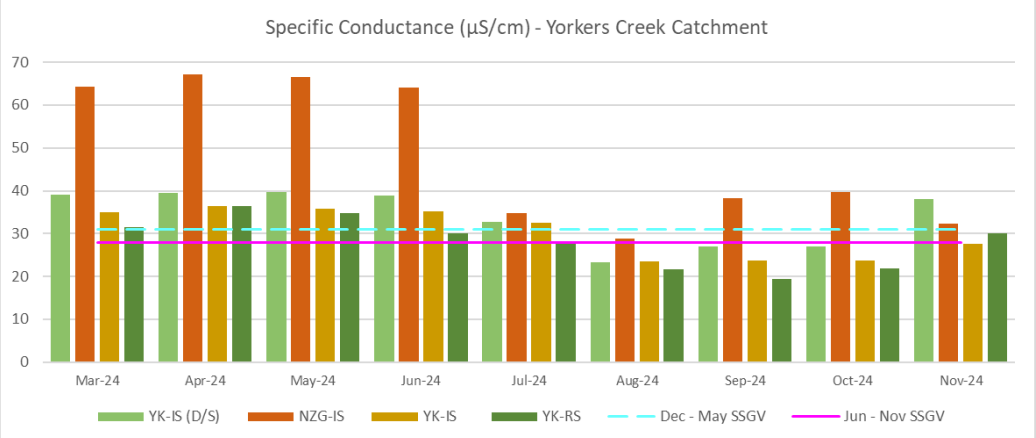

FIGURE 15: SPC FOR YORKERS CREEK CATCHMENT

Electrical Conductivity

EC (µS/cm) values exceeded June to November SSGV values at all sites across all three catchments, refer to Figure 16 to Figure 18.

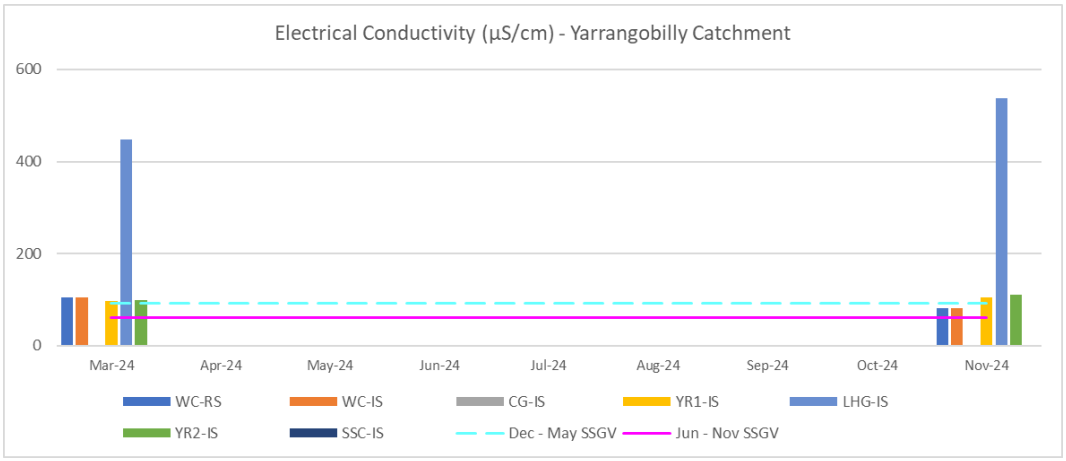

FIGURE 16: EC FOR YARRANGOBILLY RIVER CATCHMENT

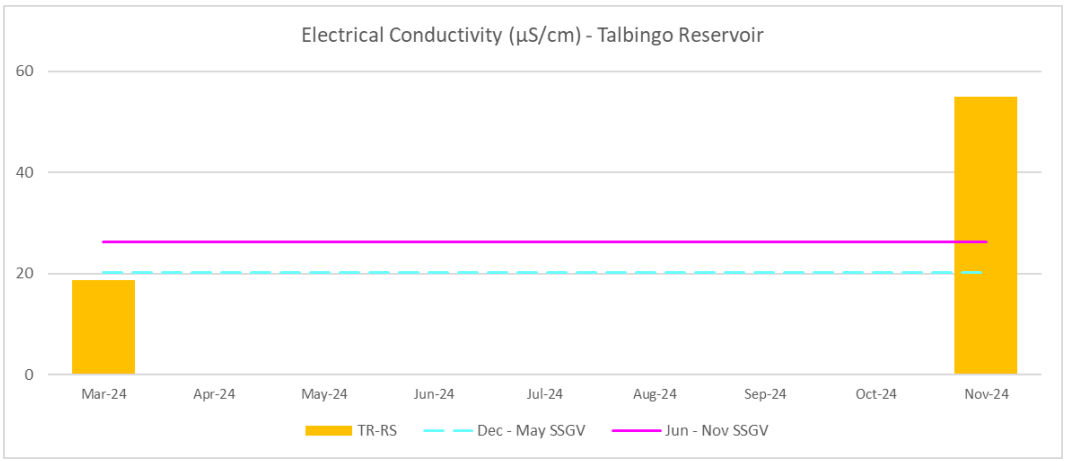

FIGURE 17: EC FOR TALBINGO RESERVOIR

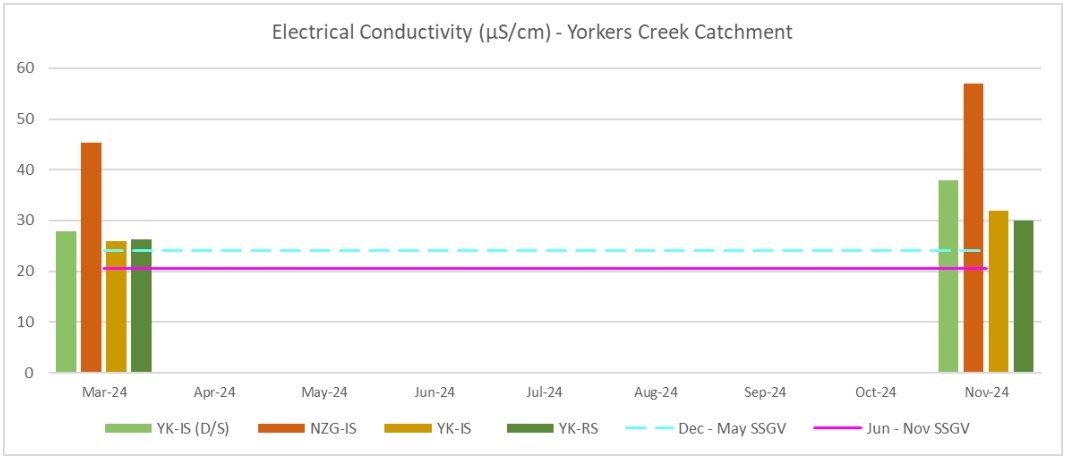

FIGURE 18: EC FOR YORKERS CREEK CATCHMENT

Turbidity

Turbidity (NTU) levels were below the June to November SSGV at all sites within the Yarrangobilly River catchment, refer to Figure 19. Talbingo Reservoir and reference site for the Yorkers Creek catchment both exceeded their respective June to November SSGV. However, impact sites at Yorkers Creek catchment were within the SSGV, refer to Figure 20 and Figure 21.

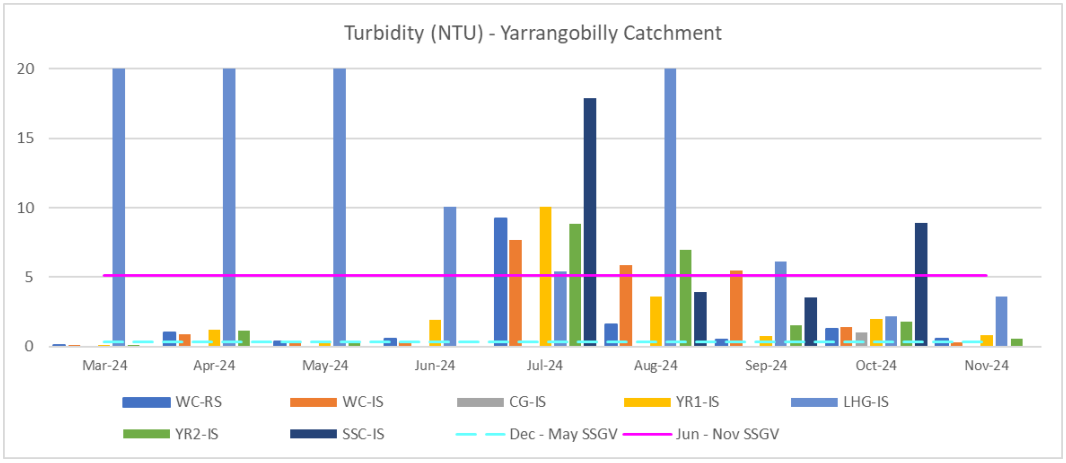

FIGURE 19: TURBIDITY FOR YARRANGOBILLY CATCHMENT

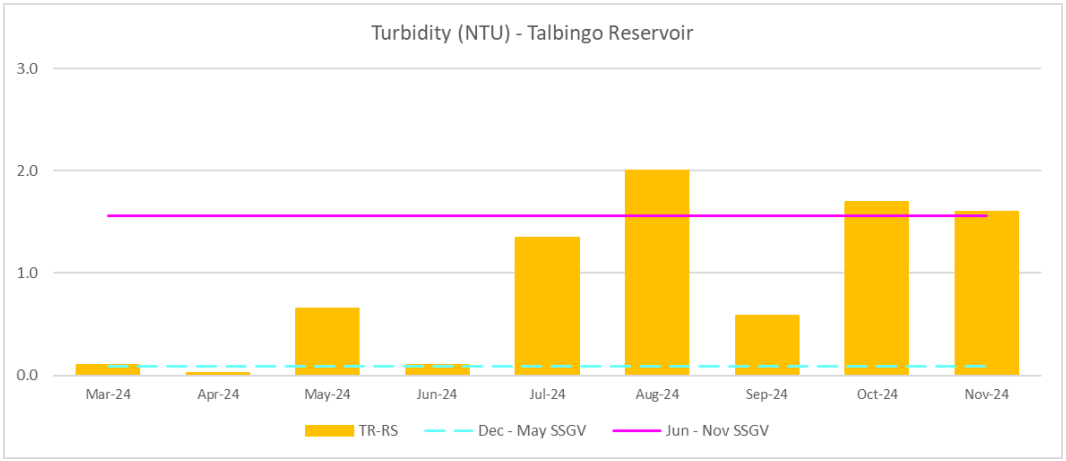

FIGURE 20: TURBIDITY FOR TALBINGO RESERVOIR

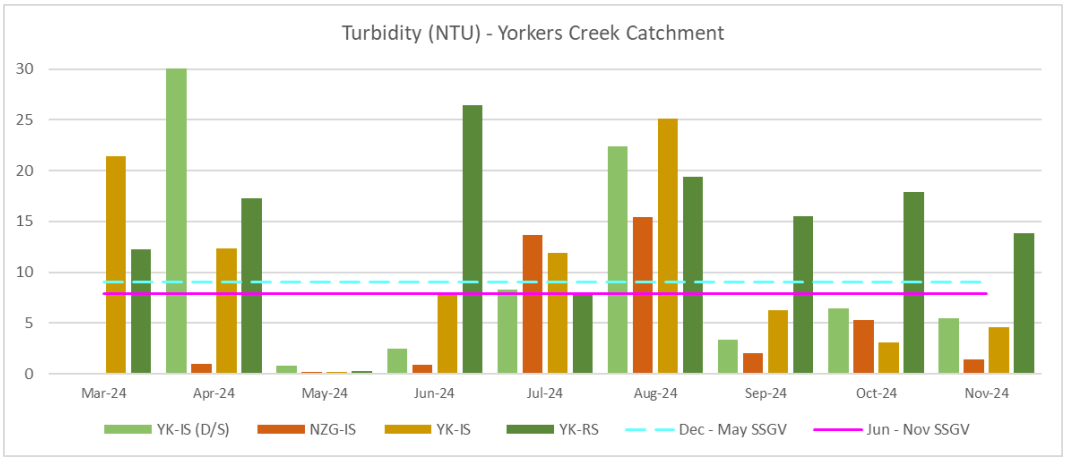

FIGURE 21: TURBIDITY FOR YORKERS CREEK CATCHMENT

Total Suspended Solids

TSS (mg/L) levels exceeded the respective June to November SSGV at all reference sites, along with several impact sites. In the Yarrangobilly catchment, most sites were below either the limit of reporting (LOR) or the June to November SSGV (1.0 mg/L), except for the reference site WC-RS, which was slightly higher at 2.0 mg/L, and LHG-IS, which recorded a significantly elevated value of 16 mg/L, refer Figure 22. At Talbingo Reservoir, TSS exceeded the SSGV (0.2 mg/L) with a recorded value of 5 mg/L in November 2024, refer Figure 23. In the Yorkers Creek catchment, all TSS values were above the SSGV (0.2 mg/L), with the reference site YK-RS showing the highest value at 30 mg/L, well above the guideline, refer to Figure 24.

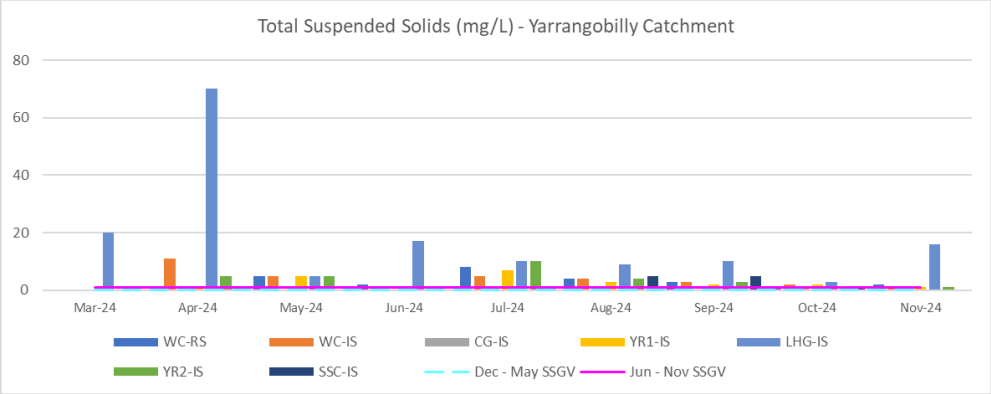

FIGURE 22: TSS FOR YARRANGOBILLY CATCHMENT

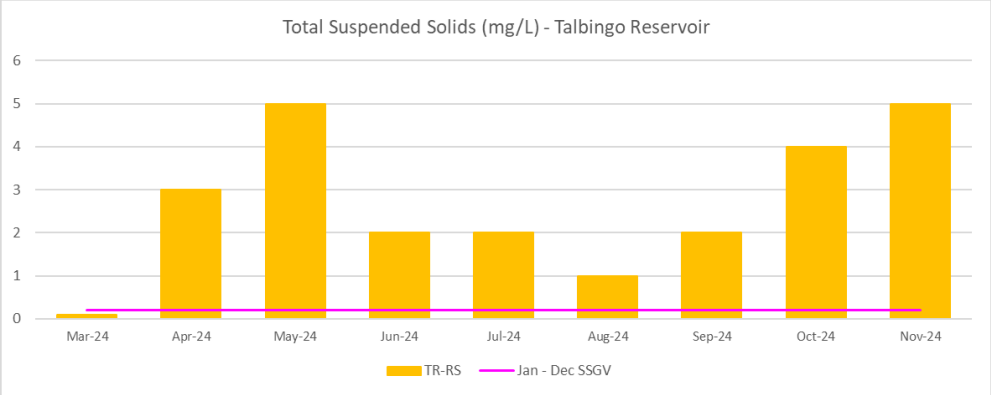

FIGURE 23: TSS FOR TALBINGO RESERVOIR

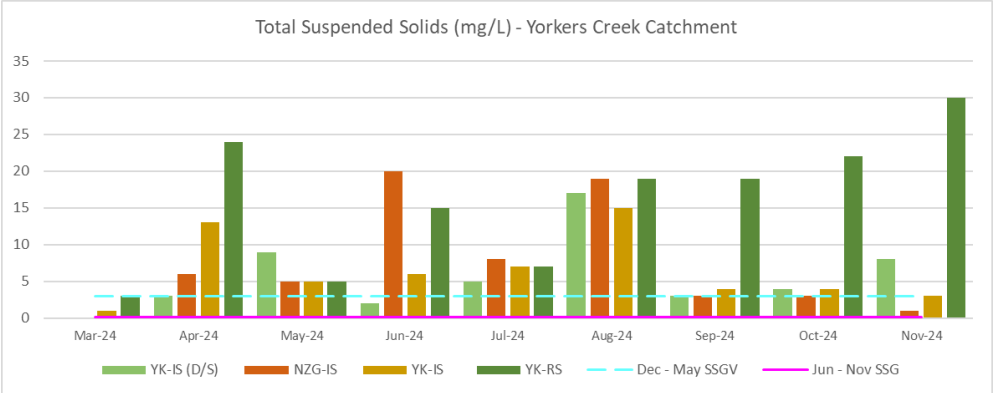

FIGURE 24: TSS FOR YORKERS CREEK CATCHMENT

Redox

Redox (mV) for all sites were almost double the June to November SSGV for each catchment and significantly higher than the previous redox measurements taken in March 2024, refer to Figure 25 to Figure 27.

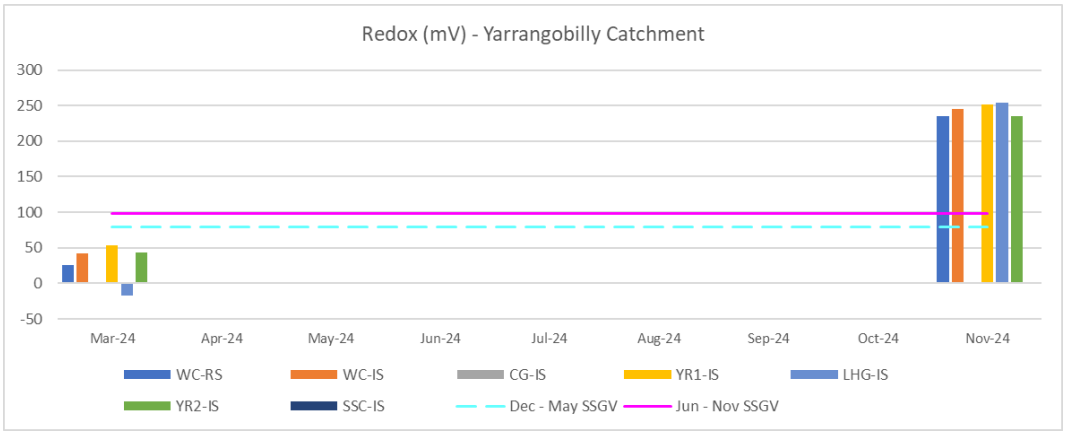

FIGURE 25: REDOX FOR YARRANGOBILLY RIVER CATCHMENT

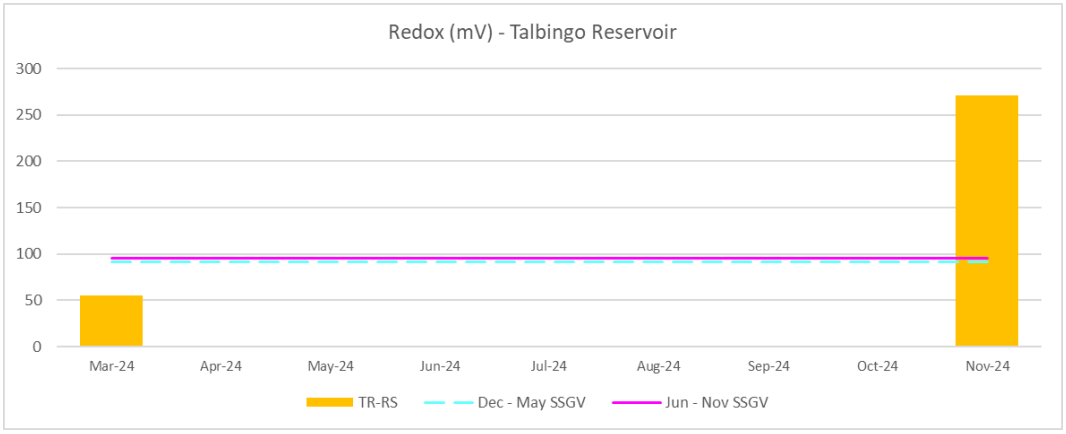

FIGURE 26: REDOX FOR TALBINGO RESERVOIR

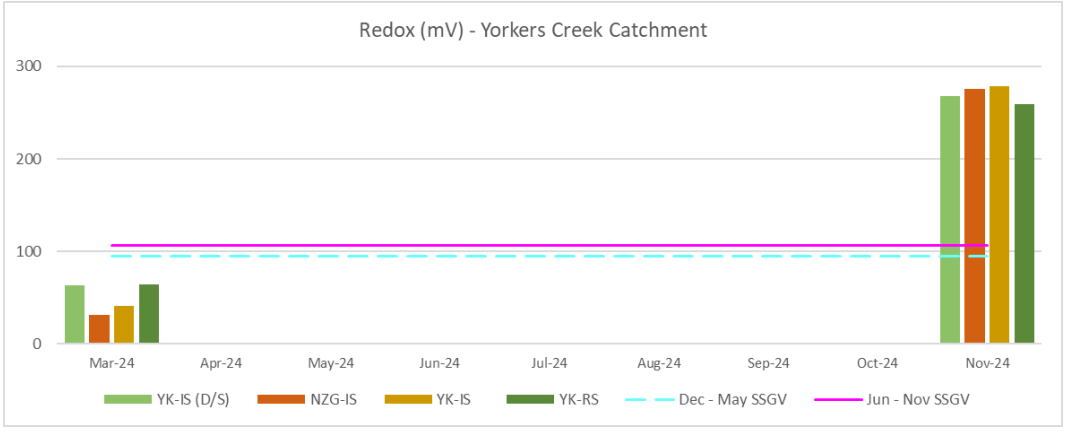

FIGURE 27: REDOX FOR YORKERS CREEK CATCHMENT

Nitrogen Oxides

Nitrogen Oxides (mg/L) levels exceeded the June to November SSGV (0.015 mg/L) at all reference sites and one impact site, while all other sites recorded values below the LOR. WC-RS, YK2-IS, and TR-RS each recorded values of 0.02 mg/L, and YK-RS recorded a slightly higher value of 0.03 mg/L, refer to Figure 28 to Figure 30.

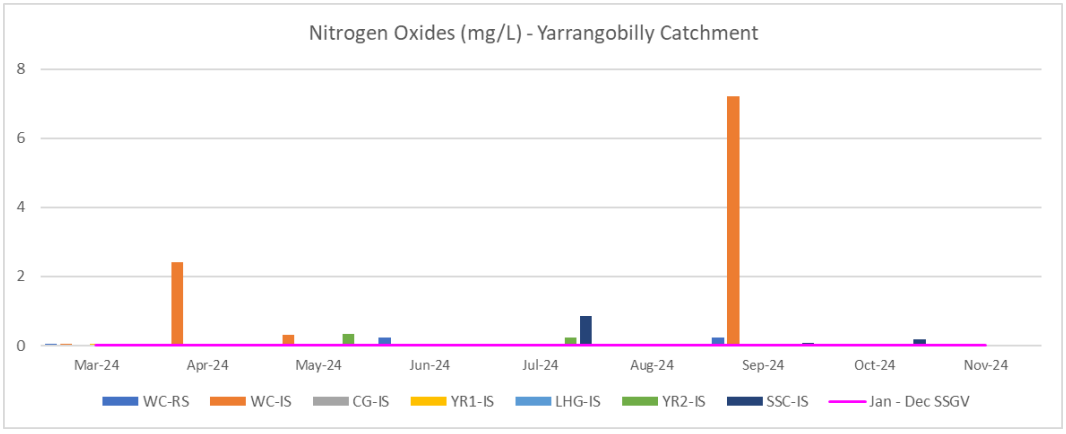

FIGURE 28: NITROGEN OXIDES FOR YARRANGOBILLY CATCHMENT

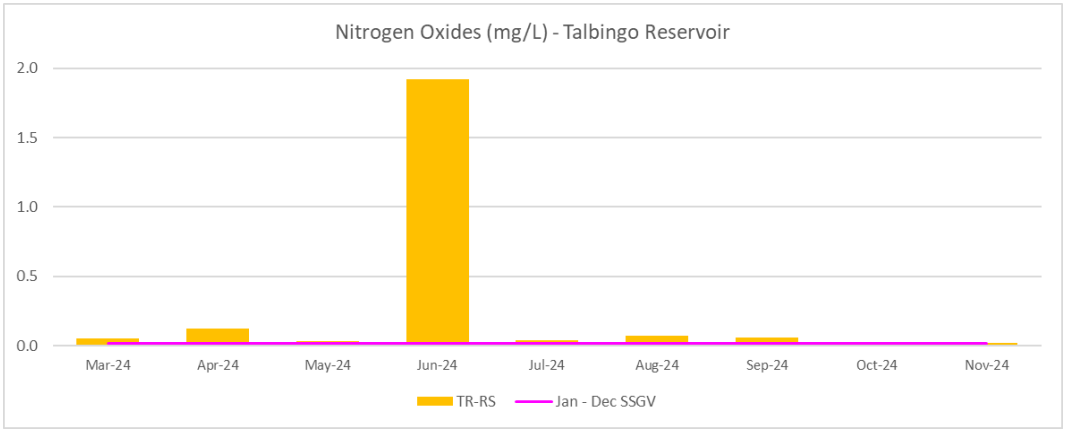

FIGURE 29: NITROGEN OXIDES FOR TALBINGO RESERVOIR

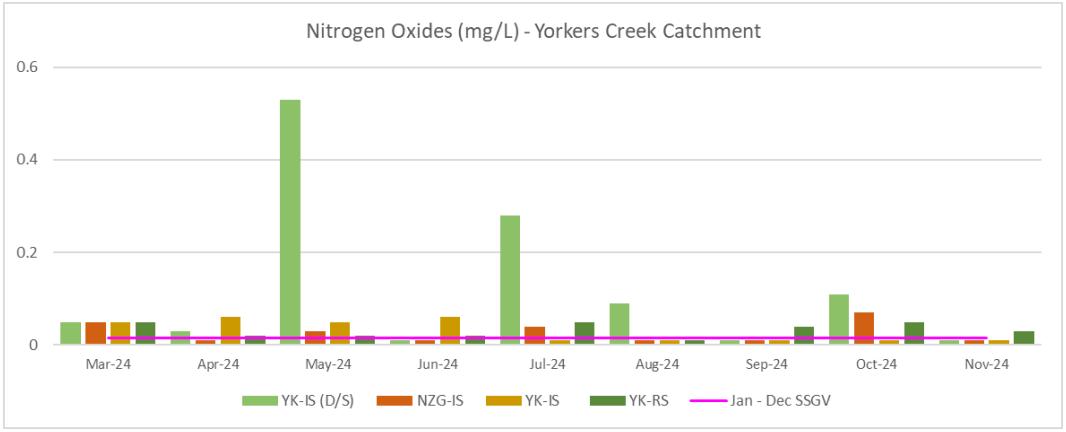

FIGURE 30: NITROGEN OXIDES FOR YORKERS CREEK CATCHMENT

Ammonia

Ammonia (mg/L) levels were below the LOR at all sites except for LHG-IS and two reference sites, WC-RS and YK-RS. LHG-IS recorded a value significantly above the June to November SSGV (0.013 mg/L) at 0.100 mg/L, while the two reference sites were slightly above the SSGV, each recording 0.02 mg/L, refer Figure 31 to Figure 33.

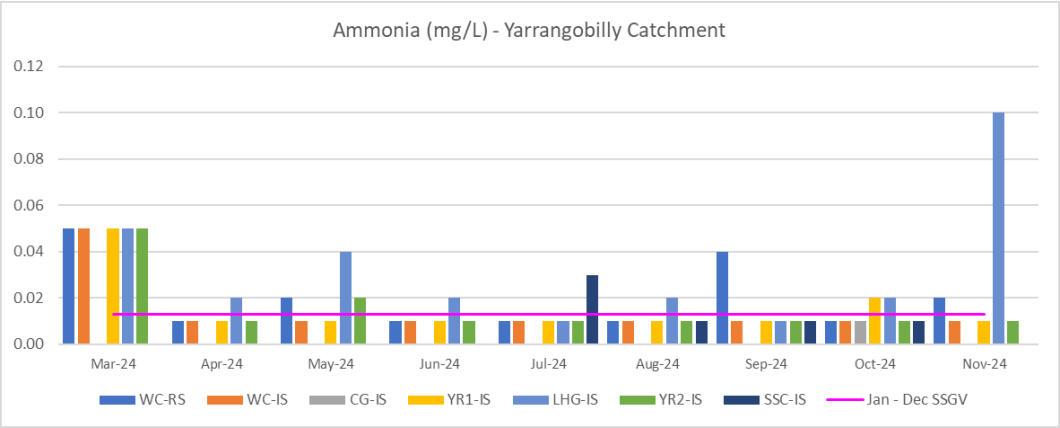

FIGURE 31: AMMONIA FOR YARRANGOBILLY CATCHMENT

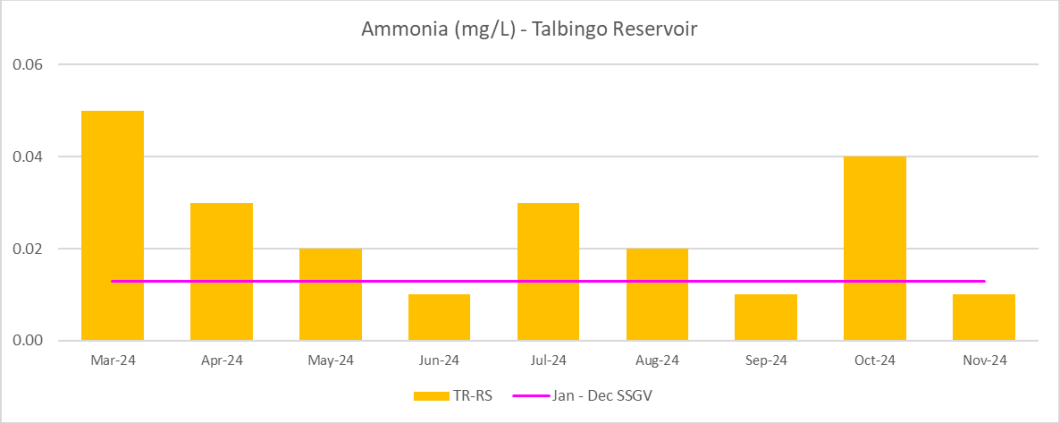

FIGURE 32: AMMONIA FOR TALBINGO RESERVOIR

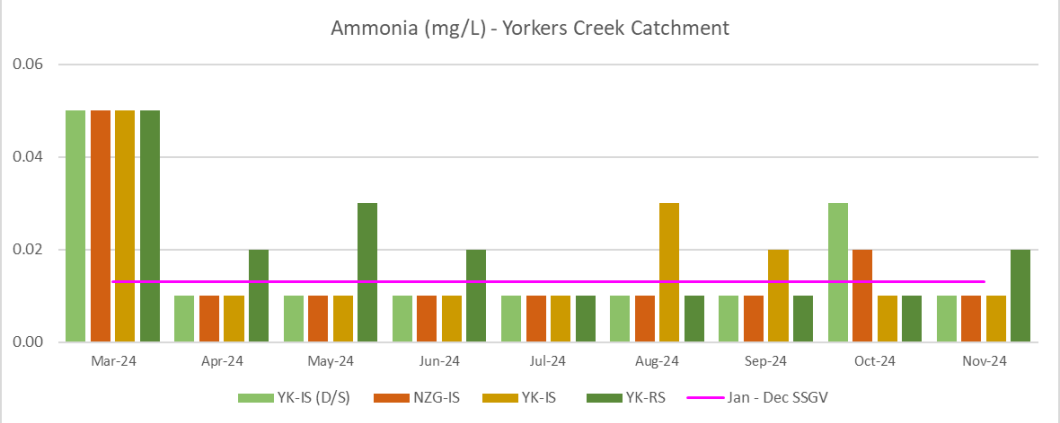

FIGURE 33: AMMONIA FOR YORKERS CREEK CATCHMENT

Cyanide

Cyanide (mg/L) was below either the LOR at all sites, refer to Figure 34 to Figure 36.

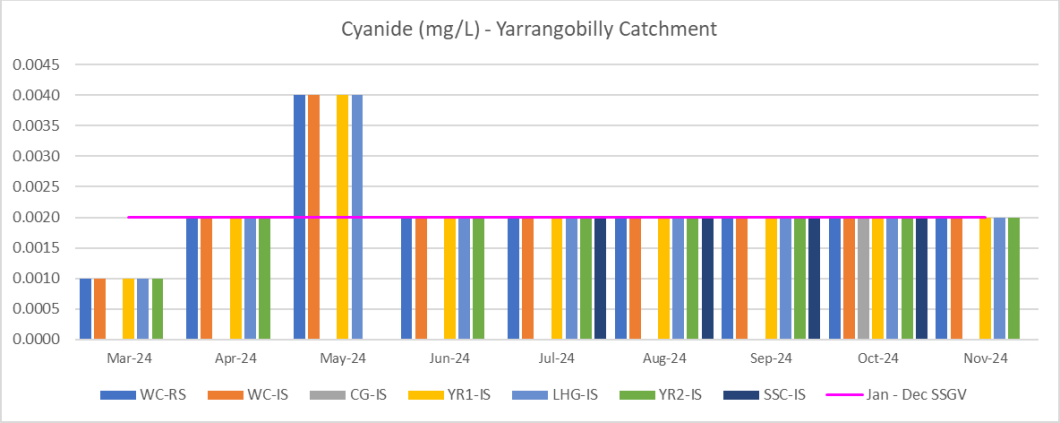

FIGURE 34: CYANIDE FOR YARRANGOBILLY RIVER CATCHMENT

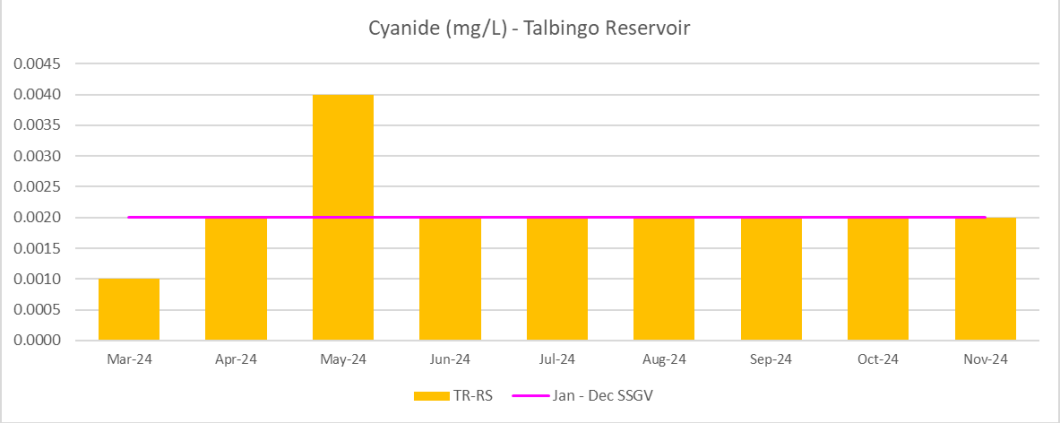

FIGURE 35: CYANIDE FOR TALBINGO RESERVOIR

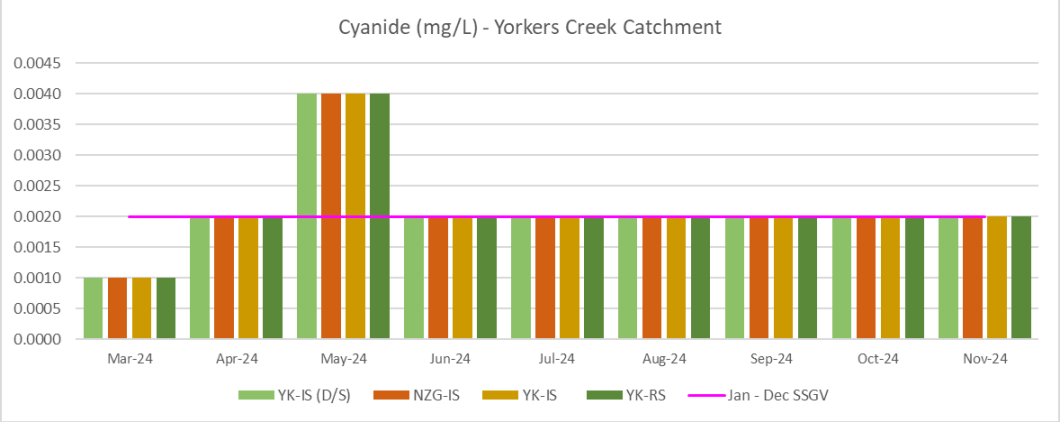

FIGURE 36: CYANIDE FOR YORKERS CREEK CATCHMENT

Total Hardness

$CaCO_3$ (mg/L) levels exceeded the June to November SSGV at all sites. LHG-IS recorded a significantly elevated value of 307 mg/L, well above the June to November SSGV of 30 mg/L, while other sites in the Yarrangobilly catchment ranged between 36 mg/L and 51 mg/L, refer Figure 37. At Talbingo Reservoir (TR-RS), $CaCO_3$ was also above the June to November SSGV (8.0 mg/L), recording 21 mg/L, refer Figure 38. In the Yorkers Creek catchment, NZG-IS recorded the highest $CaCO_3$ value at 21 mg/L, while the remaining sites also exceeded the June to November SSGV (7.0 mg/L), with values ranging from 9 mg/L to 12 mg/L, refer to Figure 39.

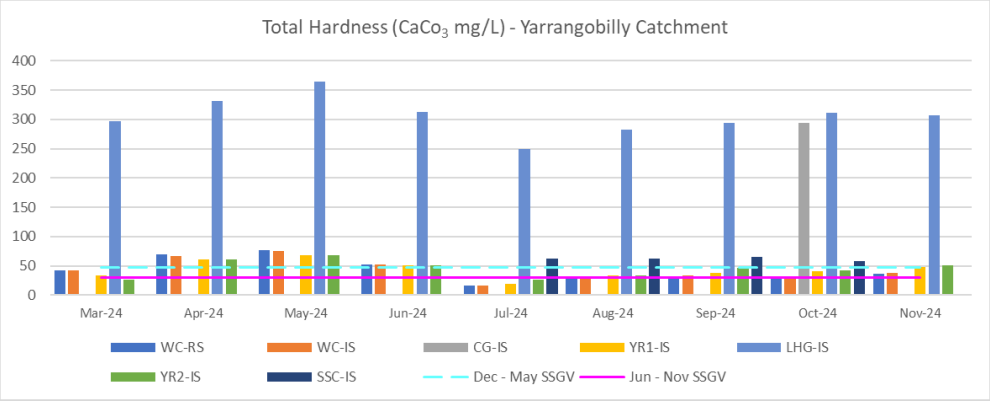

FIGURE 37: TOTAL HARDNESS FOR YARRANGOBILLY CATCHMENT

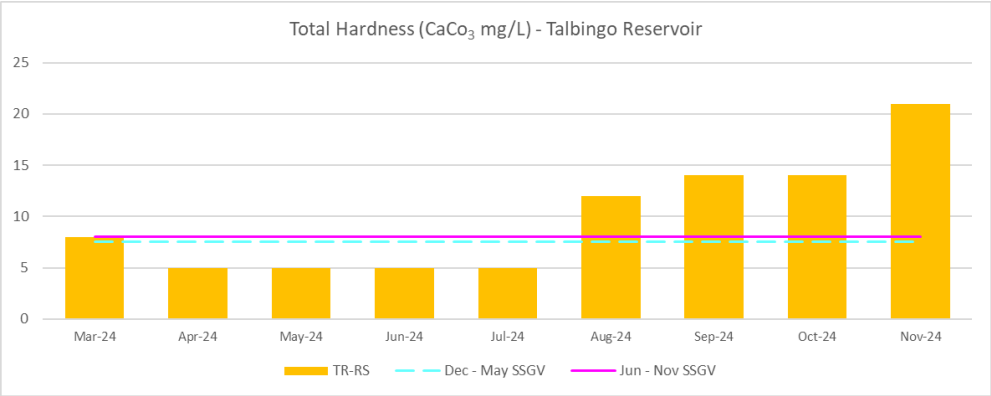

FIGURE 38: TOTAL HARDNESS FOR TALBINGO RESERVOIR

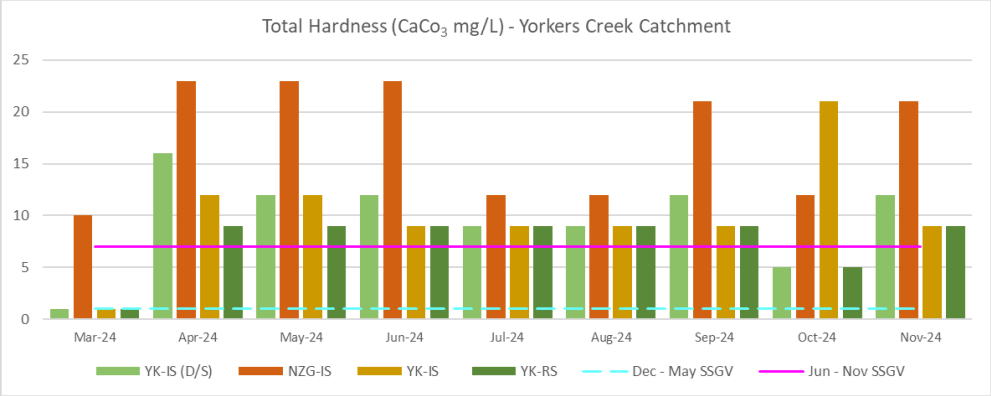

FIGURE 39: TOTAL HARDNESS FOR YORKERS CREEK CATCHMENT

Total Kjeldahl Nitrogen

TKN (mg/L) was below either the LOR or SSGV at all sites, refer Figure 40 to Figure 42.

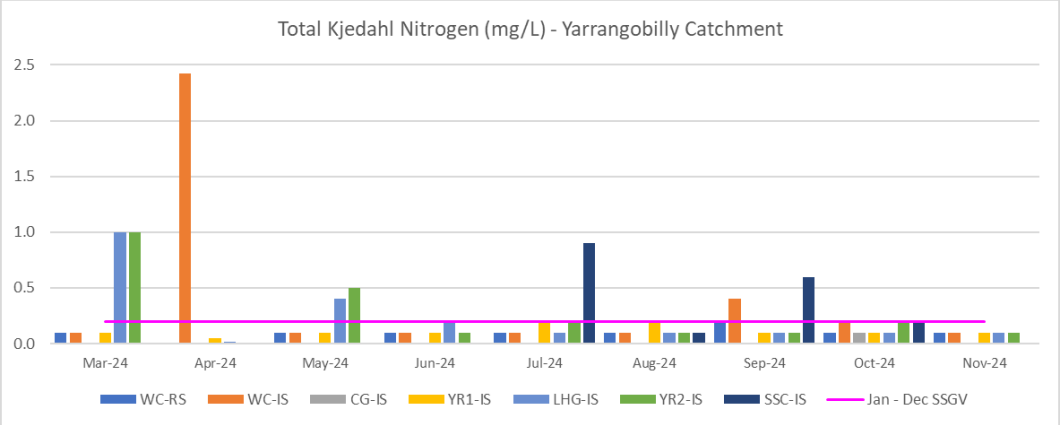

FIGURE 40: TOTAL KJEDAHL NITROGEN FOR YARRANGOBILLY CATCHMENT

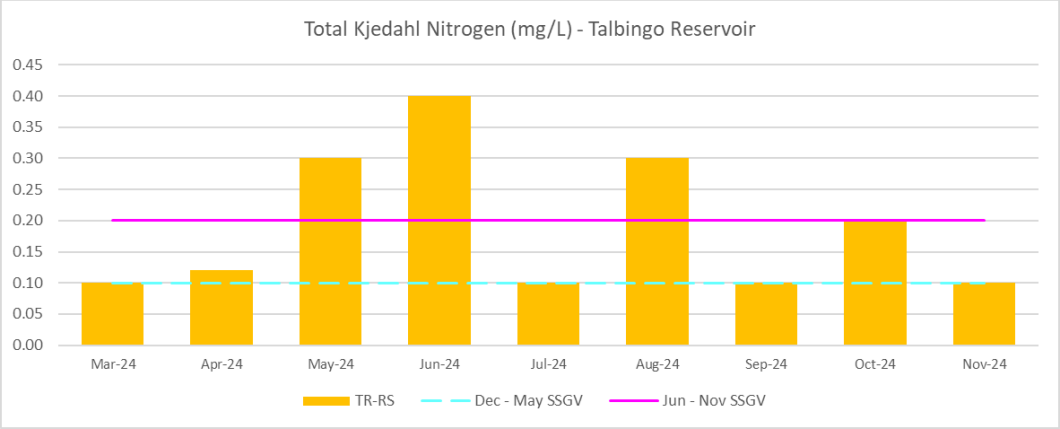

FIGURE 41: TOTAL KJEDAHL NITROGEN FOR TALBINGO RESERVOIR

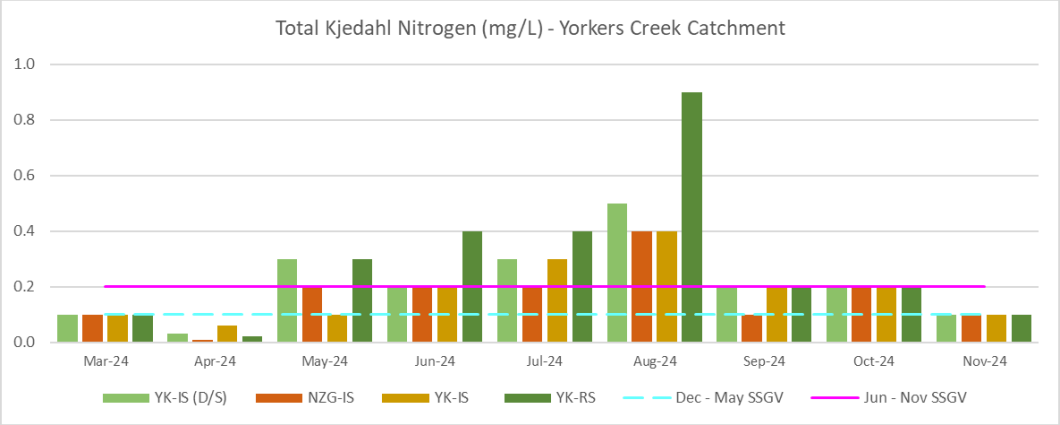

FIGURE 42: TOTAL KJEDAHL NITROGEN FOR YORKERS CREEK CATCHMENT

Total Nitrogen

TN (mg/L) values were either below the LOR or the June to November SSGV (0.2 mg/L) across all sites, Figure 43 to Figure 45.

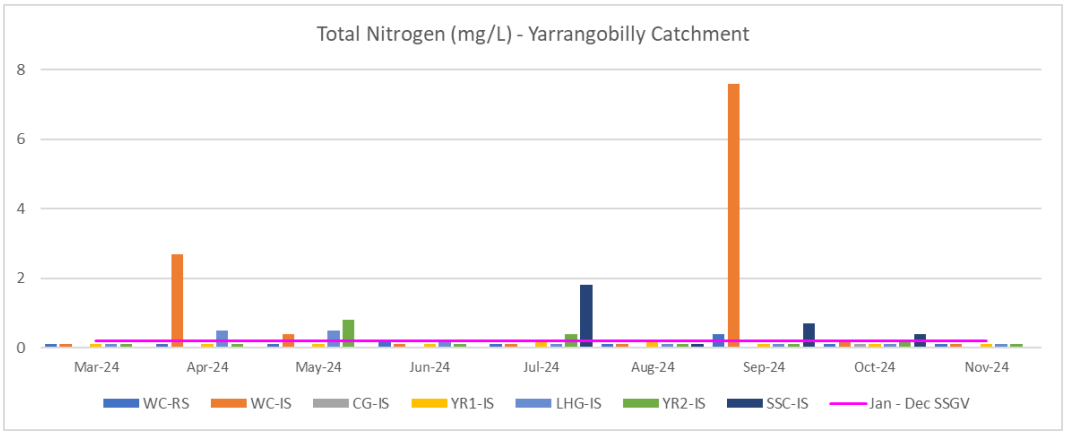

FIGURE 43: TOTAL NITROGEN FOR YARRANGOBILLY CATCHMENT

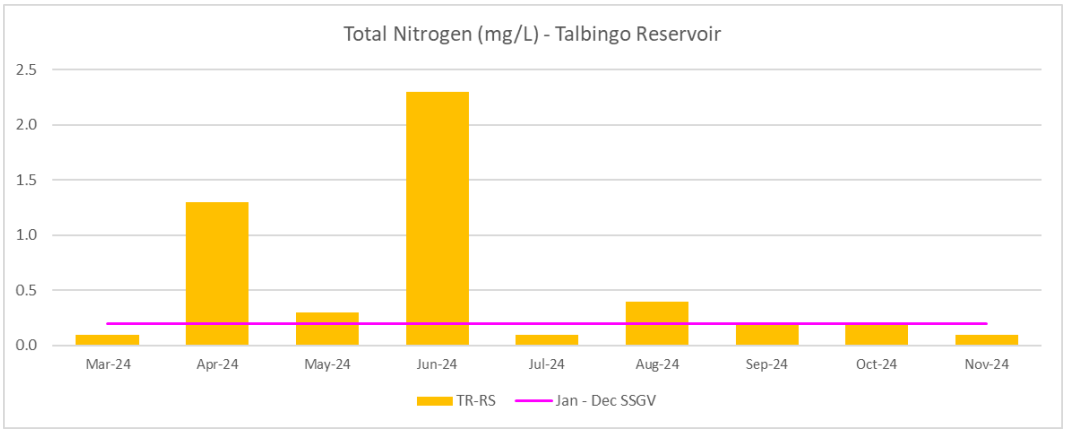

FIGURE 44: TOTAL NITROGEN FOR TALBINGO RESERVOIR

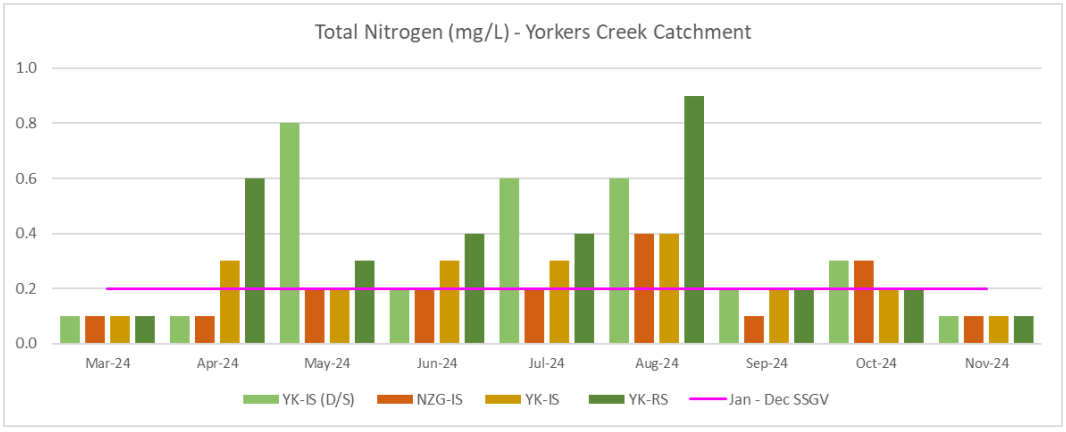

FIGURE 45: TOTAL NITROGEN FOR YORKERS CREEK CATCHMENT

Total Phosphorous

TP (mg/L) levels exceeded the June to November SSGV (0.02 mg/L) at all reference sites and several impact sites. In the Yarrangobilly catchment, the reference site WC-RS recorded the highest value at 0.06 mg/L, refer Figure 46. At Talbingo Reservoir and all sites within the Yorkers Creek catchment, TP levels were consistently 0.04 mg/L, moderately exceeding the SSGV, refer Figure 47 and Figure 48.

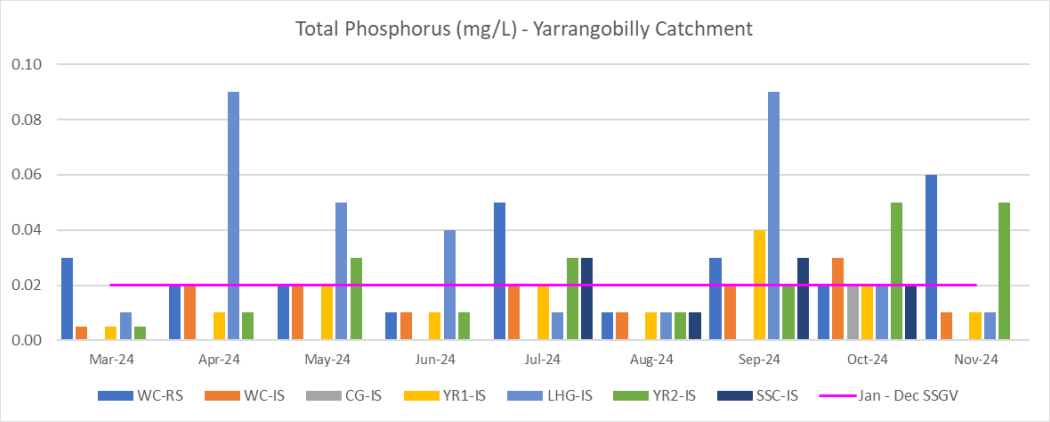

FIGURE 46: TOTAL PHOSPHOROUS FOR YARRANGOBILLY CATCHMENT

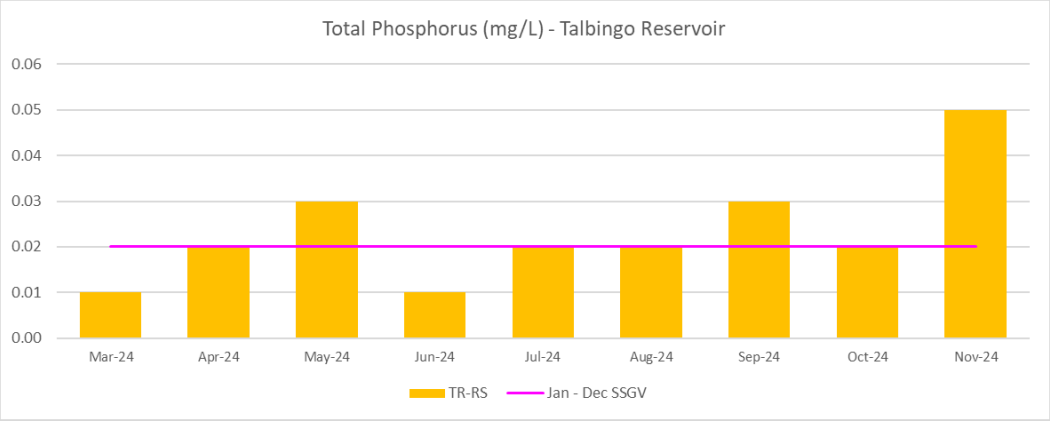

FIGURE 47: TOTAL PHOSPHOROUS FOR TALBINGO RESERVOIR

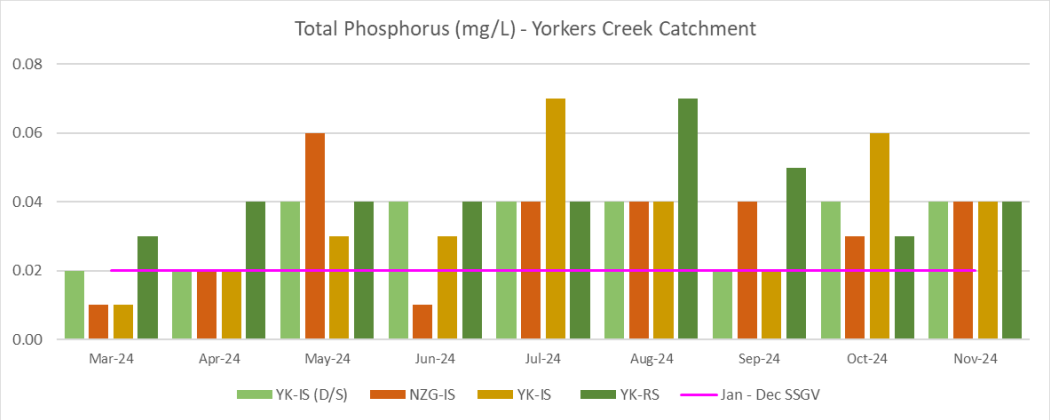

FIGURE 48: TOTAL PHOSPHOROUS FOR YORKERS CREEK CATCHMENT

Reactive Phosphorus

All sites measured below the LOR for RP (mg/L), refer to Figure 49 to Figure 51.

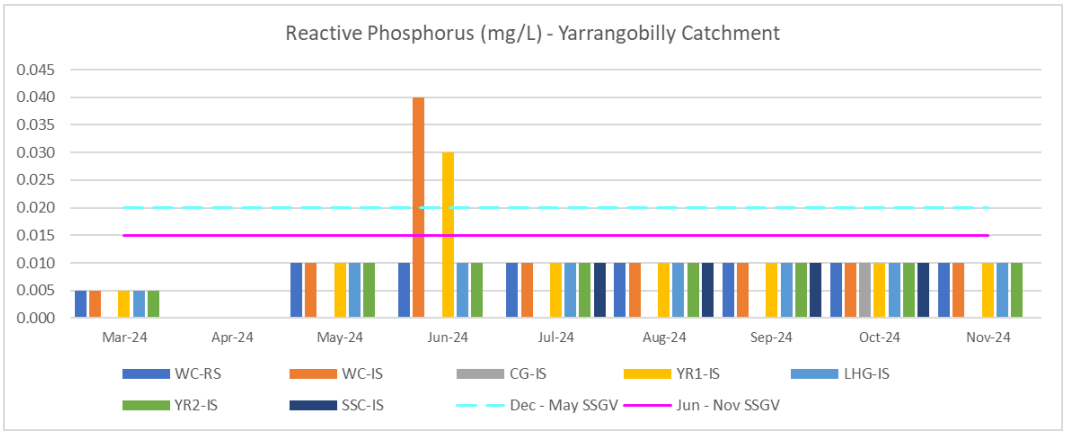

FIGURE 49: RP FOR YARRANGOBILLY RIVER CATCHMENT

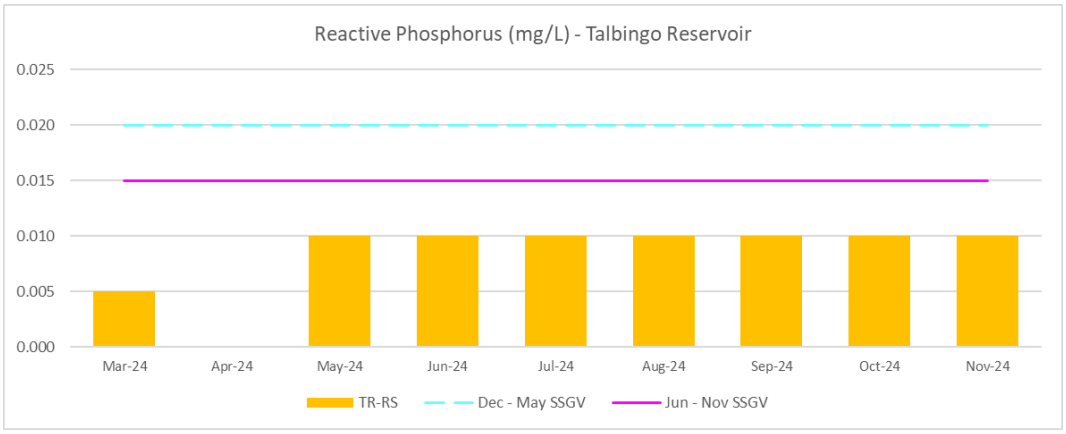

FIGURE 50: RP FOR TALBINGO RESERVOIR

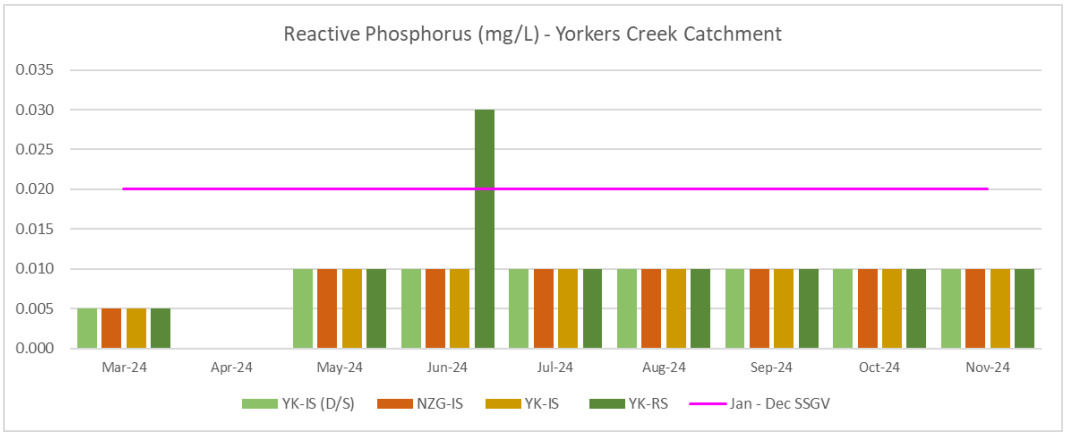

FIGURE 51: RP FOR YORKERS CREEK CATCHMENT

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**
Mn	WC-RS	0.004	0.002	All reference sites, along with several impact sites, exceeded the June to November SSGV. The highest Mn (mg/L) value was recorded at YK-IS, measuring 0.016 mg/L in November 2024.
	YR1-IS	0.020		
	TR-RS	0.050		
	YK-RS	0.014	0.003	
	YK-IS (D/S)	0.011		
	NZG-IS	0.005		
	YK-IS	0.016		
Zn	YK-RS	0.008	0.002	Zn (mg/L) values were below either the LOR or the June to November SSGV at all sites, except for YK-RS and YK-IS, which exceeded the SSGV.
	YK-IS	0.010		

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	YR1-IS	0.04	0.027	Al (mg/L) levels exceeded the DGV at three impact sites in the Yarrangobilly catchment (YR1-IS, LHG-IS, and YR2-IS). Furthermore, all sites within the Yorkers Creek catchment and Talbingo Reservoir also exceeded the DGV.
	YR2-IS	0.04		
	TR-RS	0.14		
	LHG-IS	0.15		
	YK-RS	1.29		
	YK-IS (D/S)	0.26		
	NZG-IS	0.11		
	YK-IS	0.31		
Cr	YK-RS	0.02	0.00001	Cr (mg/L) exceeded the DGV at the Yorkers Creek reference site (YK-RS), while all other sites recorded values below the LOR.
Fe	YK-RS	1.05	0.3	The Yorkers Creek reference site (YK-RS) exceeded the DGV for Fe (mg/L), along with YK-IS (D/S) and YK-IS. All other sites were either below the LOR or within the DGV.
	YK-IS (D/S)	0.41		
	YK-IS	0.39		

5.3. Discussion

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

- Transmission line clearing and bulk earthworks activities were ongoing within the Yarrangobilly and Yorkers Creek catchment areas
- Impact sites within the Yarrangobilly catchment are influenced by other activities associated with the Snowy 2.0 project
- Cave Gully (CG-IS) and Sheep Station Creek (SSC-IS) impact sites within the Yarrangobilly catchment were both dry at the time of sampling
- 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 no visible flow at the time of sampling. LGH-IS consistently recorded higher values across multiple parameters
- Very low water level recorded at Talbingo Reservoir (TR-RS)
- Temperature increased across all catchments in November
- Further drop in DO (%) at LHG-IS (83.1%); similar trends in Yorkers Creek below SSGV. TSS increased further, with LHG-IS recording 16 mg/L and YK-RS reaching 30 mg/L
- Higher exceedances for SPC at LHG-IS (537 µS/cm) in Yarrangobilly
- Turbidity exceedances were experienced at TR-RS (1.6 NTU) and YK-RS (13.8 NTU)
- Ammonia slightly increased in November, compared to October
- Higher value for TP at WC-RS (0.06 mg/L); consistent exceedances at Talbingo Reservoir and Yorkers Creek (0.04 mg/L).
- Slightly higher levels of dissolved metals; Mn highest at YK-IS (0.016 mg/L); Zn exceeded at YK-RS and YK-IS
- Increased total Al (1.29 mg/L) and Fe (1.05 mg/L) at YK-RS; Total Cr continued to exceed only at YK-RS.

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 November 2024, temperatures increased across all catchments, with the Yarrangobilly catchment ranging from 12.1 °C to 15.7 °C, Talbingo Reservoir reaching 15.6 °C, and Yorkers Creek recording 12.4 °C to 19.3 °C. pH levels were within the SSGV range (6.5 to 8.0) at all sites. DO was generally within the SSGV in the Yarrangobilly catchment, except for LHG-IS, which dropped to 83.1%, while Talbingo Reservoir and Yorkers Creek remained below the SSGV. SPC exceeded the June to November SSGV at LHG-IS in the Yarrangobilly catchment, with LHG-IS recording 537 µS/cm.

Turbidity levels were below the SSGV at most sites, but TR-RS (1.6 NTU) and YK-RS (13.8 NTU) exceeded their thresholds. TSS surpassed the SSGV at all reference sites and some impact sites, with LHG-IS recording 16 mg/L in Yarrangobilly and YK-RS reaching 30 mg/L in Yorkers Creek.

Ammonia levels were mostly below the LOR, except at LHG-IS (0.100 mg/L), WC-RS, and YK-RS (0.02 mg/L each). Nitrogen Oxides exceeded the SSGV at all reference sites, with YK-RS recording 0.03 mg/L, while TKN remained below the LOR or SSGV.

Total Hardness ($CaCO_3$) exceeded the SSGV across all sites, with LHG-IS recording 307 mg/L and Yorkers Creek sites ranging from 9 mg/L to 21 mg/L.

TP levels exceeded the SSGV at all reference sites and several impact sites, with WC-RS recording 0.06 mg/L and consistent exceedances at Talbingo Reservoir and Yorkers Creek sites (0.04 mg/L).

Dissolved Metals showed Mn and Zn exceedances, with YK-IS recording the highest Mn level (0.016 mg/L) and Zn exceeding the SSGV at YK-RS and YK-IS. Total Metals exceeded the DGV for Al, Cr, and Fe at several sites, with YK-RS recording the highest Al (1.29 mg/L) and Fe (1.05 mg/L), while Cr exceeded the DGV only at YK-RS.

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Appendix A: Field Sheet (UGL, 2024)

Water Quality Monitoring Field Data Sheet

UGL

Date: 12 **Sample Run:** 8C **Sampling Purpose:** Monthly Water Quality Monitoring **Samplers:** Lachlan Whiteford

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	7:23	—	—	—	—	—	—	—	—	Dry
WC-RS	East	7:43	12.2	—	90.6	46.3	7.69	0.51	—		Clear, debris (leaves & sticks) on edges of bank. Bottom of water course mix of large rocks & smaller rocks + gravel inbetween. Oxygen bubbling in with rapids
WC-IS	East	8:01	12.2	—	90.4	46.2	7.63	053	—		Very similar, very clear. Sticks & debris + fine gravel sediment in water. Slight algae cover on submerged rocks
YR1-IS	East	8:30	15.0	—	92.2	59.5	7.69	0.33	—		Very clear, some algae on submerged rocks. Very fine sediment settled between larger rocks in water.
CG-IS	East	8:55	—	—	—	—	—	—	—	—	Dry
LHG-IS	East	9:05	12.1	—	83.1	322.0	7.91	5.42	—		High silt deposition, large number of flora growing in water. Orange/brown tinge to water colour in high density flora areas
YR2-IS	East	9:26	15.7	—	92.1	62.0	7.92	0.94	—		Large log in water. Coincident flow, large volume & small patch of foam on the water. Fine sediment & gravel inbetween larger rocks on bed
TR-RS	—	11:10	15.6	—	89.8	19.2	7.73	2.97			Reservoir level very low, visible sediment & metals in water, slight brown colour.
YK-RS	—	~~11:58~~	~~19.3~~	—	84.8	~~17.0~~	~~7.53~~	~~22.47~~			Fine silts on banks, ~~tints~~ brown tinge to water, lots of sandy/silt sediment, sticks + debris
YK-FS	—	12.28	14.7	—	84.1	7.5	7.79	5.13			Murky bottom, relatively clear water, silt deposition, visible metals, debris + fine sediment upstream
YK-IS(dd)	—	12:58	13.5	—	83.3	27.7	7.17	8.83			slight colouration, light brown tinge, cloudy but minimal. Low intensity flow. Moss + flora in water
NZG-IS	—	13:28	12.4	—	82.2	32.4	7.29	0.97			Metals visible & mixed in with sediment on bottom. Fauna tracks on bank. Debris in water

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

CERTIFICATE OF ANALYSIS

Work Order	: **ES2437351**	Page	: 1 of 11
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 8C)	Date Samples Received	: 14-Nov-2024 15:30
Order number	: 4501837828	Date Analysis Commenced	: 16-Nov-2024
C-O-C number	: ----	Issue Date	: 21-Nov-2024 16:24
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
Ivan Taylor	Analyst	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.
- TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- 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 19cm	WC-IS 22cm	YR1-RS 26cm	LHG-IS 17cm	YR2-RS 23cm
			Sampling date / time	12-Nov-2024 09:00	12-Nov-2024 09:40	12-Nov-2024 10:20	12-Nov-2024 11:00	12-Nov-2024 11:40
Compound	CAS Number	LOR	Unit	ES2437351-001	ES2437351-002	ES2437351-003	ES2437351-004	ES2437351-005
				Result	Result	Result	Result	Result
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	82	82	105	537	111
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	60	58	74	363	77
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	1	mg/L	2	1	<1	16	<1
EA045: Turbidity								
Turbidity	----	0.1	NTU	0.6	0.3	0.8	3.6	0.6
EA075: Redox Potential								
Redox Potential	----	0.1	mV	235	245	251	254	235
pH Redox	----	0.01	pH Unit	7.23	7.22	7.64	8.02	7.92
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	36	38	48	307	51
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.02	<0.01	0.01	<0.01	0.01
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.004	0.002	0.002	0.007	0.002
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	<0.05	<0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.01	0.02	0.04	0.15	0.04
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

Compound	CAS Number	LOR	Unit	Sample ID	WC-RS 19cm	WC-IS 22cm	YR1-RS 26cm	LHG-IS 17cm	YR2-RS 23cm
				Sampling date / time	12-Nov-2024 09:00	12-Nov-2024 09:40	12-Nov-2024 10:20	12-Nov-2024 11:00	12-Nov-2024 11:40
					ES2437351-001	ES2437351-002	ES2437351-003	ES2437351-004	ES2437351-005
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L		**0.003**	**0.004**	**0.003**	**0.023**	**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	**0.21**	**0.05**
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
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		**0.02**	<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		<0.01	<0.01	<0.01	**0.01**	**0.02**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	<0.01	**0.01**	**0.02**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	WC-RS 19cm	WC-IS 22cm	YR1-RS 26cm	LHG-IS 17cm	YR2-RS 23cm
				Sampling date / time	12-Nov-2024 09:00	12-Nov-2024 09:40	12-Nov-2024 10:20	12-Nov-2024 11:00	12-Nov-2024 11:40
Compound	CAS Number	LOR	Unit		ES2437351-001	ES2437351-002	ES2437351-003	ES2437351-004	ES2437351-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.06**	<0.01	<0.01	<0.01	**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
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		**9.7**	**9.9**	**9.7**	**9.9**	**10.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	TR-RS 21cm	YK-IS(d/s) 22cm	NZG-IS 23cm	YK-IS 20cm	YK-RS 27cm
			Sampling date / time	12-Nov-2024 12:20	12-Nov-2024 13:00	12-Nov-2024 13:40	12-Nov-2024 14:20	12-Nov-2024 15:00
Compound	CAS Number	LOR	Unit	ES2437351-006	ES2437351-007	ES2437351-008	ES2437351-009	ES2437351-010
				Result	Result	Result	Result	Result
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	55	38	57	32	30
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	45	48	60	42	46
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	1	mg/L	5	8	<1	3	30
EA045: Turbidity								
Turbidity	----	0.1	NTU	1.6	5.5	1.4	4.6	13.8
EA075: Redox Potential								
Redox Potential	----	0.1	mV	271	268	276	279	259
pH Redox	----	0.01	pH Unit	6.92	6.97	6.85	6.53	6.68
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	21	12	21	9	9
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.01	0.05	0.04	0.06	0.06
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	0.010	0.008
Manganese	7439-96-5	0.001	mg/L	0.050	0.011	0.005	0.016	0.014
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	0.06	0.12	0.12
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.14	0.26	0.11	0.31	1.29
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TR-RS 21cm	YK-IS(d/s) 22cm	NZG-IS 23cm	YK-IS 20cm	YK-RS 27cm
				Sampling date / time	12-Nov-2024 12:20	12-Nov-2024 13:00	12-Nov-2024 13:40	12-Nov-2024 14:20	12-Nov-2024 15:00
Compound	CAS Number	LOR	Unit		ES2437351-006	ES2437351-007	ES2437351-008	ES2437351-009	ES2437351-010
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.002**
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L		**0.070**	**0.021**	**0.006**	**0.022**	**0.032**
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		**0.23**	**0.41**	**0.14**	**0.39**	**1.05**
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
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	<0.01	**0.02**
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		**0.02**	<0.01	<0.01	<0.01	**0.02**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.02**	<0.01	<0.01	<0.01	**0.03**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TR-RS 21cm	YK-IS(d/s) 22cm	NZG-IS 23cm	YK-IS 20cm	YK-RS 27cm
				Sampling date / time	12-Nov-2024 12:20	12-Nov-2024 13:00	12-Nov-2024 13:40	12-Nov-2024 14:20	12-Nov-2024 15:00
Compound	CAS Number	LOR	Unit		ES2437351-006	ES2437351-007	ES2437351-008	ES2437351-009	ES2437351-010
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.05**	**0.02**	**0.04**	**0.04**	**0.04**
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
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		**9.7**	**9.4**	**9.6**	**9.3**	**9.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	NZG-IS-REP 23cm	----	----	----	----
			Sampling date / time	12-Nov-2024 15:40	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2437351-011	--------	--------	--------	--------
				Result	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**57**	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**59**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	1	mg/L	**1**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.5**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**280**	----	----	----	----
pH Redox	----	0.01	pH Unit	**6.93**	----	----	----	----
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	**21**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.04**	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.005**	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.06**	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.08**	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	NZG-IS-REP 23cm	----	----	----	----
				Sampling date / time	12-Nov-2024 15:40	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2437351-011	--------	--------	--------	--------
					Result	----	----	----	----
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		**0.006**	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Iron	7439-89-6	0.05	mg/L		**0.13**	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
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		<0.01	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		<0.1	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		<0.1	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	NZG-IS-REP 23cm	----	----	----	----
				Sampling date / time	12-Nov-2024 15:40	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2437351-011	--------	--------	--------	--------
					Result	----	----	----	----
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**	----	----	----	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		**9.5**	----	----	----	----

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2437351**	Page	: 1 of 12
Client	: **UGL LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: CAMILLE PALMER	Telephone	: +61-2-8784 8555
Project	: 3200-0645 TransGrid Maragle 500/330kV Station. (Event 8C)	Date Samples Received	: 14-Nov-2024
Site	: Maragle/Lobs Hole	Issue Date	: 21-Nov-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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **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 : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	ES2437131--007	Anonymous	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	ES2437131--008	Anonymous	**Total Kjeldahl Nitrogen as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

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
EA045: Turbidity							
Clear Plastic Bottle - Natural							
WC-RS - 19cm,	WC-IS - 22cm,	----	----	----	16-Nov-2024	14-Nov-2024	**2**
YR1-RS - 26cm,	LHG-IS - 17cm,						
YR2-RS - 23cm,	TR-RS - 21cm,						
YK-IS(d/s) - 22cm,	NZG-IS - 23cm,						
YK-IS - 20cm,	YK-RS - 27cm,						
NZG-IS-REP - 23cm							
EA075: Redox Potential							
Clear Plastic Bottle - Natural							
WC-RS - 19cm,	WC-IS - 22cm,	----	----	----	16-Nov-2024	12-Nov-2024	**4**
YR1-RS - 26cm,	LHG-IS - 17cm,						
YR2-RS - 23cm,	TR-RS - 21cm,						
YK-IS(d/s) - 22cm,	NZG-IS - 23cm,						
YK-IS - 20cm,	YK-RS - 27cm,						
NZG-IS-REP - 23cm							
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
WC-RS - 19cm,	WC-IS - 22cm,	----	----	----	16-Nov-2024	14-Nov-2024	**2**
YR1-RS - 26cm,	LHG-IS - 17cm,						
YR2-RS - 23cm,	TR-RS - 21cm,						
YK-IS(d/s) - 22cm,	NZG-IS - 23cm,						
YK-IS - 20cm,	YK-RS - 27cm,						
NZG-IS-REP - 23cm							
EK071G: Reactive Phosphorus as P by discrete analyser							

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK071G: Reactive Phosphorus as P by discrete analyser - Analysis Holding Time Compliance						
Clear Plastic Bottle - Natural						
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	----	----	----	16-Nov-2024	14-Nov-2024	**2**
EP025: Oxygen - Dissolved (DO)						
Clear Plastic Bottle - Natural						
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	----	----	----	16-Nov-2024	12-Nov-2024	**4**

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: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	**----**	**18-Nov-2024**	10-Dec-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
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**19-Nov-2024**	19-Nov-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**19-Nov-2024**	19-Nov-2024	✓
EA045: Turbidity							
Clear Plastic Bottle - Natural (EA045)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**16-Nov-2024**	14-Nov-2024	×
EA075: Redox Potential							
Clear Plastic Bottle - Natural (EA075)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**16-Nov-2024**	12-Nov-2024	×
ED093F: SAR and Hardness Calculations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**20-Nov-2024**	10-Dec-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 - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**20-Nov-2024**	11-May-2025	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020B-T)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**19-Nov-2024**	11-May-2025	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**21-Nov-2024**	10-Dec-2024	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**21-Nov-2024**	10-Dec-2024	✓
EK026SF: Total CN by Segmented Flow Analyser							
Opaque plastic bottle - NaOH (EK026SF)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**20-Nov-2024**	26-Nov-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
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**20-Nov-2024**	10-Dec-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**16-Nov-2024**	14-Nov-2024	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**20-Nov-2024**	10-Dec-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**19-Nov-2024**	10-Dec-2024	✓	**19-Nov-2024**	10-Dec-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**19-Nov-2024**	10-Dec-2024	✓	**19-Nov-2024**	10-Dec-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 - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**16-Nov-2024**	14-Nov-2024	✘
EP025: Oxygen - Dissolved (DO)							
Clear Plastic Bottle - Natural (EP025)							
WC-RS - 19cm, WC-IS - 22cm, YR1-RS - 26cm, LHG-IS - 17cm, YR2-RS - 23cm, TR-RS - 21cm, YK-IS(d/s) - 22cm, NZG-IS - 23cm, YK-IS - 20cm, YK-RS - 27cm, NZG-IS-REP - 23cm	**12-Nov-2024**	**----**	----	----	**16-Nov-2024**	12-Nov-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
Conductivity by Auto Titrator	EA010-P	5	45	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	12	**16.67**	**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	12	**16.67**	**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
Redox Potential	EA075	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids	EA025	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	3	28	**10.71**	**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 Mercury by FIMS	EG035T	3	28	**10.71**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	2	14	**14.29**	**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	2	13	**15.38**	**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
Conductivity by Auto Titrator	EA010-P	4	45	**8.89**	**8.33**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	12	**8.33**	**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	12	**8.33**	**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
Redox Potential	EA075	3	14	**21.43**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids	EA025	3	11	**27.27**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	4	28	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	11	**27.27**	**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 Mercury by FIMS	EG035T	2	28	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	14	**7.14**	**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

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 Control Samples (LCS) - Continued							
Turbidity	EA045	1	13	**7.69**	**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
Conductivity by Auto Titrator	EA010-P	3	45	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	12	**8.33**	**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	12	**8.33**	**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	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	28	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	11	**9.09**	**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 Mercury by FIMS	EG035T	2	28	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	14	**7.14**	**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	1	13	**7.69**	**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 Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**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	12	**8.33**	**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	2	28	**7.14**	**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 Mercury by FIMS	EG035T	2	28	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**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
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
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)
Redox Potential	EA075	WATER	In house: Ion selective electrode
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
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
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)

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
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)
Oxygen - Dissolved	EP025	WATER	In house: Referenced to APHA 4500-O G. Dissolved Oxygen Probe. 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	: **ES2437351**	Page	: 1 of 9
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 8C)	Date Samples Received	: 14-Nov-2024
Order number	: 4501837828	Date Analysis Commenced	: 16-Nov-2024
C-O-C number	: ----	Issue Date	: 21-Nov-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
Ivan Taylor	Analyst	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 (%)
EA010P: Conductivity by PC Titrator (QC Lot: 6193837)									
ES2437243-005	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	10100	10100	0.1	0% - 20%
ES2437356-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	12400	12800	2.8	0% - 20%
ES2437196-006	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	3760	3720	1.2	0% - 20%
ES2437112-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	9260	9140	1.4	0% - 20%
ES2437309-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	5430	5430	0.1	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6197732)									
ES2437351-011	NZG-IS-REP 23cm	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	59	58	3.0	No Limit
ES2437351-001	WC-RS 19cm	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	60	62	1.6	No Limit
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6197733)									
ES2437351-010	YK-RS 27cm	EA025: Suspended Solids (SS)	----	1	mg/L	30	29	5.4	0% - 20%
ES2437351-001	WC-RS 19cm	EA025: Suspended Solids (SS)	----	1	mg/L	2	2	0.0	No Limit
EA045: Turbidity (QC Lot: 6192933)									
ES2437351-001	WC-RS 19cm	EA045: Turbidity	----	0.1	NTU	0.6	0.6	0.0	No Limit
ES2437351-010	YK-RS 27cm	EA045: Turbidity	----	0.1	NTU	13.8	16.8	19.6	0% - 20%
EA075: Redox Potential (QC Lot: 6193041)									
ES2437351-001	WC-RS 19cm	EA075: Redox Potential	----	0.1	mV	235	233	1.1	0% - 20%
		EA075: pH Redox	----	0.01	pH Unit	7.23	7.25	0.3	0% - 20%
ES2437351-010	YK-RS 27cm	EA075: Redox Potential	----	0.1	mV	259	261	0.7	0% - 20%
		EA075: pH Redox	----	0.01	pH Unit	6.68	6.70	0.3	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6199400)									

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: 6199400) - continued									
ES2437351-001	WC-RS 19cm	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.02	0.02	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.05	<0.05	0.0	No Limit
ES2437351-011	NZG-IS-REP 23cm	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.005	0.005	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.04	0.03	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.06	0.05	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6199402)									
ES2437351-001	WC-RS 19cm	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
ES2437351-011	NZG-IS-REP 23cm	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6197999)									
ES2437094-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
ES2437351-008	NZG-IS 23cm	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: 6198000)									
ES2437335-005	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	2.08	2.12	1.6	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.109	0.108	1.4	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.045	0.047	4.5	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.10	0.13	19.5	0% - 50%
		EG020A-T: Iron	7439-89-6	0.05	mg/L	8.57	8.66	1.1	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 (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 6198000) - continued									
ES2437351-008	NZG-IS 23cm	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.006	0.006	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.11	0.10	0.0	0% - 50%
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.14	0.14	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 6199401)									
ES2437351-001	WC-RS 19cm	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2437351-011	NZG-IS-REP 23cm	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 6198001)									
ES2437083-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2437196-004	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 6198002)									
ES2437351-007	YK-IS(d/s) 22cm	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 6199289)									
ES2437309-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 6199292)									
ES2437082-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.0	No Limit
ES2437351-007	YK-IS(d/s) 22cm	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: 6198944)									
ES2437131-007	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	10.6	10.7	0.5	0% - 20%
ES2437351-005	YR2-RS 23cm	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: 6193182)									
ES2437351-001	WC-RS 19cm	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2437351-010	YK-RS 27cm	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: 6198945)									
ES2437131-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	1.18	1.17	0.0	0% - 20%
ES2437351-005	YR2-RS 23cm	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6198938)									
ES2437131-007	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	10.6	10.9	2.6	0% - 20%
ES2437351-006	TR-RS 21cm	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	<0.1	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 (%)*
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6198937)									
ES2437131-007	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.63	0.69	9.6	0% - 20%
ES2437351-006	TR-RS 21cm	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.05	0.04	0.0	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 6193181)									
ES2437351-001	WC-RS 19cm	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	0.01	0.0	No Limit
ES2437351-010	YK-RS 27cm	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
EA010P: Conductivity by PC Titrator (QCLot: 6193837)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	102	89.9	110
				<1	2100 µS/cm	97.6	90.2	111
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6197732)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	98.0	87.0	109
				<10	293 mg/L	120	75.2	126
				<10	2410 mg/L	103	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6197733)								
EA025: Suspended Solids (SS)	----	1	mg/L	<1	150 mg/L	99.7	83.0	129
				<1	1000 mg/L	99.9	81.0	111
				<1	879 mg/L	96.4	83.0	118
EA045: Turbidity (QCLot: 6192933)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	99.8	91.0	105
EA075: Redox Potential (QCLot: 6193041)								
EA075: Redox Potential	----	----	mV	----	234 mV	99.6	96.0	106
				----	300 mV	101	97.0	105
				----	86 mV	97.4	89.0	111
EG020F: Dissolved Metals by ICP-MS (QCLot: 6199400)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	94.5	80.0	116
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.3	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	93.0	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.2	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.2	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.3	83.0	111
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	92.0	82.0	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.9	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.3	81.0	117
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	93.6	82.0	112
EG020F: Dissolved Metals by ICP-MS (QCLot: 6199402)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	90.4	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6197999)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	99.2	70.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6198000)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	108	82.0	120
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	105	82.0	114
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100.0	84.0	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	104	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	102	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	103	85.0	115
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	103	85.0	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	104	84.0	116
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	106	79.0	117
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	85.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 6199401)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	97.5	83.0	105
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6198001)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.0	77.0	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6198002)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.0	77.0	111
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 6199289)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	111	73.0	133
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 6199292)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	110	73.0	133
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6198944)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	105	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6193182)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	102	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6198945)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6198938)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	95.0	69.0	123
				<0.1	1 mg/L	99.7	70.0	123
				<0.1	5 mg/L	101	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6198937)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	87.2	71.3	126
				<0.01	0.442 mg/L	80.0	71.3	126
				<0.01	1 mg/L	90.0	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
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 6193181)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	108	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: 6199400)							
ES2437119-012	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	95.0	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	95.1	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	94.1	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	95.6	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	98.5	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	94.4	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	96.6	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	96.1	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6198000)							
ES2437335-006	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	106	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	99.9	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	103	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	103	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	98.2	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	87.0	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	106	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	103	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 6199401)							
ES2436880-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	99.3	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6198001)							
ES2437083-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	93.8	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6198002)							
ES2437351-006	TR-RS 21cm	EG035T: Mercury	7439-97-6	0.01 mg/L	93.2	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 6199289)							
ES2437309-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	109	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 6199292)							
ES2437082-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	110	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*
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6198944)							
ES2437131-007	Anonymous	EK055G: Ammonia as N	7664-41-7	0.5 mg/L	# Not Determined	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6193182)							
ES2437351-001	WC-RS 19cm	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	109	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6198945)							
ES2437131-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	109	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6198938)							
ES2437131-008	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	# Not Determined	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6198937)							
ES2437131-008	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	83.4	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 6193181)							
ES2437351-001	WC-RS 19cm	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	119	70.0	130

Appendix C: November 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)
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
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
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
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
WC-RS	Mar-24	No	10.7	87.5	9.72	143.6	104.3	7.80	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*
	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*
	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*
	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*
	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*
	Aug-24	No	10.4	80.6	-	47.1	-	7.80	-	1.6	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*
	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*
	Oct-24	No	9.3	92.7	-	52	-	7.55	-	1.3	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*
	Nov-24	No	12.2	90.6	9.7	82	82	7.63	235	0.6	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.004	*0.0001*	*0.001*
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*
	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*
	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*
	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*
	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*
	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*
	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*
	Oct-24	No	9.5	93.3	-	52.1	-	7.66	-	1.4	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*
	Nov-24	No	12.2	90.4	9.9	82	82	7.63	245	0.3	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oct-24	No	12.7	93.2	-	382.8	-	8.17	-	1	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	*0.001*	*0.0001*	*0.001*
	Nov-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*
	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*
	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*
	Jun-24	No	5.6	94.3	-	112.4	-	7.80	-	1.94	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.14	*0.001*	0.003	*0.0001*	*0.001*
	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*
	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*
	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*
	Oct-24	No	12.5	94.9	-	66.8	-	7.77	-	2	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	*0.001*	*0.0001*	*0.001*
	Nov-24	No	15	92.2	9.7	105	105	7.69	251	0.8	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.020	*0.0001*	*0.001*

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

Parameter		TN (mg/L)	TP (mg/L)	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)		0.25	0.02	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)		0.1	0.01	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 Va		0.2	0.02	0.00002	0.002	0.013	0.015	0.020	47	0.2	52	0.2												
June - Nov SSGV		0.2	0.02	0.00002	0.002	0.013	0.015	0.015	30	0.2	39	1.0												
WC-RS	Mar-24	*0.1*	0.03	*0.00001*	*0.001*	0.050	0.05	*0.005*	42	*0.1*	70	*0.1*												
	Apr-24	*0.1*	0.02	*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	*0.1*	0.02	*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	0.2	*0.01*	*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	*0.1*	0.05	*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	*0.1*	*0.01*	*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	0.4	0.03	*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*
	Oct-24	*0.1*	0.02	*0.001*	*0.005*	*0.010*	0.02	*0.01*	31	*0.1*	46	*1*	0.07	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.004	*0.001*	*0.001*	*0.005*	0.1	*0.0001*
	Nov-24	*0.1*	0.06	*0.001*	*0.005*	0.020	0.02	*0.01*	36	*0.1*	60	2	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.003	*0.001*	*0.001*	*0.005*	*0.05*	*0.0001*
WC-IS	Mar-24	*0.1*	*0.005*	*0.00001*	*0.001*	0.050	0.05	*0.005*	42	*0.1*	88	*0.1*												
	Apr-24	2.7	0.02	*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	0.4	0.02	*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	*0.1*	*0.01*	*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	*0.1*	0.02	*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	*0.1*	*0.01*	*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	7.6	0.02	*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*
	Oct-24	0.2	0.03	*0.001*	*0.005*	*0.010*	0.02	*0.01*	31	0.2	39	2	0.08	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.004	0.005	*0.001*	*0.005*	0.12	*0.0001*
	Nov-24	*0.1*	*0.01*	*0.001*	*0.005*	*0.010*	*0.01*	*0.01*	38	*0.1*	58	*1*	0.02	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.003	*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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oct-24	*0.1*	0.02	*0.001*	*0.005*	*0.010*	*0.01*	*0.01*	294	*0.1*	298	*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*
	Nov-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YR1-IS	Mar-24	*0.1*	*0.005*	*0.00001*	*0.001*	0.050	0.05	*0.005*	34	*0.1*	66	*0.1*												
	Apr-24	*0.1*	*0.01*	*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	*0.1*	0.02	*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	*0.1*	*0.01*	*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	0.2	0.02	*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	0.2	*0.01*	*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	*0.1*	0.04	*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*
	Oct-24	*0.1*	0.02	*0.001*	0.006	0.020	*0.01*	*0.01*	41	*0.1*	60	2	0.08	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	0.09	*0.0001*
	Nov-24	*0.1*	*0.01*	*0.001*	*0.005*	*0.010*	*0.01*	*0.01*	48	*0.1*	74	*1*	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.003	*0.001*	*0.001*	*0.005*	*0.05*	*0.0001*

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

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)
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
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
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
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
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
	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*
	May-24	No	7	63.3	-	618	-	7.00	-	1003.7	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	0.004	0.71	*0.001*	0.184	*0.0001*	*0.001*
	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*
	Jul-24	No	8	87.5	-	503	-	7.30	-	5.44	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.07	*0.001*	0.025	*0.0001*	*0.001*
	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*
	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*
	Oct-24	No	12.4	86.5	-	432.4	-	7.59	-	2.2	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.10	*0.001*	0.036	*0.0001*	*0.001*
	Nov-24	No	12.1	83.1	9.9	537	537	7.91	254	3.6	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*
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*
	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*
	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*
	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*
	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*
	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*
	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*
	Oct-24	No	11.6	93.7	-	69.9	-	7.34	-	1.8	0.03	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*
	Nov-24	No	15.7	92.1	10	62	111	7.92	235	0.6	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*
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*
	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*
	Sep-24	No	12.2	84.1	-	122.2	-	7.10	-	3.53	0.05	*0.001*	*0.0001*	*0.001*	0.003	*0.002*	*0.05*	*0.001*	0.002	*0.0001*	*0.001*
	Oct-24	No	10.1	81.5	-	110.3	-	6.83	-	8.9	0.08	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	*0.001*	*0.0001*	*0.001*
	Nov-24	No Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Parameter		TN (mg/L)	TP (mg/L)	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)		0.25	0.02	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)		0.1	0.01	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 Va		0.2	0.02	0.00002	0.002	0.013	0.015	0.020	47	0.2	52	0.2												
June - Nov SSGV		0.2	0.02	0.00002	0.002	0.013	0.015	0.015	30	0.2	39	1.0												
LHG-IS	Mar-24	*0.1*	*0.01*	*0.00001*	0.006	0.050	0.05	*0.005*	297	1	330	20												
	Apr-24	0.5	0.09	*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	0.5	0.05	*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	0.2	0.04	*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	*0.1*	*0.01*	*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	*0.1*	*0.01*	*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	*0.1*	0.09	*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*
	Oct-24	*0.1*	0.02	*0.001*	*0.005*	0.020	*0.01*	*0.01*	312	*0.1*	362	3	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.034	*0.001*	*0.001*	*0.005*	0.26	*0.0001*
	Nov-24	*0.1*	*0.01*	*0.001*	*0.005*	0.100	*0.01*	*0.01*	307	*0.1*	363	16	0.15	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.023	*0.001*	*0.001*	*0.005*	0.21	*0.0001*
YR2-IS	Mar-24	*0.1*	*0.005*	*0.00001*	*0.001*	0.050	0.05	*0.005*	27	1	58	*0.1*												
	Apr-24	*0.1*	*0.01*	*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	0.8	0.03	*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	*0.1*	*0.01*	*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	0.4	0.03	*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	*0.1*	*0.01*	*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	*0.1*	0.02	*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*
	Oct-24	0.2	0.05	*0.001*	*0.005*	*0.010*	*0.01*	*0.01*	43	0.2	71	*1*	0.07	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.002	*0.001*	*0.001*	*0.005*	0.08	*0.0001*
	Nov-24	*0.1*	0.05	*0.001*	*0.005*	*0.010*	0.02	*0.01*	51	*0.1*	77	*1*	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.005	*0.001*	*0.001*	*0.005*	*0.05*	*0.0001*
SSC-IS	Mar-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Apr-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	May-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Jun-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Jul-24	1.8	0.03	*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	*0.1*	*0.01*	*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	0.7	0.03	*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*
	Oct-24	0.4	0.02	*0.001*	*0.005*	*0.010*	0.18	*0.01*	58	0.2	100	*1*	0.13	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	0.1	*0.0001*
	Nov-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

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)
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
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
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
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
TR-RS	Mar-24	No	13.4	72.5	7.57	24	18.7	7.10	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*
	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*
	May-24	No	10.1	91.5	-	30.2	-	6.80	-	0.65	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	0.004	*0.05*	*0.001*	0.002	*0.0001*	*0.001*
	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*
	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*
	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*
	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*
	Oct-24	No	9.5	95.2		15.3		7.78		1.7	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.008	*0.0001*	*0.001*
	Nov-24	No	15.6	92.1	9.7	55	55	7.73	271	1.6	*0.01*	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	*0.05*	*0.001*	0.05	*0.0001*	*0.001*

Parameter		TN (mg/L)	TP (mg/L)	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		0.25	0.02	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		0.1	0.01	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		0.2	0.02	0.00002	0.002	0.013	0.015	0.02	7.5	0.1	12.5	0.2												
June - Nov SSGV		0.2	0.02	0.00002	0.002	0.013	0.015	0.015	8	0.2	15	0.2												
TR-RS	Mar-24	*0.1*	*0.01*	*0.00001*	*0.001*	0.050	0.05	*0.005*	8	*0.1*	44	*0.1*												
	Apr-24	1.3	0.02	*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	0.3	0.03	*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	2.3	*0.01*	*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	*0.1*	0.02	*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	0.4	0.02	*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	0.2	0.03	*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*
	Oct-24	0.2	0.02	*0.001*	0.013	0.040	0.02	*0.01*	14	0.2	38	4	0.07	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.01	*0.001*	*0.001*	*0.005*	0.11	*0.0001*
	Nov-24	*0.1*	0.05	*0.001*	*0.005*	*0.010*	0.02	*0.01*	21	*0.1*	45	5	0.14	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.07	*0.001*	*0.001*	*0.005*	0.23	*0.0001*

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

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)
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
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
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
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
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*
	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*
	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*
	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*
	Jul-24	No	2.9	83.1	-	27.8	-	7.40	-	7.97	0.19	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.21	*0.001*	0.010	*0.0001*	*0.001*
	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*
	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*
	Oct-24	No	18.3	87.8		21.8		7.55		17.9	0.14	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.15	*0.001*	0.013	*0.0001*	*0.001*
	Nov-24	No	19.3	84.8	9	30	30	6.68	259	13.8	0.06	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.12	*0.001*	0.014	*0.0001*	*0.001*
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*
	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*
	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*
	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*
	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*
	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*
	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*
	Oct-24	No	11.3	84.0		27		7.36		6.4	0.1	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.12	*0.001*	0.010	*0.0001*	*0.001*
	Nov-24	No	13.5	83.3	9.4	38	38	7.17	268	5.5	0.05	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.1	*0.001*	0.011	*0.0001*	*0.001*
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*
	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*
	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*
	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*
	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*
	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*
	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*
	Oct-24	No	11.1	84.5		39.6		7.47		5.3	0.08	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.11	*0.001*	0.008	*0.0001*	*0.001*
	Nov-24	No	12.4	82.2	9.6	32.4	57	7.29	276	1.4	0.04	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.06	*0.001*	0.005	*0.0001*	*0.001*
YK-IS	Mar-24	No	11.4	78.0	8.53	35	25.9	6.70	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*
	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*
	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*
	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*
	Jul-24	No	3.2	82.8	-	32.5	-	7.00	-	11.9	0.31	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.25	*0.001*	0.008	*0.0001*	*0.001*
	Aug-24	No	7.2	81.3	-	23.5	-	6.70	-	25.12	0.67	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.46	*0.001*	0.015	*0.0001*	0.002
	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*
	Oct-24	No	13.7	86.3		23.7		7.83		3.1	0.07	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.06	*0.001*	0.004	*0.0001*	*0.001*
	Nov-24	No	14.7	83.3	9.3	27.7	32	7.17	279	4.6	0.06	*0.001*	*0.0001*	*0.001*	*0.001*	*0.002*	0.12	*0.001*	0.016	*0.0001*	*0.001*

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

Parameter		TN (mg/L)	TP (mg/L)	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)
YORKERS CREEK CATCHMENT																								
DGV		0.25	0.02	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		0.1	0.01	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		0.2	0.02	0.00002	0.002	0.013	0.015	0.02	1	0.1	30	3												
June - Nov SSGV		0.2	0.02	0.00002	0.002	0.013	0.015	0.02	7	0.2	10	0.2												
YK-RS	Mar-24	*0.1*	0.03	*0.00001*	*0.003*	0.050	0.05	*0.005*	*1*	*0.1*	30	3												
	Apr-24	0.6	0.04	*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	0.3	0.04	*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	0.4	0.04	*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	0.4	0.04	*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	0.9	0.07	*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	0.2	0.05	*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*
	Oct-24	0.2	0.03	*0.001*	*0.005*	*0.010*	0.05	*0.01*	5	0.2	21	22	0.24	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.02	*0.001*	*0.001*	*0.005*	0.45	*0.0001*
	Nov-24	*0.1*	0.04	*0.001*	0.008	0.020	0.03	*0.01*	9	*0.1*	46	30	1.29	*0.001*	*0.0001*	0.002	*0.001*	*0.001*	0.032	*0.001*	*0.001*	*0.005*	1.05	*0.0001*
YK-IS (D/S)	Mar-24	*0.1*	0.02	*0.00001*	*0.002*	0.050	0.05	*0.005*	*1*	*0.1*	15	*0.1*												
	Apr-24	*0.1*	0.02	*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	0.8	0.04	*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	0.2	0.04	*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	0.6	0.04	*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	0.6	0.04	*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	0.2	0.02	*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*
	Oct-24	0.3	0.04	*0.001*	0.009	0.030	0.11	*0.01*	5	0.2	24	4	0.22	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.01	*0.001*	*0.001*	*0.005*	0.28	*0.0001*
	Nov-24	*0.1*	0.04	*0.001*	*0.005*	*0.010*	*0.01*	*0.01*	12	*0.1*	48	8	0.26	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.07	*0.001*	*0.001*	*0.005*	0.41	*0.0001*
NZG-IS	Mar-24	*0.1*	*0.01*	*0.00001*	*0.002*	0.050	0.05	*0.005*	10	*0.1*	22	*0.1*												
	Apr-24	*0.1*	0.02	*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	0.2	0.06	*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	0.2	*0.01*	*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	0.2	0.04	*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	0.4	0.04	*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	*0.1*	0.04	*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*
	Oct-24	0.3	0.03	*0.001*	*0.005*	0.020	0.07	*0.01*	12	0.2	26	3	0.17	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.01	0.002	*0.001*	*0.005*	0.27	*0.0001*
	Nov-24	*0.1*	0.04	*0.001*	*0.005*	*0.010*	*0.01*	*0.01*	21	*0.1*	60	*1*	0.11	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.006	*0.001*	*0.001*	*0.005*	0.14	*0.0001*
YK-IS	Mar-24	*0.1*	*0.01*	*0.00001*	*0.004*	0.050	0.05	*0.005*	*1*	*0.1*	21	*1*												
	Apr-24	0.3	0.02	*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	0.2	0.03	*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	0.3	0.03	*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	0.3	0.07	*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	0.4	0.04	*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	0.2	0.02	*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*
	Oct-24	0.2	0.06	*0.001*	*0.005*	*0.010*	*0.01*	*0.01*	21	0.2	40	4	0.14	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.006	*0.001*	*0.001*	*0.005*	0.23	*0.0001*
	Nov-24	*0.1*	0.04	*0.001*	0.01	*0.010*	*0.01*	*0.01*	9	*0.1*	42	3	0.31	*0.001*	*0.0001*	*0.001*	*0.001*	*0.001*	0.022	*0.001*	*0.001*	*0.005*	0.39	*0.0001*

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

Appendix D: Calibration Certificate

HK Calibration Technologies Pty Ltd
ACN: 152 274 014 ABN: 84 152 274 014
Postal Address: PO Box 4489, North Rocks, 2151
NSW Australia
T: 1300 309 881 F: 1300 885 178
Email: info@hkcalibrations.com.au
Web: www.hkcalibrations.com.au

CALIBRATION CERTIFICATE

REPORT NO: 177471-1

CLIENT:	CLIENT ADDRESS:
UGL PTY LIMITED -AUBURN	3 GEORGE YOUNG STREET AUBURN NSW 2144

INSTRUMENT DATA

A	EQUIPMENT TYPE	WATER QUALITY METER
B	MAKE	YSI
C	MODEL	PRO DSS
D	SERIAL NUMBER	23H104391
E	ASSET NUMBER	NOT FOUND
F	DESCRIPTION OF TYPE	DIGITAL
G	RANGE	VARIOUS
H	RATED ACCURACY / TOLERANCE OF U.U.T. (±)	AS FOUND

CALIBRATION DATE

I	DATE OF CALIBRATION	25/10/2024
J	RECOMMENDED DUE DATE	25/10/2025

CALIBRATION RESULT

The results of the tests, calibrations, and /or measurements included in this document are traceable to Australian/national standards.

K	READING OF U.U.T.	SEE PAGE 2
L	READING OF MASTER INSTRUMENT	SEE PAGE 2
M	ADJUSTMENT	NIL
N	REPAIR	NIL
O	SERVICEABILITY/FUNCTIONALITY	ACCEPTABLE
P	TECHNICIAN COMMENT	THIS INSTRUMENT WAS FOUND TO BE FUNCTIONING AS INDICATED BY OUR FINDINGS WITHIN THIS REPORT.

The applicable measurement uncertainties are calculated in accordance with the method described in the ISO Guide to the Expression of Uncertainty in Measurement, with confidence level of 95% using a coverage factor k=2.

CALIBRATION PROCEDURE AND TRACEABILITY

Q	LOCATION OF EQUIPMENT	TEST AND MEASUREMENT LAB
R	CALIBRATED BY	CHINMAY
S	CALIBRATION ENVIRONMENT	TEMPERATURE: 23.0 ± 2°C AVERAGE HUMIDITY: 45% ± 10% RH
T	CALIBRATION PROCEDURE	HKC SOP 11-28-V8
U	REFERENCE CALIBRATION STANDARD USED:- HKCT'S PRECISION INSTRUMENT TRACEABLE TO AUSTRALIAN NATIONAL STANDARDS VIA A NATA CERTIFIED CALIBRATION CERTIFICATE:-	*MODEL: 5502E,34465A* *ASSET: HKC001A,HKC001C* *SERIAL NO: 2371801,MY60083003* *NATA REPORT NO: A43641EA, 2023004169*

CB
TECHNICIAN'S SIGNATURE

CX
AUTHORISED BY

25/10/2024
DATE OF ISSUE

QR FORM 25-01-V4 (7/16)

SYDNEY
Unit 3
27 Daking Street
North Parramatta
NSW 2151

MELBOURNE
Suite 5
296 Bay Road
Cheltenham
VIC 3192

BRISBANE
Unit 8
87 Kelliner Street
Richlands
QLD 4077

ADELAIDE
Level 30
Westpac House
91 King William Street
Adelaide
SA 5000

PERTH
Unit 8
8 Aspiration Circuit
Bibra Lake
WA 6163

HOBART
Level 6
Reserve Bank Building
111 Macquarie Street
Hobart
TAS 7000

Report No.: 177471-1
Calibration Date: 25 OCT 2024

Equipment No.: 23H104391

FUNCTION 1: pH

STIMULUS	U.U.T. READING	U.U.T.ERROR
4.00	4.00	0.0
7.00	7.00	0.00
10.00	10.01	0.01

FUNCTION 2: CONDUCTIVITY

MASTER READING	U.U.T. READING	ERROR
84 µs/cm	84 µs/cm	0

FUNCTION 3: TEMPERATURE

STIMULUS °C	U.U.T. READING °C	U.U.T.ERROR
25.0	25.2	0.2

FUNCTION 4:OPR

MASTER READING MV	U.U.T. READING MV	ERROR
240	240	0

FUNCTION 5: DISSOLVED OXYGEN

STIMULUS %DO	U.U.T. READING %DO	U.U.T.ERROR
0	0.0	0.0

FUNCTION 6: BAROMETRIC PRESSURE

STIMULUS mmHG	U.U.T. READING mmHG	U.U.T.ERROR
760	759.5	-0.5