

Annual Surface Water and Groundwater Monitoring Report 2024



Albany Motorsport Park

Lot 5780 Down Road South

Drome WA

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1. Introduction

Groundwater and surface water monitoring was conducted at the Albany Motorsport Park (AMP) site from October 2023 to November 2024. Monitoring was completed quarterly until the winter period and then was undertaken monthly as the precinct started operations. Monitoring in the 23/24 period included 7 rounds of monitoring (Jan 24, Apr 24, Jul 24, Aug 24, Sept 24, Oct 24 and Nov 24). In January 2024 only field parameters and turbidity was collected for CS01, CS02 and CS03 for the three surface water sites. Three surface water sites, seven shallow bores and one deep bore were monitored as part of the continued quarterly monitoring program for April 24 until July 24 and then after consultation with DWER this testing regime was reduced down to 3 shallow bores (MB01, MB02, MB03), two creek samples (CS01 and CS03) and the deep bore (DB01). See Appendix A (Table 10) for the July 2024 approved testing regime. The testing in the latter part of 2024 was conducted monthly to capture the winter period and late winter parameters in the post construction periods of the motocross track. CS02 and CS03 were dry in 2024 and parameters were not able to be obtained in CS03 since August 2024 (due to being too dry).

The DWER endorsed monitoring program for the July 2024 monitoring period is included in Appendix A (Table 10) and a plan showing the location of the monitoring sites is shown in Appendix B.

This report summarises the findings of the surface water and groundwater quality monitoring, and compares fixed point photography to indicate any potential disturbances/impacts at the AMP site for the 2024 monitoring period. Water quality results are compared to relevant trigger values where available. The 2024 monitoring results include the October 2022 and 2023 water quality results where applicable for the two-year comparison (pre-construction periods and post construction of the motocross precinct).

1.1. Overview

Earthworks for the motocross precinct, four-wheel drive precinct and the access road was completed in 2024 with operations of the motocross track commencing in 2024. Construction of the race track precinct in the east of the site has not commenced. A fence has been constructed around the wetland to provide protection of the wetland from cattle and human activity. The deep bore, constructed to a depth of 41 m in 2019 is now an operational production bore for the motocross facility.

Reporting and measuring in the current constructed bores commenced in October 2022, whereby the bores constructed near some of the original surface water bore locations (pre 2022 monitoring). For the purpose of this report October 2022, 2023 and 2024 periods have been included to show the variation since the inception of the constructed shallow water bores. This report captures the pre-construction periods and post construction period of the motocross precinct.

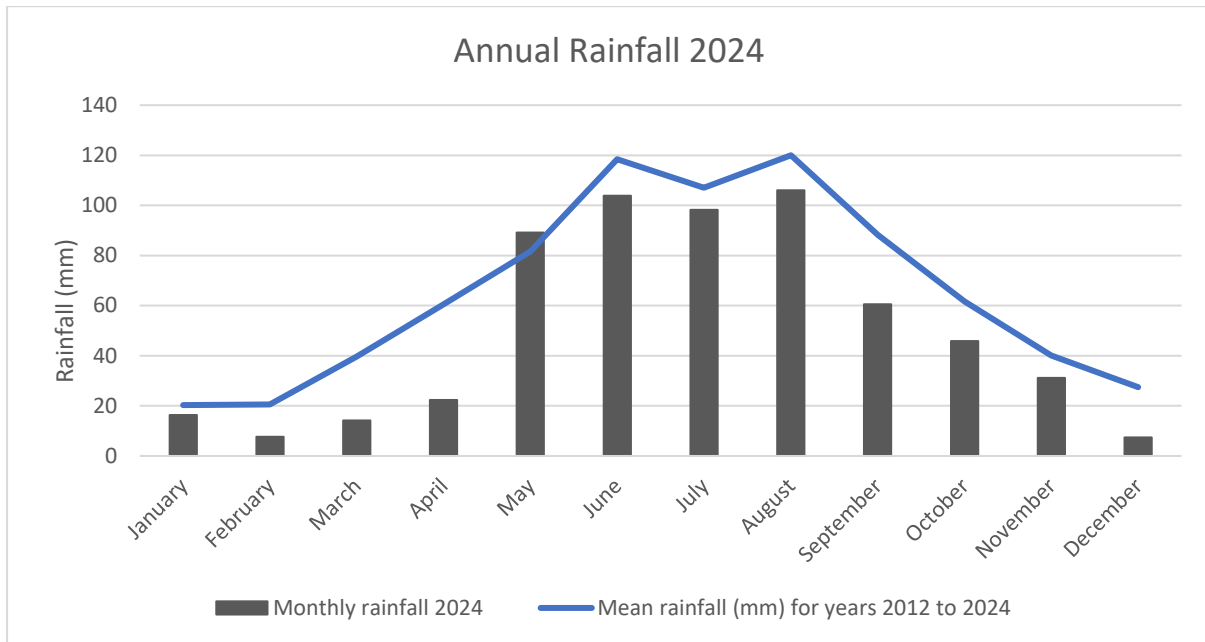
As per previous testing since 2022, there has been infrequent exceedance in trigger levels, and it is therefore surmised that it is highly unlikely that there is any contamination on the site, neither pre-existing or occurring during construction. There was a noticeable peak in some of the parameters across the Winter 2023 to Spring 2024 period. This can be seen in varying degrees for Zinc, Copper, Nitrogen Oxides (Nox_N) and Total Nitrogen (TN) across all monitoring sites. However, as discussed in previous reports, these peaks can likely be attributed to sources ranging from past fertilizer/stock use and possible leaching of metals used in the production of the bore attachments and pump. The cattle were removed off the site in 2024.

In 2024 CS02 and CS03 were not measured consistently due to being dry at sample events. CS04 sample point is to be measured when has water present, to date this has not been collected due to being dry but is recorded for fixed point photography.

1.2. Annual Rainfall 2024 monitoring period

The Bureau of Meteorology (BoM) Albany Airport station recorded a lower-than-average rainfall for the 2024 monitoring period with data from the station shown below in Figure 1.

Figure 1: Albany Airport BOM (station no. 9999) annual rainfall 2024



2. Water quality

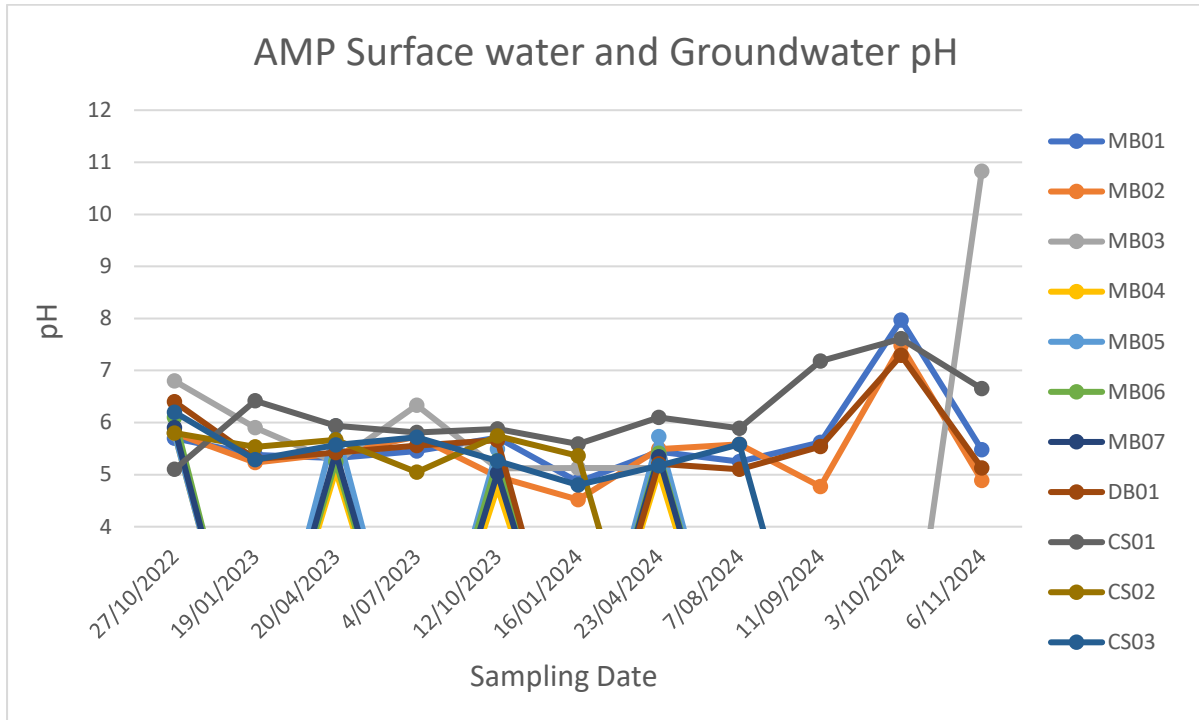
2.1. pH

The pH levels in 2024 at the surface water sites, shallow bores and the deep bore were found to be slightly acidic to acidic (4.52 to 6.42) and below the ANZECC and ARMCANZ (2000) lower trigger value for slightly-disturbed wetlands ecosystems in the Southwest of Australia (7- 8.5). The noticeable change is in the surface water sampling point CS01, whereby in 2024 this has become less acidic, measuring 7.18, 7.61 and 6.65 in the later months of 2024. Groundwater bores MB01, MB02 and DB01 also showed a spike of more alkaline water in the month of October.

There has been some minor fluctuation in pH levels in the surface water and groundwater since monitoring commenced in October 22, this is not unusual given pH has many influencing factors. The pH levels for the 2024 monitoring period are presented in Table 1 and shown graphically in Figure 2, with the raw pH data presented in Appendix C.

Table 1 –Monitoring results pH

	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024
MB01	5.7	5.38	5.32	5.45	5.71	4.86	5.44	5.25	5.62	7.97	5.48
MB02	5.8	5.23	5.41	5.73	4.96	4.52	5.49	5.58	4.77	7.48	4.89
MB03	6.8	5.9	5.24	6.33	5.12	5.13	5.13	Dry	Dry	Dry	10.83
MB04	5.8	Not tested	5.08	Not tested	4.75	Not tested	5.06	Not tested	Dry	Not tested	Not tested
MB05	5.8	Not tested	5.93	Not tested	5.49	Not tested	5.73	Not tested	Not tested	Not tested	Not tested
MB06	6.1	Not tested	5.25	Not tested	5.27	Not tested	5.41	Not tested	Not tested	Not tested	Not tested
MB07	5.9	Not tested	5.42	Not tested	5.03	Not tested	5.34	Not tested	Not tested	Not tested	Not tested
DB01	6.4	5.3	5.42	5.56	5.66	Not tested	5.21	5.10	5.54	7.29	5.13
CS01	5.1	6.42	5.94	5.81	5.88	5.59	6.10	5.89	7.18	7.61	6.65
CS02	5.8	5.53	5.67	5.05	5.74	5.36	Dry	Dry	Not tested	Not tested	Not tested
CS03	6.2	5.29	5.57	5.72	5.26	4.8	5.17	5.58	Not tested	Not tested	Not tested

Figure 2: Surface water and groundwater pH


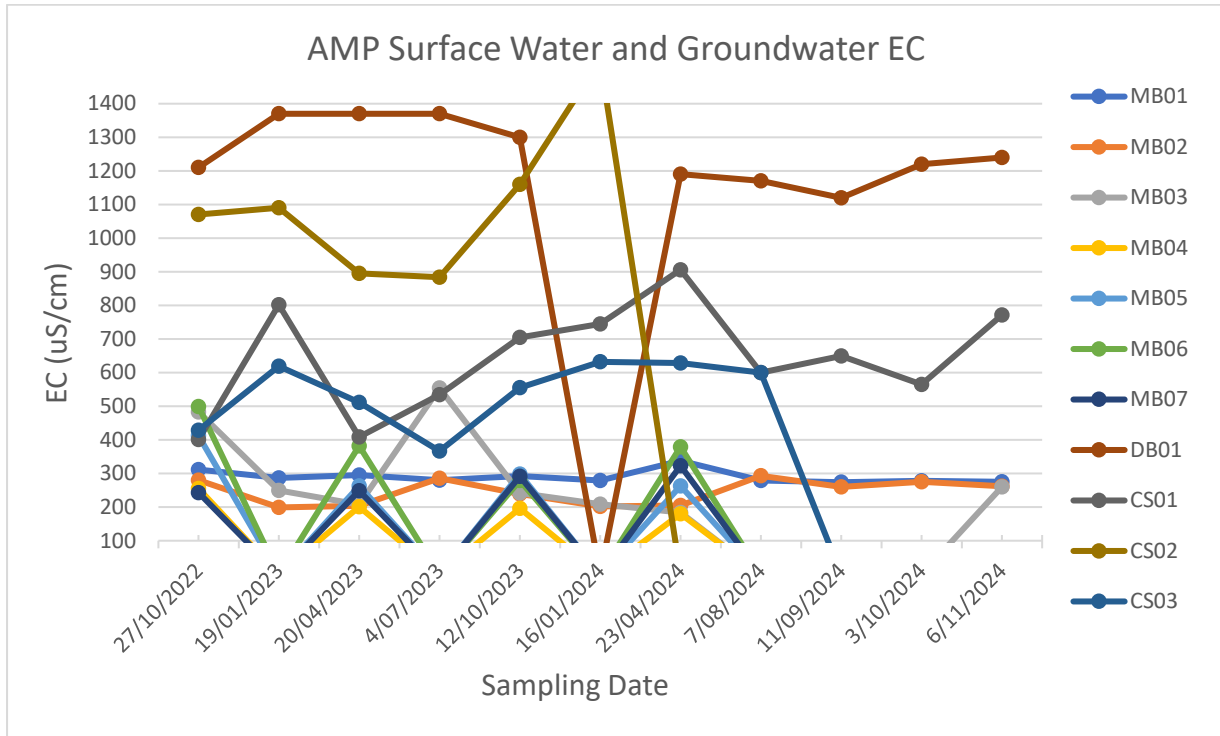
The long-term pH results (Figure 11, Appendix D) for CS01, CS02, DB01, MB02 and MB07 show pH levels have not altered significantly compared to the 2018/2019 monitoring results.

2.2. Electrical Conductivity

The Electrical Conductivity (EC) at the surface water sites, the shallow bores and the deep bore at the AMP site varied with both location and sampling event. Generally, EC levels across the site were low and below the ANZECC and ARMCANZ (2000) upper trigger value for slightly-disturbed wetland ecosystems in Southwest Australia (1500uS/cm). EC levels were elevated at DB01 and CS01, during each monitoring event, compared to the other monitoring sites, whilst still remaining below the ANZECC and ARMCANZ (2000) upper trigger value at these sites. EC levels at each of the monitoring sites during the 2024 reporting period are shown in Table 2 and Figure 3, with the raw EC data presented in Appendix C.

Table 2 –Monitoring results EC

	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024
MB01	311	287	295	280	292	279	338	279	274	278	275
MB02	280	199	204	286	239	202	205	293	260	275	262
MB03	483	250	208	554	242	209	184	Dry	Dry	Dry	260
MB04	255	Not tested	201	Not tested	196	Not tested	180	Not tested	Dry	Not tested	Not tested
MB05	412	Not tested	263	Not tested	298	Not tested	263	Not tested	Not tested	Not tested	Not tested
MB06	499	Not tested	382	Not tested	279	Not tested	379	Not tested	Not tested	Not tested	Not tested
MB07	243	Not tested	249	Not tested	291	Not tested	323	Not tested	Not tested	Not tested	Not tested
DB01	1210	1370	1370	1370	1300	Not tested	1190	1170	1120	1220	1240
CS01	401	802	409	534	705	745	906	600	650	565	771
CS02	1070	1090	895	884	1160	1530	Dry	Dry	Not tested	Not tested	Not tested
CS03	429	619	511	367	555	632	629	600	Not tested	Not tested	Not tested

Figure 3: Surface water and groundwater EC


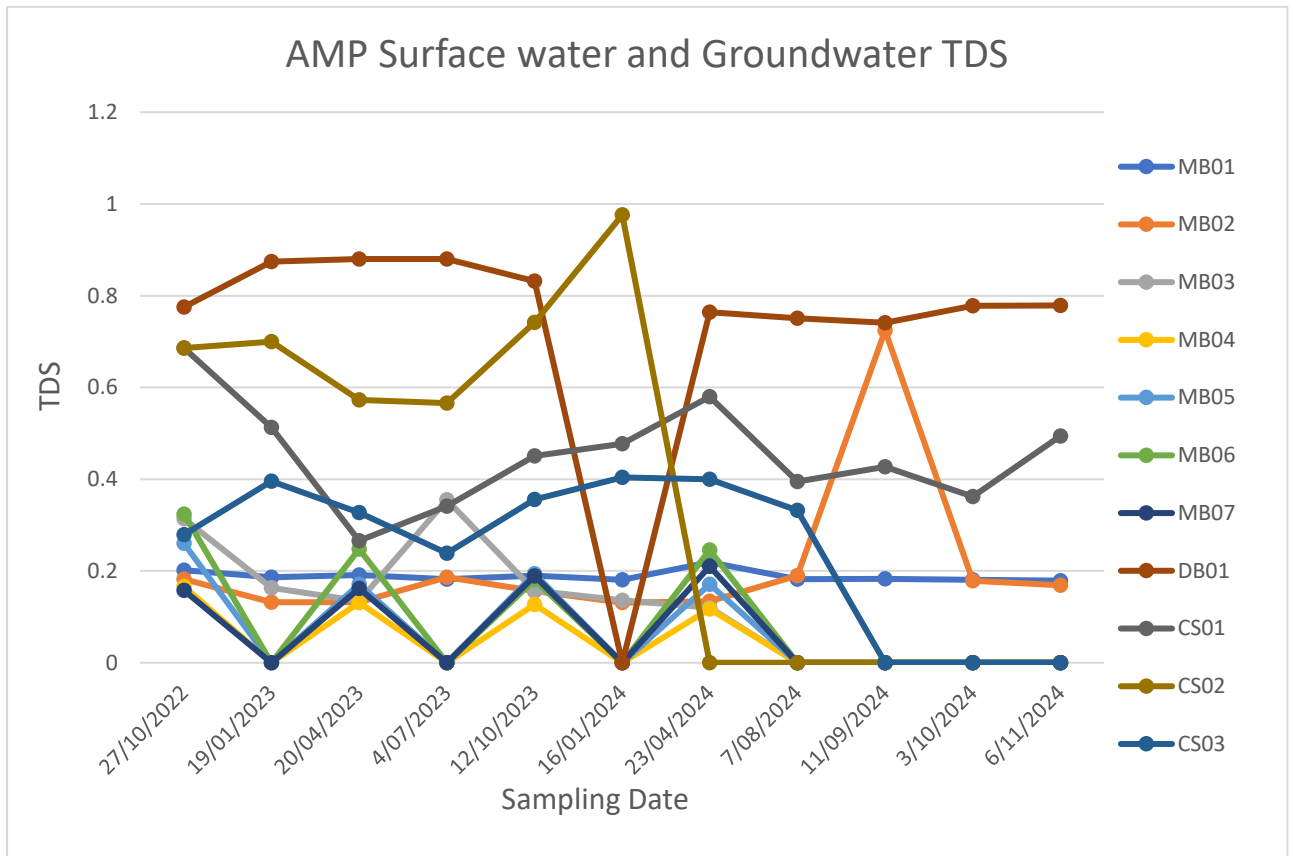
The long-term EC results (Figure 12, Appendix D) for CS01, CS02, DB01, MB02 and MB07 show EC levels have not altered significantly compared to the 2018/2019 monitoring results.

2.3. Total Dissolved Solids

The Total Dissolved Solids (TDS) at the surface water sites, the shallow bores and the deep bore at the AMP site varied with both location and sampling event. Generally, TDS levels across the site were low (<1). TDS levels in 2024 were elevated at DB01, during each monitoring event, compared to the other monitoring sites consistent with the 2023 EC results. TDS levels for each of the monitoring sites during the 2024 reporting period are shown in Table 3 and Figure 4, with the raw TDS data presented in Appendix C.

Table 3 –Monitoring results TDS

	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024
MB01	0.202	0.186	0.191	0.182	0.190	0.181	0.219	0.182	0.183	0.181	0.179
MB02	0.182	0.132	0.132	0.186	0.156	0.131	0.134	0.190	0.724	0.179	0.169
MB03	0.314	0.163	0.135	0.355	0.157	0.136	0.120	Dry	Dry	Dry	No data
MB04	0.166	Not tested	0.131	Not tested	0.127	No data	0.117	Not tested	Dry	Not tested	Not tested
MB05	0.26	Not tested	0.171	Not tested	0.194	No data	0.171	Not tested	Not tested	Not tested	Not tested
MB06	0.324	Not tested	0.248	Not tested	0.181	No data	0.246	Not tested	Not tested	Not tested	Not tested
MB07	0.158	Not tested	0.162	Not tested	0.189	No data	0.210	Not tested	Not tested	Not tested	Not tested
DB01	0.775	0.874	0.88	0.88	0.832	No data	0.764	0.751	0.741	0.778	0.779
CS01	0.686	0.513	0.266	0.341	0.451	0.477	0.580	0.395	0.427	0.362	0.494
CS02	0.686	0.7	0.573	0.566	0.742	0.976	Dry	Dry	Not tested	Not tested	Not tested
CS03	0.279	0.396	0.327	0.239	0.356	0.404	0.4	0.332	Not tested	Not tested	Not tested

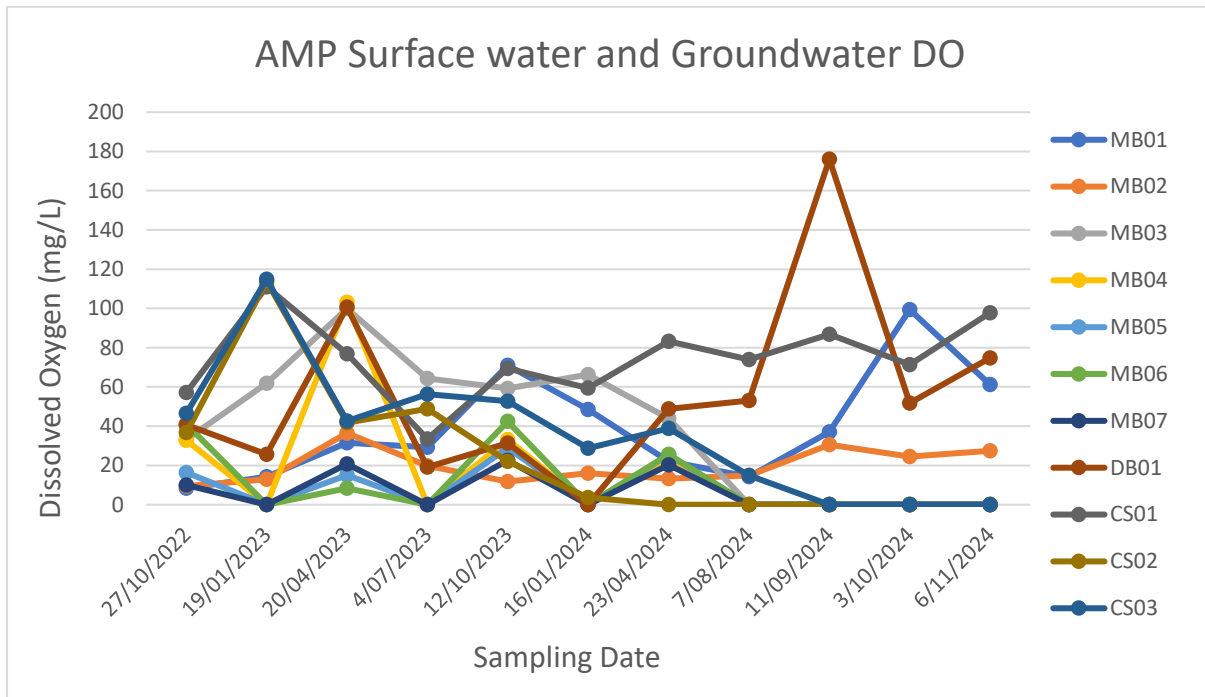
Figure 4: Surface water and groundwater TDS


2.4. Dissolved Oxygen

The Dissolved Oxygen (DO) levels recorded at the surface water sites varied from low to high, with no clear fluctuation trend. Fluctuations in DO levels vary between sites and monitoring months, both in groundwater and surface waters, with no clear trend surmised. DO levels for each of the monitoring sites during the monitoring period are shown in Table 4 and Figure 5, with the raw DO data presented in Appendix C. It is noted that MB03 did not have water in it for the latter part of 2024 reporting period, with no data recorded.

Table 4 –Monitoring results DO

	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024
MB01	8.4	14.2	31.6	29.2	71	48.5	22.1	14.3	37	99.4	61.3
MB02	9.5	13	36.5	19.8	11.8	16.1	13.2	14.9	30.6	24.5	27.5
MB03	33.2	61.8	99.9	64.3	59.2	66.3	44	Dry	Dry	Dry	78.2
MB04	32.8	Not tested	103.1	Not tested	33.1	No data	22.1	Not tested	Dry	Not tested	Not tested
MB05	16.4	Not tested	15	Not tested	29	No data	25.3	Not tested	Not tested	Not tested	Not tested
MB06	41	Not tested	8.3	Not tested	42.4	No data	25.6	Not tested	Not tested	Not tested	Not tested
MB07	10	Not tested	20.7	Not tested	22.6	No data	20.3	Not tested	Not tested	Not tested	Not tested
DB01	40.7	25.6	100.7	19.2	31.4	No data	48.9	53	176	51.7	74.8
CS01	57.2	111	76.9	33.5	69.3	59.5	83.2	74	86.9	71.3	97.8
CS02	36.8	113.8	41.8	48.9	22.1	3.6	Dry	Dry	Not tested	Not tested	Not tested
CS03	46.5	114.9	42.6	56.3	52.8	28.80	38.8	14.9	Not tested	Not tested	Not tested

Figure 5: Surface water and groundwater DO


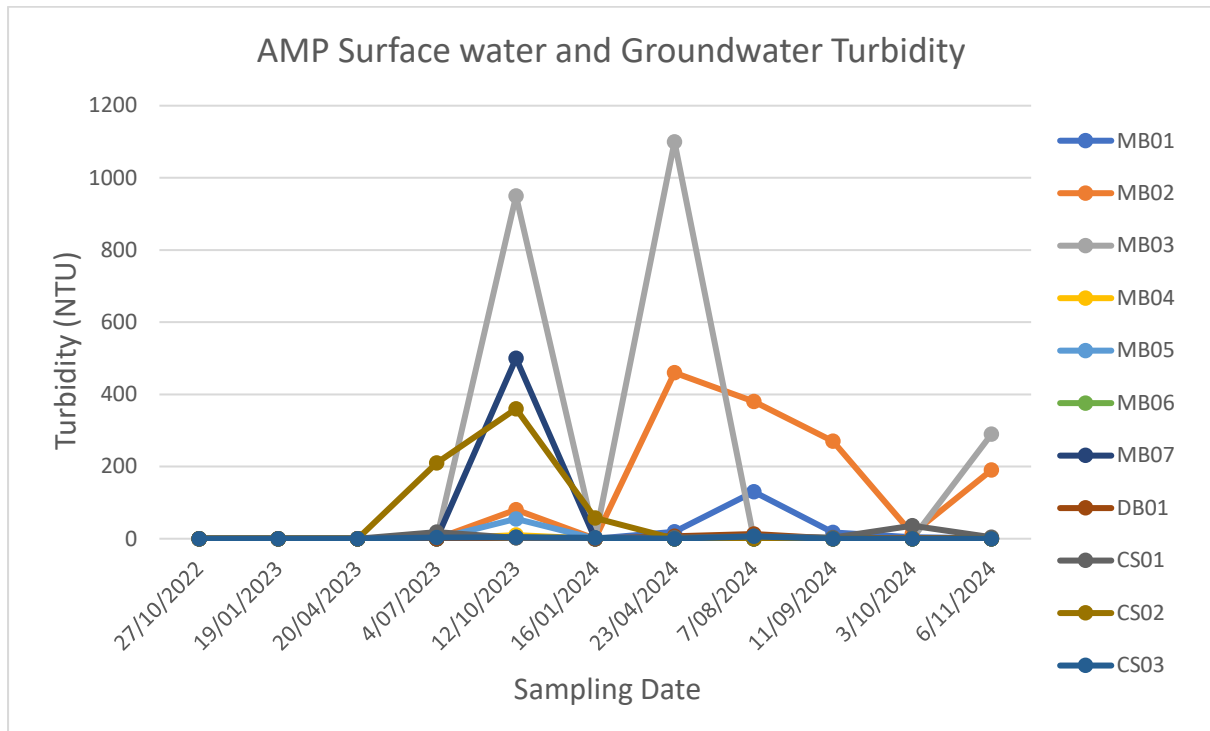
2.5. Turbidity

Turbidity was first measured at the surface water sites during the July 23 monitoring event to indicate the concentration of suspended solids and fine sediment within the surface water. Noting that fine sediment had been reported in the creek further downstream of the AMP site following heavy rainfall. Results from the Jan 24 monitoring event showed that turbidity levels in CS02 had reduced from levels seen in Oct 23 (360 NTU) and were low in CS01 (2.4 NTU) and CS03 (1.9 NTU). The elevated turbidity at CS02 is likely the result of the shallow and swampy nature of the creek at this location, with water flow here being minimal. Turbidity at CS01 remained visibly clear (with tannin coloration) and consistently at a low level from Jan 24 to Nov 24, with only a notable rise in Oct 24 (36 NTU), likely as a result of a decline in rainfall and the stagnant nature of the monitoring sites. Elevated turbidity was recorded in MB01, MB02 and MB03 (when had water) during construction periods (April to August) but has stabilised since construction has completed.

Turbidity results for each of the monitoring sites during the 2024 reporting period are shown in Table 5 and Figure 6, with the raw Turbidity data presented in Appendix C.

Table 5 –Monitoring results Turbidity

	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024
MB01	No data	No data	No data	No data	3	No data	19	130	17	3.9	1.3
MB02	No data	No data	No data	No data	80	No data	460	380	270	14	190
MB03	No data	No data	No data	No data	950	No data	1100	Dry	Dry	Dry	290
MB04	No data	No data	No data	Not tested	10	No data	No data	Not tested	Dry	Not tested	Not tested
MB05	No data	No data	No data	Not tested	55	No data	No data	Not tested	Not tested	Not tested	Not tested
MB06	No data	No data	No data	Not tested	3.5	No data	No data	Not tested	Not tested	Not tested	Not tested
MB07	No data	No data	No data	Not tested	500	No data	No data	Not tested	Not tested	Not tested	Not tested
DB01	No data	No data	No data	Not tested	3.5	No data	6.3	13	0.24	1.4	0.34
CS01	No data	No data	No data	18	2.5	2.4	2.9	6.8	3.2	36	4.4
CS02	No data	No data	No data	210	360	57	Dry	Dry	Not tested	Not tested	Not tested
CS03	No data	No data	No data	2.9	4.2	1.9	No data	6.3	Not tested	Not tested	Not tested

Figure 6: 2023 and 2024 Turbidity


2.6. Nutrients

The Total Nitrogen (TN) at the surface water sites and the shallow bores varied with both location and sampling event. Total Nitrogen (TN) and Nitrogen Oxides (Nox_N) in MB01 and MB03 is noticeably higher than the other monitoring sites, with this continuing in 2024 (when MB03 could be tested). They have both been above the trigger values given in the guidelines for TN and Nox_N since the first monitoring round in October 2022 (excepting two periods for MB03 in October 2022 and October 2023).

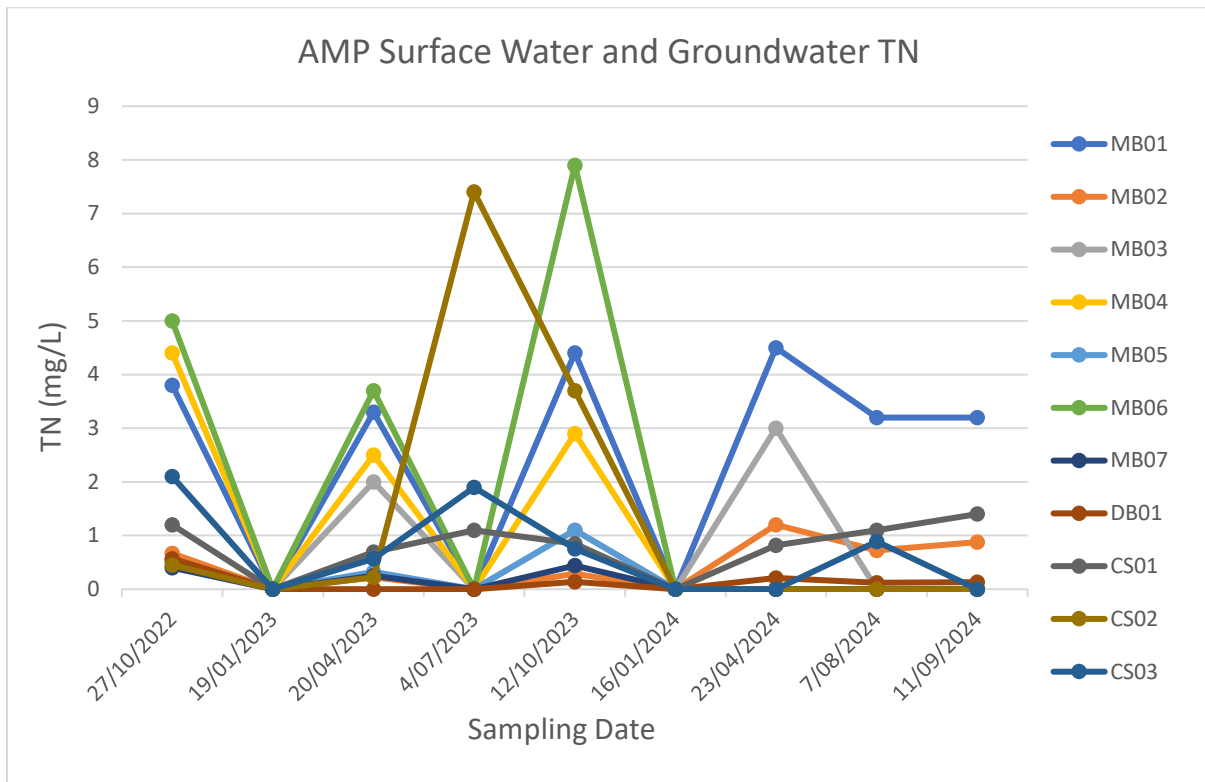
The elevated TN and Nox_N may be the result of past fertiliser use and stock grazing, noting fertiliser history of the property is unknown. Stock grazing on the property discontinued in 2024.

The 2024 reporting period indicates a spike in TN at all shallow bores (MB01, MB02 and MB03) during April 2024 (4.5mg/L, 1.2 mg/L and 3mg/L respectively). MB02 did not exceed the trigger value (of 1.5mg/L) and stabilised through the sampling period, with MB03 and MB01 still exceeding the guidelines in Nov 2024. CS01 had elevated TN above trigger levels in October 2024 at 2.4 mg/L (> trigger level of 1.5mg/L). CS02 and CS03 did not have consistent testing in 2024 due to the water levels too low to sample.

The TN levels at the monitoring sites during the monitoring period is shown in Table 6 and Figure 7, with the raw TN data shown in Appendix C.

Table 6 –Monitoring results TN

	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024
MB01	3.8	Not tested	3.3	No data	4.4	Not tested	4.5	3.2	3.2	3.7	3.9
MB02	0.67	Not tested	0.22	No data	0.29	Not tested	1.2	0.72	0.88	0.48	0.49
MB03	0.55	Not tested	2	No data	1.1	Not tested	3	Dry	Dry	Dry	2.8
MB04	4.4	Not tested	2.5	No data	2.9	Not tested	Not tested	Not tested	Dry	Not tested	Not tested
MB05	0.5	Not tested	0.32	No data	1.1	Not tested	Not tested	Not tested	Not tested	Not tested	Not tested
MB06	5	Not tested	3.7	No data	7.9	Not tested	Not tested	Not tested	Not tested	Not tested	Not tested
MB07	0.4	Not tested	0.25	No data	0.44	Not tested	Not tested	Not tested	Not tested	Not tested	Not tested
DB01	0.57	Not tested	<0.10	No data	0.14	Not tested	0.21	0.12	0.13	0.29	<0.10
CS01	1.2	Not tested	0.69	1.1	0.85	Not tested	0.82	1.1	1.4	2.4	0.75
CS02	0.45	Not tested	0.22	7.4	3.7	Not tested	Dry	Dry	Not tested	Not tested	Not tested
CS03	2.1	Not tested	0.57	1.9	0.75	Not tested	No data	0.89	Not tested	Not tested	Not tested

Figure 7: Surface water and groundwater TN


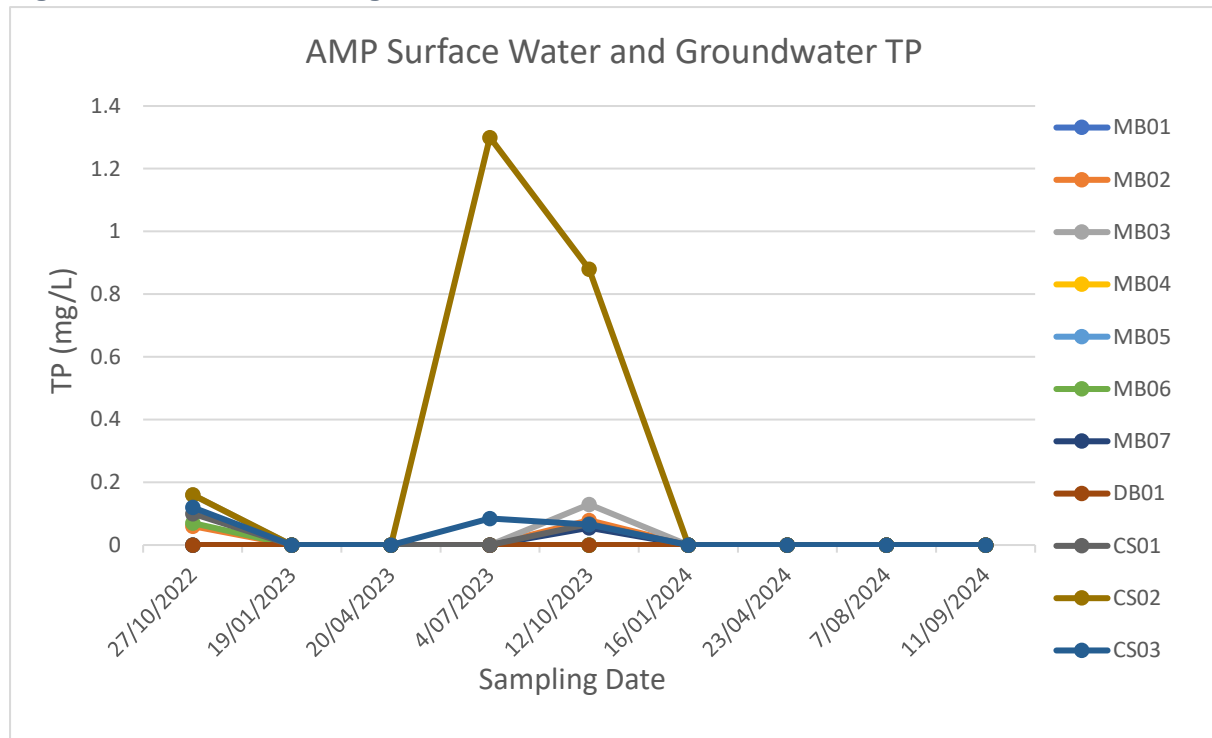
The long-term TN results to the 2018/2019 monitoring results are presented in Appendix D (Figure 13, Appendix D).

Total Phosphorus (TP) did not spike above the ANZECC and ARMCANZ (2000) trigger value (0.06 mg/L) in the 2024 sampling events. The TP levels at the monitoring sites during the monitoring period is shown in Table 7 and Figure 8, with the raw data shown in Appendix C.

When comparing the 2023 TP results to the 2018/2019 monitoring results (Figure 14, Appendix D) TP levels were high in CS02 in the 2023 reporting period, but with inconsistent results in 2024 comparison is not able to be surmised. CS01 continues to be well below ANZECC and ARMCANZ (2000) trigger values for TP 0.06mg/L.

Table 7 –Monitoring results TP

	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024
MB01	<0.050	Not tested	<0.050	No data	<0.050	Not tested	<0.050	<0.050	<0.050	<0.050	<0.050
MB02	0.06	Not tested	<0.050	No data	0.079	Not tested	<0.050	<0.050	<0.050	<0.050	<0.050
MB03	0.16	Not tested	<0.050	No data	0.13	Not tested	<0.050	Dry	Dry	Dry	<0.050
MB04	<0.050	Not tested	<0.050	Not tested	<0.050	Not tested	Not tested	Not tested	Dry	Not tested	Not tested
MB05	<0.050	Not tested	<0.050	Not tested	<0.050	Not tested	Not tested	Not tested	Not tested	Not tested	Not tested
MB06	0.07	Not tested	<0.050	Not tested	<0.050	Not tested	Not tested	Not tested	Not tested	Not tested	Not tested
MB07	<0.050	Not tested	<0.050	Not tested	0.055	Not tested	Not tested	Not tested	Not tested	Not tested	Not tested
DB01	<0.050	Not tested	<0.050	No data	<0.050	Not tested	<0.050	<0.050	<0.050	<0.050	<0.050
CS01	0.1	Not tested	<0.050	No data	0.067	Not tested	<0.050	<0.050	<0.050	<0.050	<0.050
CS02	0.16	Not tested	<0.050	1.3	0.88	Not tested	Dry	Dry	Not tested	Not tested	Not tested
CS03	0.12	Not tested	<0.050	0.085	0.065	Not tested	No data	<0.050	Not tested	Not tested	Not tested

Figure 8: Surface water and groundwater TP


2.7. Dissolved Metals

Dissolved metal (arsenic, cadmium, chromium, copper, mercury, nickel, lead and zinc) levels were generally found to be low and below the ANZECC & ARMCANZ (2000) trigger values for toxicants in freshwater ecosystems at 95% level of protection. All sites monitored showed some exceedance of Copper, Nickel or Zinc or a combination of all. With CS01 showing a brief exceedance in Chromium in the initial three months of testing.

The levels of Zinc in DB01 rose steadily after October 2023, this is likely to be due to leaching of metals from the bore pump and fittings. Zinc is also found naturally in groundwaters, usually as a sulphide.

The dissolved metal levels for each monitoring site for the monitoring period are shown in Appendix C.

2.8. Hydrocarbons

The Volatile Total Recoverable Hydrocarbons (TRH), Methyl tertiary-butyl ether, benzene, toluene, ethylbenzene, xylene and Naphthalene (MBTEXN), and Semi-volatile TRH laboratory results were found to be below the laboratory detection limit for all parameters at all monitoring sites sampled. The TRH, MBTEXN and semi-volatile TRH levels for each monitoring site for the monitoring period are shown in Appendix C.

2.9. PAHs in water

Polycyclic Aromatic Hydrocarbons (PAHs) laboratory results were found to be below laboratory detection limits at all monitoring sites during each monitoring event. The PAH levels for each monitoring site for the monitoring period are shown in Appendix C.

2.10. Surfactants

The Methyl Blue Active Substances (MBAS) analysis, which detects foaming agents and detergents as well as other anionic substances in water, showed all sites sampled had MBAS readings below the laboratory detection limit. Previous monitoring results for MBAS have showed either very low levels or below detection limits of MBAS at all monitoring sites.

The MBAS levels for each monitoring site for the monitoring period are shown in Appendix C.

2.11. Coliforms

Thermotolerant coliforms and *E.coli* have only been recorded in two instances since monitoring began. Thermotolerant coliforms and *E.coli* have been present since monitoring began in October 2022 in CS01, likely due to agricultural runoff from the neighbouring pastures. When the livestock were removed the levels dropped to a regular baseline level between 10-50cfu/100ml. In October 2024 a sharp rise was recorded, subsequently dropping back to baseline level again in November 2024. It is theorised that decomposition of a dead animal upstream caused these results. A single low-level event at MB01 was also recorded in October 2024 (>3cfu/100ml), of which the cause is unknown.

The TC and *E. coli* levels for each monitoring site for the monitoring period are shown in Appendix C.

3. Groundwater and Surface water Levels

3.1. Groundwater levels

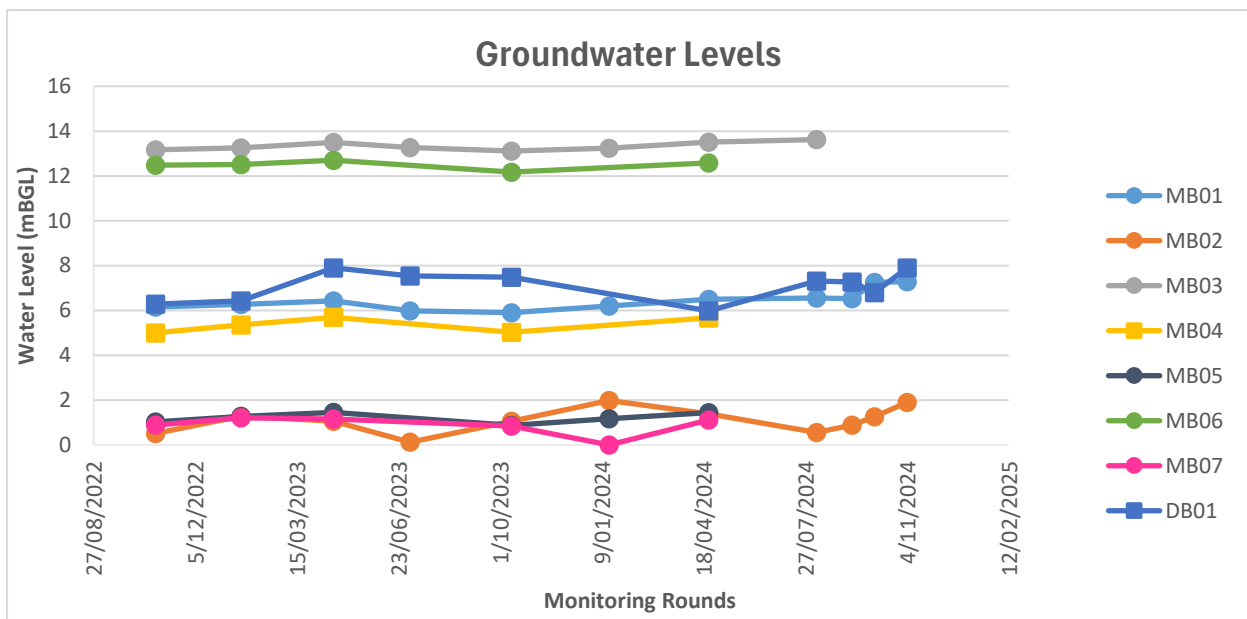
Groundwater levels in the shallow bores have fluctuated with some temporal lag as a result of rainfall events, whilst the deep bore has remained relatively stable, as it is connected to the regional aquifer. The previous 12-16 months have experienced less rainfall than average for the Albany area (Figure 1) which has seen some relative drops in water tables overall towards the end of 2024 which would be attributable to the deficiency in annual rainfall.

There is no indication that construction works at the AMP site have impacted on the superficial or confined aquifer groundwater levels. The groundwater levels recorded in the monitoring bores in 2022-2024 are shown in Table 8 and Figure 9.

Table 8 –Groundwater levels

	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	4/11/2024
MB01	6.15	6.27	6.42	5.98	5.90	6.20	6.50	6.55	6.52	7.25	7.28
MB02	0.51	1.28	1.05	0.12	1.05	1.98	1.39	0.55	0.88	1.25	1.90
MB03	13.16	13.25	13.49	13.27	13.11	13.24	13.51	13.62	Not tested	Not tested	14.27
MB04	5	5.35	5.69	Not tested	5.03	Not tested	5.67	Not tested	Not tested	Not tested	Not tested
MB05	1.02	1.27	1.45	Not tested	0.87	1.17	1.44	Not tested	Not tested	Not tested	Not tested
MB06	12.48	12.51	12.70	Not tested	12.17	Not tested	12.59	Not tested	Not tested	Not tested	Not tested
MB07	0.88	1.21	1.15	Not tested	0.84	Not tested	1.11	Not tested	Not tested	Not tested	Not tested
DB01	6.28	6.43	7.90	7.54	7.48	Dry	5.98	7.31	7.26	6.8	7.89

Figure 9: Groundwater levels



3.2. Surface water levels

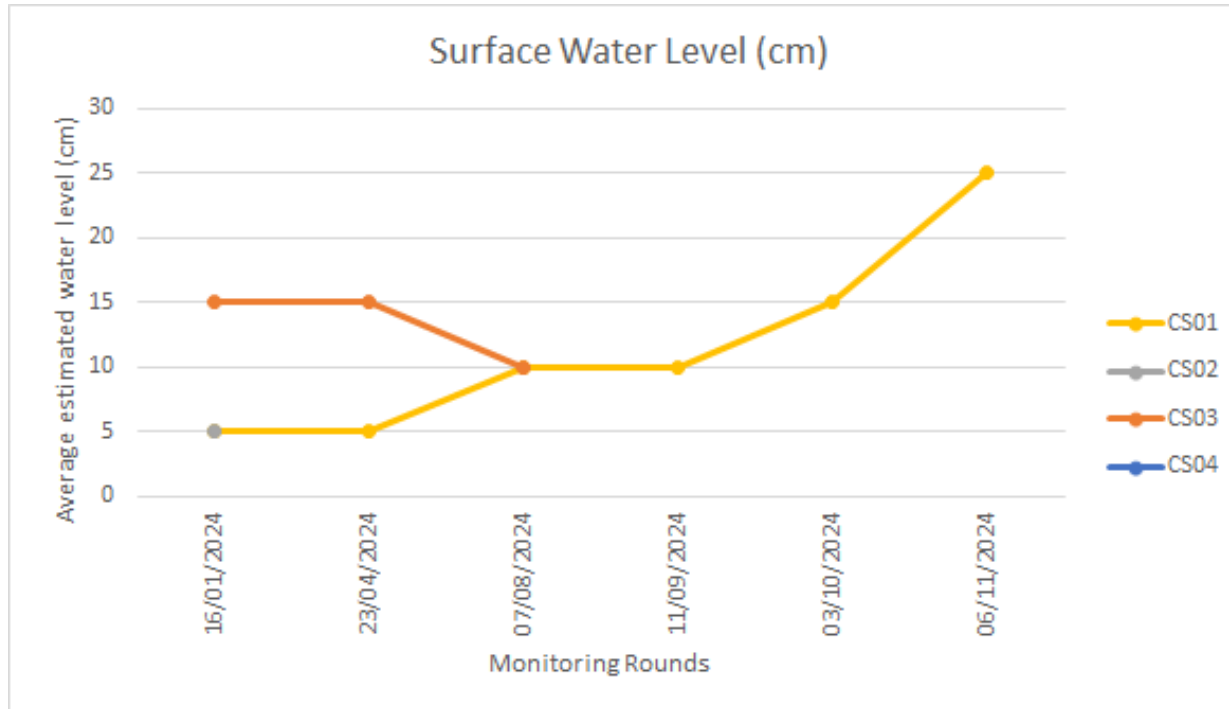
Surface water levels within the creek fluctuated consistent with rainfall, with no indication that construction works have impacted on surface water levels within the creek. Surface water levels for the monitoring period are presented in Table 9 and Figure 10. CS04 has been included but to date has had no water collected due to being dry during sample periods.

Table 9 – 2024 monitoring results surface water levels

Monitoring Site	Water level (cm)					
	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024
CS04	No running water	No running water	No running water	No running water	No running water	No running water
CS03	15-20*	15	10	No running water	No running water	No running water
CS02	5-10	No running water	Not measured	Not measured	Not measured	Not measured
CS01	5-10	5-10	10	10	15	25

* When a range of depth was recorded, the shallowest depth has been used.

Figure 10: Surface water levels



4. Fixed point photography

Fixed-point photography commenced in Oct 22 as part of the DWER endorsed monitoring program. Fixed-point photography monitoring sites (MB01-FP, MB02-FP, MB05-FP, MB05-FP2, MB07-FP, CS01-FP, CS02-FP and CS03-FP) show little change in the wetland morphology and vegetation structure since monitoring commenced and is shown in the fixed-point photography in Appendix E. The observed colour of the water at CS01 shows less tannin staining which may be attributable to the de-stocking of the property.

5. Conclusion and Recommendations

Water quality and level monitoring results showed that there has been no significant change to the surface water and groundwater quality parameters as a result of construction at the motocross track. Some variations in Turbidity occurred during construction and will be considered in future expansion on the site. Generally, water quality parameters at all monitoring sites were consistent with pre-development results and characteristic of agricultural land in the southwest of Australia. Fixed-point photography also showed there has been no significant change to the wetland morphology or vegetation structure as a result of construction. Rather the water color has significantly changed with the removal of the cattle grazing on the site, with cleared water noted in the fixed-point photography when comparing to previous years.

5.1. 2025 Proposed WQ testing regime

The proposed monitoring program for the 2025 monitoring period (presently pending approval/review from DWER) is included in Appendix A (Table 11). The monitoring program is to be reviewed in July 2025 or if construction for Stage 1B and 1C works commence.

At a meeting on 27th November 2024 between DWER, CoA, AMP and BDS, at the DWER regional office in Albany, the following was noted:

- There have been no trigger events since 2022 and there is high confidence that no contaminants are present onsite or coming into the site from surface waters during construction periods.
- The greatest risks for release of contaminants are during any major construction when large quantities of potential contaminants such as diesel, coolants and other hydrocarbons are onsite.
- During events, it was discussed that motorbike fuel tanks do not leak following an accident-causing contaminants. They would likely only leak after a catastrophic highway crash or similar where the tank integrity is compromised. Off road bikes are “designed” to survive spills etc.
- Two new sampling points designated SD1 and SD2 are to be investigated as surface sediment samples at the retention basin outflow.
- In light of the above discussions a refined sampling regime was agreed to until June 2025 or until Stage 2 works commenced, which the timing was unknown at the meeting.

Refer to the full 2025 monitoring program as agreed to by DWER, COA and the AMP until June 2025, which at that time will be reviewed.

6. References

ANZECC & ARMCANZ (Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand) (2000). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.

Appendix A

DWER endorsed monitoring program July 2024
& Proposed 2025 Program

Table 10 – DWER endorsed AMP Monitoring Program July 2024

Development Proposal	Monitoring Proposal	Monitoring Parameters	Approximate Timeframe
Motocross and 4WD Training Precincts complete. No construction proposed at Race Track Precinct.	<ul style="list-style-type: none"> Monitoring of MB1, MB2, MB3, DB1, CS1 and CS3 to commence for a minimum period of 4months, ensuring capture of the late winter period. Monitoring of Motocross Precinct bio-retention basin (inlet and outlet) to occur 3-4 times per year following frequent rainfall events (1EY event) upon completion. Monitoring of the surface water flows entering the precinct through the roadside drain (CS4) up to 2 times per year – flow dependent. CS2 removed from schedule as it is ineffectual. CS4 replaces as an inflow site. 	<ul style="list-style-type: none"> Visual inspection and fixed-point photography adjacent/within wetlands. Water levels. In-situ: pH, EC, TDS & Dissolved Oxygen. Lab: pH & EC. Turbidity. Thermotolerant Coliforms & E. coli. Surfactants. Nutrient suite. Heavy metals. TRH (C6-C10), MBTEXN & PAH. 	August September October & November 2024
*On demand *monitoring if major spill or environmental accident recorded. Level and composition of spill to determine testing regime.			Ongoing
A review of the monitoring program in consultation with DWER to occur with a further review every 2 years.			End of November 2024

Table 11 – Proposed AMP Monitoring Program for 2025

Development Proposal	Monitoring Proposal	Monitoring Parameters	Approximate Timeframe
Motocross and Offroad Precincts	<ul style="list-style-type: none"> MB1, MB2, MB3, DB1 and CS01, CS03 and CS04 (noting CS03 and CS04 when flowing water is present). Bioretention basin: sediment testing for baseline data collection. Location to be defined prior to February 2024 testing. Hydrocarbons only. Basin inlet/outlet water: tested following 1EY event, if possible, divert to sediment testing if required. Insitu and Hydrocarbons only. (SD1 and SD2) 	<ul style="list-style-type: none"> Continue visual inspection and fixed-point photography adjacent/within wetlands. BGL /Water levels. In-situ: pH, EC, TDS & Dissolved Oxygen. Laboratory: pH & EC. Turbidity (CS01, CS03 & CS04 only) Thermotolerant Coliforms & E. coli (CS01, CS03 & CS04 only) Heavy metals. TRH (C6-C10) & MBTEXN 	Quarterly: February, May 2025.
*On demand *monitoring if major spill or environmental accident recorded. Level and composition of spill to determine testing regime. See Monitoring Response and contingency plan below.			Ongoing
A review of the monitoring program in consultation with DWER.			June 2025
BDS to investigate the potential for sediment sampling from the entry/exit main retention pond as a means of detecting any contaminants and report back to the group prior to February monitoring round. Noted as SD1 and SD2 approximate locations on mapping to coincide with drainage pipes on the property, shown below.			By February 2025
A review of the monitoring program in consultation with DWER to occur should Stage 2 construction commence. Construction to be discussed with DWER 1 month prior to commencement to allow time for approval for any variation in this plan. Refer the Monitoring Program Mapping for details of agreed monitoring locations.			Ongoing 2025

Appendix B


Monitoring location plan July 2024 &
Proposed WQ testing regime 2025 (under review)




Albany Office:
29 Hercules Crescent
Albany, WA 6330
(08) 9842 1575

Denmark Office:
740 South Coast Highway
Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450
(08) 9072 1382






Overview Map Scale 1:500,000

Legend

- Subject Site
- Cadastre
- ★ Fixed Point Photography
- ⊕ Shallow groundwater bores
- Surface water sites
- ▲ Deep Bore

 Scale
1:7,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Albany Motorsport Park
Lot 5780 Down Road South
Drome, WA 6330

**Surface Water and Groundwater Monitoring Plan
July 2024**

Site Assessment	QA Check	Drawn by
N/A	DL	KPK
STATUS	FILE	DATE
FINAL	COA0019	03/02/2025

Appendix C

Water quality monitoring results

CS01

Parameters	Guideline	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024
Physicochemical												
pH	7 to 8.5 ¹⁾	3.48	6.42	5.94	5.81	5.88	5.59	6.10	5.89	7.18	7.61	6.85
pH - lab	7 to 8.5 ¹⁾	6.4	-	6.1	6.2	6.3	-	6.3	6.2	6.4	6.2	-
Electrical Conductivity (µS/cm)	300-1500 ¹⁾	401	802	409	534	705	745	906	600	650	565	771
Electrical Conductivity - lab (µS/cm)	300-1500 ¹⁾	580	-	860	-	690	-	920	650	700	570	810
Dissolved Oxygen (mg/L)		5.67	9.92	7.46	3.07	6.88	5.51	8.27	7.62	8.98	7.18	9.55
Dissolved Oxygen (%)	90 to 120 ¹⁾	57.2	111	76.9	33.5	69.3	59.5	83.2	74	86.9	71.3	97.8
Total Dissolved Solids (g/L)	<1 ¹⁾	0.686	0.513	0.266	0.341	0.451	0.477	0.58	0.395	0.427	0.362	0.494
Turbidity - lab (NTU)	10-100 ¹⁾	-	-	-	18	2.5	2.4	2.9	6.8	3.2	36	4.4
Nutrients (mg/L)												
TN	<1.5 ¹⁾	1.2	-	0.69	1.1	0.85	-	0.82	1.1	1.4	2.4	0.75
TKN_N*		1.0	-	0.41	1.0	0.58	-	0.56	0.88	1.2	2.3	0.56
NH3_N	<0.04 ¹⁾	0.01	-	<0.0050	0.012	0.0086	-	0.0087	<0.0050	0.026	0.083	0.017
NO3_N		0.21	-	0.28	0.12	0.27	-	0.26	0.21	0.14	0.57	0.86
NO2_N		<0.050	-	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.20	<0.20
NOx_N	<0.1 ¹⁾	0.21	-	0.28	0.11	0.27	-	0.26	0.21	0.16	0.13	0.19
TP (Acid Extractable Metals - Groundwater)		-	-	-	-	-	-	<0.050	0.069	<0.050	0.071	<0.050
TP (Dissolved Metals - Groundwater)	<0.06 ¹⁾	0.16	-	<0.050	<0.050	0.067	-	<0.050	<0.050	<0.050	<0.050	<0.050
PO4_P	<0.03 ¹⁾	0.019	-	0.0054	0.021	0.0065	-	<0.0050	0.010	0.050	0.011	<0.050
Dissolved Metals (µg/L)												
Arsenic, As	<13 ²⁾	<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Cadmium, Cd	<0.2 ²⁾	<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	0.17	<0.10	<0.10
Chromium, Cr	<1.0 ²⁾	1.1	-	1	1.1	<1.0	-	<1.0	<1.0	<1.0	1.4	<1.0
Copper, Cu	<1.4 ²⁾	<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	3.1	10	7.7
Mercury, Hg	<0.6 ²⁾	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050
Nickel, Ni	<11 ²⁾	<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	1.3
Lead Pb	<3.4 ²⁾	<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc, Zn	<8.0 ²⁾	8.2	-	1	2.2	1.1	-	3.7	4.5	7.0	8.9	22
Volatile Total Recoverable Hydrocarbons (µg/L)												
TRH C6 - C9		<10	-	<10	<10	<10	-	<10	<10	<10	<10	<10
TRH C6 - C10		<10	-	<10	<10	<10	-	<10	<10	<10	<10	<10
TRH C6 -C10 less BTEX (F1)		<10	-	<10	<10	<10	-	<10	<10	<10	<10	<10
MBTEXN (µg/L)												
MTBE		<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	950 ²⁾	<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene		<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene		<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene		<2.0	-	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	350 ²⁾	<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Total Xylene		<3.0	-	<3.0	<3.0	<3.0	-	<3.0	<3.0	<3.0	<3.0	<3.0
Naphthalene		<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Semi-volatile Total Recoverable Hydrocarbons (µg/L)												
TRH C10 - C14		<50	-	<50	<50	<50	-	<50	<50	<50	150	<50
TRH C15 - C28		<100	-	<100	<100	<100	-	<100	<100	220	140	<100
TRH C29 - C36		<100	-	<100	<100	<100	-	<100	<100	<100	<100	<100
Total +ve TRH C10-C36		<50	-	<50	<50	<50	-	<50	<50	220	290	<50
TRH >C10 - C16		<50	-	<50	<50	<50	-	<50	<50	53	150	<50
TRH >C10 -C16 less N (F2)		<50	-	<50	<50	<50	-	<50	<50	53	150	<50
TRH >C16 - C34		<100	-	<100	<100	<100	-	<100	<100	240	140	<100
TRH >C34 - C40		<100	-	<100	<100	<100	-	<100	<100	<100	<100	<100
Total +ve TRH >C10-C40		<50	-	<50	<50	<50	-	<50	<50	290	290	<50
PAHs in water (µg/L)												
Naphthalene	16 ²⁾	<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)anthracene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b,j,k)fluoranthene		<0.20	-	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)pyrene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Indeno(1,2,3-c,d)pyrene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenzo(a,h)anthracene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(g,h,i)perylene		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Total +ve PAH's		<0.10	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Surfactants (mg/L)												
MBAS		0.1	-	0.16	<0.10	<0.20	-	<0.10	<0.10	<0.10	<0.10	<0.10
Microbial Testing (cfu/100mL)												
Thermotolerant Coliforms		60	-	100	-	10	-	50	20	10	350	20
E.coli		60	-	100	-	10	-	50	20	10	280	20

¹⁾ ANZECC and ARMCANZ (2000) Trigger values for South-west Australia for slightly-disturbed wetland ecosystems; target exceedance printed in red.

²⁾ ANZECC and ARMCANZ (2000) Trigger values for toxicants in freshwater ecosystems at 95% level of protection; target exceedance printed in red.

* TKN as N by calculation

MB01

Parameters	Guideline	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024
Physicochemical												
pH	7 to 8.5 ¹⁾	3.59	5.38	5.32	5.45	5.71	4.86	5.44	5.25	5.62	7.97	5.48
pH - lab	7 to 8.5 ¹⁾	5.7	-	5.4	-	5.90	-	5.4	5.5	5.6	6.1	6
Electrical Conductivity (µS/cm)	300-1500 ¹⁾	311	287	295	280	292	279	338	279	274	278	275
Electrical Conductivity - lab (µS/cm)	300-1500 ¹⁾	250	-	310	-	270	-	270	310	280	270	290
Dissolved Oxygen (mg/L)		0.8	1.2	2.98	2.77	6.84	4.5	2.05	1.34	3.45	9.51	5.76
Dissolved Oxygen (%)		8.4	14.2	31.6	29.2	71.0	48.5	22.1	14.3	37	99.4	61.3
Total Dissolved Solids (g/L)	<1 ¹⁾	0.202	0.186	0.191	0.182	0.190	0.181	0.219	0.182	0.183	0.161	0.179
Turbidity - lab (NTU)		-	-	-	-	3.0	-	19	130	17	3.9	1.3
Nutrients (mg/L)												
TN	<1.5 ¹⁾	3.8	-	3.3	-	4.4	-	4.5	3.2	3.2	3.7	3.9
TKN_N*		0.8	-	0.11	-	0.59	-	0.86	0.27	0.72	0.51	0.72
NH ₃ _N	<0.04 ¹⁾	<0.0050	-	<0.0050	-	0.014	-	0.0066	<0.0050	0.014	0.068	0.048
NO ₃ _N		2.8	-	3.2	-	3.8	-	3.6	2.9	2.5	14	14
NO ₂ _N		0.23	-	<0.0050	-	<0.0050	-	<0.0050	<0.0050	<0.050	<0.020	<0.020
NO _x _N	<0.1 ¹⁾	3.0	-	3.2	-	3.8	-	3.6	2.9	2.5	3.2	3.2
Groundwater	<0.06 ¹⁾	<0.0050	-	<0.0050	-	<0.0050	-	<0.0050	<0.0050	<0.050	<0.050	<0.050
TP (Dissolved Metals - Groundwater)		-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
PO ₄ _P	<0.03 ¹⁾	<0.0050	-	<0.0050	-	0.005	-	0.0072	<0.0050	0.0084	<0.0050	<0.0050
Dissolved Metals (µg/L)												
Arsenic, As	<13 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Cadmium, Cd	<0.2 ²⁾	<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium, Cr	<1.0 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Copper, Cu	<1.4 ²⁾	<1.0	-	<1.0	-	1.5	-	<1.0	<1.0	<1.0	3.1	3.6
Mercury, Hg	<0.6 ²⁾	<0.050	-	<0.050	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050
Nickel, Ni	<11 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Lead Pb	<3.4 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc, Zn	<8.0 ²⁾	5.5	-	1.5	-	27	-	14	4	2.9	33	38
Volatile Total Recoverable Hydrocarbons (µg/L)												
TRH C6 - C9		<10	-	<10	-	<10	-	<10	<10	<10	<10	<10
TRH C6 - C10		<10	-	<10	-	<10	-	<10	<10	<10	<10	<10
TRH C6 -C10 less BTEX (F1)		<10	-	<10	-	<10	-	<10	<10	<10	<10	<10
MBTEXN (µg/L)												
MTBE		<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	950 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene		<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene		<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene		<2.0	-	<2.0	-	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	350 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Total Xylene		<3.0	-	<3.0	-	<3.0	-	<3.0	<3.0	<3.0	<3.0	<3.0
Naphthalene		<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Semi-volatile Total Recoverable Hydrocarbons (µg/L)												
TRH C10 - C14		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
TRH C15 - C28		<100	-	<100	-	<100	-	<100	<100	<100	<100	<100
TRH C29 - C36		<100	-	<100	-	<100	-	<100	<100	<100	<100	<100
Total +ve TRH C10-C36		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
TRH >C10 - C16		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
TRH >C10 -C16 less N (F2)		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
TRH >C16 - C34		<100	-	<100	-	<100	-	<100	<100	<100	<100	<100
TRH >C34 - C40		<100	-	<100	-	<100	-	<100	<100	<100	<100	<100
Total +ve TRH >C10-C40		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
PAHs in water (µg/L)												
Naphthalene	16 ²⁾	<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)anthracene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b,j,k)fluoranthene		<0.20	-	<0.20	-	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)pyrene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Indeno(1,2,3-c,d)pyrene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenzo(a,h)anthracene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(g,h,i)perylene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Total +ve PAH's		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Surfactants (mg/L)												
MBAS		<0.10	-	0.11	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Microbial Testing (cfu/100mL)												
Thermotolerant Coliforms		<10	-	<10	-	20	-	20	<10	<10	2	<1
E.coli		<10	-	<10	-	20	-	20	<10	<10	1	<1

¹⁾ ANZECC and ARMCANZ (2000) Trigger values for South-west Australia for slightly-disturbed wetland ecosystems; target exceedance printed in red.

²⁾ ANZECC and ARMCANZ (2000) Trigger values for toxicants in freshwater ecosystems at 95% level of protection, stated otherwise; target exceedance printed in red.

* TKN as N by calculation

MB02

Parameters	Guideline	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024
Physicochemical												
pH	7 to 8.5 ¹⁾	2.93	5.23	5.41	5.73	4.96	4.52	5.49	5.58	4.77	7.48	4.89
pH - lab	7 to 8.5 ¹⁾	5.8	-	5	-	4.9	-	4.8	4.7	4.6	4.4	4.6
Electrical Conductivity (µS/cm)	300-1500 ¹⁾	280	199	204	286	239	202	205	293	260	275	262
Electrical Conductivity - lab (µS/cm)	300-1500 ¹⁾	240	-	190	-	230	-	200	280	280	280	260
Dissolved Oxygen (mg/L)		0.9	1.07	3.22	2.07	1.13	1.48	1.21	1.41	2.86	2.4	2.62
Dissolved Oxygen (%)		9.5	13	36.5	19.8	11.80	16.1	13.2	14.9	30.6	24.5	27.5
Total Dissolved Solids (g/L)	<1 ¹⁾	0.182	0.132	0.132	0.186	0.156	0.131	0.134	0.19	0.724	0.179	0.169
Turbidity - lab (NTU)		-	-	-	-	80	-	460	380	270	14	190
Nutrients (mg/L)												
TN	<1.5 ¹⁾	0.67	-	0.22	-	0.29	-	1.2	0.72	0.88	0.48	0.49
TKN_N*		0.58	-	0.22	-	0.29	-	1.2	0.71	0.88	0.45	0.46
NH ₃ _N	<0.04 ¹⁾	0.16	-	0.017	-	0.073	-	0.040	0.015	0.029	0.064	0.023
NO ₃ _N		0.085	-	<0.0050	-	0.0064	-	0.020	0.007	<0.050	0.13	0.12
NO ₂ _N		0.0071	-	<0.0050	-	<0.0050	-	<0.0050	<0.0050	<0.050	<0.020	<0.020
NO _x _N	<0.1 ¹⁾	0.1	-	0.0050	-	0.0081	-	0.021	0.0086	<0.050	0.031	0.029
TP (Acid Extractable Metals - Groundwater)	<0.06 ¹⁾	0.06	-	<0.050	-	0.079	-	0.11	0.062	<0.050	<0.050	0.12
TP (Dissolved Metals - Groundwater)		-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
PO ₄ _P	<0.03 ¹⁾	<0.0050	-	<0.0050	-	<0.0050	-	<0.0050	<0.0050	0.0056	0.0055	0.0094
Dissolved Metals (µg/L)												
Arsenic, As	<13 ²⁾	<1.0	-	1.4	-	<1.0	-	2.3	<1.0	<1.0	<1.0	<1.0
Cadmium, Cd	<0.2 ²⁾	<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium, Cr	<1.0 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Copper, Cu	<1.4 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	1.6	4.9	<1.0
Mercury, Hg	<0.6 ²⁾	<0.050	-	<0.050	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050
Nickel, Ni	<11 ²⁾	4.8	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Lead Pb	<3.4 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc, Zn	<8.0 ²⁾	13	-	4.9	-	3.9	-	7.3	6.8	8.9	12	15
VolatileTotal Recoverable Hydrocarbons (µg/L)												
TRH C6 - C9		<10	-	<10	-	<10	-	<10	<10	<10	<10	<10
TRH C6 - C10		<10	-	<10	-	<10	-	<10	<10	<10	<10	<10
TRH C6-C10 less BTEX (F1)		<10	-	<10	-	<10	-	<10	<10	<10	<10	<10
MBTEX (µg/L)												
MTBE		<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	950 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene		<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene		<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene		<2.0	-	<2.0	-	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	350 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Total Xylene		<3.0	-	<3.0	-	<3.0	-	<3.0	<3.0	<3.0	<3.0	<3.0
Naphthalene		<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Semi-volatileTotal Recoverable Hydrocarbons (µg/L)												
TRH C10 - C14		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
TRH C15 - C28		110	-	<100	-	<100	-	<100	<100	<100	<100	<100
TRH C29 - C36		<100	-	<100	-	<100	-	<100	<100	<100	<100	<100
Total +ve TRH C10-C36		110	-	<50	-	<50	-	<50	<50	<50	<50	<50
TRH >C10 - C16		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
TRH >C10 - C16 less N (F2)		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
TRH >C16 - C34		120	-	<100	-	<100	-	<100	<100	<100	<100	<100
TRH >C34 - C40		<100	-	<100	-	<100	-	<100	<100	<100	<100	<100
Total +ve TRH >C10-C40		120	-	<50	-	<50	-	<50	<50	<50	<50	<50
PAHs in water (µg/L)												
Naphthalene	16 ²⁾	<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)anthracene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b,j,k)fluoranthene		<0.20	-	<0.20	-	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)pyrene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Indeno(1,2,3-c,d)pyrene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenzo(a,h)anthracene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(g,h,i)perylene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Total +ve PAH's		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
MBAS												
		<0.10	-	0.21	-	<0.10	-	<0.10	<0.10	<0.10	<10	<0.10
Microbial Testing (cfu/100ml)												
Thermotolerant Coliforms		<10	-	<10	-	<10	-	<10	<10	<10	<1	<10
E.coli		<10	-	<10	-	<10	-	<10	<10	<10	<1	<10

¹⁾ ANZECC and ARM CANZ (2000) Trigger values for South-west Australia for slightly-disturbed wetland ecosystems; target exceedance printed in red.

²⁾ ANZECC and ARM CANZ (2000) Trigger values for toxicants in freshwater ecosystems at 95% level of protection; target exceedance printed in red.

* TKN as N by calculation

MB03

Parameters	Guideline	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024	25/02/2025
Physicochemical													
pH	7 to 8.5 ¹⁾	3.61	5.9	5.24	6.33	5.12	5.13	5.13	Dry	Dry	-	10.83	5.98
pH - lab	7 to 8.5 ¹⁾	6.8	-	5.4	-	5.40	-	5.3	Dry	Dry	-	5.4	5.6
Electrical Conductivity (uS/cm)	300-1500 ¹⁾	483	250	208	554	242	209	184	Dry	Dry	-	121	336
Electrical Conductivity - lab (µS/cm)	300-1500 ¹⁾	740	-	190	-	220	-	200	Dry	Dry	-	260	380
Dissolved Oxygen (mg/L)		3.15	5.05	9.24	6.31	5.55	6.17	4.17	Dry	Dry	-	7.61	8.02
Dissolved Oxygen (%)		33.2	61.8	99.9	64.3	59.2	66.3	44	Dry	Dry	-	78.2	93.5
Total Dissolved Solids (g/L)	<1 ¹⁾	0.314	0.163	0.135	0.355	0.157	0.136	0.120	Dry	Dry	-	0.079	0.218
Turbidity - lab (NTU)	10-100 ¹⁾	-	-	-	-	950	-	1100	Dry	Dry	-	290	1000
Dissolved Metals (µg/L)													
TN	<1.5 ¹⁾	0.55	-	2.0	-	1.1	-	3.0	-	-	-	2.8	2.9
TKN_N*		0.33	-	0.13	-	0.63	-	1.8	-	-	-	0.94	2.1
NH ₃ _N	<0.04 ¹⁾	<0.0050	-	<0.0050	-	<0.0050	-	<0.0050	-	-	-	0.033	0.076
NO ₃ _N		0.21	-	1.9	-	0.48	-	1.2	-	-	-	8.4	0.86
NO ₂ _N		0.018	-	8.3	-	<0.0050	-	<0.0050	-	-	-	<0.0020	<0.0050
Nox_N	<0.1 ¹⁾	0.2	-	1.9	-	0.49	-	1.2	-	-	-	1.9	0.86
TP (Acid Extractable Metals - Groundwater)		-	-	-	-	-	-	0.1	-	-	-	0.15	0.41
TP (Dissolved Metals - Groundwater)	<0.06 ¹⁾	0.16	-	<0.050	-	0.13	-	<0.050	-	-	-	<0.050	<0.050
PO ₄ _P	<0.03 ¹⁾	<0.0050	-	<0.0050	-	<0.0050	-	<0.0050	-	-	-	0.019	<0.0050
Volatile Total Recoverable Hydrocarbons (µg/L)													
TRH C6 - C9		220	-	<10	-	<10	-	<10	-	-	-	<10	<10
TRH C6 - C10		270	-	<10	-	<10	-	<10	-	-	-	<10	<10
TRH C6 - C10 less BTEX (F1)		270	-	<10	-	<10	-	<10	-	-	-	<10	<10
MBTEXN (µg/L)													
MTBE		<1.0	-	<1.0	-	<1.0	-	<1.0	-	-	-	<1.0	<1.0
Benzene	950 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	-	-	-	<1.0	<1.0
Toluene		<1.0	-	<1.0	-	<1.0	-	<1.0	-	-	-	<1.0	4.2
Ethylbenzene		<1.0	-	<1.0	-	<1.0	-	<1.0	-	-	-	<1.0	<1.0
m+p-xylene		<2.0	-	<2.0	-	<2.0	-	<2.0	-	-	-	<2.0	<2.0
o-xylene	350 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	-	-	-	<1.0	<1.0
Total Xylene		<3.0	-	<3.0	-	<3.0	-	<3.0	-	-	-	<3.0	<3.0
Naphthalene		<1.0	-	<1.0	-	<1.0	-	<1.0	-	-	-	<1.0	<1.0
Semi-volatile Total Recoverable Hydrocarbons (µg/L)													
TRH C10 - C14		68	-	<50	-	<50	-	<50	-	-	-	<50	<50
TRH C15 - C28	950 ²⁾	630	-	130	-	<100	-	<100	-	-	-	<100	<100
TRH C29 - C36		1000	-	250	-	<100	-	<100	-	-	-	<100	<100
Total +ve TRH C10-C36		1698	-	380	-	<50	-	<50	-	-	-	<50	<50
TRH >C10 - C16		68	-	<50	-	<50	-	<50	-	-	-	<50	<50
TRH >C10 - C16 less N (F2)	350 ²⁾	68	-	<50	-	<50	-	<50	-	-	-	<50	<50
TRH >C16 - C34		1400	-	310	-	<100	-	<100	-	-	-	<100	<100
TRH >C34 - C40		970	-	190	-	<100	-	<100	-	-	-	<100	<100
Total +ve TRH >C10-C40		2438	-	500	-	<50	-	<50	-	-	-	<50	<50
PAHs in water (µg/L)													
Naphthalene	16 ²⁾	<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Acenaphthylene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Acenaphthene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Fluorene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Phenanthrene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Anthracene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Fluoranthene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Pyrene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Benzo(a)anthracene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Chrysene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Benzo(b,j+k)fluoranthene		<0.20	-	<0.20	-	<0.20	-	<0.20	-	-	-	<0.20	<0.20
Benzo(a)pyrene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Indeno(1,2,3-c,d)pyrene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Dibenzo(a,h)anthracene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Benzo(g,h,i)perylene		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Total +ve PAH's		<0.10	-	<0.10	-	<0.10	-	<0.10	-	-	-	<0.10	<0.10
Surfactants (mg/L)													
MBAS		<0.10	-	0.24	-	<0.10	-	0.12	-	-	-	<0.10	<0.10
Microbial Testing (cfu/100mL)													
Thermotolerant Coliforms		30	-	<10	-	<10	-	<10	-	-	-	<10	<10
E.coli		30	-	<10	-	<10	-	<10	-	-	-	<10	<10

¹⁾ ANZECC and ARMICANZ (2000) Trigger values for South-west Australia for slightly-disturbed wetland ecosystems; target exceedance printed in red.

²⁾ ANZECC and ARMICANZ (2000) Trigger values for toxicants in freshwater ecosystems at 95% level of protection, stated otherwise; target exceedance printed in red.

* TKN as N by calculation

03/10/24 no groundwater present to test (suspected surface water only)

** 11/09/2024 not enough for laboratory testing.

DB01

Parameters	Guideline	27/10/2022	19/01/2023	20/04/2023	4/07/2023	12/10/2023	16/01/2024	23/04/2024	7/08/2024	11/09/2024	3/10/2024	6/11/2024
Physicochemical												
pH	7 to 8.5 ¹⁾	3.65	5.3	5.42	5.56	5.66	-	5.21	5.1	5.54	7.29	5.13
pH - lab	7 to 8.5 ¹⁾	6.2	-	5.4	-	6.0	-	5.4	5.4	5.6	5.8	5.3
Electrical Conductivity (µS/cm)	300-1500 ¹⁾	1210	1370	1370	1370	1300	-	1190	1170	1120	1220	1240
Electrical Conductivity - lab (µS/cm)	300-1500 ¹⁾	1000	-	1300	-	1200	-	1200	1200	1200	1200	1200
Dissolved Oxygen (mg/L)		3.87	2.25	9.5	1.87	2.96	-	4.38	5.24	17.4	5.02	6.89
Dissolved Oxygen (%)		40.7	25.6	100.7	19.2	31.4	-	48.9	53	176	51.7	74.8
Total Dissolved Solids (g/L)	<1 ¹⁾	0.775	0.874	0.88	0.88	0.832	-	0.764	0.751	0.741	0.778	0.779
Turbidity - lab (NTU)		-	-	-	-	3.5	-	6.3	13	0.24	1.4	0.34
Nutrients (mg/L)												
TN	<1.5 ¹⁾	0.57	-	<0.10	-	0.14	-	0.21	0.12	0.13	0.29	<0.10
TKN_N*		0.21	-	0.14	-	0.13	-	0.22	0.10	0.13	0.15	<0.10
NH3_N	<0.04 ¹⁾	<0.0050	-	<0.0050	-	0.026	-	<0.0050	0.017	0.024	0.12	<0.0050
NO3_N		0.35	-	0.0097	-	0.0055	-	<0.0050	0.018	<0.0050	0.63	<0.020
NO2_N		<0.0050	-	<0.0050	-	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.020	<0.020
NOx_N	<0.1 ¹⁾	0.35	-	0.011	-	0.0077	-	<0.0050	0.023	<0.0050	0.15	<0.0050
TP (Acid Extractable Metals - Groundwater)		-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
TP (Dissolved Metals - Groundwater)	<0.06 ¹⁾	<0.050	-	<0.050	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050
PO4_P	<0.03 ¹⁾	0.019	-	<0.0050	-	<0.0050	-	<0.0050	<0.0050	0.0091	0.012	<0.0050
Dissolved Metals (µg/L)												
Arsenic, As	<13 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Cadmium, Cd	<0.2 ²⁾	0.1	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium, Cr	<1.0 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Copper, Cu	<1.4 ²⁾	<1.0	-	<1.0	-	<1.0	-	10	2.0	3.3	2.6	2.9
Mercury, Hg	<0.6 ²⁾	<0.050	-	<0.050	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050
Nickel, Ni	<11 ²⁾	1.8	-	<1.0	-	1.1	-	4.3	4.4	2	8.1	9.1
Lead, Pb	<3.4 ²⁾	<1.0	-	<1.0	-	<1.0	-	16	2.8	<1.0	<1.0	1.1
Zinc, Zn	<8.0 ²⁾	46	-	3.4	-	14	-	35	110	240	150	220
Volatile Total Recoverable Hydrocarbons (µg/L)												
TRH C6 - C9		<10	-	<10	-	<10	-	<10	<10	<10	<10	<10
TRH C6 - C10		<10	-	<10	-	<10	-	<10	<10	<10	<10	<10
TRH C6 -C10 less BTEX (F1)		<10	-	<10	-	<10	-	<10	<10	<10	<10	<10
MBTEXN (µg/L)												
MTBE		<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	950 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene		<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene		<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene		<2.0	-	<2.0	-	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	350 ²⁾	<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Total Xylene		<3.0	-	<3.0	-	<3.0	-	<3.0	<3.0	<3.0	<3.0	<3.0
Naphthalene		<1.0	-	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Semi-volatile Total Recoverable Hydrocarbons (µg/L)												
TRH C10 - C14		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
TRH C15 - C28		<100	-	<100	-	<100	-	<100	<100	<100	<100	<100
TRH C29 - C36		<100	-	<100	-	<100	-	<100	<100	<100	<100	<100
Total +ve TRH C10-C36		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
TRH >C10 - C16		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
TRH >C10 -C16 less N (F2)		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
TRH >C16 - C34		<100	-	<100	-	<100	-	<100	<100	<100	<100	<100
TRH >C34 - C40		<100	-	<100	-	<100	-	<100	<100	<100	<100	<100
Total +ve TRH >C10-C40		<50	-	<50	-	<50	-	<50	<50	<50	<50	<50
PAHs in water (µg/L)												
Naphthalene	16 ²⁾	<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)anthracene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b,j,k)fluoranthene		<0.20	-	<0.20	-	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)pyrene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Indeno(1,2,3-c,d)pyrene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenzo(a,h)anthracene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(g,h,i)perylene		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Total +ve PAH's		<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Surfactants (mg/L)												
MBAS		<0.10	-	0.27	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10
Microbial Testing (cfu/100mL)												
Thermotolerant Coliforms		10	-	<10	-	<10	-	<10	<10	<1	<1	<1
E.coli		10	-	<10	-	<10	-	<10	<10	<1	<1	<1

¹⁾ ANZECC and ARMCANZ (2000) Trigger values for South-west Australia for slightly-disturbed wetland ecosystems; target exceedance printed in red.

²⁾ ANZECC and ARMCANZ (2000) Trigger values for toxicants in freshwater ecosystems at 95% level of protection; target exceedance printed in red.

* TKN as N by calculation

Appendix D

Long-term water quality monitoring results

Long-term water quality monitoring results

Groundwater and surface water monitoring was conducted at the AMP site in 2018 to 2019. Water quality monitoring results from Oct 22 to Nov 24 are compared to monitoring results from the 2018/2019 monitoring period for pH, EC, TN and TP. Noting, monitoring sites have altered since the 2018/2019 monitoring period. CS01, CS02 and DB01 remain in the same location, whilst SB04 is in the same location as MB02 and SB09 is in the same location as MB07. All other monitoring sites as part of the 2018/2019 monitoring program are either not in the vicinity of the current monitoring sites or they have insufficient data to be compared to the current sites.

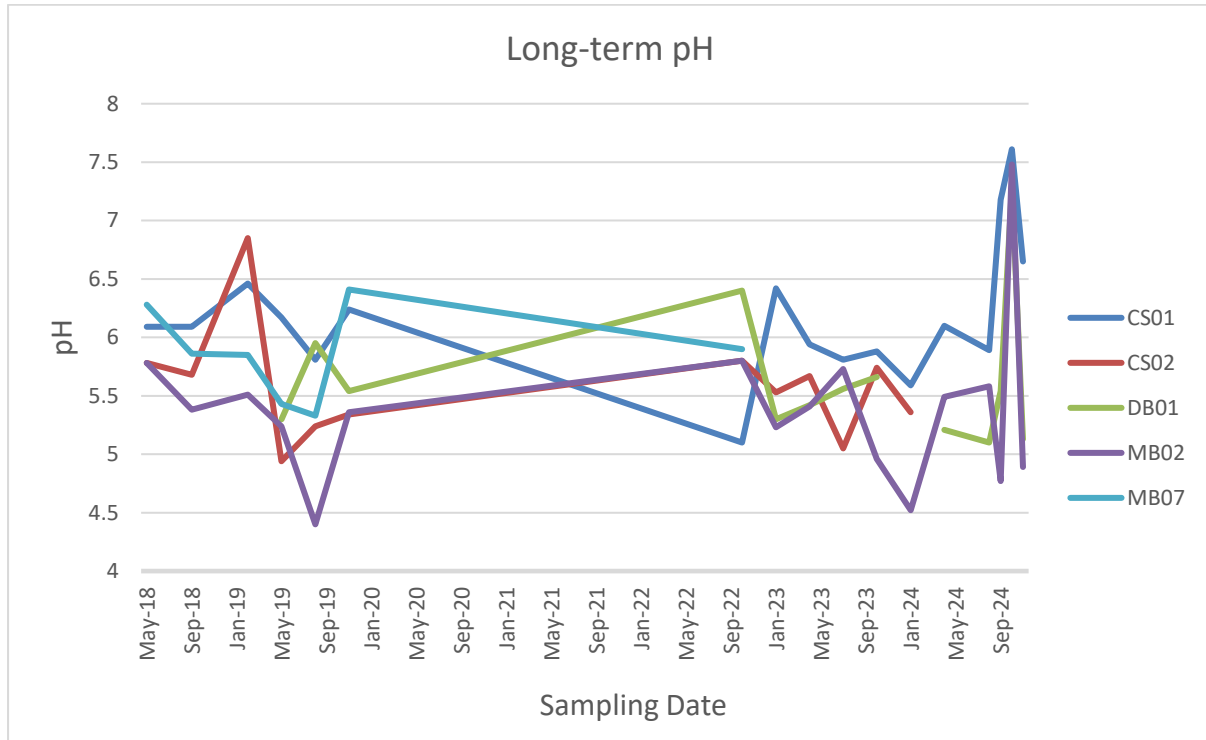


Figure 11: Long-term pH levels at the AMP site (May 2018 to November 2024)

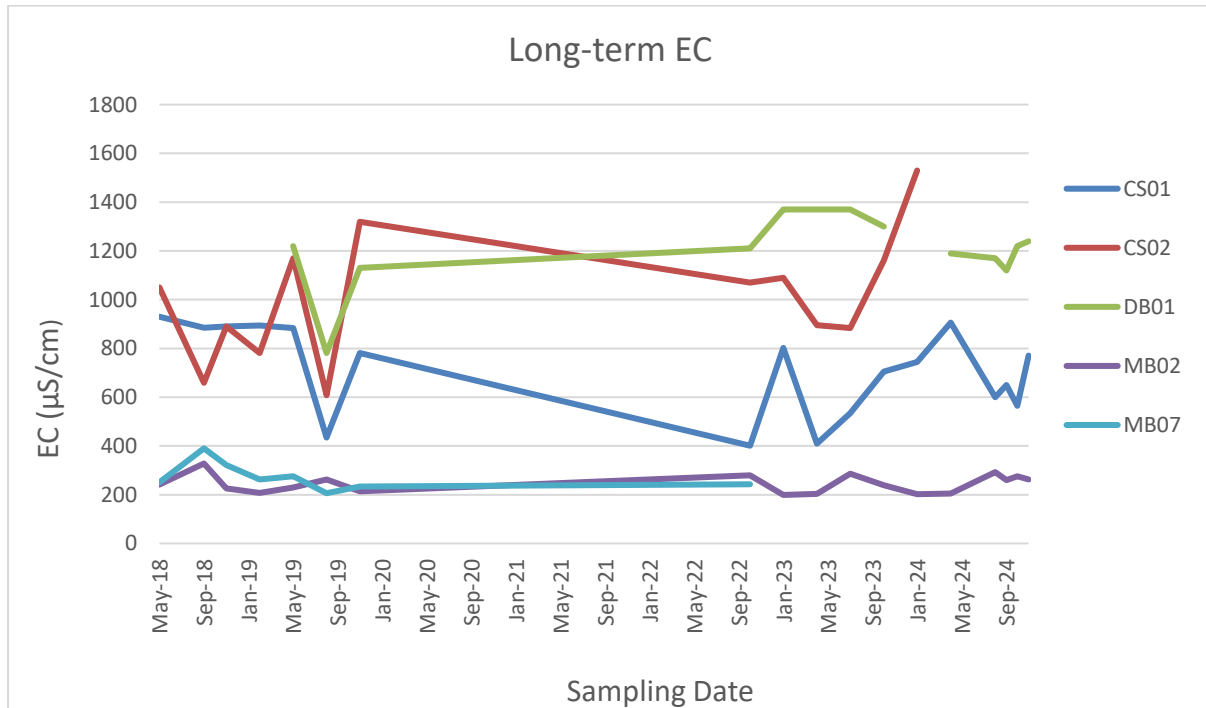


Figure 12: Long-term EC levels at the AMP site (February 2018 to November 2024)

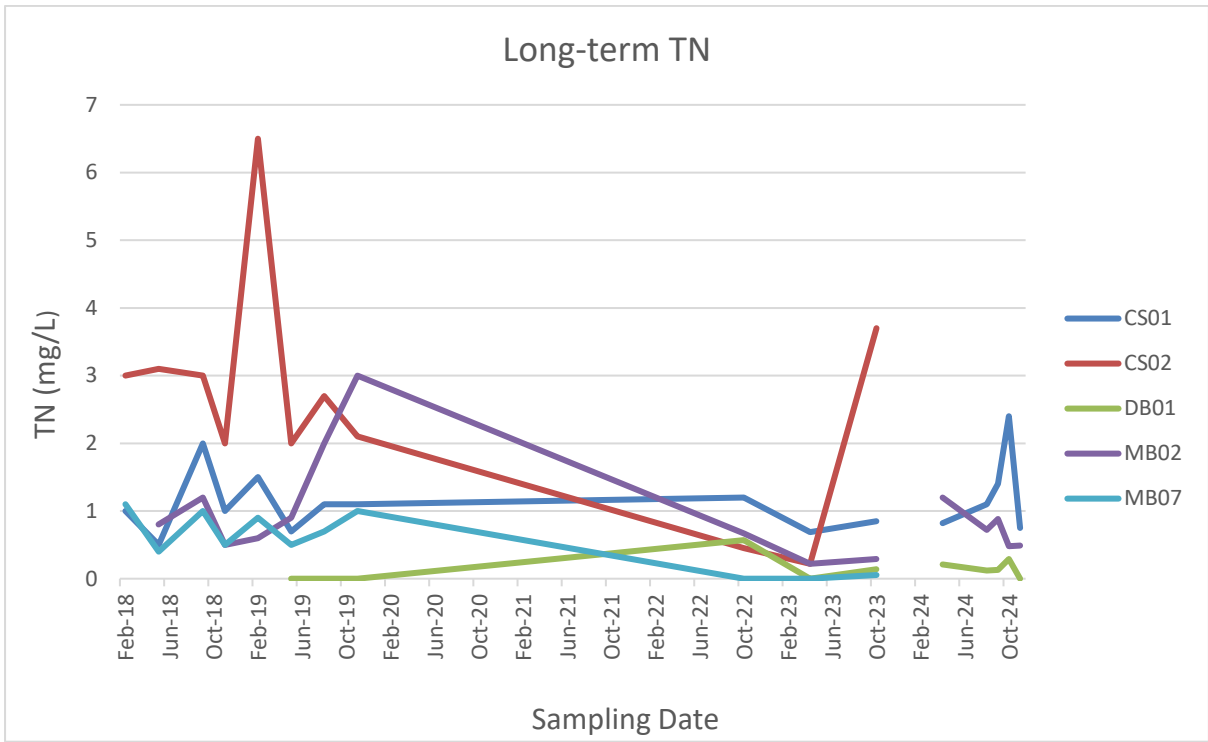


Figure 13: Long-term TN levels at the AMP site (February 2018 to November 2024)

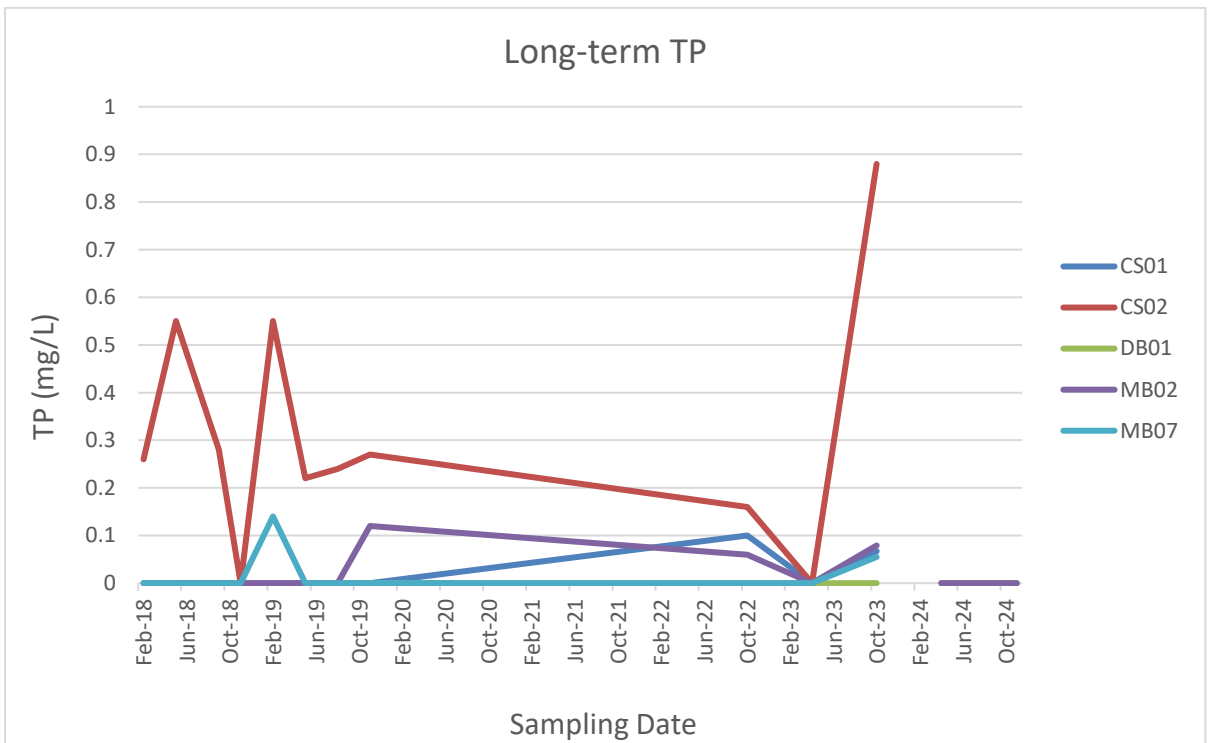


Figure 14: Long-term TP levels at the AMP site (February 2018 to November 2024)

Appendix E

Fixed-point photography

Fixed Point Photography

MB1-FP

27 Oct 2022



19 Jan 2023



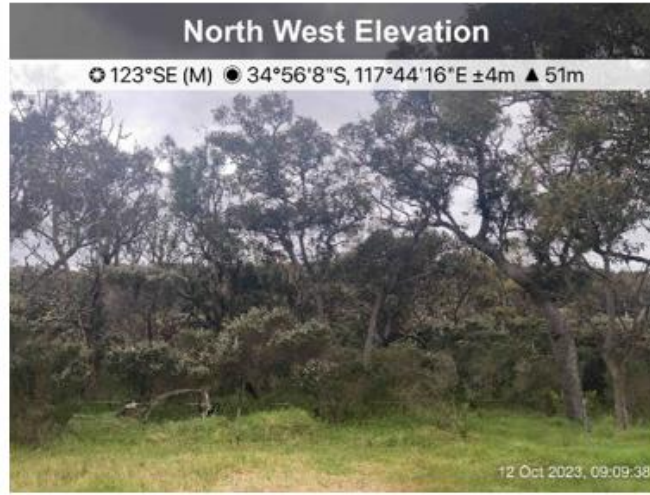
20 April 2023



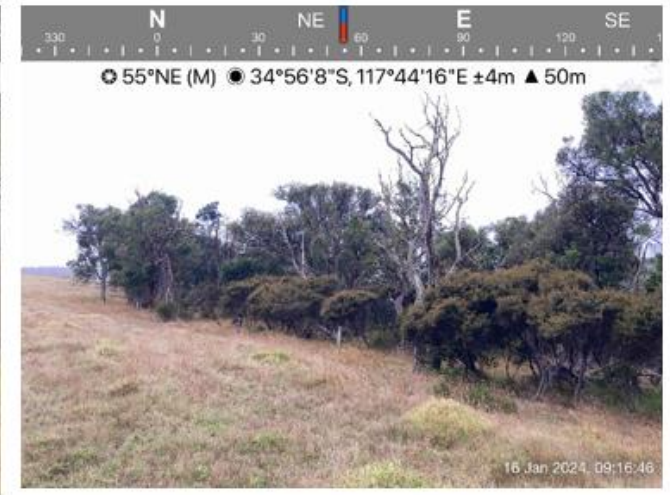
4 July 2023



12 October 2023



16 January 2024



23 April 2024



7 August 2024



11 September 2024



3rd October 2024



6th November 2024



MB2-FP

27 Oct 2022



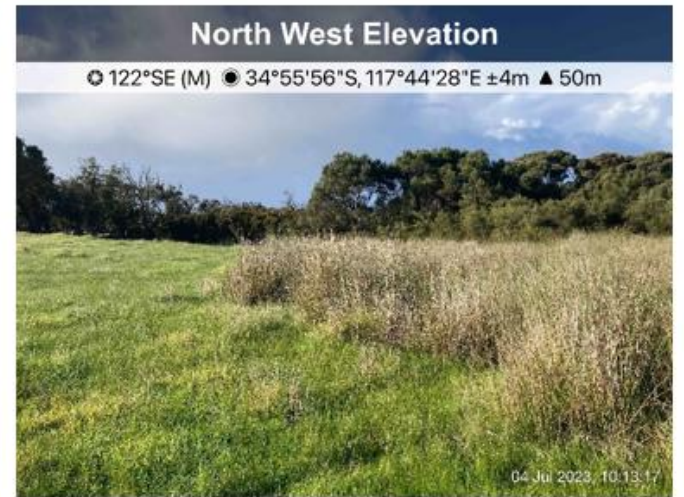
19 Jan 2023



20 April 2023



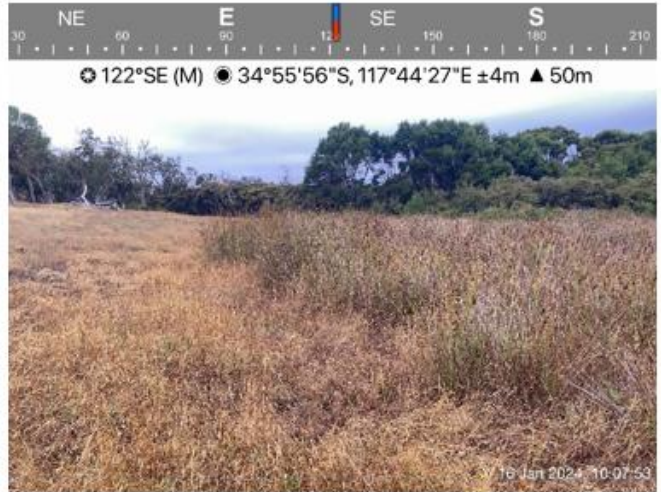
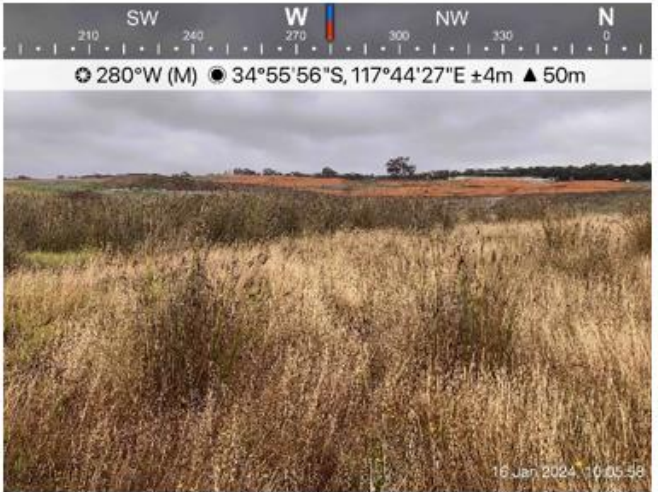
4 July 2023



12 October 2023



16 January 2024



23 April 2024



7 August 2024



11 September 2024



3rd October 2024

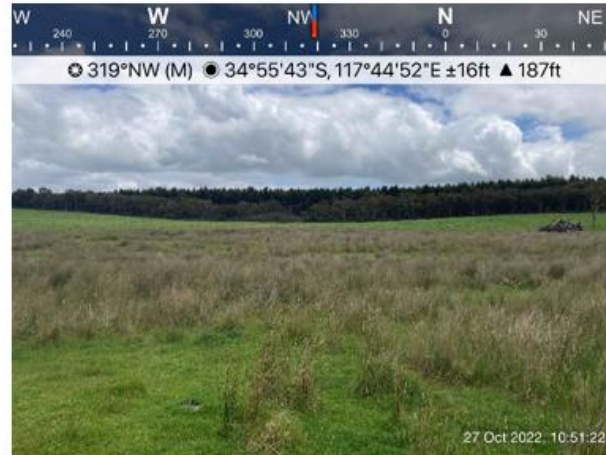


6th November 2024



MB5-FP

27 Oct 2022



20 April 2023



12 October 2023



23 April 2024



MB5-FP2

27 Oct 2022|



19 Jan 2023



20 April 2023



12 October 2023



MB7-FP

27 Oct 2022



20 April 2023



12 October 2023



23 April 2024

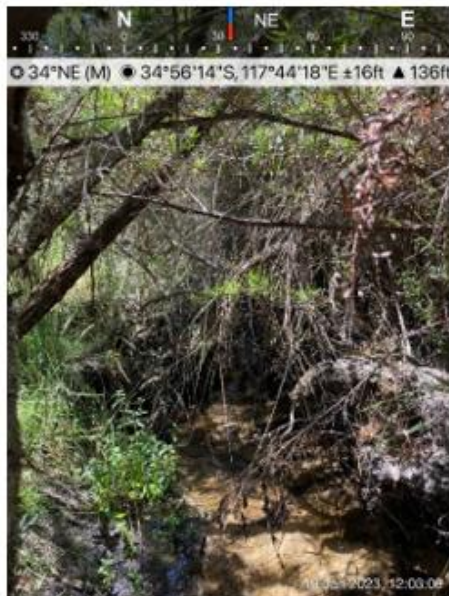


CS1-FP

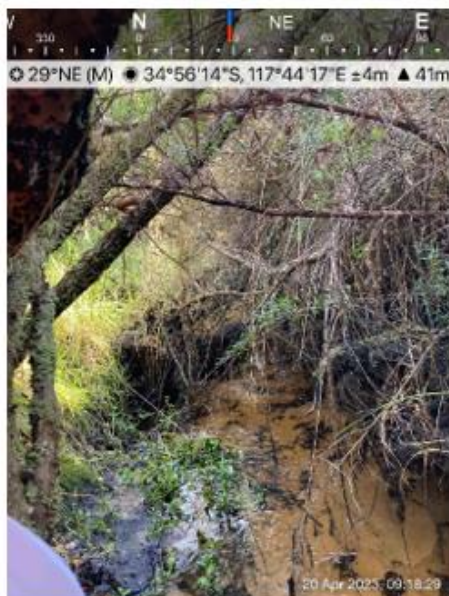
27 Oct 2022



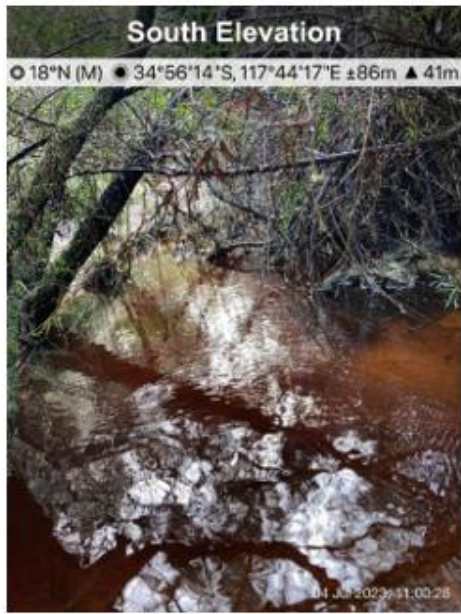
19 January 2023



20 April 2023



4 July 2023



12 October 2023



16 January 2024



23 April 2024



7 August 2024



6th November 2024

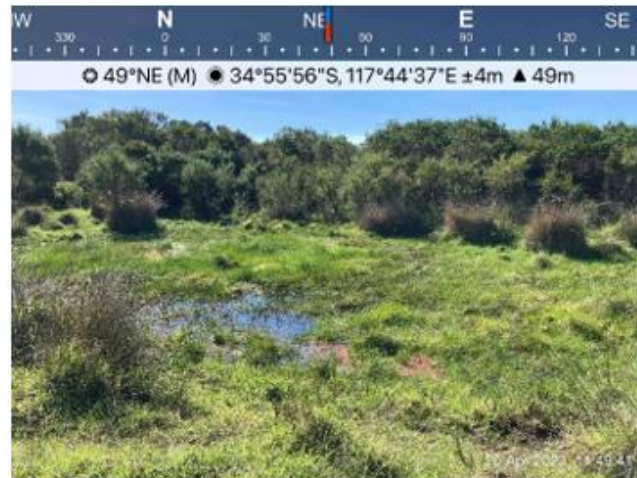


CS2-FP

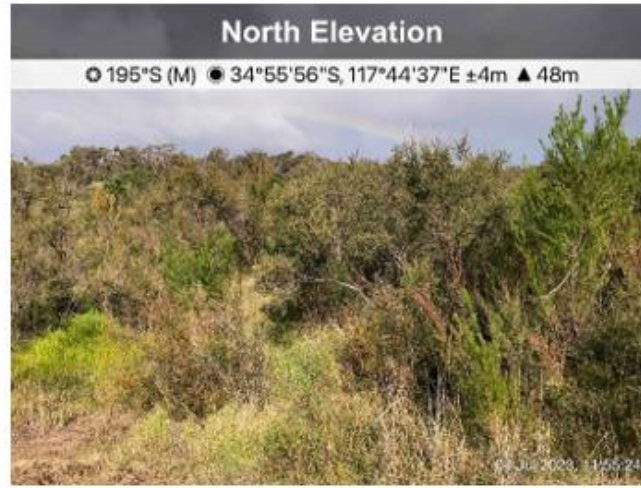
27 Oct 2022



20 April 2023



4 July 2023



12 October 2023



16 January 2024



CS3-FP

27 Oct 2022



19 Jan 2023



20 April 2023



4 July 2023



12 October 2023



16 January 2024

