



Lower Fitzroy River Infrastructure Project, Queensland EPBC 2009/5173

Lower Fitzroy Water Quality Monitoring and Reporting Program – 17 July 2024 to 16 July 2025

Sunwater

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Basis of Report

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Key Acronyms and Definitions

LFWQMRP	Lower Fitzroy Water Quality Monitoring and Reporting Program
AWQMR	Annual Water Quality Monitoring Report
the median	12-month rolling median calculated for each parameter at each site
WQO	Water Quality Objective: Water Quality Objectives as scheduled under the Queensland Environmental Protection (Water and Wetland Biodiversity) Policy for the relevant sub-basin
DGV	Default Guideline Value: Recommended guideline values as listed under the Australian and New Zealand guidelines for fresh and marine water quality
Pre-Action Baseline	25 th and 75 th percentiles of data collected for each sub-basin prior to the commencement of the Rookwood Weir construction activities, data from upstream of the construction area (after commencement), and historical data (2010 -2018)
Control Site Range	Minimum and maximum at upstream sites during the operations phase (December 2023 to July 2025), with the control site range to be updated as the LFWQMRP is implemented
Baseline Range for Fitzroy Sub-Basin	Minimum and maximum across sites within the Fitzroy River sub-basin prior to operations (July 2020 to December 2022)
Baseline Range for All Sub-Basins	Minimum and maximum across all sites monitored for the LFWQMRP prior to operations (July 2020 to December 2022)
Reporting Period	12 months following the commencement of operations (17 July 2024 – 16 July 2025)



1.0 Introduction

Sunwater operate Rookwood Weir under Lower Fitzroy River Infrastructure Project, Queensland *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval 2009/5173, which presents a range of conditions for the construction and operation of the weir.

Sunwater has developed a Lower Fitzroy Water Quality Monitoring and Reporting Program (LFWQMRP) to address Condition 1a of the EPBC approval. The LFWQMRP requires Sunwater to prepare an Annual Water Quality Monitoring Report (AWQMR) every 12 months following commencement of the action to contribute towards the Annual Compliance Report as per approval Condition 10.

The AWQMR has been prepared following the commencement of the operation of the weir for reporting period 17 July 2024 – 16 July 2025¹ (the Reporting Period) to specifically address Sections 11.2 (Water Quality Offset Assessment), 11.4.2 (Annual Reporting) and 13 (Review Procedures) of the LFWQMRP. Specifically, the report presents analyses and synthesis of monitoring data provided by Sunwater for the Reporting Period relevant for:

- Summarising water quality monitoring records and data to provide assurance that the LFWQMRP has been implemented.
- Describing rainfall and flow conditions during the Reporting Period, and presenting joint analyses of water quality and flow data to enable interpretation of any effects of flow on water quality.
- The nitrogen concentrations generated from inundation of the weir and the potential for impacts on the Great Barrier Reef (GBR) with respect to the modelling target as described in the Water Quality (Nitrogen) Offset Management Plan (WQNOMP).
- Determining if there has been an increase in nutrient, sediment or farm chemical loads from the use of water for irrigated agriculture that may cause a residual impact to the GBR.
- High-level review of the monitoring program and providing recommendations for any amendments that would contribute to continuous improvement of the monitoring program.

¹ In order to ensure completeness of data reporting for monitoring completed in July 2025, this report also includes data collected on 17 July 2025 at the following monitoring locations:

- Riverslea
- Yarra Road
- The Pocket
- Weir DS
- Weir US



2.0 Water Quality Monitoring Records and Data Synthesis

2.1 Methods

Water quality monitoring data was provided by Sunwater for the Reporting Period. Data was supplied for sites as described in the LFWQMRP for the operational phase of the project for monitoring the effects of inundation and agricultural land use on water quality (Table 2-1; Map 2.1). Six of these sites are also used for recording flow volume and four for recording rainfall (Table 2-1). It is noted that monitoring at several of the alternative sites (i.e. Baralaba, Craiglee and Rookwood) was not required during the Reporting Period.

Water quality records were evidenced as count of data points for each parameter at each site during the Reporting Period. Furthermore, the LFWQMRP presents an adaptive approach to water quality assessment and management that involves calculating the 12-month rolling median (the median) for each parameter at sites within the 'potential change area' (i.e. inundation area and agriculture change area), and assessing the median using Water Quality Guidelines (WQG's) (specifically - Water Quality Objectives (WQOs) and Default Guideline Values (DGV)), pre-action baselines (25th and/or 75th percentiles) and upstream control site data to identify if there have been any water quality changes in the Fitzroy River due to operation of the weir and associated water supply for agricultural that may have an impact on the GBR. The median for each month for the Reporting Period was presented for each site and each parameter, and compared to the WQO/DGV and the pre-action baseline, with exceedances investigated further as per the LFWQMRP.



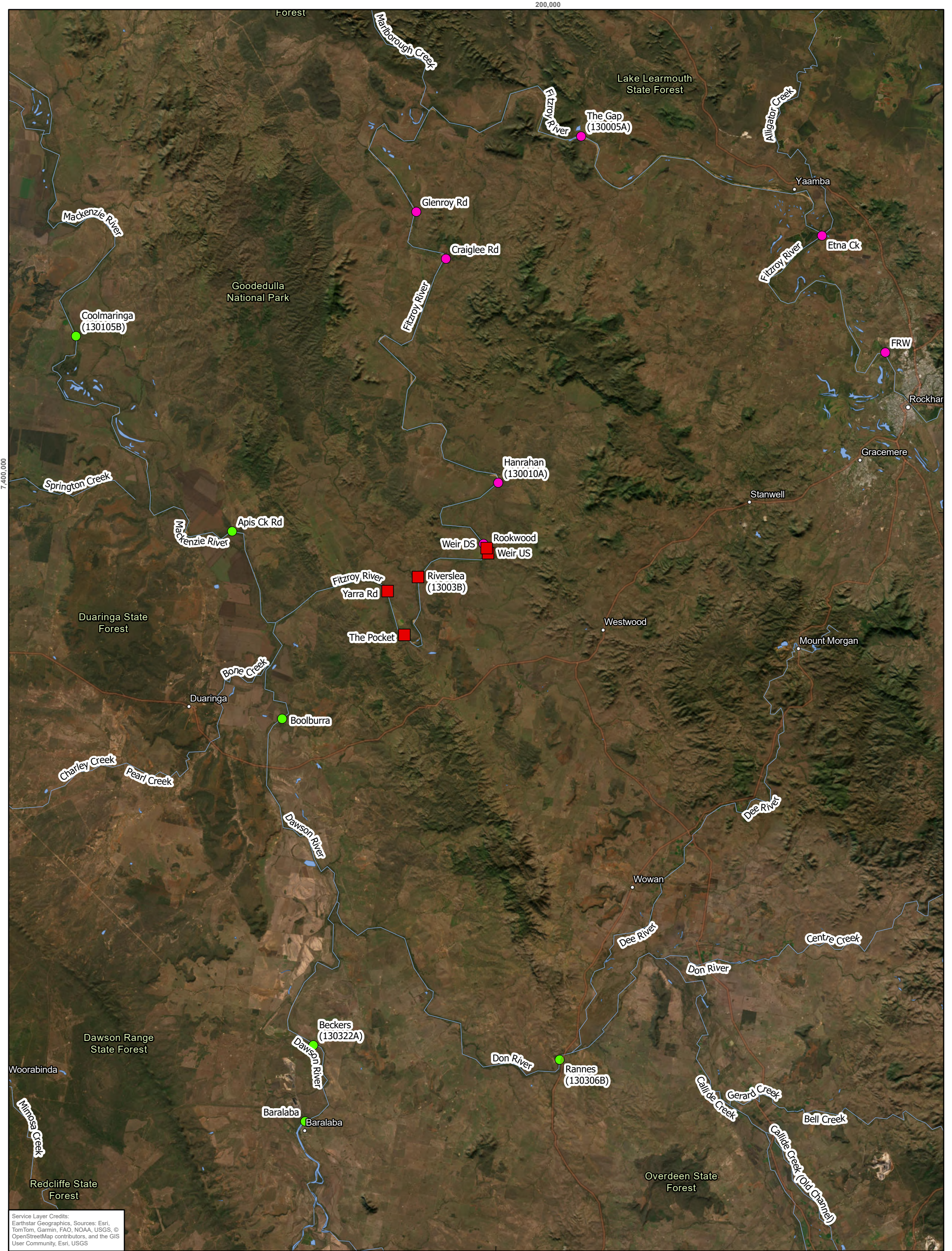
Table 2-1 Water Quality and Flow Monitoring Sites

Catchment	Site Name, No and (Location Code)	River	Site Type	Latitude	Longitude	Monitoring Scope	Monitoring Type
Mackenzie	Coolmaringa, 1a (130105B)	Mackenzie	US	-23.317992	149.524431	I	WQ
Mackenzie	Apis Ck Rd, 1b (ALT3)	Mackenzie	US	-23.528290	149.713540	I (ALT) A	WQ Flow
Callide	Rannes, 2 (130306B)	Don	US	-24.098355	150.115224	I	WQ
Lower Dawson	Beckers, 3a (130322A)	Dawson	US	-24.088204	149.821813	I	WQ
Lower Dawson	Boolburra, 4 (#4)	Dawson	US	-23.732093	149.777099	I A	WQ Flow
Fitzroy	Yarra Rd, 5 (#8)	Fitzroy	WI	-23.590272	149.899135	I	WQ Algae Stratification PDIBP
Fitzroy	The Pocket, 6 (#9)	Fitzroy	WI	-23.637759	149.920073	I	WQ Algae Stratification PDIBP
Fitzroy	Riverslea, 7 (13003B)	Fitzroy	WI WI & DS	-23.574210	149.934844	I A	WQ Algae Stratification PDIBP ICIAP
Fitzroy	Weir US, 8b (Weir-US)	Fitzroy	WI WI & DS	-23.546591	150.017184	I A	WQ Flow Algae Stratification PDIBP ICIAP
Fitzroy	Weir DS, 9b (Weir-DS)	Fitzroy	DS WI & DS	-23.536490	150.011641	I A	WQ Flow ICIAP
Fitzroy	Hanrahan, 10 (130010A)	Fitzroy	DS WI & DS	-23.469388	150.027484	I A	WQ ICIAP
Fitzroy	Glenroy Rd, 11a (#15)	Fitzroy	DS WI & DS	-23.175149	149.924039	I A	WQ Flow ICIAP
Fitzroy	The Gap, 12c (130005A)	Fitzroy	DS WI & DS	-23.088950	150.116800	I (ALT) A	WQ Flow ICIAP
Fitzroy	Etna Ck, 12b (ALT5)	Fitzroy	DS WI & DS	-23.191580	150.403850	I (ALT) A	WQ ICIAP
Fitzroy	FRW, 12c (Rockhampton)	Fitzroy	DS	-23.317520	150.481930	I A	WQ Flow ICIAP
Lower Dawson	Baralaba, 3b (ALT6)	Dawson	US	-24.171630	149.813930	I (ALT)	WQ
Fitzroy	At Rookwood, 8or9a (RWP)	Fitzroy	WI	-23.541080	150.015420	I (ALT)	WQ Algae Stratification PDIBP
Fitzroy	Craiglee Rd, 11b (#14)	Fitzroy	DS	-23.225800	149.960170	I (ALT)	WQ

Rd: Road, US: Upstream, WI: Within Impoundment, DS: Downstream, I: Inundation monitoring site, A: Agriculture land use monitoring site, ALT: Alternative site when primary site is inaccessible, WQ: Water Quality, PDIBP: Progressive Declines in Bimonthly Parameters, ICIAP: Increased Concentration in Agriculture Parameters

Note: Baralaba, At Rookwood and Craiglee Road are alternative sites and there has been no need to monitor these locations to date.





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	0 3.5 7 14 km
Coordinate System:	GDA2020 MGA Zone 55
Scale:	1:400,000 at A3
Project Number:	635.000125
Date Drawn:	5/09/2025
Drawn by:	AB
Reviewed by:	BC

LEGEND

Monitoring Site

-  Downstream
-  Upstream

-  Within Impoundment
-  Watercourse
-  Lake/Reservoir

ROCKWOOD WEIR

MONITORING SITES FOR THE LFWQMRP

2.2 Results

The number of monitoring events undertaken at each site for the Reporting Period is shown in Table 2-2. It is noted that monitoring at several sites (e.g. Coolmaringa, Etna Ck and The Gap) was not implemented until after July 2024 as these sites are agricultural monitoring sites, and monitoring at agricultural sites commenced from August 2024 to coincide with the supply of water to properties for agricultural purposes. However, the frequency of monitoring of each parameter at other sites was in accordance with the LFWQMRP, except for:

- Coolmaringa in November 2024, and January and February 2025, where no sampling was completed due to the site being inaccessible due to boggy conditions (identified as a safety hazard).
- Weir US in April 2025, where in situ and depth profile measurements could not be taken due to high flows (identified as a safety hazard).
- Flow event monitoring in January 2025, whereby sampling was not completed within the 48 hour timeframe for the first flow event due to a logistics planning issue arising from challenges in coordinating human resources and delays in acquiring sampling equipment.
- Metals and hardness (including alkalinity, chloride, sulfate, fluoride and total anions) were not analysed at The Gap, Apis Ck and Etna Ck in September and November 2024, and January, March, June and July 2025.
- Dissolved Oxygen % saturation (Field) at FRW in March 2025 was incorrectly entered in the field and omitted from the analyses.
- Turbidity (Field) at Glenroy Rd in April 2025 was inaccurate and omitted from all analyses.
- Total nitrogen (filtered) and any subsequent nutrient calculation was not analysed in November 2024 at any site.
- Diketonitrile (DKN) was not analysed in July, September and November 2024 at any site.

Algal bloom event monitoring was completed fortnightly at:

- Yarra Rd from 21 August to 4 December 2024.
- Riverslea from 11 September to 20 November 2024.
- The Pocket from 11 September to 6 November 2024.
- Weir US on 6 November 2024.

Flow event monitoring was triggered and completed at The Gap, Boolburra, Glenroy Rd, Apis Ck, FRW, Weir DS and Weir US on:

- 1st Flow >100 cumecs; 5 – 6 January 2025.
- 2nd Flow >200 cumecs; 20 – 21 January 2025.
- 3rd Flow >200 cumecs; 6 – 17 February 2025.

Rainfall event monitoring was triggered and completed at Melaleuca Creek (upstream and downstream) and Gogango Creek (upstream and downstream) sites on:

- Rainfall >75 mm/24 hours; 14 – 15 August 2024.



No stratification, bi-monthly or agricultural event monitoring was completed during the Reporting Period.

The 12-month rolling median for each parameter at each site for each month in the Reporting Period is presented in Appendix A. The following exceedances of the WQO/DGV and/or the pre-action baselines were identified on one or more months:

- Upstream control sites:
 - Coolmaringa: reactive phosphorus
 - Apis Ck Rd: reactive phosphorus, terbuthylazine, isoxaflutole
 - Rannes: redox potential, alkalinity, filtered nitrogen, reactive phosphorus, total Kjeldahl nitrogen, total organic nitrogen, dissolved organic nitrogen
 - Beckers: redox potential, dissolved oxygen
 - Boolburra: redox potential, dissolved oxygen
- Downstream potential change area sites:
 - Yarra Rd: redox potential, dissolved oxygen, reactive phosphorus, chlorophyll a
 - The Pocket: redox potential, dissolved oxygen, reactive phosphorus
 - Riverslea: redox potential, dissolved oxygen, reactive phosphorus
 - Weir US: redox potential, dissolved oxygen, reactive phosphorus
 - Weir DS: redox potential, reactive phosphorus
 - Hanrahan: isoxaflutole
 - Glenroy Rd: reactive phosphorus, filtered potassium
 - The Gap: dissolved oxygen, reactive phosphorus
 - Etna Ck: dissolved oxygen, reactive phosphorus
 - FRW: dissolved oxygen, reactive phosphorus.

Investigation of the exceedances at sites in the potential change area indicated that all exceeding parameters at each site on each occasion achieved the historical control site value (SLR Consulting 2025a), with the exception of:

- Redox potential at The Pocket, Riverslea and Weir US in April 2024, which exceeded the baseline maximum for all basins. The observed results do not indicate adverse conditions for aquatic biota, but instead indicate conditions where oxidation dominates biogeochemical processes. There is no temporal pattern to indicate that oxidising conditions are regulator or consistent; however, the spatial pattern in April 2024 indicates only sites within the impoundment had high redox potential. Factors that can lead to high redox potential include high concentration of dissolved oxygen (which was not observed), high photosynthetic activity (which was not observed - evidenced by the chlorophyll a data), low organic matter in the surface water and/or high mixing of surface waters (e.g. from wind). The cause of the April 2024 results can not be determined specifically based on the available information, and while the results were specific to impounded waters, they have not reoccurred and so the conditions that resulted in the high redox potential may have been a one-off (e.g. associated with a newly established reservoir) or are an uncommon event. Continuation of the monitoring program will enable ongoing evaluation of water quality and management of water quality risks.



- Dissolved Oxygen at Weir US in March 2025, which was lower than the baseline range for all basins. The percent saturation of dissolved oxygen at Weir US in March 2025 was 16% (corresponding to approximately 1.3 mg/L), which is likely below the range tolerated by most aquatic biota. There is no spatial pattern of low dissolved oxygen across sites within the potential change area in March 2025, nor a temporal trend of consistently low dissolved oxygen at Weir US. The result is therefore not likely to be related to the operation of the weir. The cause of the low dissolved oxygen cannot be determined based on available information, but as it appears to be an anomalous result there is no evidence to indicate that there is an ongoing water quality concern or that the result is related to operation of the weir. Continuation of the monitoring program will enable ongoing evaluation of water quality and management of water quality risks.

Therefore, with the exception of potential anomalous results for redox potential and dissolved oxygen, water quality at each site on each occasion reflected ambient water quality conditions and did not indicate ongoing water quality concerns related to the operation of the weir.



Table 2-2 Count of Monitoring Events for Each Parameter at Each Site for the Reporting Period

Parameter	Units	LOR	Upstream					Within Impoundment				Downstream					
			Mackenzie R		Don R	Dawson R		Fitzroy R									
			Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Field																	
Temperature (Field)	°C		9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
pH (Field)	units		9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Electrical Conductivity (field)	µS/cm		9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
DO (Field)	mg/L		9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Redox Potential (Field)	mV		9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Total Dissolved Solids (Field)	mg/L		9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
DO % Saturation (Field)	%		9	13	13	13	13	13	13	13	12	13	13	13	12	12	12
Turbidity (Field)	NTU		9	13	13	13	13	13	13	13	12	13	13	12	12	12	13
Inorganics																	
Alkalinity (total) as CaCO3	mg/L	1	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Alkalinity (Bicarbonate as CaCO3)	mg/L	1	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Alkalinity (Carbonate as CaCO3)	mg/L	1	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Alkalinity (Hydroxide) as CaCO3	mg/L	1	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Total Suspended Solids (Lab)	mg/L	5	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Particle Size Analysis	%	1	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Ammonia as N	mg/L	0.01	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Chloride	mg/L	1	4	2	7	7	7	7	7	7	7	7	7	7	0	0	7
Nitrogen (Total)	mg/L	0.1	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Nitrogen (Total) (filtered)	mg/L	0.1	9	12	12	12	12	12	12	12	11	12	12	12	11	11	12
Nitrite + Nitrate as N	mg/L	0.01	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Total Phosphorus as P	mg/L	0.01	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Total Phosphorus as P (filtered)	mg/L	0.01	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Total Dissolved Solids (Lab)	mg/L	10	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Nitrate (as N)	mg/L	0.01	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Nitrite (as N)	mg/L	0.01	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Fluoride	mg/L	0.1	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Kjeldahl Nitrogen Total	mg/L	0.1	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Sulfate as SO4	mg/L	1	4	2	7	7	7	7	7	7	7	7	7	7	0	0	7
Metals																	
Aluminium (filtered)	mg/L	0.01	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Iron (filtered)	mg/L	0.05	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Manganese (filtered)	mg/L	0.001	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Copper (filtered)	mg/L	0.001	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Zinc (filtered)	mg/L	0.005	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7



Parameter	Units	LOR	Upstream					Within Impoundment				Downstream					
			Mackenzie R		Don R	Dawson R		Fitzroy R									
			Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Hardness as CaCO3 (filtered)	mg/L	1	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Total Anions																	
Calcium (filtered)	mg/L	1	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Potassium (filtered)	mg/L	1	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Sodium (filtered)	mg/L	1	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Magnesium (filtered)	mg/L	1	4	1	7	7	7	7	7	7	7	7	7	7	0	0	7
Herbicides																	
Atrazine-desethyl	µg/L	0.1	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Metribuzin	µg/L	0.02	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
2,4-dichlorophenoxyacetic acid	µg/L	10	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Ametryn	µg/L	0.01	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Atrazine	µg/L	0.01	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Diuron	µg/L	0.02	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Fluroxypyr	µg/L	10	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Hexazinone	µg/L	0.02	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Metolachlor	µg/L	0.01	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Metsulfuron-methyl	µg/L	5	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Pendimethalin	µg/L	0.05	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Propazine	µg/L	0.01	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Simazine	µg/L	0.02	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Tebuthiuron	µg/L	0.02	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Terbutryn	µg/L	0.01	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Triclopyr	µg/L	10	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Other																	
Chlorantranilprole	µg/L	0.10	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Tebuconazole	µg/L	0.01	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Organic											7	7					
Terbuthylazine	µg/L	0.01	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
NA																	
Fipronil	µg/L	0.01	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Fluproponate	µg/L	0.1	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Inorganic Nitrogen as N – Filtered (Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx]))	mg/L	0.01	9	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Thiamethoxam	µg/L	0.02000	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Chlorophyll a	mg/L	0.001	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13
Imidacloprid	µg/L	0.01000	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7
Pesticides																	
Diketonitrile (DKN)	µg/L	0.01	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4



Parameter	Units	LOR	Upstream					Within Impoundment				Downstream							
			Mackenzie R		Don R	Dawson R		Fitzroy R											
			Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW		
Haloxyfop	µg/L	0.1	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7		
Imazapic	µg/L	0.01	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7		
Isoxaflutole	µg/L	0.01	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7		
Organophosphorous Pesticides																			
Chlorpyrifos	µg/L	0.02	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7		
Diazinon	µg/L	0.01	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7		
Fungicides																			
Propiconazole	µg/L	0.05	4	7	7	7	7	7	7	7	7	7	7	7	6	6	7		
Calculations																			
Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01	9	12	12	12	12	12	12	12	11	12	12	12	11	11	12		
Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13		
Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13		
Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13		
Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01	9	12	12	12	12	12	12	12	11	12	12	12	11	11	12		
Particulate Phosphorus (PP) (PP = [TP] – [TP filtered])	mg/L	0.01	9	13	13	13	13	13	13	13	12	13	13	13	12	12	13		

grey shading denotes monitoring frequency less frequent than expected as part of the LFWQMRP.



3.0 Environmental Conditions and Influence of Flow on Water Quality

3.1 Methods

Daily and monthly rainfall and flow volume (discharge) data was obtained from the sites indicated in Table 2-1 and graphed, with the date of each water quality monitoring event indicated on each graph.

Instantaneous flow (day of sampling) and antecedent flow statistics (i.e. average flow volume recorded 7 days prior, 30 days prior and 90 days prior) were calculated for each flow monitoring site with reference to each water quality sampling event at the corresponding water quality monitoring sites (Table 3-1). Pearson's correlation analyses were then implemented using R Studio to assess statistical relationships between water quality and instantaneous flow and antecedent flow, respectively. Pearson's correlation analyses were only completed for parameters that had more than 75% of results greater than the LOR and where 6 or more data points were available within the Reporting Period to ensure validity of the assessment.

Table 3-1 Flow Monitoring Sites and Corresponding Water Quality Monitoring Sites

Flow Monitoring Site	Corresponding Water Quality Monitoring Sites
Coolmaringa (130105B)	Coolmaringa, Apis Ck, Yarra Rd, The Pocket
Rannes (130306B)	Rannes
Neville Hewitt Weir Tailwater (130361A)	Baralaba
Beckers (130322A)	Beckers
Knebworth (130362A)	Boolburra
Riverslea (130003B)	Riverslea
Rookwood Headwater (130012A)	Weir US
Rookwood Tailwater (130011B)	Weir DS
Hanrahan (130010A)	Hanrahan, Craiglee Rd, Glenroy Rd
The Gap (130005A)	The Gap
Wattlebank (130002B)	Etna Creek, FRW



3.2 Results

3.2.1 Environmental Conditions

Monthly rainfall and flow data recorded during the Reporting Period (Figure 3-1) indicated that:

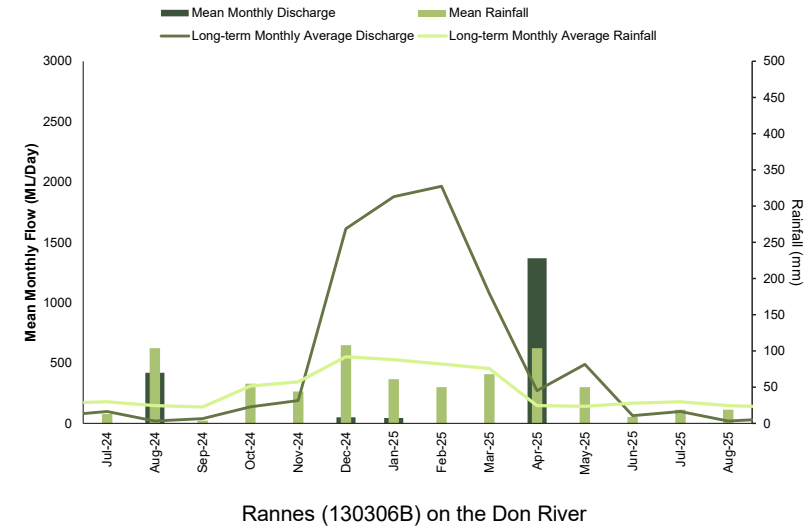
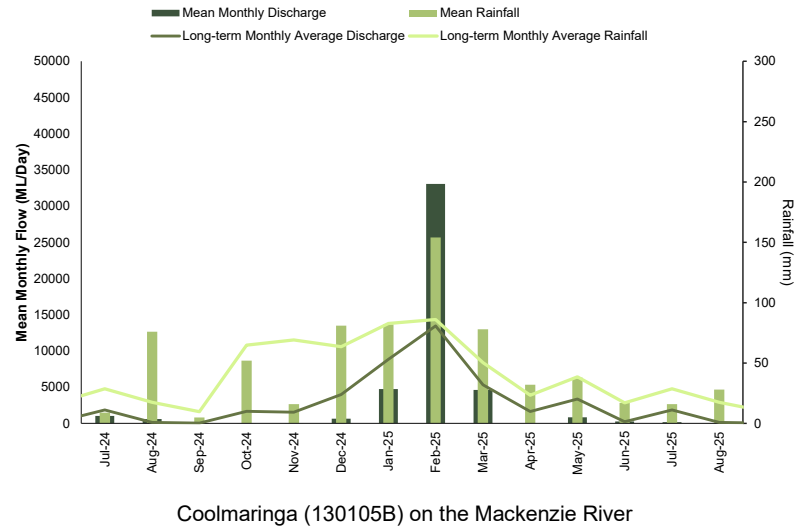
- Rainfall was variable between months and locations, but generally similar to or higher than the long-term average for most months. Peaks in rainfall varied between sites; however, rainfall peaks were generally recorded in August 2024 and during the wet season from December 2024 to April 2025.
- The magnitude of peaks in rainfall was generally similar across all sites (i.e. <200 mm), except at The Gap where peaks in rainfall were 270 mm (February 2024) and 211 mm (March 2024).
- Flow volume (discharge) in waterways was generally similar to or less than the long-term average for most months, except in February 2025 at Coolmaringa and April 2025 at Rannes, Beckers, Hanrahan and The Gap.
- Peaks in flow volume (discharge) generally coincided with peaks in rainfall. However, increased flow was not always recorded following peaks in rainfall, and increased flow was also not always associated with peaks in rainfall at the corresponding station. These results indicate that rainfall higher up in the catchment is a notable determinant of flow patterns in the study area.

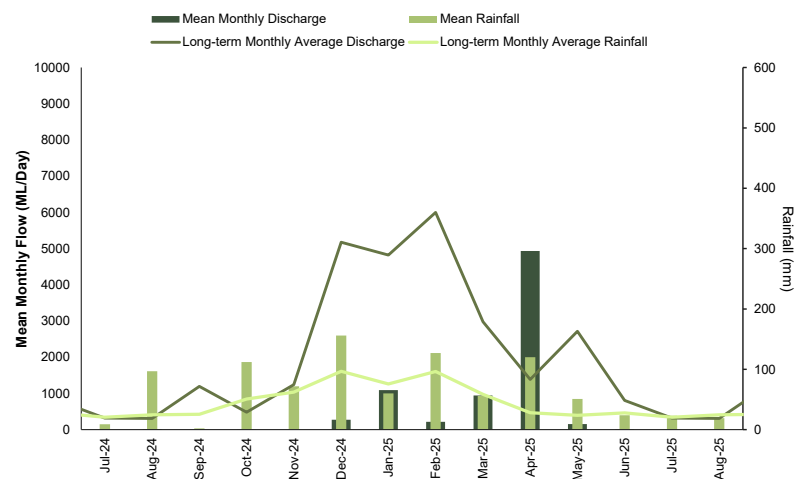
Daily rainfall and flow volume (discharge) data recorded during the Reporting Period (Figure 3-2) indicated that:

- Peaks in flow were recorded in:
 - August 2024 on the Don River (Rannes).
 - January 2025 on the Dawson River (Neville, Beckers, and Knebworth).
 - February 2025 on the Mackenzie River (Coolmaringa), and Fitzroy River (Riverslea, Rookwood Weir, Hanrahan, The Gap and Wattlebank).
 - March 2025 on the Dawson River (Neville, Beckers and Knebworth).
 - April 2025 at all locations.
- Peaks in rainfall and flow volume were typically discrete short duration events.

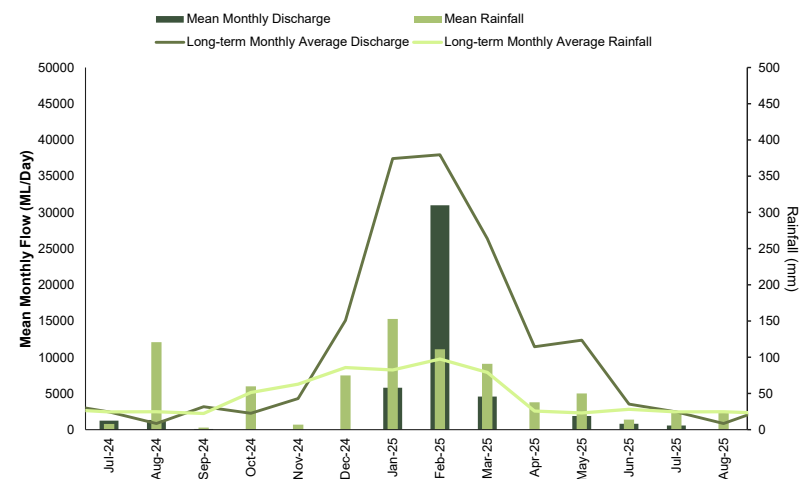


Figure 3-1 Monthly Rainfall and Flow for the Reporting Period Compared to the Long-Term Average

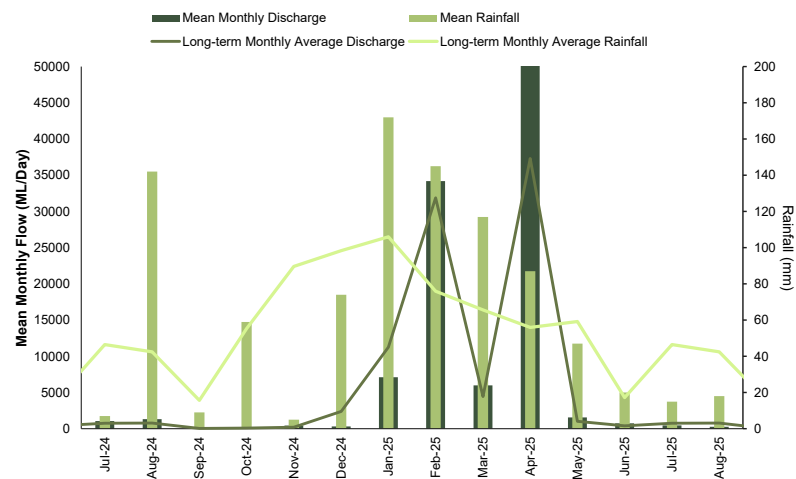




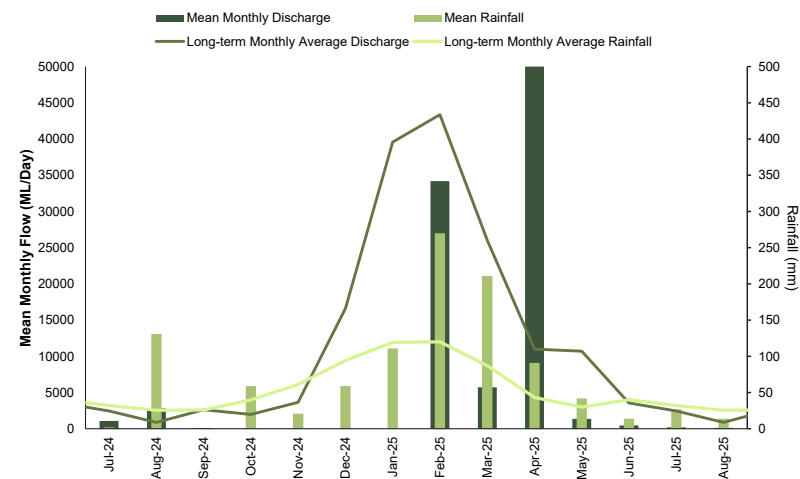
Beckers (130322A) on the Dawson River



Riverslea (130003B) on the Fitzroy River



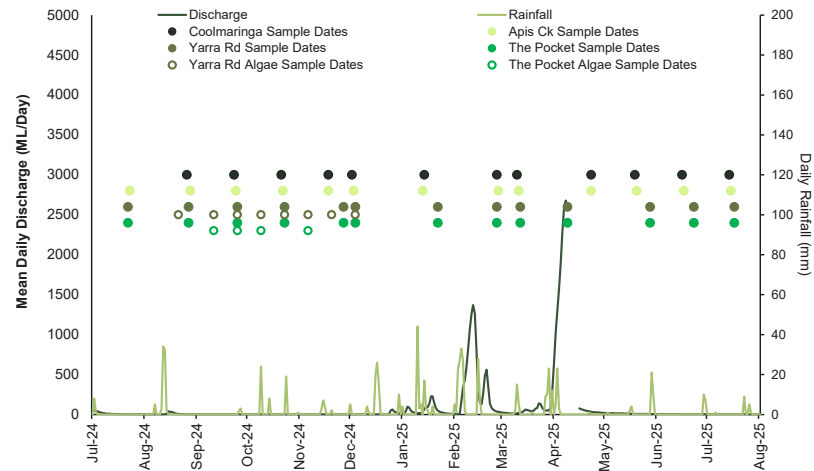
Hanrahan (130010A) on the Fitzroy River



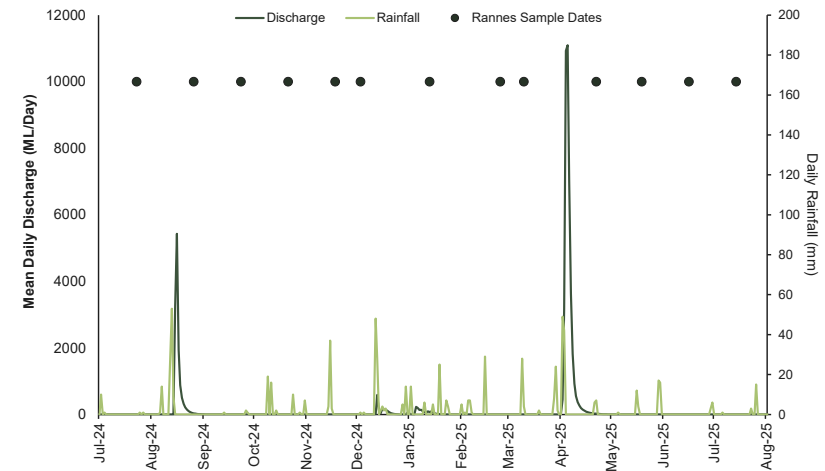
The Gap (130005A) on the Fitzroy River



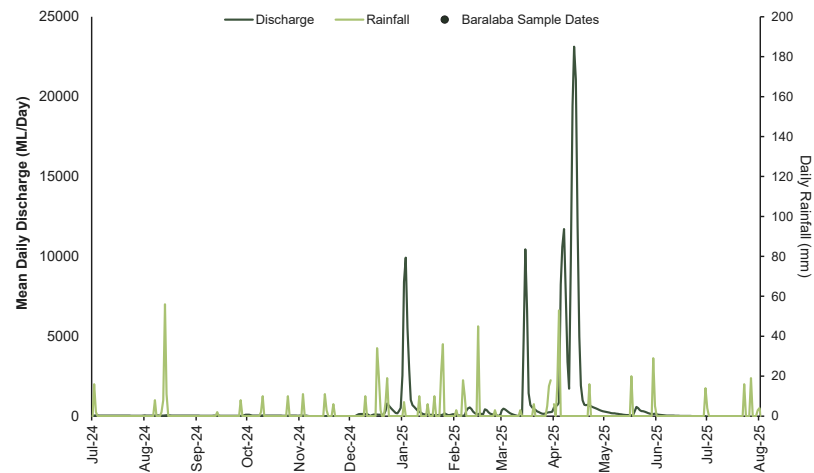
Figure 3-2 Daily Rainfall and Flow Volume (Discharge) for the Reporting Period with Survey Events for Each Nearby Location



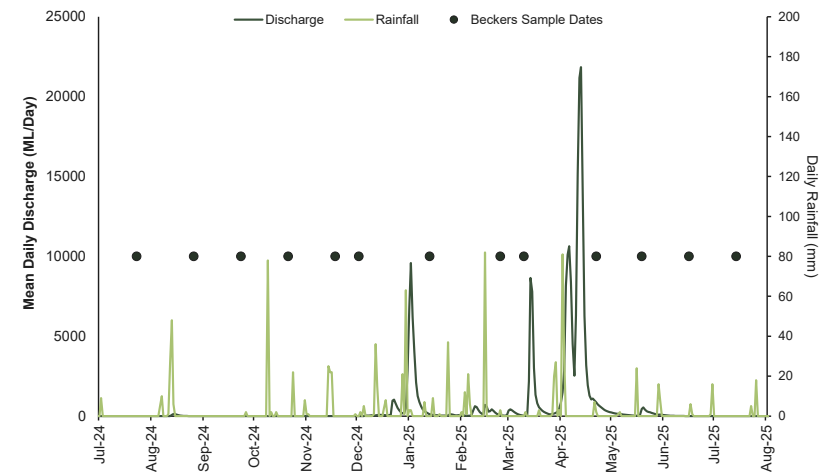
Coolmaringa (130105B) on the Mackenzie River



Rannes (130306B) on the Don River

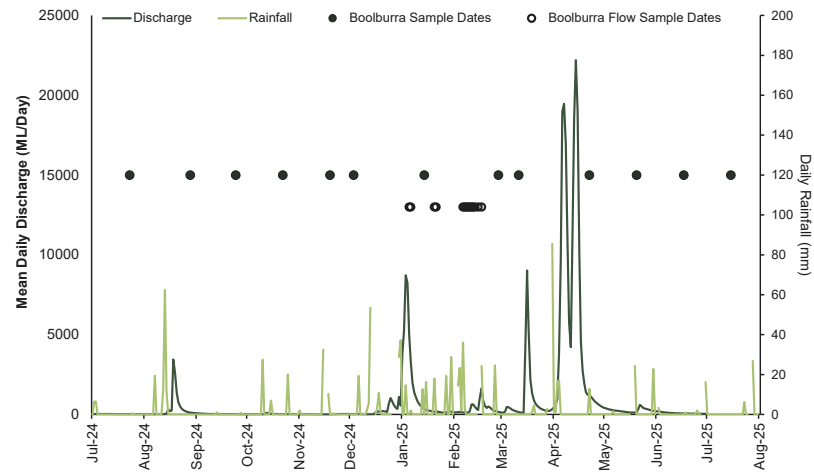


Rainfall at Belvedere (BOM #39201) and flow at Neville (130361A) on the Dawson River

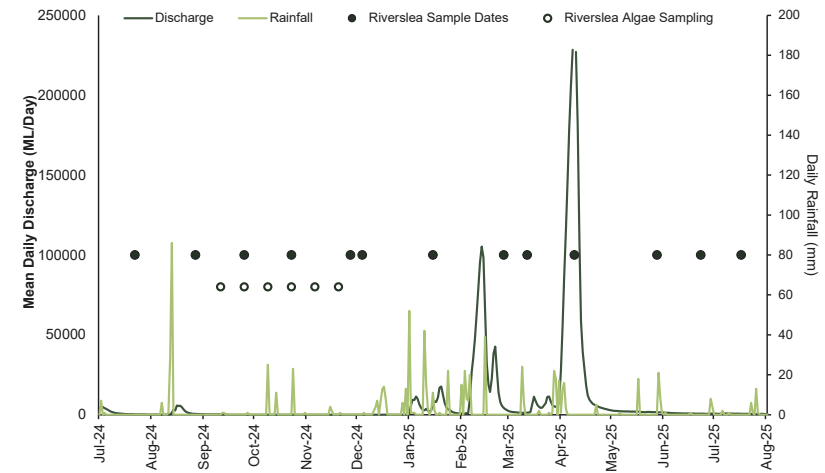


Beckers (130322A) on the Dawson River

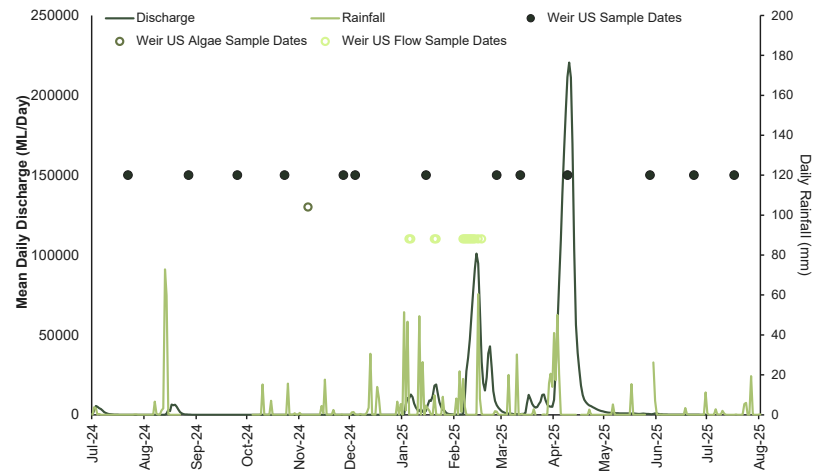




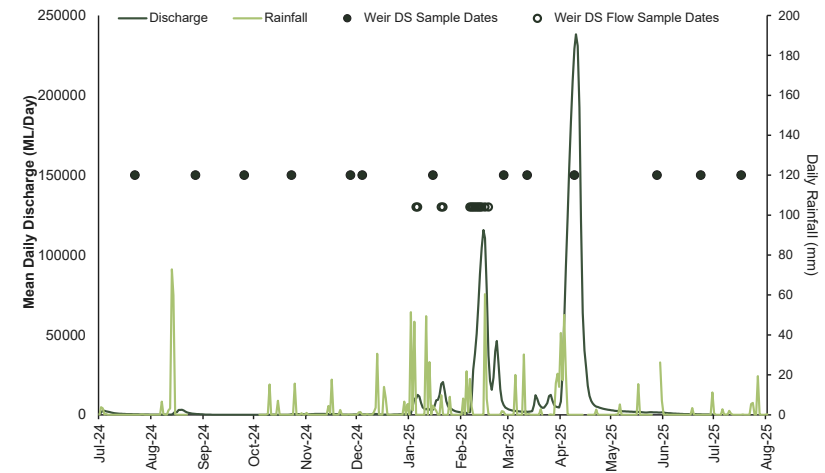
Rainfall at Duaringa (BOM #35026) and flow at Knebworth (130362A) on the Dawson River



Riverslea (130003B) on the Fitzroy River

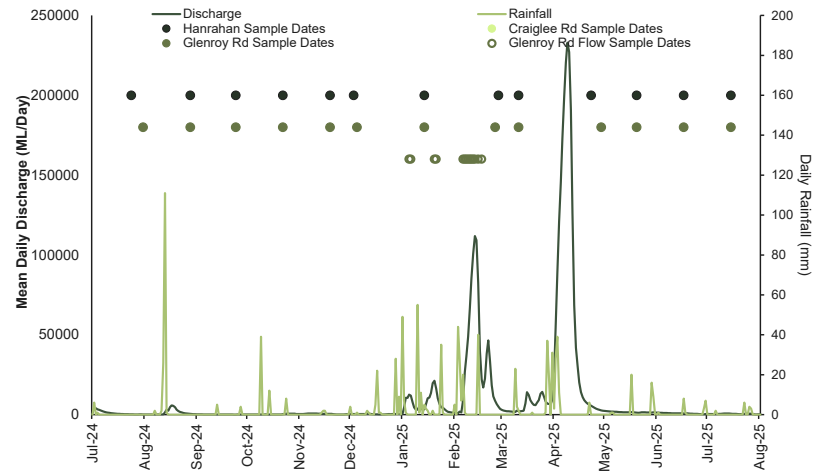


Rainfall at Westwood (BOM #39349) and flow at Rookwood Headwaters on the Fitzroy River

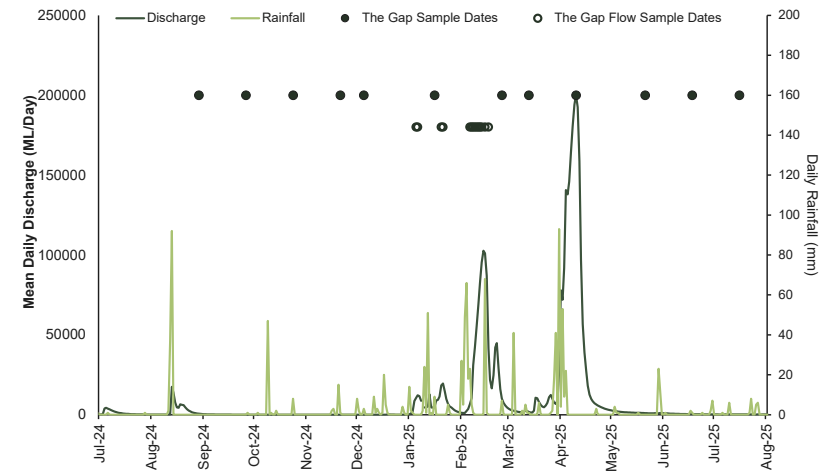


Daily rainfall at Westwood (BOM #39349) and flow at Rookwood Tailwaters on the Fitzroy River

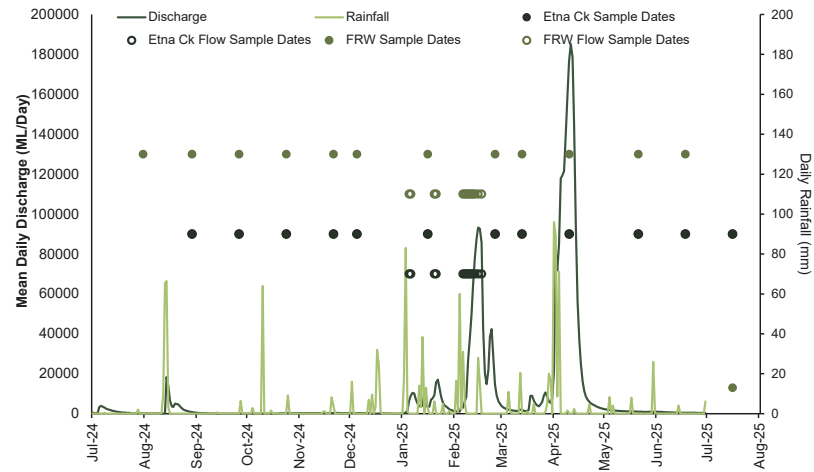




Hanrahan (130010A) on the Fitzroy River



The Gap (130005A) on the Fitzroy River



Rainfall at Yaamba (BOM #33076) and flow at Wattlebank (130002B) on the Fitzroy River



3.2.2 Water Quality Relationships with Flow Volume

The results of Pearson's correlation analyses between water quality and flow volume (discharge) are shown in Appendix B with significant results summarised in Table 3-2. The results indicate that most tests had non-significant relationship between water quality concentration data for most parameters and flows volume, with the exceptions being:

- pH (Field) at 5 locations, with negative correlations indicated for multiple flow statistics at Coolmaringa (Instantaneous, 7 days and 30 days) and The Gap (Instantaneous, 7 days and 30 days).
- Electrical Conductivity (Field) at 7 locations, with negative correlations indicated for multiple flow statistics at Weir DS (Instantaneous, 7 days and 30 days), The Gap (Instantaneous, 7 days and 30 days) and FRW (Instantaneous, 7 days and 30 days).
- Total Dissolved Solids (Field) at 4 locations with negative correlations indicated for multiple flow statistics at Weir DS (Instantaneous, 7 days and 30 days), The Gap (Instantaneous, 7 days and 30 days) and FRW (Instantaneous, 7 days and 30 days).
- Turbidity (Field) at 6 locations, with positive correlations indicate for multiple flow statistics at Yarra Rd (Instantaneous, 7 days and 30 days), The Gap (Instantaneous, 7 days and 30 days) and FRW (Instantaneous, 7 days, 30 days and 90 days).
- Nitrogen (Total) at 7 locations, with positive correlations indicated for multiple flow statistics at Weir DS (Instantaneous, 7 days and 30 days), Hanrahan (Instantaneous, 7 days and 30 days) and FRW (Instantaneous, 7 days, 30 days and 90 days).
- Total Phosphorus at 8 locations, with positive correlations indicated for multiple flow statistics at The Pocket (Instantaneous, 7 days and 30 days), Weir DS (Instantaneous, 7 days and 30 days), Hanrahan (Instantaneous, 7 days and 30 days), Glenroy Rd (Instantaneous, 7 days and 30 days), The Gap (Instantaneous, 7 days, 30 days and 90 days) and FRW (Instantaneous, 7 days, 30 days and 90 days).
- Total Phosphorus (filtered) at 8 locations, with a positive correlation indicated for multiple flow statistics at Hanrahan (Instantaneous, 7 days and 30 days).
- Total Dissolved Solids (Lab) at 7 locations, with positive correlations indicated for multiple flow statistics at Yarra Rd (Instantaneous, 7 days, 30 days and 90 days) and Hanrahan (Instantaneous, 7 days and 30 days).
- Reactive Phosphorus at 7 locations, with positive correlations indicated for multiple flow statistics at Yarra Rd (Instantaneous, 7 days and 30 days) and Hanrahan (Instantaneous, 7 days, 30 days and 90 days).
- Water Hardness at 2 locations, with negative correlations indicated for multiple flow statistics at Beckers (Instantaneous, 7 days and 30 days).
- Magnesium at 2 locations, with negative correlations indicated for multiple flow statistics at Beckers (Instantaneous, 7 days and 30 days).
- Kjeldahl Nitrogen at 7 locations, noting the statistical relationships were not strong and so not graphed.
- Total Suspended Solids (Lab) and Kjeldahl Nitrogen (Filtered) at 5 locations, noting the statistical relationships were not strong and so not graphed.
- DO (Field) at 3 locations, noting the statistical relationships were not strong and so not graphed.

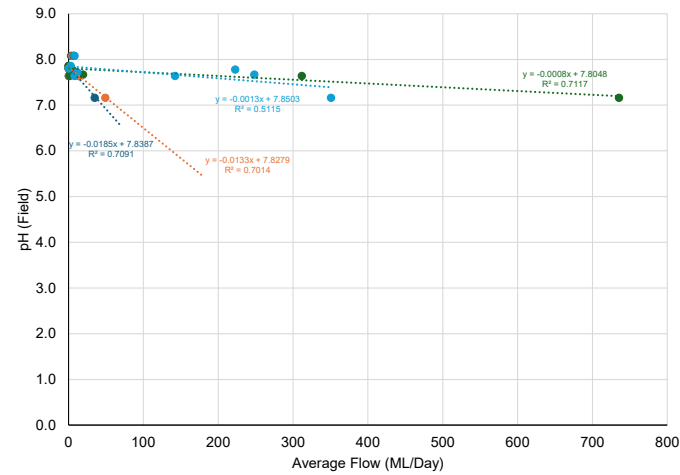


- DO % Saturation (Field), Nitrate, Dissolved Copper and Tebuthiuron at 2 locations, noting the statistical relationships were not strong and so not graphed.
- Nitrite + Nitrate, Inorganic Nitrogen, Dissolved Aluminium, Dissolved Manganese and Metolachlor at 1 location, noting the statistical relationships were not strong and so not graphed.

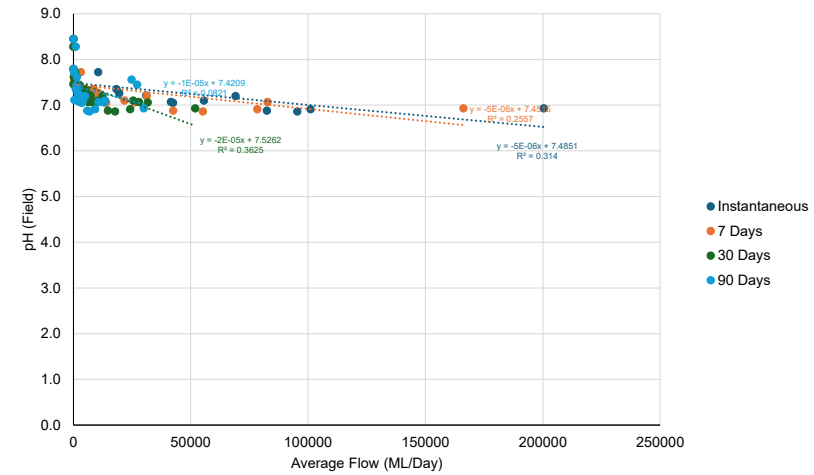
Overall, the 90-day antecedent flow statistic had the least influence on water quality, indicating that shorter-term flow patterns are more important in determining water quality patterns. Increases in short-term flow volume often resulted in increased turbidity and nutrients, but reduced electrical conductivity, pH and ions.



Figure 3-3 Correlation Plots of Parameters with Strong Correlations to Flow (i.e. 3 or More Significant Correlations)

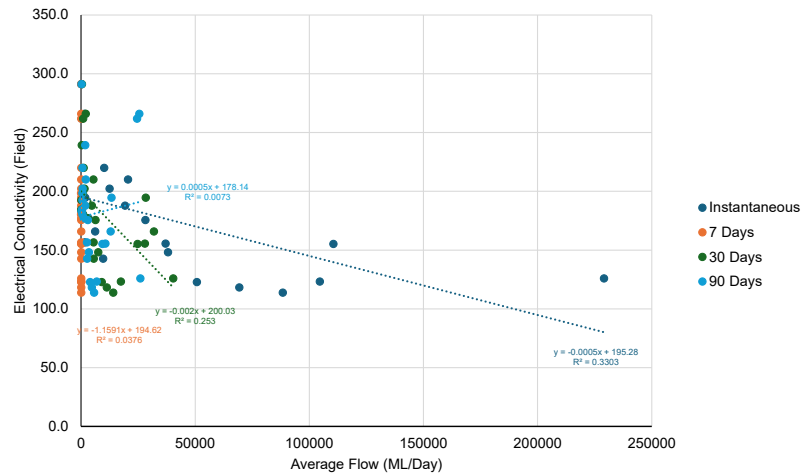


pH (Field) at Coolmaringa

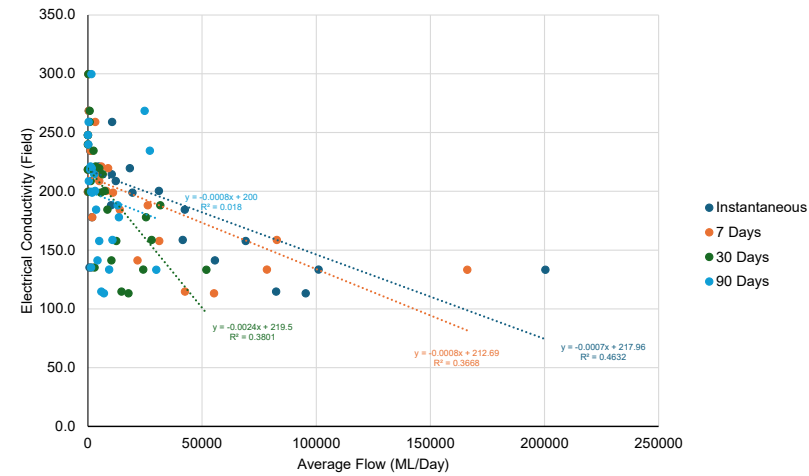


pH (Field) at The Gap

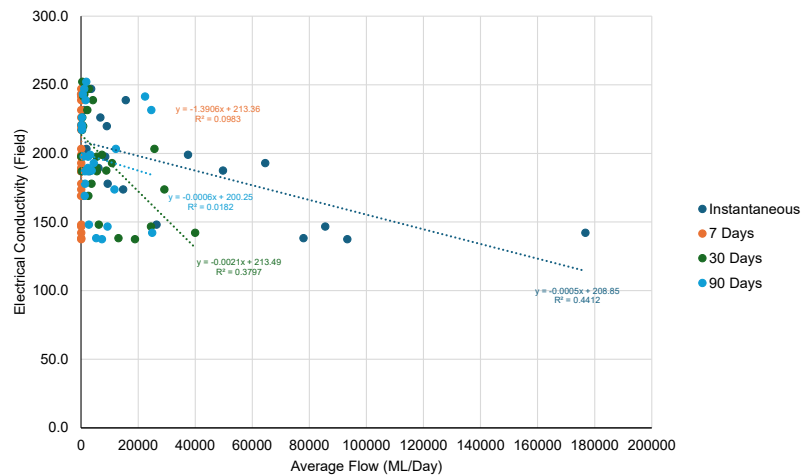




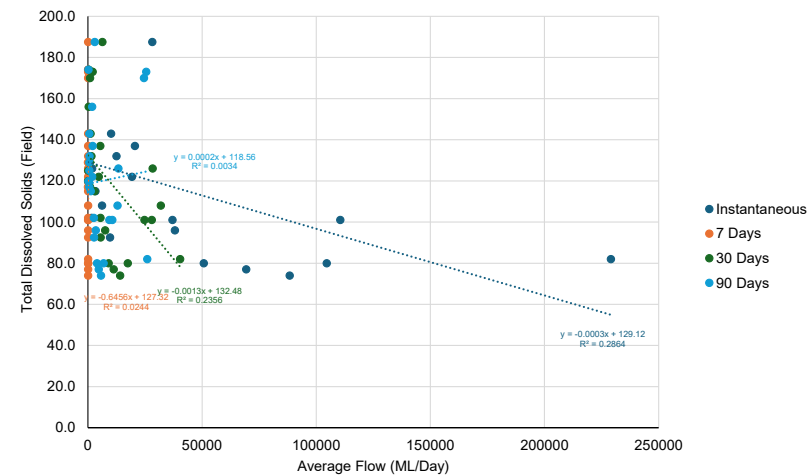
Electrical Conductivity (Field) at Weir DS



Electrical Conductivity (Field) at The Gap

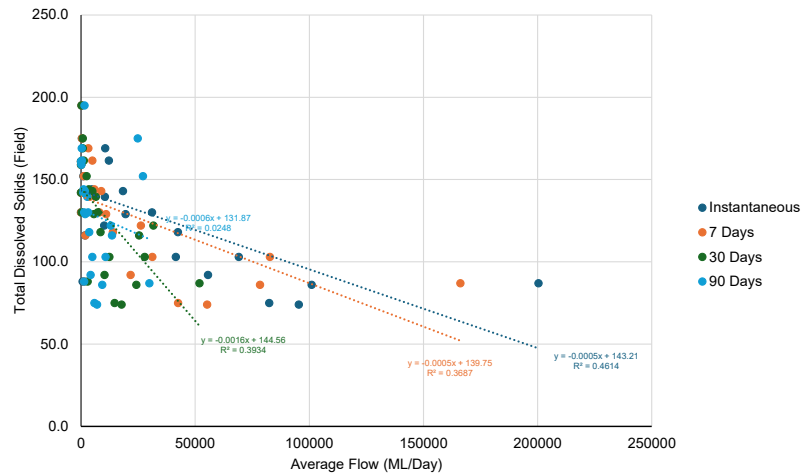


Electrical Conductivity (Field) at FRW

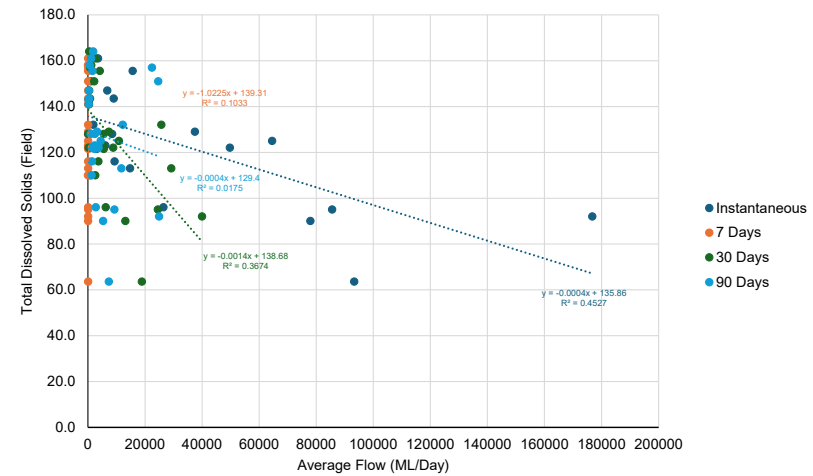


Total Dissolved Solids (Field) at Weir DS

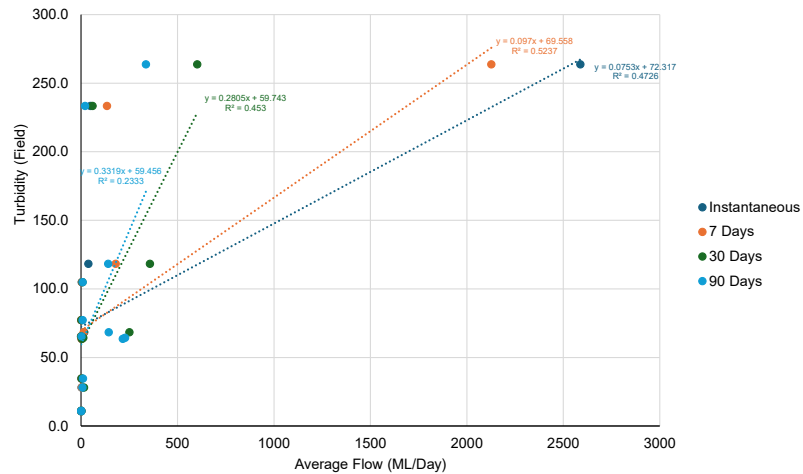




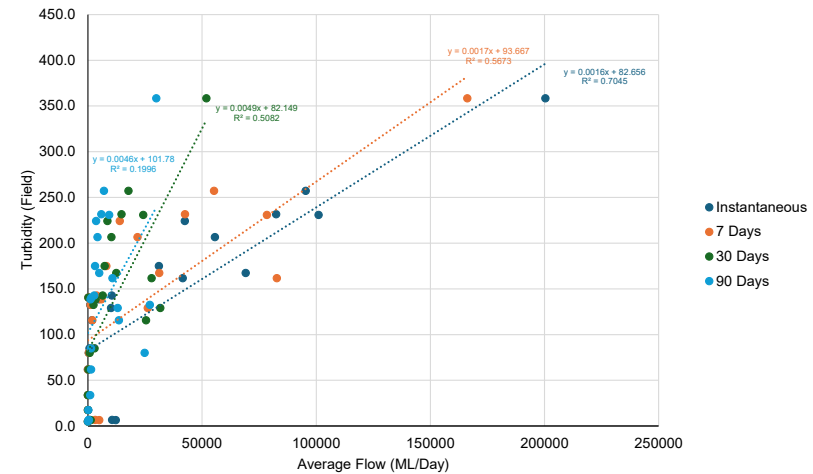
Total Dissolved Solids (Field) at The Gap



Total Dissolved Solids (Field) at FRW

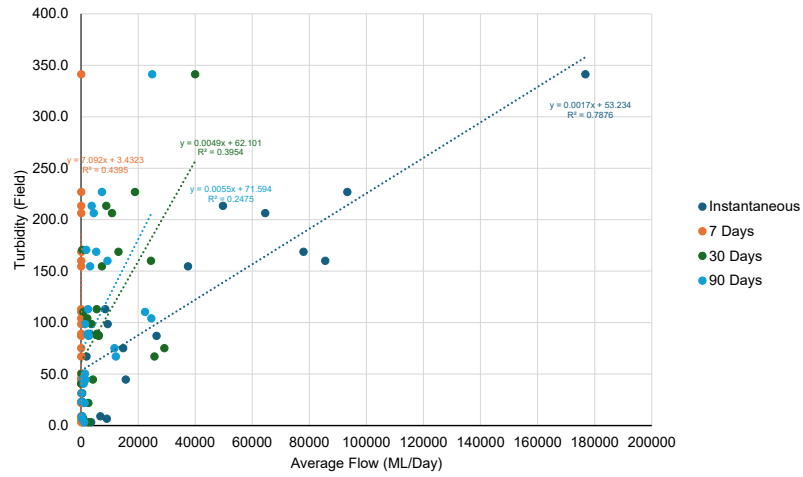


Turbidity (Field) at Yarra Rd

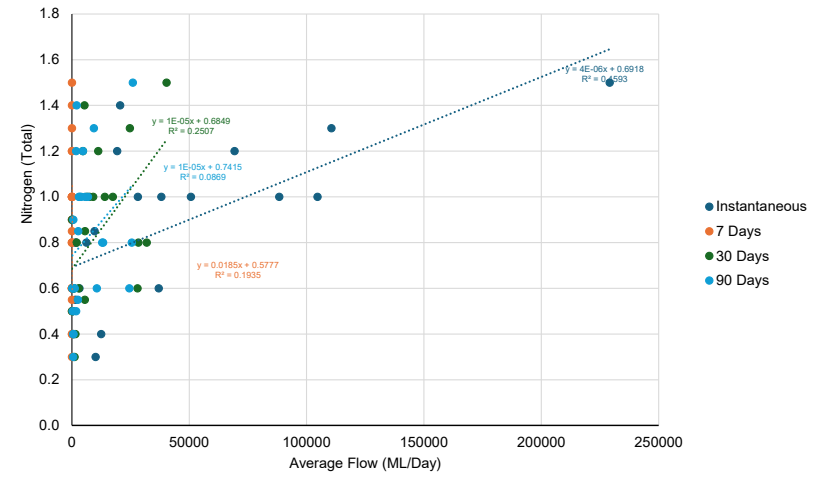


Turbidity (Field) at The Gap

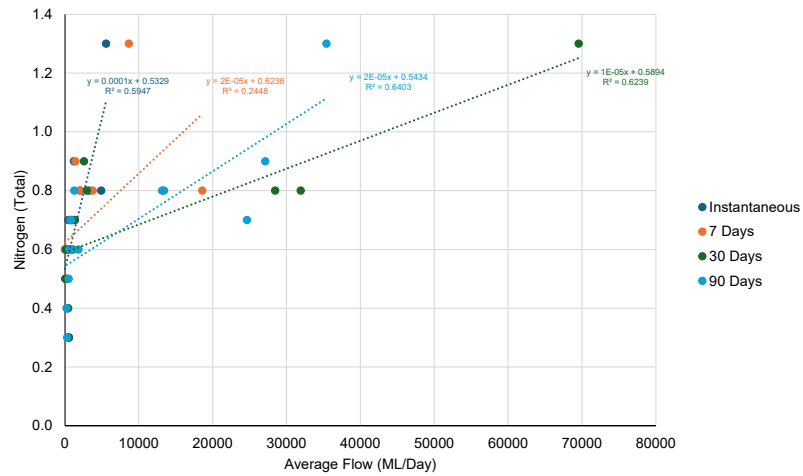




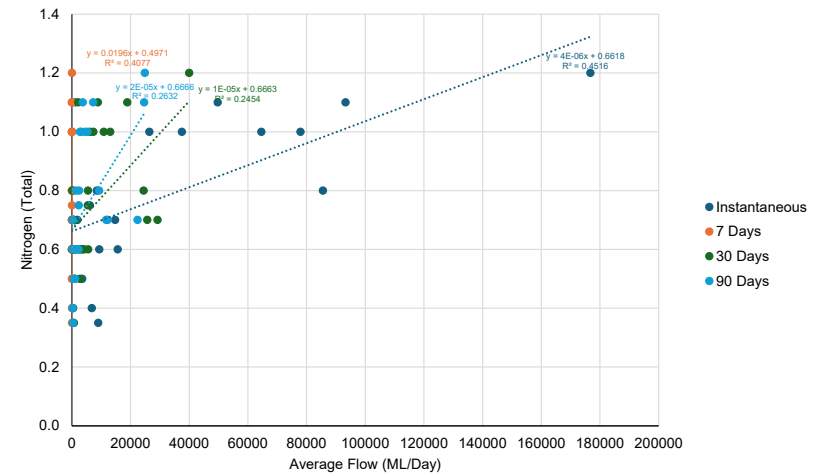
Turbidity (Field) at FRW



Total Nitrogen at Weir DS

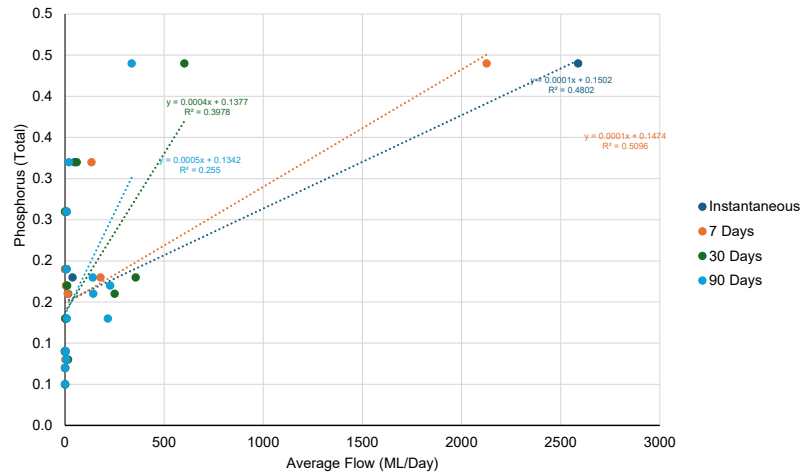


Total Nitrogen at Hanrahan

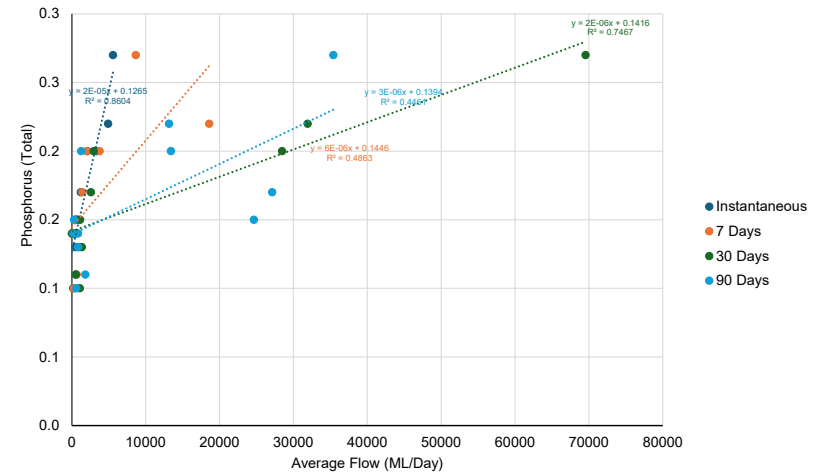


Total Nitrogen at FRW

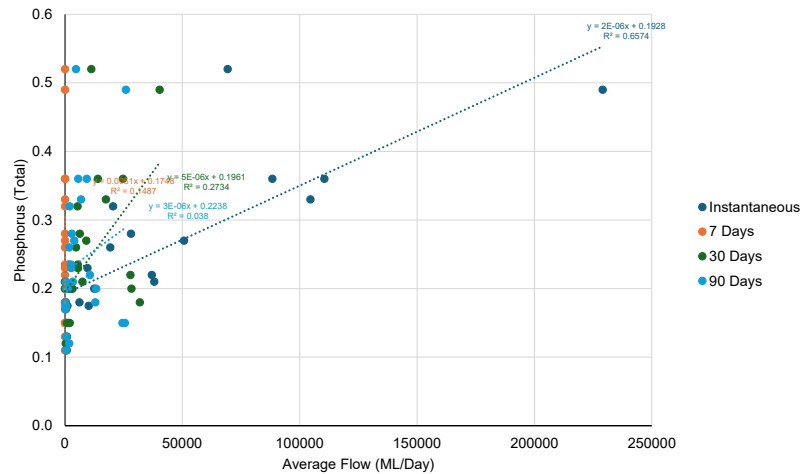




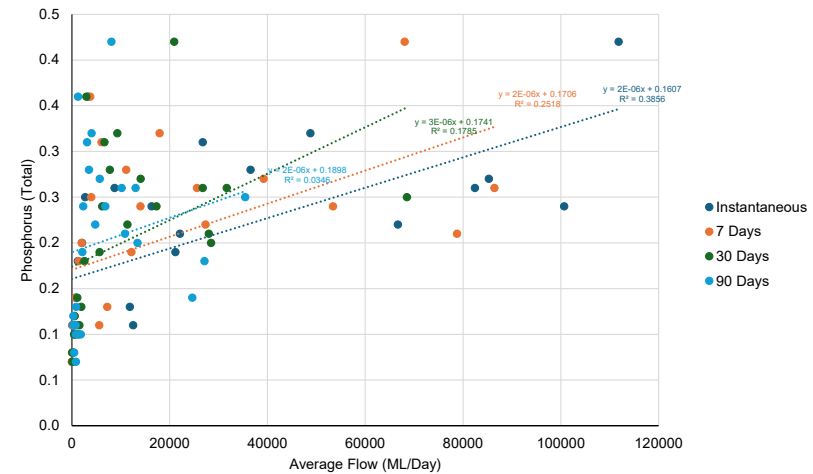
Total Phosphorus at The Pocket



Total Phosphorus at Hanrahan

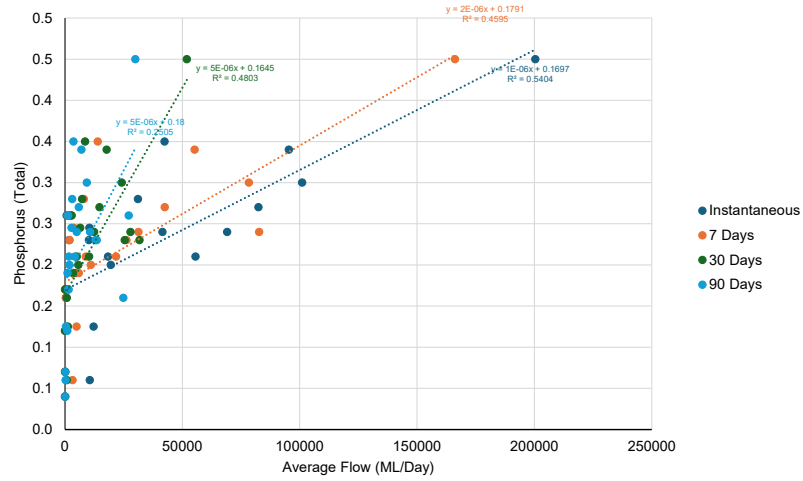


Total Phosphorus at Weir DS

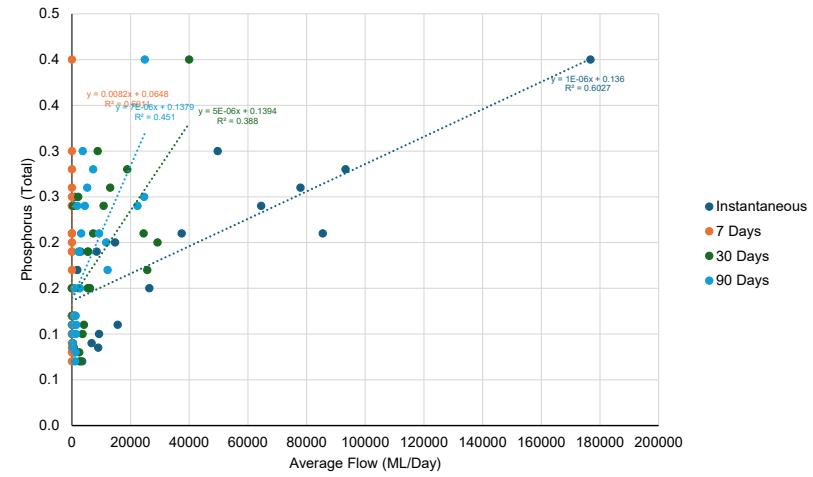


Total Phosphorus at Glenroy Rd

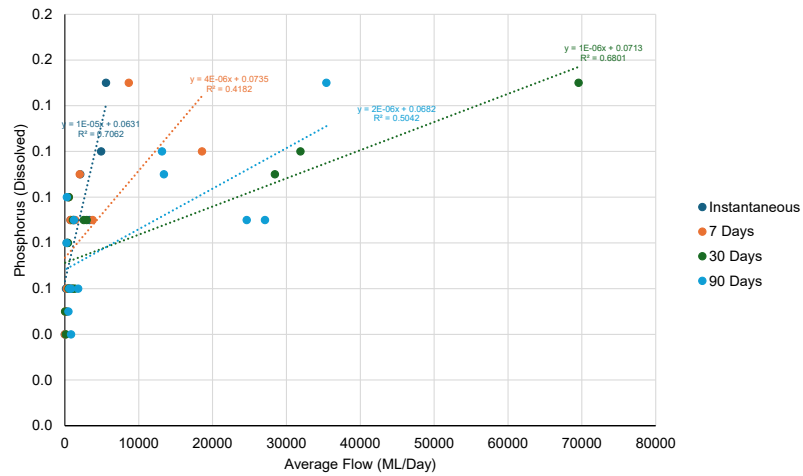




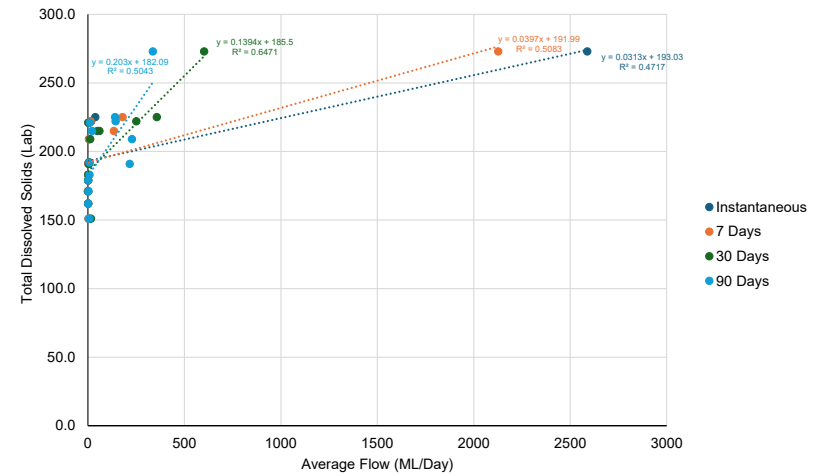
Total Phosphorus at The Gap



Total Phosphorus at FRW

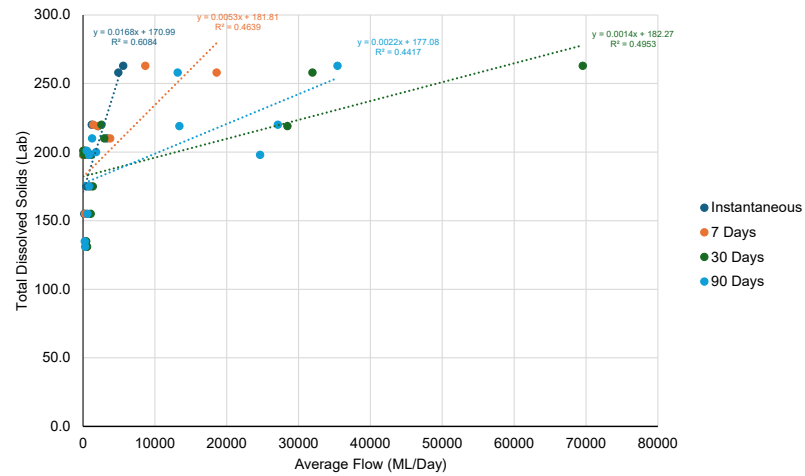


Dissolved Phosphorus at Hanrahan

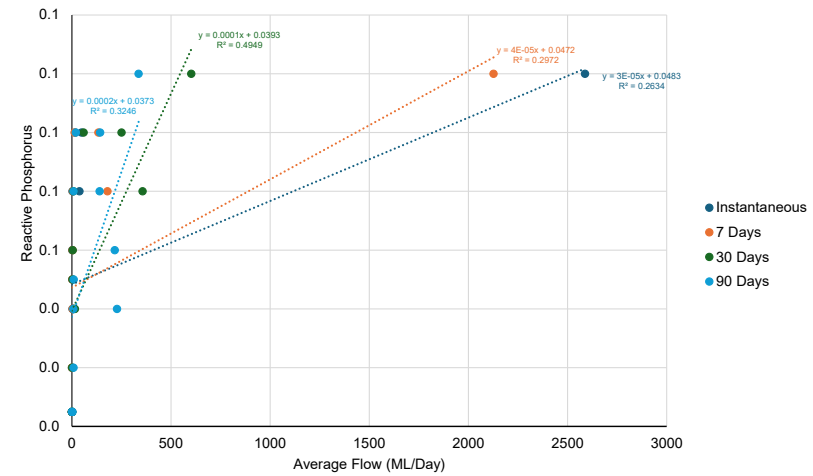


Total Dissolved Solids (Lab) at Yarra Rd

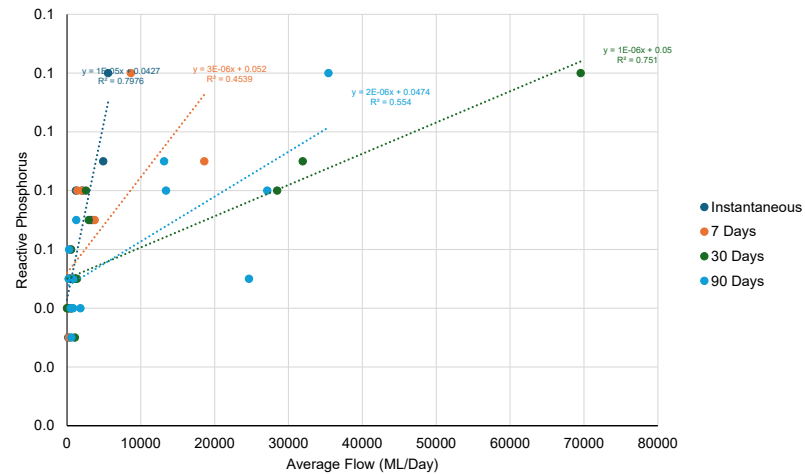




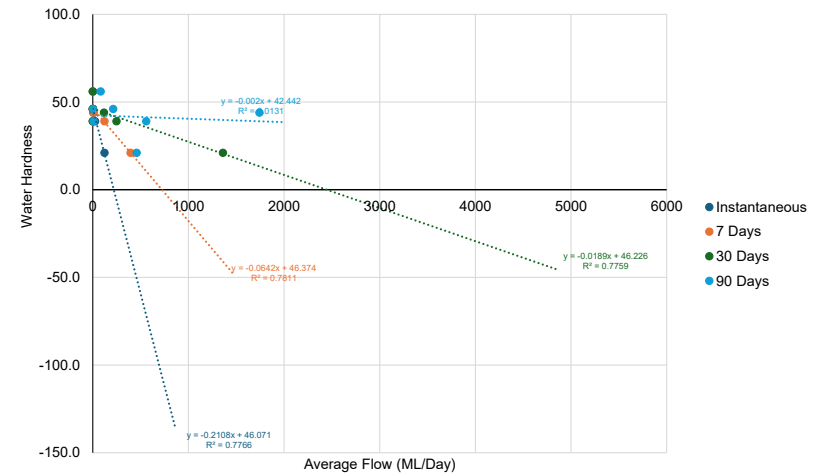
Total Dissolved Solids (Lab) at Hanrahan



Reactive Phosphorus at Yarra Rd

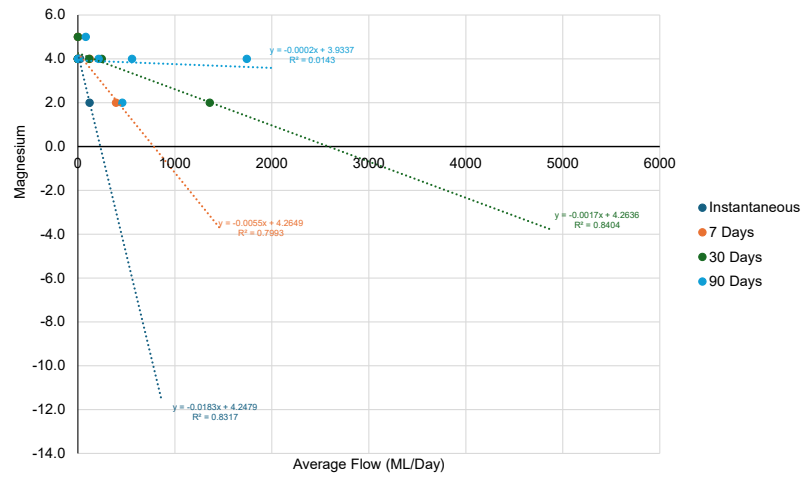


Reactive Phosphorus at Hanrahan



Water Hardness at Beckers





Magnesium at Beckers



Table 3-2 Significant Pearson Correlation Coefficients Between Water Quality and Flow for the Reporting Period

Parameter	Upstream					Within Impoundment				Downstream					
	Mackenzie R		Don R	Dawson R		Fitzroy R									
	Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Field															
pH (Field)	1, 7, 30										1	1, 7	1, 7, 30	30	
Electrical Conductivity (field)	90								1	1, 7, 30		1, 7	1, 7, 30	90	1, 7, 30
DO (Field)		1				30		1						30	
Total Dissolved Solids (Field)	90									1, 7, 30		1	1, 7, 30		1, 7, 30
DO % Saturation (Field)		1		90										30	
Turbidity (Field)					1, 7	1, 7, 30		7		1, 7	1	1	1, 7, 30		1, 7, 30, 90
Inorganics															
Total Suspended Solids (Lab)	90				1, 7				1	1, 7		1, 7			
Nitrogen (Total)							7	7, 30	90	1, 7, 30	1, 30, 90		1, 30		1, 7, 30, 90
Nitrite + Nitrate as N					90										
Total Phosphorus as P						7	1, 7, 30	7, 30		1, 7, 30	1, 7, 30	1, 7, 90	1, 7, 30, 90		1, 7, 30, 90
Total Phosphorus as P (filtered)						30	30	30	30	30	1, 30, 90	30	30		
Total Dissolved Solids (Lab)	7	1, 7			1, 7	1, 7, 30, 90	30, 90				1, 7, 30			90	
Nitrate (as N)					90							90			
Reactive Phosphorus as P (Orthophosphate as P)						30		7, 30, 90	30	30	1, 7, 30, 90	30			90
Kjeldahl Nitrogen Total							1, 7	7	90	1, 7	1, 90	1	1, 7		1, 7
Kjeldahl Nitrogen Total (filtered)								30		30	1, 30		30		30
Metals															
Aluminium (filtered)						1, 7									
Manganese (filtered)						30									
Copper (filtered)								1, 7						7	
Hardness as CaCO3 (filtered)				1, 7, 30			7								
Total Anions															
Magnesium (filtered)				1, 7, 30			1, 7								
Herbicides															
Metolachlor						1, 7								1	
Tebuthiuron		1, 7									1, 7				
NA															
Inorganic Nitrogen as N - Filtered											1, 30				

1: Instantaneous flow, 7: 7 days prior flow, 30: 30 days prior flow, 90: 90 days prior flow

blue shading: 1 significant correlation, green shading: 2 significant correlations, orange shading: 3 significant correlations, red shading: 4 significant correlations.



4.0 Nitrogen Concentrations

4.1 Methods

Raw total nitrogen data was graphed for each site for the Reporting Period to visually display trends over time and compare total nitrogen concentrations with the applicable pre-action baseline 75th percentile.

4.2 Results

Monthly nitrogen concentrations were generally similar across upstream, within impoundment and downstream sites and less than the applicable 75th percentile pre-action baseline except for (Figure 4-1-Figure 4-3):

- Lower Dawson River upstream sites Beckers (October 2024; 1.5 mg/L) and Boolburra (July 2024; 5.3 mg/L), which exceeded the pre-action baseline of 1.4 mg/L
- Fitzroy River within impoundment sites The Pocket (April 2025; 1.4 mg/L), Riverslea (April 2025; 1.3 mg/L) and Weir-US (May 2025; 1.8 mg/L), which exceeded the pre-action baseline of 1.25 mg/L
- Fitzroy River downstream sites Weir-DS (April 2025; 1.5 mg/L), Hanrahan (April 2025; 1.3 mg/L) and Glenroy Rd (January 2025; 1.4 mg/L), which exceeded the pre-action baseline of 1.25 mg/L.

The higher concentration of nitrogen at the Fitzroy River sites in April 2025 is likely the result of the high flow recorded during that month (see Section 3.2.1), with correlation analysis identifying a significant correlation between flow and the concentration of nitrogen for most Fitzroy River sites (see Section 3.2.2).

Nitrogen concentrations were less than 2 mg/L at all sites on all occasions except at Boolburra in July 2024 (5.4 mg/L), where it was more than three times the pre-action baseline (1.4 mg/L). However, this peak in nitrogen concentration was not recorded at any sites downstream or at Boolburra during other months during the Reporting Period, indicating that it was highly localised and temporally limited.



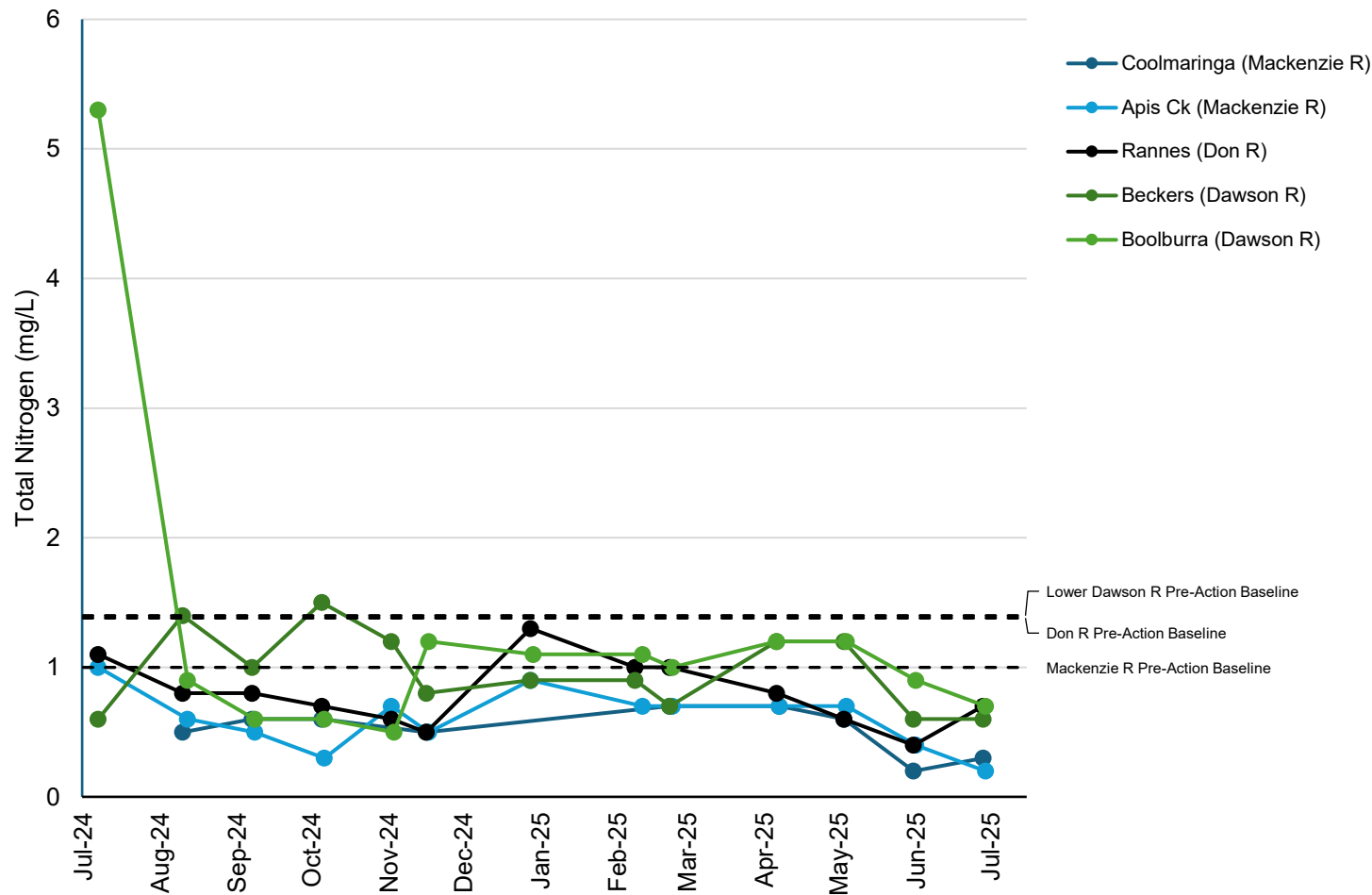


Figure 4-1: Monthly Nitrogen Concentrations at Upstream Sites During the Reporting Period



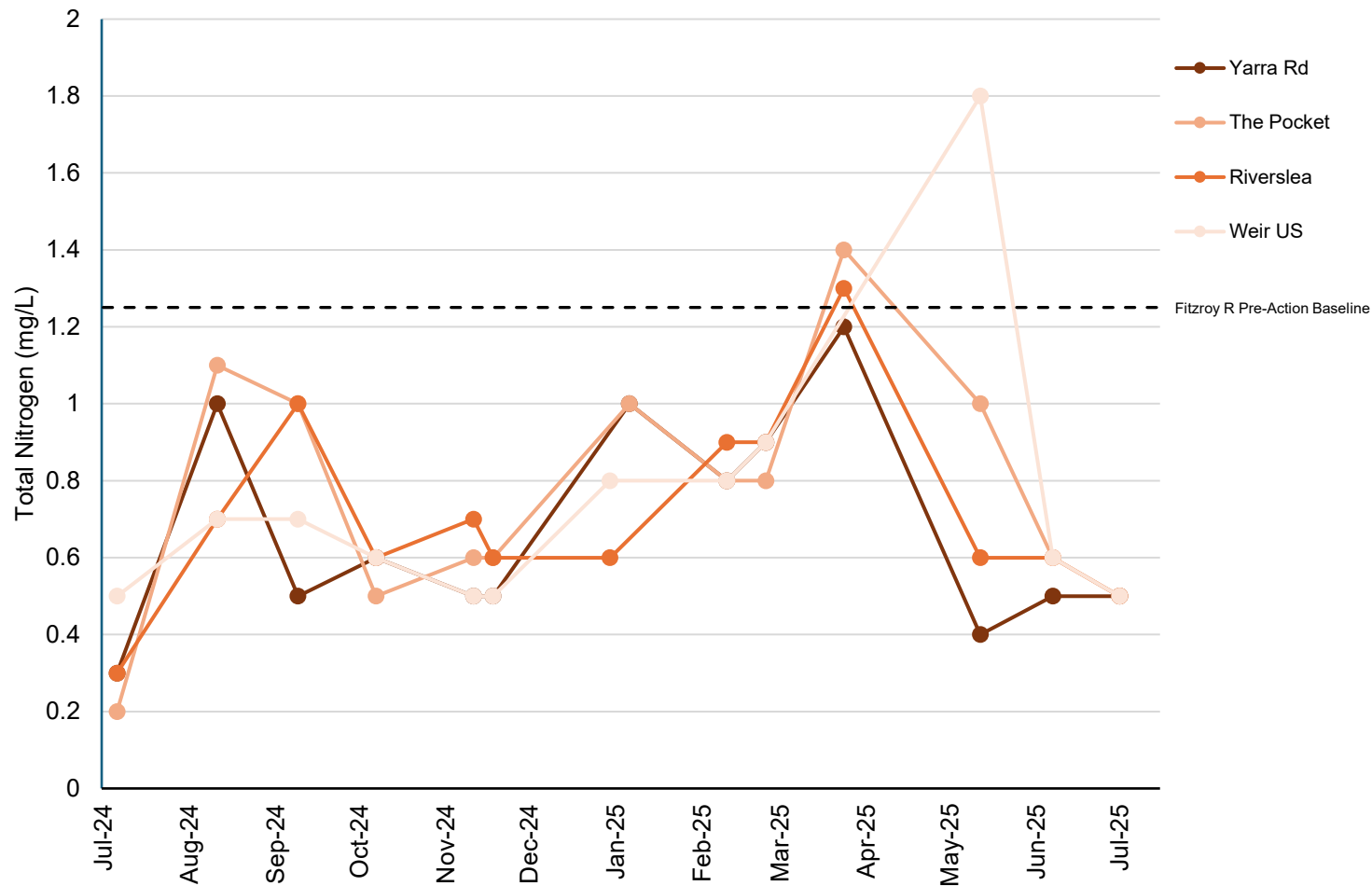


Figure 4-2: Monthly Nitrogen Concentrations Sites Within the Impoundment During the Reporting Period



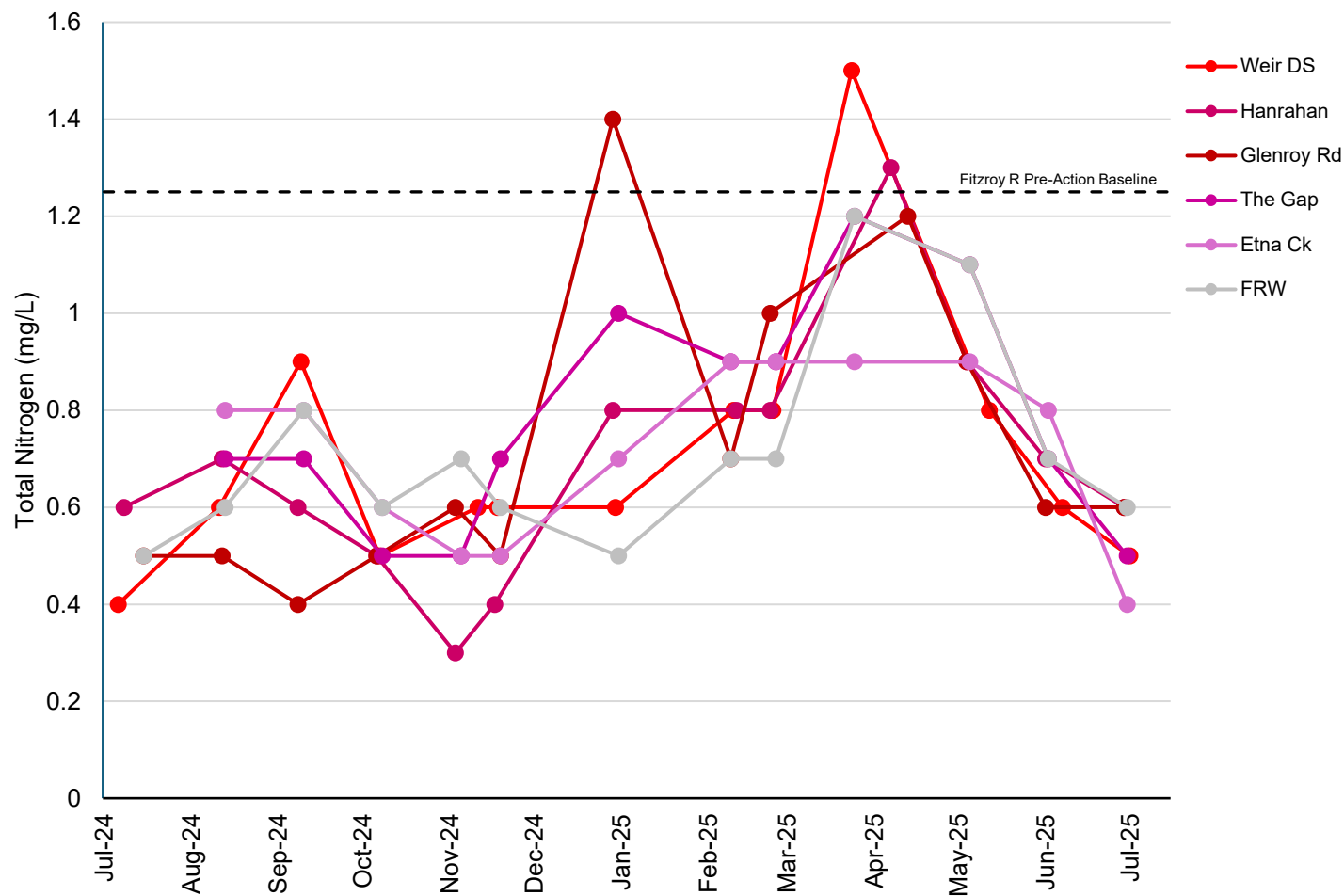


Figure 4-3: Monthly Nitrogen Concentrations at Downstream Sites During the Reporting Period



5.0 Nutrient, Sediment and Pesticide Loads

5.1 Methods

To derive estimated daily water quality concentration data from the monthly data, the difference between two consecutive monthly data points was calculated, and this was divided by the number of days between the two data points, which yielded the 'daily change number'. Derived water quality concentration data was then calculated for each day between the two data empirical points by either sequentially adding or subtracting the daily change number using a daily time step. This yielded a steady daily rate of change in derived water quality concentration data between the two empirical monthly water quality values and is assumed to approximate a linear relationship in water quality patterns between empirical data points. Higher density of sampling events during flow events ensures that variability in water quality concentration data associated with flows is adequately represented in the underlying empirical data, and in the derived data. Any empirical data that was less than the limit of reporting was assumed to be half of the limit of reporting in all calculations.

The mass of each parameter in tonnes was then calculated by multiplying concentration data in milligrams per litre with flow volume in megalitres/day for each day of the Reporting Period and then divided by 1,000. These results were graphed and any apparent trends noted, and high-level assessment of any potential increase in water quality risks to the GBR was presented.

Load calculations were only completed for parameters that had more than 75% of results greater than the LOR and where 6 or more data points were available to ensure validity of the analyses.

5.2 Results

A summary of the average and peak loads for each parameter at each location is summarised in Table 5-1 to Table 5-2.

5.2.1 Nutrients

Nutrient loads during the Reporting Period were typically highest at monitoring locations within and downstream of Riverslea (Figure 5-1 and Table 5-1-Table 5-2), with:

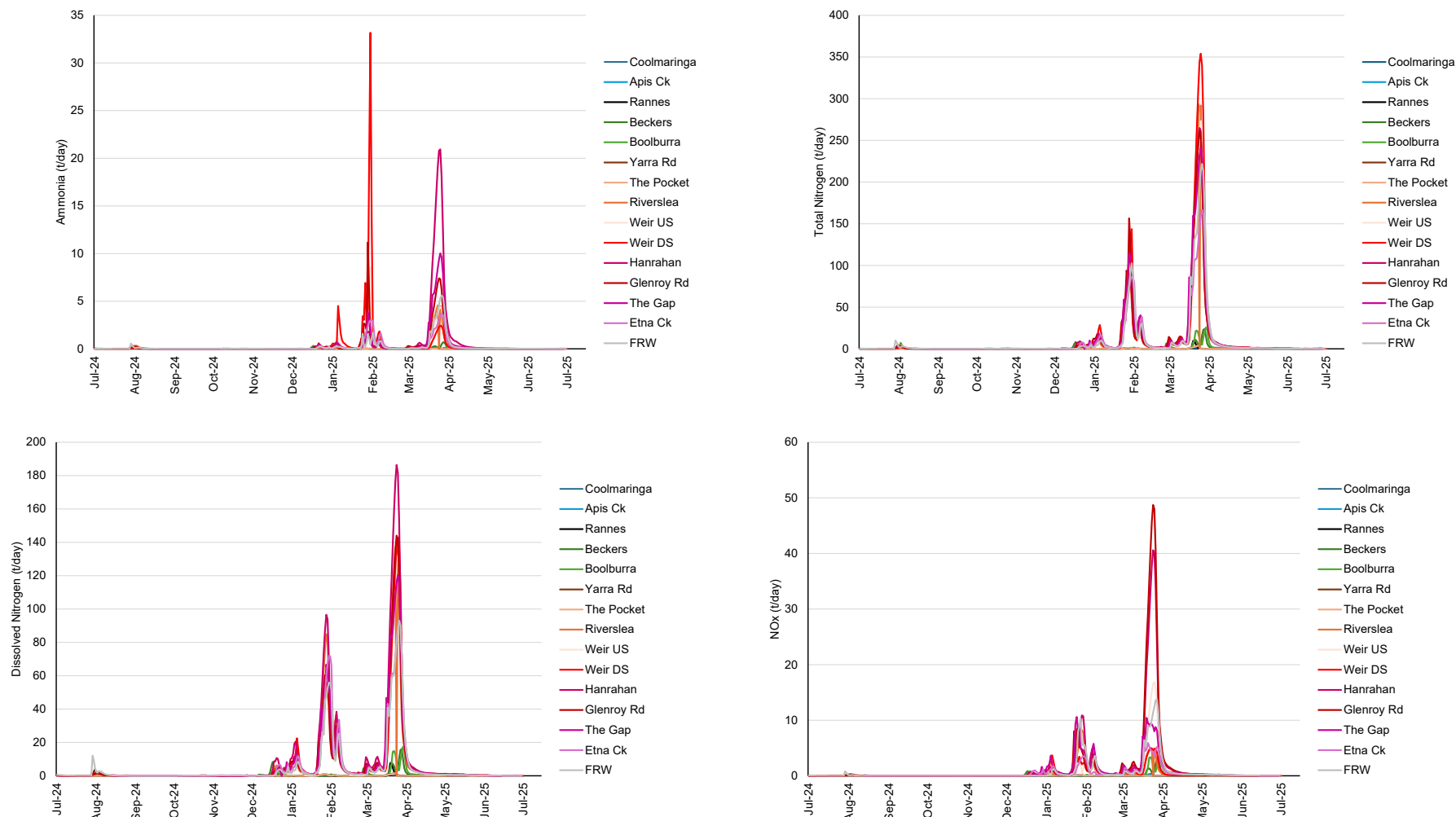
- Average daily loads of ammonia, and dissolved nitrogen compounds (i.e. dissolved nitrogen, dissolved Kjeldahl nitrogen and dissolved inorganic nitrogen) highest at Hanrahan.
- Average daily loads of total nitrogen (i.e. total nitrogen and total Kjeldahl nitrogen) highest at Weir DS.
- Average daily loads of oxidised nitrates (i.e. NO_x and nitrate) highest at Glenroy Rd.
- Average daily loads of phosphorus (total phosphorus, dissolved phosphorus and reactive phosphorus) generally highest at The Gap and Weir-DS, with peaks in April 2025 for total phosphorus at Weir-DS (115 tonnes), dissolved phosphorus at Weir-DS (31 tonnes), Hanrahan (32 tonnes) and Glenroy Rd (33 tonnes), and reactive phosphorus at The Gap (23 tonnes).
- Nutrient loads were typically highest in the Fitzroy River, particularly within and downstream of Riverslea) and higher in the Dawson River compared to the Mackenzie and Don Rivers.

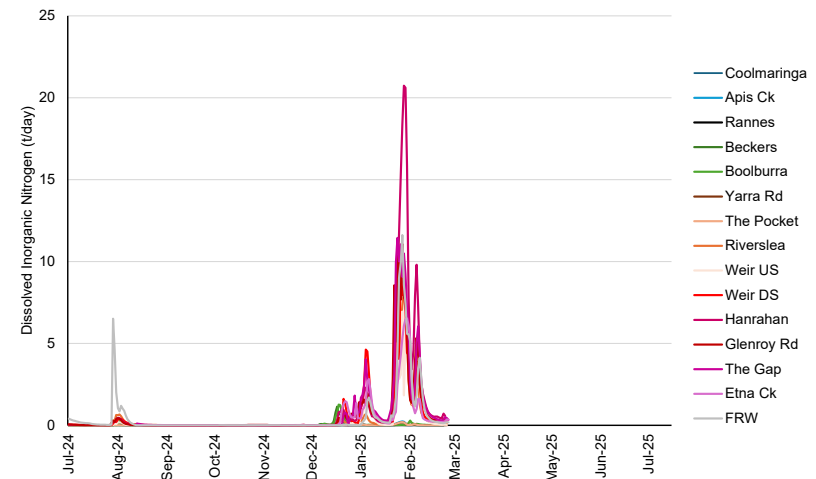
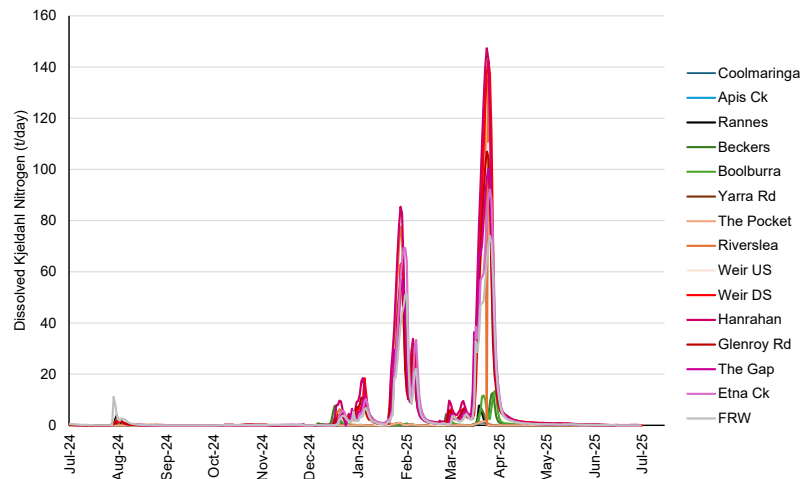
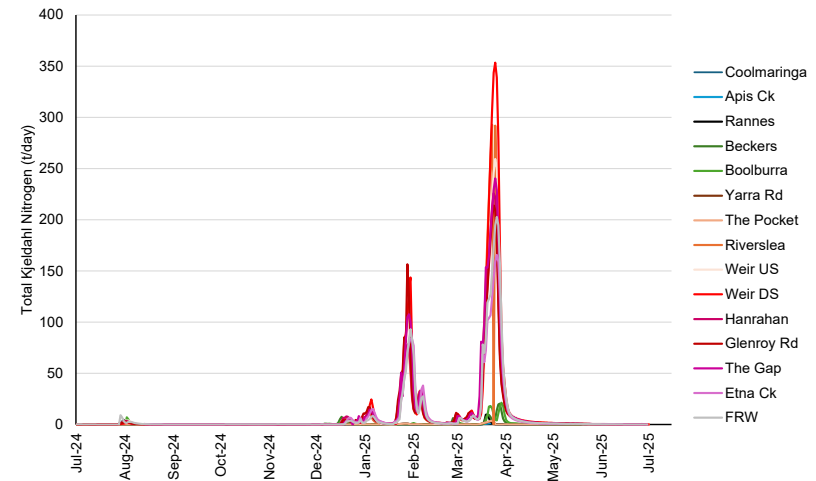
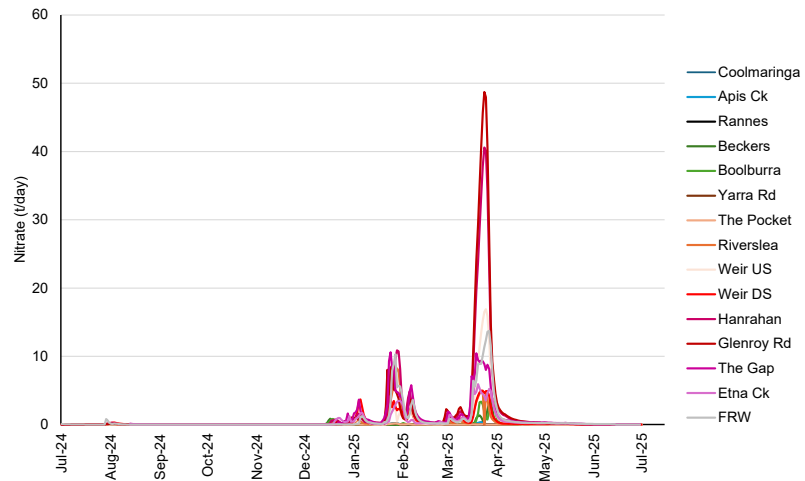


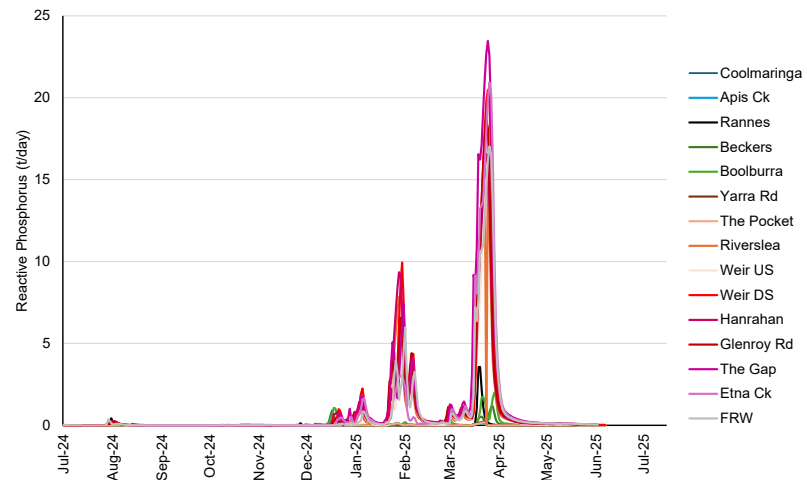
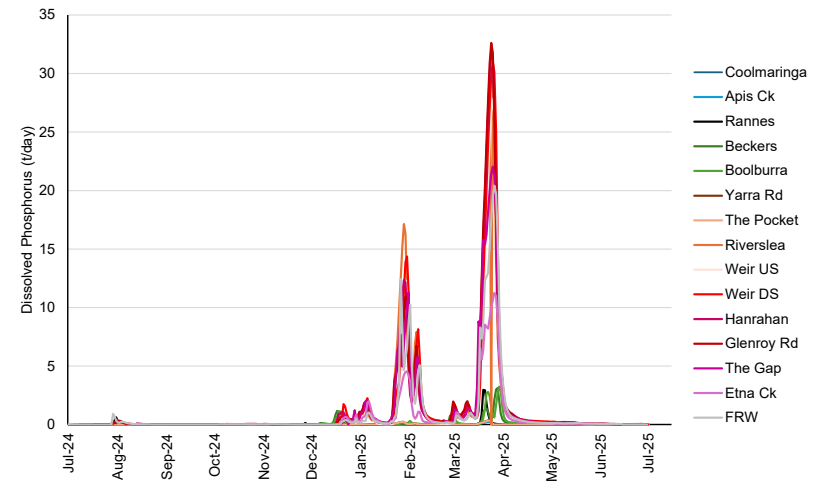
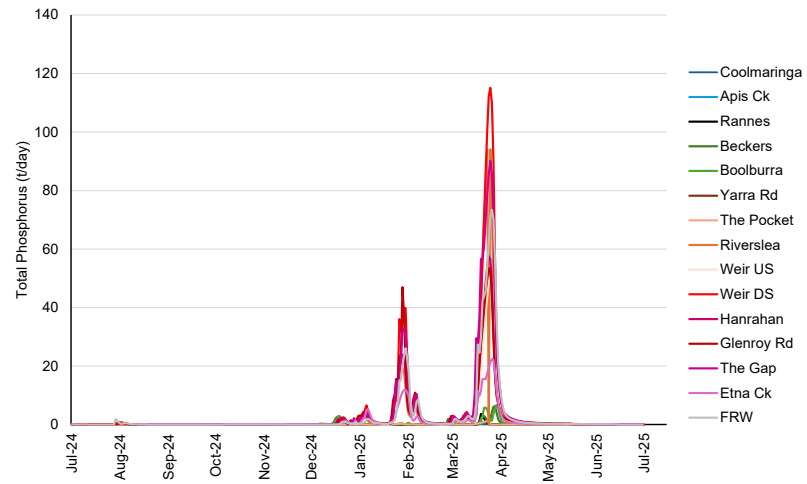
- Annual total nitrogen loads at Weir-DS was 4,365 tonnes (calculated as daily loads multiplied by 365 days). As the nitrogen offset requirement of 194 tonnes, generated through a modelled scenario, under the Water Quality (Nitrogen) Offsets Management Plan (WQNOMP) is less than the empirical calculated load, it may require further assessment to ensure validity. In particular, it is noted that annual nitrogen loads at upstream control sites on the Dawson River (Beckers: 231 tonnes and Boolburra: 338 tonnes) were also higher than the nitrogen offset requirement, and that nitrogen loads were typically higher at the weir location pre-operations compared to the operations phase (SLR Consulting 2025b).
- Peaks in nutrient loads were typically in late January and late March 2025, coinciding with periods of high flow (Figure 5-1).
- Calculated annual loads of particulate nitrogen at Weir-DS (i.e. difference between total nitrogen and dissolved nitrogen daily loads multiplied by 365 days) was 2,234 tonne, which is similar to the 2013 baseline end-of-catchment load calculated for the Fitzroy River Reef 2050 Water Quality Improvement Plan (2,134 tonne).
- Calculated annual loads of particulate nitrogen at end of catchment (i.e. FRW) was 1,591 tonne, which is lower than the 2013 baseline end-of-catchment load calculated for the Fitzroy River Reef 2050 Water Quality Improvement Plan (2,134 tonne) and similar to the 2025 water quality target (1,494 tonnes).
- Calculated annual loads of particulate phosphorus at Weir-DS (i.e. difference between total phosphorus and dissolved phosphorus daily loads multiplied by 365 days) was 927 tonne, which is slightly lower than the 2013 baseline end-of-catchment load calculated for the Fitzroy River Reef 2050 Water Quality Improvement Plan (1,267 tonne).
- Calculated annual loads of particulate phosphorus at end of catchment (i.e. FRW) was 664 tonne, which is lower than the 2013 baseline end-of-catchment load calculated for the Fitzroy River Reef 2050 Water Quality Improvement Plan (1,267 tonne) and less than the 2025 water quality target (887 tonnes).



Figure 5-1 Extrapolated Nutrient Loads for the Reporting Period







5.2.2 Sediment

Sediment loads (i.e. using total suspended solids as a surrogate indicator for sediment) during the Reporting Period were typically highest at monitoring locations within and downstream of Riverslea (Figure 5-2 and Table 5-1-Table 5-2), with:

- Average daily loads were highest at The Gap (2,246 tonnes), Weir DS (1,565 tonnes) and FRW (1,097 tonnes).
- Peaks in sediment loads were typically in late January and late March 2025, coinciding with periods of high flow (Figure 5-2).
- Sediment loads were typically highest in the Fitzroy River (particularly within and downstream of Riverslea) and higher in the Dawson River compared to the Mackenzie and Don Rivers.
- Calculated annual loads of fine sediment at Weir-DS (571 kilotonnes) and FRW (400 kilotonnes), were much lower than the 2013 baseline end-of-catchment load calculated for the Fitzroy River Reef 2050 Water Quality Improvement Plan (1,300 kilotonnes) and the 2025 water quality target (910 kilotonnes).

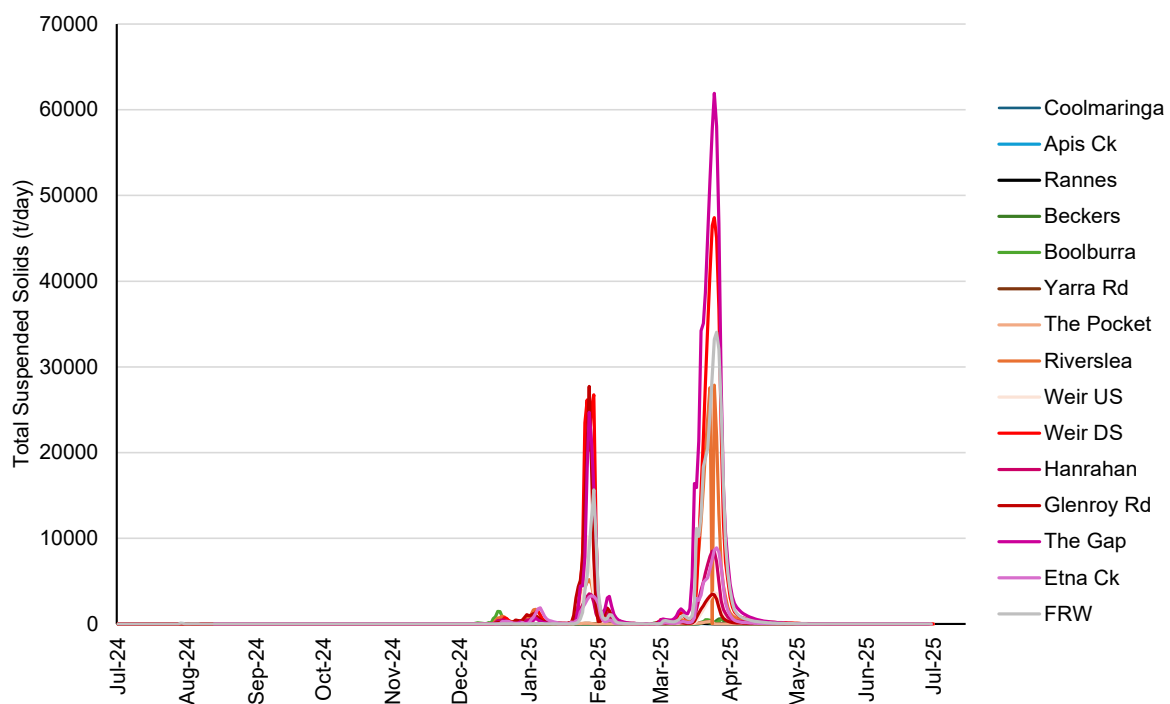


Figure 5-2 Extrapolated Sediment Loads for the Reporting Period



5.2.3 Pesticides

Load calculations were completed for four pesticide parameters (i.e. Metolachlor, Tebuthiuron, Terbutylazine and Diketonitrile). Seventy-five percent (75%) of results for the remaining pesticide parameters was less than the LOR and so calculation of loads for these parameters was not possible.

Pesticides loads during the Reporting Periods were typically highest at monitoring locations within and downstream of Riverslea, however minimal pesticides were recorded at the end of catchment (i.e. FRW; Figure 5-3 and Table 5-1-Table 5-2). Results also indicated:

- Peaks in pesticide loads were typically in late January and late March 2025, coinciding with periods of high flow (Figure 5-3).
- The Reef 2050 Water Quality Improvement Plan water quality targets for the Fitzroy River are presented as a concentration rather than loads, with a comparison of the average extrapolated concentration at Weir DS and FRW indicating:
 - The average extrapolated Metolachlor concentration at Weir-DS (0.116 µg/L) was greater than the water quality target for protection of 99% of aquatic species (0.0084 µg/L); however, the average extrapolated Metolachlor concentration at FRW (0.00000004 µg/L) was much lower than the water quality target (0.0084 µg/L).
 - The average extrapolated Tebuthiuron concentration at Weir-DS (0.43 µg/L) and FRW (0.00000005 µg/L) were much lower than the water quality target for protection of 95% of aquatic species (2.2 µg/L).
 - The average extrapolated Terbutylazine concentration at Weir-DS (0.09 µg/L) and FRW (<0.00000001 µg/L) were much lower than the Australian Drinking Water Guideline (10 µg/L).
 - There is no water quality target for the protection of aquatic species for diketonitrile; however, the extrapolated concentration at the end of catchment (i.e. FRW) was effectively absent (0.00000001 µg/L).



Figure 5-3 Extrapolated Pesticide Loads for the Reporting Period

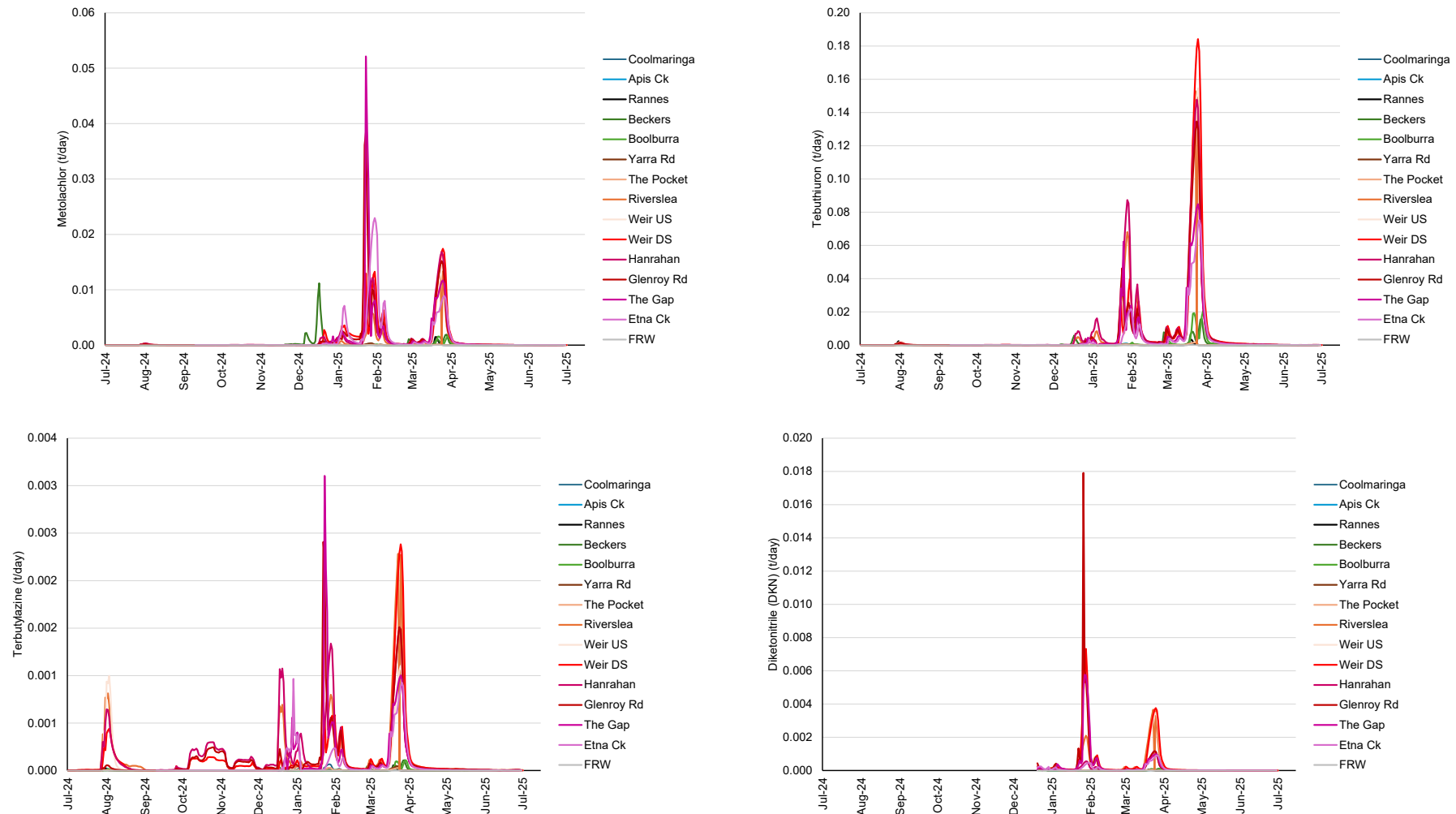


Table 5-1 Average Daily Loads (Tonne/Day) for Nutrients, Sediment and Pesticides/Herbicides at Each Monitoring Location for the Reporting Period

Parameter	Upstream					Within Impoundment				Downstream					
	Mackenzie R		Don R	Dawson R		Fitzroy R									
	Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Inorganics															
Total Suspended Solids (Lab)	2	1	1	17	40	7	7	737	237	1565	329	465	2246	400	1097
Ammonia as N	0.002	0.002	0.001	0.019	0.010	0.002	0.002	0.172	0.225	0.387	0.584	0.305	0.388	0.221	0.217
Nitrogen (Total)	0.07	0.06	0.14	0.63	0.93	0.09	0.10	9.00	9.52	11.96	9.72	10.14	11.74	8.88	9.11
Nitrogen (Total) (filtered)	0.04	0.06	0.11	0.46	0.61	0.06	0.06	5.56	5.16	5.84	7.95	5.79	6.58	5.89	4.75
Nitrite + Nitrate as N	0.01	0.01	0.00	0.08	0.13	0.01	0.01	0.35	0.57	0.37	1.37	1.54	0.89	0.46	0.70
Total Phosphorus as P	0.01	0.02	0.04	0.17	0.25	0.03	0.03	2.62	1.95	3.77	2.25	2.33	3.89	1.30	2.73
Total Phosphorus as P (filtered)	0.01	0.01	0.04	0.08	0.12	0.01	0.01	1.14	1.05	1.23	1.21	1.23	1.19	0.63	0.91
Nitrate (as N)	0.008	0.013	0.001	0.078	0.131	0.006	0.005	0.349	0.566	0.369	1.373	1.537	0.886	0.463	0.699
Reactive Phosphorus as P (Orthophosphate as P)	0.01	0.01	0.04	0.04	0.09	0.01	0.01	0.61	0.64	0.84	0.78	0.79	1.20	0.93	0.73
Kjeldahl Nitrogen Total	0.06	0.05	0.14	0.56	0.78	0.09	0.10	8.77	9.08	11.73	8.37	8.71	11.05	8.56	8.26
Kjeldahl Nitrogen Total (filtered)	0.04	0.05	0.11	0.39	0.49	0.05	0.06	5.30	4.51	5.61	6.59	4.61	5.28	5.55	3.92
Herbicides															
Metolachlor	0.00000	0.00001	0.00002	0.00019	0.00006	0.00001	0.00000	0.00049	0.00079	0.00095	0.00083	0.00106	0.00120	0.00121	0.00000
Tebuthiuron	0.00006	0.00005	0.00005	0.00047	0.00067	0.00005	0.00005	0.00546	0.00497	0.00599	0.00660	0.00481	0.00466	0.00366	0.00000
Organic															
Terbutylazine	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00010	0.00007	0.00011	0.00014	0.00010	0.00009	0.00006	0.00000
NA															
Inorganic Nitrogen as N - Filtered	0.001	0.010	0.005	0.024	0.046	0.008	0.008	0.345	0.341	0.498	0.897	0.587	0.809	0.457	0.542
Diketonitrile (DKN)	0.00000	0.00000	0.00000	0.00001	0.00001	0.00000	0.00000	0.00028	0.00038	0.00043	0.00009	0.00032	0.00026	0.00009	0.00000



Table 5-2 Maximum Daily Loads (Tonne/Day) for Nutrients, Sediment and Pesticides/Herbicides at Each Monitoring Location for the Reporting Period

Parameter	Upstream					Within Impoundment				Downstream					
	Mackenzie R		Don R	Dawson R		Fitzroy R									
	Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Inorganics															
Total Suspended Solids (Lab)	94	39	96	630	1491	282	290	27876	10192	47415	8522	27730	61912	8890	34035
Ammonia as N	0.036	0.046	0.086	0.714	0.133	0.031	0.033	4.568	8.523	33.162	20.939	11.182	10.018	3.704	5.602
Nitrogen (Total)	1.88	1.88	9.75	23.93	25.79	3.19	3.69	293.64	273.16	353.96	264.91	260.52	240.43	166.70	221.81
Nitrogen (Total) (filtered)	1.42	1.60	7.77	16.11	17.33	1.62	1.60	137.03	132.28	142.94	186.36	144.05	120.22	93.06	93.06
Nitrite + Nitrate as N	0.35	0.39	0.06	3.37	3.91	0.15	0.17	8.24	16.91	5.34	40.58	48.73	10.60	5.93	13.72
Total Phosphorus as P	0.43	0.41	3.60	6.32	6.75	1.02	1.15	94.10	50.74	115.09	57.59	53.48	90.16	22.50	73.41
Total Phosphorus as P (filtered)	0.24	0.27	2.97	3.13	3.24	0.37	0.35	29.61	27.83	31.02	31.91	32.61	22.04	11.25	20.42
Nitrate (as N)	0.35	0.39	0.06	3.37	3.91	0.15	0.17	8.24	16.91	5.34	40.58	48.73	10.60	5.93	13.72
Reactive Phosphorus as P (Orthophosphate as P)	0.15	0.15	3.57	1.18	2.00	0.24	0.18	15.39	15.78	20.47	16.57	18.64	23.47	20.93	17.03
Kjeldahl Nitrogen Total	1.52	1.43	9.75	20.48	21.35	3.18	3.69	292.83	259.41	353.47	225.91	213.93	240.43	165.79	202.84
Kjeldahl Nitrogen Total (filtered)	1.07	1.25	7.77	12.65	13.32	1.61	1.60	136.22	110.24	142.46	147.35	106.97	100.18	92.16	74.09
Herbicides															
Metolachlor	0.00009	0.00013	0.00148	0.01117	0.00163	0.00036	0.00014	0.01359	0.01453	0.01742	0.01683	0.03838	0.05214	0.02295	0.00000
Tebuthiuron	0.00141	0.00134	0.00333	0.01586	0.02060	0.00168	0.00167	0.15293	0.15463	0.18421	0.14776	0.13464	0.08488	0.07523	0.00000
Organic															
Terbutylazine	0.00007	0.00003	0.00006	0.00011	0.00011	0.00005	0.00003	0.00228	0.00110	0.00238	0.00151	0.00241	0.00310	0.00097	0.00000
NA															
Inorganic Nitrogen as N - Filtered	0.03	0.24	0.43	1.14	1.27	0.19	0.20	8.24	8.52	9.70	20.74	11.07	11.44	6.53	11.62
Diketonitrile (DKN)	0.00002	0.00002	0.00006	0.00011	0.00011	0.00004	0.00004	0.00367	0.00864	0.00970	0.00116	0.01791	0.00577	0.00093	0.00000



6.0 Monitoring Program Review

A high-level review of the current monitoring program indicated:

- A review of the parameter list after the first three years of operation and removing parameters that were <LOR on all occasions would be prudent to remove redundancy and unnecessary use of resources.
- Presenting the full monitoring requirements of the program in an integrated table, and within a more succinct document, would increase the operational utility of the design document and potentially provide opportunity to streamline the monitoring program.
- The need for measuring chlorophyll a at depth when stratification is detected is onerous and not likely to provide information over and above surface sampling.
- The need to monitoring water quality for a fourth flow event (i.e. during major flood conditions as defined by BOM²) should be rationalised to only gauged data to eliminate safety concerns.

7.0 Conclusions

Implementation of the monitoring program for the Reporting Period was generally in accordance with the design of the LFWQMRP, within minor gaps in monitoring at some sites generally due to adverse conditions (wet access roads or high flow preventing safe sampling). However, overall the program achieved the scope and requirements of the EPBC approval and the LFWQMRP, with the key results being:

- The 12-month rolling median achieved the applicable WQO and/or baseline percentile for most parameters at most sites. With the exception of potential anomalous results for redox potential and dissolved oxygen, all exceedances at sites in the potential change area were consistent with historical control site data, and so there was no evidence that operation of Rookwood Weir has negatively influenced water quality of the Lower Fitzroy River
- The 90-day antecedent flow statistic had the least influence on water quality, indicating that shorter-term flow patterns are more important in determining water quality patterns. Increases in short-term flow volume often resulted in increased turbidity and nutrients, but reduced electrical conductivity, pH and ions.
- Monthly nitrogen concentrations were generally similar across upstream, within impoundment and downstream sites and mostly less the applicable pre-action baseline with peaks in nitrogen concentration within the Fitzroy River generally in April 2025 coinciding with periods of high flow.
- End of basin loads (as measured at site FRW) for nutrients, sediment and pesticides achieved Reef 2050 Water Quality Improvement Plan water quality targets for the Fitzroy River, and so there is no evidence indicating that operation of Rookwood Weir has influenced water quality risks for the Great Barrier Reef.
- Annual total nitrogen loads at Weir-DS was greater than the modelled nitrogen offset requirement under the WQNOMP but the modelled nitrogen offset requirement may require further assessment to ensure validity as annual nitrogen loads at upstream control sites on the Dawson River were also higher than the nitrogen offset

² <http://www.bom.gov.au/qld/flood/brochures/fitzroy/fitzroy.shtml>



requirement, and that nitrogen loads were typically higher at the weir location pre-operations compared to the operations phase (SLR Consulting 2025b).

- Peaks in nutrient, sediment and pesticide loads were typically in late January and late March 2025, coinciding with periods of high flow.

8.0 References

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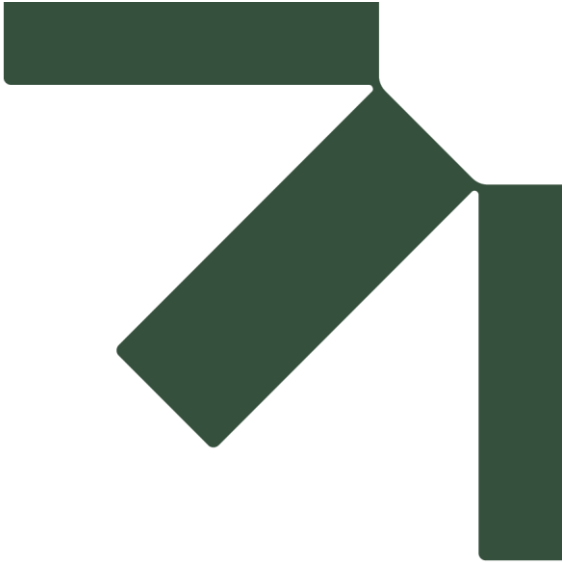
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Sunwater 2024. Sunwater: Rookwood Weir Project EPBC 2009/5173 – Water Quality (Nitrogen) Offset Management Plan, revision 3. Sunwater, March 2024.

9.0 Declaration of Suitably Qualified Persons

This report, and the data analyses presented in this report, were prepared by Dr Andrew Bentley, Dr Vanessa Clark and Dr Ben Cook, who have university qualifications in environmental science and a combined total of over 50 years of experience as professional aquatic ecologists.





Appendix A 12-month Rolling Medians

The 12-month rolling median for each month for the Reporting Period is presented for each parameter at each site in the below tables. Values shaded grey exceed both the WQO/DGV and the baseline percentiles, and the indicated exceedances at sites in the potential change area are assessed further in the Lower Fitzroy Monthly Water Quality Exceedance Investigation Report, April 2024 to July 2025 (SLR Consulting 2025a).

A.1 Coolmaringa (Upstream Control Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Mackenzie) Low	Pre Action Baseline (Mackenzie) High	EPP WQO (Mackenzie) Low	EPP WQO (Mackenzie) High	10 Mar 2025	23 Apr 2025	19 May 2025	16 Jun 2025	14 Jul 2025
Field												
Temperature (Field)	°C	0		19.7	32.2			27.1	26.4	25.7	25.0	24.2
pH (Field)	-	0		7.1	8.5	6.5	8.5	7.8	7.7	7.7	7.7	7.7
Electrical Conductivity (field)	µS/cm	0			285		310	228	228	229	232	236
DO (Field)	mg/L	0						7.6	7.4	7.6	7.8	8.0
Redox Potential (Field)	mV	0			149			100	112	124	125	125
Total Dissolved Solids (Field)	mg/L	0						147	148	148	151	153
DO % Saturation (Field)	%	0		86	107	85	110	98	97	96	97	98
Turbidity (Field)	NTU	0			259		50	62	64	66	64	62
Inorganics								-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			72			-	-	-	-	-
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	-	-	-
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	-	-	-
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	-	-	-
Total Suspended Solids (Lab)	mg/L	5			91		110	10	10	10	11	10
Ammonia as N	mg/L	0.01	0.9		0.03		0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Chloride	mg/L	1			33			-	-	-	-	-
Nitrogen (Total)	mg/L	0.1			1		0.775	0.600	0.600	0.600	0.600	0.600
Nitrogen (Total) (filtered)	mg/L	0.1			1.2			0.3	0.4	0.3	0.3	0.3
Nitrite + Nitrate as N	mg/L	0.01			0.21		0.06	<0.01	0.01	0.02	0.01	<0.01
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.18		0.16	0.14	0.16	0.16	0.15	0.14
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.08	0.09	0.08	0.08	0.08
Total Dissolved Solids (Lab)	mg/L	10						179	179	179	183	183
Nitrate (as N)	mg/L	0.01			0.21			<0.01	0.01	0.02	0.01	<0.01
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.04		0.02	0.06	0.07	0.06	0.06	0.06
Fluoride	mg/L	0.1			0.1			-	-	-	-	-
Kjeldahl Nitrogen Total	mg/L	0.1			0.85			0.60	0.55	0.50	0.50	0.50
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.3	0.4	0.3	0.3	0.3
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			7		10	-	-	-	-	-
Metals								-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		1.09			-	-	-	-	-
Iron (filtered)	mg/L	0.05			0.69			-	-	-	-	-
Manganese (filtered)	mg/L	0.001	1.9		0.017			-	-	-	-	-
Copper (filtered)	mg/L	0.001	0.0014		0.003			-	-	-	-	-
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	-	-	-
Hardness as CaCO3 (filtered)	mg/L	1			69			-	-	-	-	-
Total Anions								-	-	-	-	-
Calcium (filtered)	mg/L	1			14			-	-	-	-	-
Potassium (filtered)	mg/L	1			4			-	-	-	-	-
Sodium (filtered)	mg/L	1			24			-	-	-	-	-
Magnesium (filtered)	mg/L	1			8			-	-	-	-	-
Herbicides								-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	-	-	-
Metribuzin	µg/L	0.02			0.02			-	-	-	-	-
2,4-D	µg/L	10	280		10			-	-	-	-	-
Ametryn	µg/L	0.01			0.01			-	-	-	-	-
Atrazine	µg/L	0.01	13		0.02			-	-	-	-	-
Diuron	µg/L	0.02			0.01			-	-	-	-	-
Fluroxypyr	µg/L	10			10			-	-	-	-	-
Hexazinone	µg/L	0.02			0.01			-	-	-	-	-
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	-	-	-
Metolachlor	µg/L	0.01	0.46		0.05			-	-	-	-	-
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	-
Pendimethalin	µg/L	0.05			0.05			-	-	-	-	-
Propazine	µg/L	0.01			0.005			-	-	-	-	-



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Mackenzie) Low	Pre Action Baseline (Mackenzie) High	EPP WQO (Mackenzie) Low	EPP WQO (Mackenzie) High	10 Mar 2025	23 Apr 2025	19 May 2025	16 Jun 2025	14 Jul 2025
	Simazine	µg/L	0.02	3.2		0.01			–	–	–	–	–
	Tebuthiuron	µg/L	0.02	2.2		0.57			–	–	–	–	–
	Terbutryn	µg/L	0.01			0.01			–	–	–	–	–
	Triclopyr	µg/L	10			10			–	–	–	–	–
Other									–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	–	–	–
	Tebuconazole	µg/L	0.01			0.005			–	–	–	–	–
Organic									–	–	–	–	–
	Terbutylazine	µg/L	0.01			0.02			–	–	–	–	–
NA									–	–	–	–	–
	Fipronil	µg/L	0.01	0.018		0.01			–	–	–	–	–
	Fluproponate	µg/L	0.1			0.2			–	–	–	–	–
	Thiamethoxam	µg/L	0.02			0.01			–	–	–	–	–
	Chlorophyll a	mg/L	0.001			0.008		0.005	0.003	0.003	0.003	0.004	0.003
	Imidacloprid	µg/L	0.01			0.005			–	–	–	–	–
Pesticides									–	–	–	–	–
	Diketonitrile (DKN)	µg/L	0.01			0.005			–	–	–	–	–
	Haloxypop	µg/L	0.1			0.1			–	–	–	–	–
	Imazapic	µg/L	0.01			0.005			–	–	–	–	–
	Isoxaflutole	µg/L	0.01			0.005			–	–	–	–	–
Organophosphorous Pesticides				0.01					–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	–	–	–
	Diazinon	µg/L	0.01			0.005			–	–	–	–	–
Fungicides									–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	–	–	–
Calculations													
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			1			0.30	0.25	0.30	0.25	0.25
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			1			0.30	0.25	0.30	0.25	0.25
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.24			0.02	0.03	0.03	0.03	0.03
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			0.84			0.59	0.54	0.50	0.50	0.50
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			0.92			0.30	0.33	0.30	0.28	0.27
	Particulate Phosphorus (PP) (PP = [TP] - [TP filtered])	mg/L	0.01			0.18			0.07	0.07	0.07	0.07	0.07



A.2 Apis Ck Rd (Upstream Control Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Mackenzie) Low	Pre Action Baseline (Mackenzie) High	EPP WQO (Mackenzie) Low	EPP WQO (Mackenzie) High	23 Jul 2024	28 Aug 2024	24 Sep 2024	22 Oct 2024	18 Nov 2024	03 Dec 2024	13 Jan 2025	27 Feb 2025	11 Mar 2025	23 Apr 2025	20 May 2025	17 Jun 2025	15 Jul 2025
Field																				
Temperature (Field)	°C	0		19.7	32.2			27.0	25.5	24.1	25.4	25.5	25.5	25.5	25.5	25.5	25.0	25.0	25.0	25.0
pH (Field)	-	0		7.1	8.5	6.5	8.5	7.5	7.6	7.6	7.6	7.6	7.7	7.7	7.7	7.7	7.7	7.5	7.4	7.5
Electrical Conductivity (field)	µS/cm	0			285		310	193	200	205	209	212	212	212	217	225	225	232	234	236
DO (Field)	mg/L	0						7.2	7.3	7.6	8.0	8.1	8.1	8.1	8.1	8.1	8.1	7.9	7.9	7.9
Redox Potential (Field)	mV	0			149			124	135	124	135	130	119	119	119	119	135	148	148	149
Total Dissolved Solids (Field)	mg/L	0						126	130	135	140	142	142	142	144	148	148	151	153	154
DO % Saturation (Field)	%	0		86	107	85	110	90	90	90	90	93	91	91	91	90	90	87	87	90
Turbidity (Field)	NTU	0			259		50	33	45	33	22	22	22	22	22	22	32	47	47	47
Inorganics								-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			72			-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	-	-	-	-	-	-	-	-	-	-	-
Total Suspended Solids (Lab)	mg/L	5			91		110	14	7	7	6	7	7	7	7	7	7	8	8	8
Ammonia as N	mg/L	0.01	0.9		0.03		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.01	<0.01
Chloride	mg/L	1			33			-	-	-	-	17	17	17	17	17	17	17	17	17
Nitrogen (Total)	mg/L	0.1			1		0.775	0.650	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.650	0.650	0.700	0.700	0.650
Nitrogen (Total) (filtered)	mg/L	0.1			1.2			0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4
Nitrite + Nitrate as N	mg/L	0.01			0.21		0.06	0.08	0.07	0.07	0.06	0.03	0.03	0.03	0.03	0.03	0.03	0.06	0.06	0.03
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.18		0.16	0.12	0.12	0.12	0.12	0.10	0.10	0.10	0.10	0.11	0.11	0.13	0.13	0.11
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.08	0.08	0.08	0.07	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.07
Total Dissolved Solids (Lab)	mg/L	10						182	166	166	165	161	156	161	161	166	166	178	181	174
Nitrate (as N)	mg/L	0.01			0.21			0.08	0.07	0.07	0.06	0.03	0.03	0.03	0.03	0.03	0.03	0.06	0.06	0.03
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.04		0.02	0.05	0.06	0.05	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.06
Fluoride	mg/L	0.1			0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
Kjeldahl Nitrogen Total	mg/L	0.1			0.85			0.60	0.60	0.55	0.50	0.55	0.50	0.55	0.55	0.60	0.55	0.60	0.55	0.50
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			7		10	-	-	-	-	2	2	2	2	2	2	2	2	2
Metals								-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		1.09			-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (filtered)	mg/L	0.05			0.69			-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (filtered)	mg/L	0.001	1.9		0.017			-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (filtered)	mg/L	0.001	0.0014		0.003			-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	-	-	-	-	-	-	-	-	-	-	-
Hardness as CaCO3 (filtered)	mg/L	1			69			-	-	-	-	-	-	-	-	-	-	-	-	-
Total Anions								-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			14			-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	mg/L	1			4			-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (filtered)	mg/L	1			24			-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (filtered)	mg/L	1			8			-	-	-	-	-	-	-	-	-	-	-	-	-
Herbicides								-	-	-	-	-	-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.02			-	-	0.06	0.06	0.04	0.04	0.06	0.06	0.04	0.04	0.04	0.02	0.02
Diuron	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexazinone	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		0.57			-	-	0.20	0.20	0.15	0.15	0.20	0.20	0.24	0.24	0.24	0.20	0.16
Terbutryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Mackenzie) Low	Pre Action Baseline (Mackenzie) High	EPP WQO (Mackenzie) Low	EPP WQO (Mackenzie) High	23 Jul 2024	28 Aug 2024	24 Sep 2024	22 Oct 2024	18 Nov 2024	03 Dec 2024	13 Jan 2025	27 Feb 2025	11 Mar 2025	23 Apr 2025	20 May 2025	17 Jun 2025	15 Jul 2025
Other									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Tebuconazole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic									–	–	–	–	–	–	–	–	–	–	–	–	–
	Terbutylazine	µg/L	0.01			0.02			–	–	<0.01	<0.01	0.12	0.12	0.02	0.02	0.01	0.01	0.01	0.02	0.02
NA	Fipronil	µg/L	0.01	0.018		0.01			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Fluproponate	µg/L	0.1			0.2			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Thiamethoxam	µg/L	0.02			0.01			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chlorophyll a	mg/L	0.001			0.008		0.005	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	Imidacloprid	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Diketonitrile (DKN)	µg/L	0.01			0.005			–	–	–	–	–	–	–	–	–	–	–	–	–
	Haloxifyop	µg/L	0.1			0.1			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Imazapic	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Isoxaflutole	µg/L	0.01			0.005			–	–	<0.01	<0.01	0.013	0.013	<0.01	<0.01	0.013	0.013	0.013	<0.01	<0.01
Organophosphorous Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fungicides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calculations																					
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			1			0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			1			0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.24			0.14	0.11	0.11	0.10	0.09	0.09	0.11	0.11	0.08	0.08	0.11	0.08	0.07
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			0.84			0.51	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.51	0.50	0.50	0.50	0.50
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			0.92			0.39	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	Particulate Phosphorus (PP) (PP = [TP] – [TP filtered])	mg/L	0.01			0.18			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05



A.3 Rannes (Upstream Control Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Callide) Low	Pre Action Baseline (Callide) High	EPP WQO (Callide) Low	EPP WQO (Callide) High	23 Jul 2024	26 Aug 2024	23 Sep 2024	21 Oct 2024	18 Nov 2024	02 Dec 2024	13 Jan 2025	24 Feb 2025	10 Mar 2025	22 Apr 2025	19 May 2025	16 Jun 2025	14 Jul 2025
Field																				
Temperature (Field)	°C	0		13.8	31.7			26.4	26.0	23.9	26.0	26.1	26.5	26.5	26.5	26.7	24.5	24.5	24.5	24.5
pH (Field)	-	0		7.1	8	6.5	8.5	7.6	7.5	7.5	7.4	7.3	7.3	7.3	7.3	7.3	7.2	7.2	7.2	7.2
Electrical Conductivity (field)	µS/cm	0		420			1,150	422	409	410	409	408	404	393	380	367	380	380	387	380
DO (Field)	mg/L	0						6.7	6.7	6.2	6.4	6.1	5.7	5.7	5.7	5.7	5.7	5.6	5.6	5.6
Redox Potential (Field)	mV	0			147			143	147	141	147	150	141	134	132	126	126	132	134	135
Total Dissolved Solids (Field)	mg/L	0						281	276	272	267	267	265	265	257	247	252	252	252	247
DO % Saturation (Field)	%	0		59	83	85	110	72	71	67	71	67	67	67	67	68	68	64	64	64
Turbidity (Field)	NTU	0			120		50	12	12	11	10	10	9	9	9	8	8	7	6	5
Inorganics								-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			113			-	-	123	123	121	121	119	119	108	108	108	97	97
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	123	123	121	121	119	119	108	108	108	97	97
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Suspended Solids (Lab)	mg/L	5			31		30	16	14	14	13	13	10	8	6	6	5	5	5	<5
Ammonia as N	mg/L	0.01	0.9		0.06		0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	<0.01	<0.01	<0.01	<0.01
Chloride	mg/L	1			61			-	-	48	48	46	46	44	44	44	44	44	44	45
Nitrogen (Total)	mg/L	0.1			1.38		0.5	1.20	1.10	1.10	1.10	1.00	1.00	1.00	1.05	1.00	0.90	0.80	0.80	0.75
Nitrogen (Total) (filtered)	mg/L	0.1			0.82			0.90	0.80	0.75	0.70	0.70	0.70	0.70	0.80	0.70	0.70	0.70	0.70	0.50
Nitrite + Nitrate as N	mg/L	0.01			0.09		0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.35		0.05	0.20	0.16	0.21	0.18	0.21	0.23	0.23	0.23	0.23	0.22	0.22	0.22	0.22
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.15	0.12	0.16	0.16	0.18	0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.18
Total Dissolved Solids (Lab)	mg/L	10						290	283	280	277	274	274	270	255	238	238	238	238	238
Nitrate (as N)	mg/L	0.01			0.07			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.15		0.02	0.11	0.10	0.13	0.13	0.14	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15
Fluoride	mg/L	0.1			0.2			-	-	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Kjeldahl Nitrogen Total	mg/L	0.1			1.1			1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.1	1.0	0.9	0.8	0.8	0.8
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.9	0.8	0.8	0.7	0.8	0.8	0.8	0.9	0.8	0.7	0.7	0.7	0.6
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			13		20	-	-	6	6	7	7	7	7	7	7	7	7	11
Metals								-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		0.83			-	-	0.020	0.020	0.013	0.013	0.020	0.020	0.015	0.015	0.015	0.010	0.015
Iron (filtered)	mg/L	0.05			0.65			-	-	0.05	0.05	<0.05	<0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese (filtered)	mg/L	0.001	1.9		0.294			-	-	0.178	0.178	0.135	0.135	0.092	0.092	0.079	0.079	0.079	0.092	0.122
Copper (filtered)	mg/L	0.001	0.0014		0.005			-	-	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hardness as CaCO3 (filtered)	mg/L	1			129			-	-	123	123	120	120	116	116	113	113	113	116	120
Total Anions								-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			24			-	-	23	23	22	22	21	21	21	21	21	21	22
Potassium (filtered)	mg/L	1			7			-	-	7	7	7	7	7	7	7	7	7	7	7
Sodium (filtered)	mg/L	1			40			-	-	39	39	36	36	33	33	30	30	30	29	30
Magnesium (filtered)	mg/L	1			17			-	-	15	15	16	16	15	15	15	15	15	15	16
Herbicides								-	-	-	-	-	-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.18			-	-	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.02	0.02
Diuron	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexazinone	µg/L	0.02			0.04			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metolachlor	µg/L	0.01	0.46		0.14			-	-	0.02	0.02	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.02	0.01
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.55			-	-	0.69	0.69	0.62	0.62	0.54	0.54	0.47	0.47	0.47	0.39	0.34
Terbutryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Callide) Low	Pre Action Baseline (Callide) High	EPP WQO (Callide) Low	EPP WQO (Callide) High	23 Jul 2024	26 Aug 2024	23 Sep 2024	21 Oct 2024	18 Nov 2024	02 Dec 2024	13 Jan 2025	24 Feb 2025	10 Mar 2025	22 Apr 2025	19 May 2025	16 Jun 2025	14 Jul 2025
Other									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Tebuconazole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic									–	–	–	–	–	–	–	–	–	–	–	–	–
	Terbutylazine	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NA									–	–	–	–	–	–	–	–	–	–	–	–	–
	Fipronil	µg/L	0.01	0.018		0.01			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Fluproponate	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Imazapyr	mg/L	0.01			0.05			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Thiamethoxam	µg/L	0.02			0.01			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chlorophyll a	mg/L	0.001			0.01		0.005	0.008	0.006	0.007	0.006	0.007	0.007	0.005	0.005	0.005	0.005	0.004	0.004	0.002
	Imidacloprid	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Diketonitrile (DKN)	µg/L	0.01			0.005			–	–	–	–	–	–	–	–	–	–	–	–	–
	Haloxypop	µg/L	0.1			0.1			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Imazapic	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Isoxaflutole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organophosphorous Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fungicides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calculations																					
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			0.73			0.25	0.20	0.25	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.20	0.10	0.10
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			0.73			0.25	0.20	0.25	0.20	0.20	0.20	0.20	0.15	0.15	0.10	0.15	0.10	0.10
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.23			0.06	0.07	0.06	0.05	0.04	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			1.06			1.12	1.10	1.08	1.07	0.97	0.97	0.97	1.03	1.00	0.90	0.80	0.79	0.74
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			0.8			0.83	0.72	0.71	0.70	0.70	0.70	0.70	0.72	0.67	0.64	0.62	0.62	0.50
	Particulate Phosphorus (PP) (PP = [TP] – [TP filtered])	mg/L	0.01			0.1			0.06	0.06	0.06	0.06	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05



A.4 Beckers (Upstream Control Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Lower Dawson) Low	Pre Action Baseline (Lower Dawson) High	EPP WQO (Lower Dawson) Low	EPP WQO (Lower Dawson) High	23 Jul 2024	26 Aug 2024	23 Sep 2024	21 Oct 2024	18 Nov 2024	02 Dec 2024	13 Jan 2025	24 Feb 2025	10 Mar 2025	22 Apr 2025	19 May 2025	16 Jun 2025	14 Jul 2025
Field																				
Temperature (Field)	°C	0		12.2	32.4			27.0	26.5	23.6	25.7	26.1	26.1	26.1	26.1	26.1	25.0	25.0	25.0	25.0
pH (Field)	-	0		7.1	8	6.5	8.5	7.5	7.5	7.5	7.5	7.5	7.4	7.4	7.4	7.4	7.4	7.3	7.3	7.3
Electrical Conductivity (field)	µS/cm	0			238		340	161	160	161	160	161	161	161	162	167	167	165	165	156
DO (Field)	mg/L	0						7.7	7.4	7.2	7.0	7.0	6.7	6.7	6.2	6.2	6.2	6.2	6.2	6.2
Redox Potential (Field)	mV	0			141			127	127	128	127	128	127	127	117	113	118	124	135	142
Total Dissolved Solids (Field)	mg/L	0						110	101	106	103	107	107	107	111	111	111	111	107	101
DO % Saturation (Field)	%	0		91	101	85	110	90	88	87	87	86	82	77	77	78	78	78	78	78
Turbidity (Field)	NTU	0			321		50	94	106	104	106	112	117	117	111	104	111	111	120	120
Inorganics								-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			82			-	-	61	61	61	61	61	61	61	61	61	60	61
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	61	61	61	61	61	61	61	61	61	60	61
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Suspended Solids (Lab)	mg/L	5			84		10	21	16	16	16	21	21	21	18	18	18	23	23	18
Ammonia as N	mg/L	0.01	0.9		0.04		0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
Chloride	mg/L	1			19			-	-	10	10	9	9	8	8	9	9	10	10	11
Nitrogen (Total)	mg/L	0.1			1.4		0.5	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0
Nitrogen (Total) (filtered)	mg/L	0.1			1.32			0.75	0.70	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Nitrite + Nitrate as N	mg/L	0.01			0.26		0.06	0.18	0.10	0.07	0.04	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.02
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.39		0.05	0.24	0.26	0.27	0.28	0.29	0.30	0.29	0.27	0.26	0.28	0.30	0.30	0.30
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.12	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.13	0.13	0.13	0.14	0.14
Total Dissolved Solids (Lab)	mg/L	10						237	232	229	232	237	229	229	217	204	204	204	207	217
Nitrate (as N)	mg/L	0.01			0.26			0.18	0.10	0.07	0.04	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.02
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.13		0.02	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09
Fluoride	mg/L	0.1			0.2			-	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	<0.1
Kjeldahl Nitrogen Total	mg/L	0.1			1.1			0.8	0.8	0.8	0.8	0.9	0.9	0.8	0.8	0.8	0.8	0.9	0.9	0.9
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			5.8		25	-	-	3.0	3.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Metals								-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		0.95			-	-	0.200	0.200	0.190	0.190	0.180	0.180	0.190	0.190	0.190	0.200	0.205
Iron (filtered)	mg/L	0.05			0.65			-	-	0.27	0.27	0.27	0.27	0.26	0.26	0.27	0.27	0.27	0.27	0.31
Manganese (filtered)	mg/L	0.001	1.9		0.025			-	-	0.009	0.009	0.012	0.012	0.009	0.009	0.012	0.012	0.012	0.015	0.016
Copper (filtered)	mg/L	0.001	0.0014		0.004			-	-	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0025	0.0025	0.0025	0.0020	0.0020
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hardness as CaCO3 (filtered)	mg/L	1			68			-	-	40	40	43	43	40	40	40	40	40	40	42
Total Anions								-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			18			-	-	11	11	12	12	11	11	10	10	10	11	11
Potassium (filtered)	mg/L	1			7			-	-	7	7	7	7	6	6	6	6	6	6	7
Sodium (filtered)	mg/L	1			21			-	-	14	14	13	13	12	12	13	13	13	14	14
Magnesium (filtered)	mg/L	1			5			-	-	4	4	4	4	4	4	4	4	4	4	4
Herbicides								-	-	-	-	-	-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.03			-	-	<0.01	<0.01	0.02	0.02	0.03	0.03	0.05	0.05	0.05	0.03	0.02
Diuron	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexazinone	µg/L	0.02			0.03			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	<0.01	<0.01	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.03
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.44			-	-	0.27	0.27	0.25	0.25	0.27	0.27	0.33	0.33	0.33	0.36	0.37
Terbutryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Lower Dawson) Low	Pre Action Baseline (Lower Dawson) High	EPP WQO (Lower Dawson) Low	EPP WQO (Lower Dawson) High	23 Jul 2024	26 Aug 2024	23 Sep 2024	21 Oct 2024	18 Nov 2024	02 Dec 2024	13 Jan 2025	24 Feb 2025	10 Mar 2025	22 Apr 2025	19 May 2025	16 Jun 2025	14 Jul 2025
Other									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Tebuconazole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic									–	–	–	–	–	–	–	–	–	–	–	–	–
	Terbutylazine	µg/L	0.01			0.05			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NA									–	–	–	–	–	–	–	–	–	–	–	–	–
	Fipronil	µg/L	0.01	0.018		0.01			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Fluproponate	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Thiamethoxam	µg/L	0.02			0.01			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chlorophyll a	mg/L	0.001			0.004		0.005	0.004	0.002	0.004	0.005	0.005	0.004	0.004	0.005	0.005	0.005	0.004	0.003	0.002
	Imidacloprid	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Diketonnitrile (DKN)	µg/L	0.01			0.005			–	–	–	–	–	–	–	–	–	–	–	–	–
	Haloxypop	µg/L	0.1			0.1			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Imazapic	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Isoxaflutole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organophosphorous Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fungicides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calculations																					
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			0.57			0.15	0.20	0.25	0.30	0.30	0.30	0.30	0.30	0.20	0.30	0.30	0.30	0.30
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			0.57			0.10	0.10	0.20	0.30	0.35	0.35	0.35	0.30	0.25	0.30	0.35	0.35	0.35
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.31			0.24	0.22	0.22	0.21	0.13	0.13	0.10	0.07	0.04	0.04	0.04	0.04	0.05
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			1.09			0.73	0.76	0.77	0.78	0.83	0.83	0.78	0.78	0.77	0.77	0.85	0.85	0.85
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			1.04			0.61	0.60	0.60	0.60	0.60	0.59	0.60	0.60	0.60	0.57	0.51	0.51	0.51
	Particulate Phosphorus (PP) (PP = [TP] – [TP filtered])	mg/L	0.01			0.2			0.07	0.07	0.10	0.12	0.13	0.15	0.14	0.14	0.14	0.14	0.15	0.15	0.15



A.5 Boolburra (Upstream Control Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Lower Dawson) Low	Pre Action Baseline (Lower Dawson) High	EPP WQO (Lower Dawson) Low	EPP WQO (Lower Dawson) High	23 Jul 2024	28 Aug 2024	24 Sep 2024	22 Oct 2024	19 Nov 2024	03 Dec 2024	14 Jan 2025	27 Feb 2025	11 Mar 2025	22 Apr 2025	20 May 2025	17 Jun 2025	15 Jul 2025
Field																				
Temperature (Field)	°C	0		12.2	32.4			26.4	25.1	23.5	25.1	25.1	25.1	25.1	25.1	25.1	25.7	25.7	25.7	25.7
pH (Field)	-	0		7.1	8	6.5	8.5	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.3	7.2	7.2
Electrical Conductivity (field)	µS/cm	0			238		340	166	168	166	163	166	166	161	161	161	156	149	149	149
DO (Field)	mg/L	0						7.5	7.4	7.4	7.3	7.4	7.1	7.1	7.1	7.1	6.7	6.5	6.5	6.5
Redox Potential (Field)	mV	0			141			103	125	126	128	126	121	123	123	123	129	133	139	141
Total Dissolved Solids (Field)	mg/L	0						118	118	118	117	118	118	110	110	110	107	98	97	97
DO % Saturation (Field)	%	0		91	101	85	110	89	86	85	83	85	85	85	79	79	78	78	78	74
Turbidity (Field)	NTU	0			321		50	93	93	82	71	57	43	43	43	43	57	57	92	141
Inorganics								-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			82			-	-	59	59	56	56	53	53	54	54	54	55	56
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	59	59	56	56	53	53	54	54	54	55	56
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Suspended Solids (Lab)	mg/L	5			84		10	31	16	16	15	13	13	13	13	13	13	13	13	13
Ammonia as N	mg/L	0.01	0.9		0.04		0.02	0.03	0.04	0.03	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02
Chloride	mg/L	1			19			-	-	12	12	13	13	12	12	12	12	12	12	12
Nitrogen (Total)	mg/L	0.1			1.4		0.5	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.1	1.1	1.0
Nitrogen (Total) (filtered)	mg/L	0.1			1.32			0.65	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Nitrite + Nitrate as N	mg/L	0.01			0.26		0.06	0.19	0.17	0.14	0.10	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.10
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.39		0.05	0.28	0.27	0.24	0.20	0.20	0.18	0.18	0.18	0.18	0.18	0.20	0.22	0.20
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.11	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.11
Total Dissolved Solids (Lab)	mg/L	10						228	216	211	206	199	199	196	196	196	196	196	217	236
Nitrate (as N)	mg/L	0.01			0.26			0.19	0.17	0.14	0.10	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.10
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.13		0.02	0.09	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08
Fluoride	mg/L	0.1			0.2			-	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Kjeldahl Nitrogen Total	mg/L	0.1			1.1			1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			5.8		25	-	-	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Metals								-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		0.95			-	-	0.220	0.220	0.205	0.205	0.190	0.190	0.205	0.205	0.205	0.220	0.225
Iron (filtered)	mg/L	0.05			0.65			-	-	0.34	0.34	0.32	0.32	0.30	0.30	0.32	0.32	0.32	0.34	0.41
Manganese (filtered)	mg/L	0.001	1.9		0.025			-	-	0.016	0.016	0.015	0.015	0.015	0.015	0.016	0.016	0.016	0.016	0.016
Copper (filtered)	mg/L	0.001	0.0014		0.004			-	-	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hardness as CaCO3 (filtered)	mg/L	1			68			-	-	46	46	50	50	46	46	45	45	45	44	44
Total Anions								-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			18			-	-	11	11	11	11	11	11	11	11	11	10	11
Potassium (filtered)	mg/L	1			7			-	-	7	7	7	7	6	6	6	6	6	6	6
Sodium (filtered)	mg/L	1			21			-	-	14	14	16	16	14	14	14	14	14	13	13
Magnesium (filtered)	mg/L	1			5			-	-	5	5	5	5	5	5	5	5	5	4	4
Herbicides								-	-	-	-	-	-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.03			-	-	0.01	0.01	<0.01	<0.01	0.01	0.01	0.01	0.01	0.01	0.01	<0.01
Diuron	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexazinone	µg/L	0.02			0.03			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.44			-	-	0.36	0.36	0.35	0.35	0.36	0.36	0.39	0.39	0.39	0.36	0.38
Terbutryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Lower Dawson) Low	Pre Action Baseline (Lower Dawson) High	EPP WQO (Lower Dawson) Low	EPP WQO (Lower Dawson) High	23 Jul 2024	28 Aug 2024	24 Sep 2024	22 Oct 2024	19 Nov 2024	03 Dec 2024	14 Jan 2025	27 Feb 2025	11 Mar 2025	22 Apr 2025	20 May 2025	17 Jun 2025	15 Jul 2025
Other									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Tebuconazole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic									–	–	–	–	–	–	–	–	–	–	–	–	–
	Terbutylazine	µg/L	0.01			0.05			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NA									–	–	–	–	–	–	–	–	–	–	–	–	–
	Fipronil	µg/L	0.01	0.018		0.01			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Fluproponate	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Thiamethoxam	µg/L	0.02			0.01			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chlorophyll a	mg/L	0.001			0.004		0.005	0.003	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.001	0.001
	Imidacloprid	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Diketonnitrile (DKN)	µg/L	0.01			0.005			–	–	–	–	–	–	–	–	–	–	–	–	–
	Haloxypop	µg/L	0.1			0.1			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Imazapic	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Isoxaflutole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organophosphorous Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fungicides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calculations																					
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			0.57			0.50	0.50	0.45	0.40	0.40	0.40	0.30	0.50	0.30	0.30	0.40	0.30	0.30
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			0.57			0.50	0.50	0.45	0.40	0.35	0.35	0.30	0.40	0.30	0.30	0.35	0.30	0.30
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.31			0.25	0.23	0.18	0.12	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.11	0.17
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			1.09			0.86	0.85	0.84	0.83	0.80	0.80	0.80	0.84	0.81	0.83	0.87	0.83	0.78
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			1.04			0.46	0.52	0.50	0.48	0.48	0.48	0.48	0.48	0.48	0.52	0.52	0.52	0.50
	Particulate Phosphorus (PP) (PP = [TP] – [TP filtered])	mg/L	0.01			0.2			0.14	0.13	0.11	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.12	0.12	0.10



A.6 Yarra Rd (Downstream Potential Change Area Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	22 Jul 2024	27 Aug 2024	25 Sep 2024	23 Oct 2024	27 Nov 2024	04 Dec 2024	22 Jan 2025	26 Feb 2025	12 Mar 2025	09 Apr 2025	28 May 2025	23 Jun 2025	17 Jul 2025
Field																				
Temperature (Field)	°C	0		15.3	31.3			26.4	24.9	23.3	24.9	25.7	25.7	25.7	25.7	25.7	26.1	26.1	26.1	26.1
pH (Field)	-	0		7.3	8.4	6.5	8.5	7.5	7.5	7.5	7.5	7.5	7.4	7.4	7.4	7.3	7.2	7.2	7.2	7.2
Electrical Conductivity (field)	µS/cm	0		269			445	174	176	177	178	178	178	178	179	184	184	191	198	198
DO (Field)	mg/L	0						6.7	6.7	6.6	6.7	6.7	6.6	6.7	6.7	6.7	6.6	6.6	6.6	6.6
Redox Potential (Field)	mV	0			141			116	119	128	128	133	123	133	140	140	141	144	147	150
Total Dissolved Solids (Field)	mg/L	0						116	124	125	124	125	124	124	124	125	125	125	129	129
DO % Saturation (Field)	%	0		89	101	85	110	79	77	77	77	79	79	80	79	78	76	78	78	76
Turbidity (Field)	NTU	0			190.5		50	45	47	49	51	49	49	49	49	58	67	67	67	67
Inorganics								-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			77			-	-	54	54	54	54	53	53	54	54	54	54	58
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	54	54	54	54	53	53	54	54	54	54	58
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Suspended Solids (Lab)	mg/L	5			109.75		85	14	12	12	12	12	10	10	10	8	8	8	7	7
Ammonia as N	mg/L	0.01	0.9		0.03		0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Chloride	mg/L	1			33			-	-	18	18	18	18	18	18	18	18	18	18	19
Nitrogen (Total)	mg/L	0.1			1.25		0.5	0.70	0.80	0.70	0.60	0.60	0.60	0.60	0.60	0.70	0.70	0.70	0.55	0.55
Nitrogen (Total) (filtered)	mg/L	0.1			1.35			0.55	0.60	0.55	0.50	0.50	0.50	0.50	0.50	0.60	0.60	0.50	0.50	0.50
Nitrite + Nitrate as N	mg/L	0.01			0.29		0.06	0.05	0.10	0.06	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.28		0.05	0.15	0.16	0.17	0.16	0.15	0.15	0.15	0.15	0.17	0.17	0.17	0.15	0.15
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.09	0.09	0.09	0.08	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09
Total Dissolved Solids (Lab)	mg/L	10						179	181	182	181	179	178	180	180	181	181	188	192	201
Nitrate (as N)	mg/L	0.01			0.29			0.05	0.10	0.06	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.05		0.02	0.05	0.05	0.05	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.04	0.05	0.06
Fluoride	mg/L	0.1			0.1			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Kjeldahl Nitrogen Total	mg/L	0.1			0.95			0.55	0.60	0.55	0.60	0.55	0.55	0.55	0.55	0.60	0.65	0.65	0.55	0.55
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			10		15	-	-	2	2	2	2	2	2	3	3	3	4	4
Metals								-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		1.28			-	-	0.210	0.210	0.195	0.195	0.210	0.210	0.195	0.195	0.195	0.210	0.195
Iron (filtered)	mg/L	0.05			0.69			-	-	0.27	0.27	0.25	0.25	0.27	0.27	0.30	0.30	0.30	0.32	0.30
Manganese (filtered)	mg/L	0.001	1.9		0.013			-	-	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
Copper (filtered)	mg/L	0.001	0.0014		0.003			-	-	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hardness as CaCO3 (filtered)	mg/L	1			90			-	-	50	50	48	48	46	46	48	48	48	50	51
Total Anions								-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			16			-	-	10	10	10	10	10	10	10	10	10	10	11
Potassium (filtered)	mg/L	1			5			-	-	3	3	3	3	3	3	4	4	4	4	4
Sodium (filtered)	mg/L	1			26			-	-	16	16	17	17	16	16	17	17	17	17	17
Magnesium (filtered)	mg/L	1			12			-	-	5	5	5	5	5	5	5	5	5	5	6
Herbicides								-	-	-	-	-	-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.04			-	-	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Diuron	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexazinone	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	0.06	0.06	0.08	0.08	0.09	0.09	0.08	0.08	0.08	0.06	0.06
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.67			-	-	0.30	0.30	0.35	0.35	0.30	0.30	0.35	0.35	0.35	0.30	0.24
Terbutryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	22 Jul 2024	27 Aug 2024	25 Sep 2024	23 Oct 2024	27 Nov 2024	04 Dec 2024	22 Jan 2025	26 Feb 2025	12 Mar 2025	09 Apr 2025	28 May 2025	23 Jun 2025	17 Jul 2025
Other									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Tebuconazole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic									–	–	–	–	–	–	–	–	–	–	–	–	–
	Terbutylazine	µg/L	0.01			0.02			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.01	0.01
NA									–	–	–	–	–	–	–	–	–	–	–	–	–
	Fipronil	µg/L	0.01	0.018		0.01			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Fluproponate	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Thiamethoxam	µg/L	0.02			0.01			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chlorophyll a	mg/L	0.001			0.004		0.005	0.005	0.006	0.005	0.006	0.005	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
	Imidacloprid	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Diketonnitrile (DKN)	µg/L	0.01			0.02			–	–	–	–	–	–	–	–	–	–	–	–	–
	Haloxypop	µg/L	0.1			0.1			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Imazapic	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Isoxaflutole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organophosphorous Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fungicides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calculations																					
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			0.9			0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.10	0.20
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			0.9			0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.15	0.15	0.10	0.15
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.32			0.10	0.12	0.10	0.08	0.08	0.10	0.10	0.10	0.10	0.08	0.06	0.04	0.04
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			0.94			0.47	0.47	0.48	0.48	0.48	0.49	0.49	0.49	0.54	0.63	0.63	0.54	0.54
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			0.82			0.43	0.44	0.43	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
	Particulate Phosphorus (PP) (PP = [TP] – [TP filtered])	mg/L	0.01			0.42			0.08	0.09	0.10	0.09	0.08	0.08	0.08	0.06	0.06	0.06	0.06	0.06	0.06



A.7 The Pocket (Downstream Potential Change Area Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	22 Jul 2024	27 Aug 2024	25 Sep 2024	23 Oct 2024	27 Nov 2024	04 Dec 2024	22 Jan 2025	26 Feb 2025	12 Mar 2025	09 Apr 2025	28 May 2025	23 Jun 2025	17 Jul 2025
Field																				
Temperature (Field)	°C	0		15.3	31.3			26.1	24.4	23.3	24.4	25.8	25.8	25.8	25.8	25.8	26.6	26.6	26.6	26.6
pH (Field)	-	0		7.3	8.4	6.5	8.5	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.3	7.3	7.2	7.2
Electrical Conductivity (field)	µS/cm	0		269			445	173	173	177	173	177	177	177	177	177	177	181	183	183
DO (Field)	mg/L	0						5.8	5.9	6.4	5.9	6.4	5.8	6.3	6.2	6.2	5.7	6.2	6.9	6.9
Redox Potential (Field)	mV	0			141			156	148	140	132	140	121	140	141	121	121	110	128	128
Total Dissolved Solids (Field)	mg/L	0						119	119	119	119	119	118	118	118	119	119	119	119	119
DO % Saturation (Field)	%	0		89	101	85	110	72	74	75	74	75	74	76	74	74	72	74	78	82
Turbidity (Field)	NTU	0			190.5		50	43	43	54	64	54	55	55	55	64	68	67	69	69
Inorganics								-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			77			-	-	58	58	56	56	54	54	56	56	56	58	58
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	58	58	56	56	54	54	56	56	56	58	58
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Suspended Solids (Lab)	mg/L	5			109.75		85	12	13	12	10	10	6	6	6	<5	<5	<5	6	9
Ammonia as N	mg/L	0.01	0.9		0.03		0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02
Chloride	mg/L	1			33			-	-	20	20	20	20	20	20	20	20	20	20	20
Nitrogen (Total)	mg/L	0.1			1.25		0.5	0.50	0.50	0.75	0.50	0.55	0.60	0.60	0.60	0.70	0.70	0.80	0.80	0.80
Nitrogen (Total) (filtered)	mg/L	0.1			1.35			0.45	0.50	0.60	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Nitrite + Nitrate as N	mg/L	0.01			0.29		0.06	0.07	0.10	0.07	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.01	0.02	0.01
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.28		0.05	0.14	0.14	0.20	0.14	0.14	0.14	0.14	0.14	0.15	0.15	0.17	0.17	0.17
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.09	0.09
Total Dissolved Solids (Lab)	mg/L	10						185	176	178	176	176	176	176	176	178	178	182	187	187
Nitrate (as N)	mg/L	0.01			0.29			0.07	0.10	0.07	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.01	0.02	0.01
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.05		0.02	0.05	0.06	0.05	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.04	0.05	0.06
Fluoride	mg/L	0.1			0.1			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Kjeldahl Nitrogen Total	mg/L	0.1			0.95			0.50	0.50	0.65	0.50	0.55	0.60	0.60	0.60	0.65	0.65	0.75	0.75	0.75
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			10		15	-	-	2	2	2	2	2	2	4	4	4	5	5
Metals								-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		1.28			-	-	0.250	0.250	0.205	0.205	0.160	0.160	0.200	0.200	0.200	0.160	0.155
Iron (filtered)	mg/L	0.05			0.69			-	-	0.36	0.36	0.31	0.31	0.25	0.25	0.29	0.29	0.29	0.28	0.27
Manganese (filtered)	mg/L	0.001	1.9		0.013			-	-	0.006	0.006	0.005	0.005	0.006	0.006	0.007	0.007	0.007	0.006	0.005
Copper (filtered)	mg/L	0.001	0.0014		0.003			-	-	0.0020	0.0020	0.0025	0.0025	0.0030	0.0030	0.0025	0.0025	0.0025	0.0020	0.0020
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hardness as CaCO3 (filtered)	mg/L	1			90			-	-	47	47	49	49	47	47	49	49	49	50	51
Total Anions								-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			16			-	-	9	9	10	10	9	9	10	10	10	10	11
Potassium (filtered)	mg/L	1			5			-	-	3	3	4	4	4	4	4	4	4	4	4
Sodium (filtered)	mg/L	1			26			-	-	16	16	17	17	16	16	17	17	17	17	18
Magnesium (filtered)	mg/L	1			12			-	-	6	6	6	6	6	6	6	6	6	6	6
Herbicides								-	-	-	-	-	-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.04			-	-	0.04	0.04	0.03	0.03	0.04	0.04	0.03	0.03	0.03	0.02	0.02
Diuron	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexazinone	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	0.09	0.09	0.10	0.10	0.09	0.09	0.08	0.08	0.08	0.06	0.06
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.67			-	-	0.32	0.32	0.36	0.36	0.32	0.32	0.36	0.36	0.36	0.32	0.25
Terbutryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	22 Jul 2024	27 Aug 2024	25 Sep 2024	23 Oct 2024	27 Nov 2024	04 Dec 2024	22 Jan 2025	26 Feb 2025	12 Mar 2025	09 Apr 2025	28 May 2025	23 Jun 2025	17 Jul 2025
Other									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Tebuconazole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic									–	–	–	–	–	–	–	–	–	–	–	–	–
	Terbutylazine	µg/L	0.01			0.02			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
NA									–	–	–	–	–	–	–	–	–	–	–	–	–
	Fipronil	µg/L	0.01	0.018		0.01			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Fluproponate	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Thiamethoxam	µg/L	0.02			0.01			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chlorophyll a	mg/L	0.001			0.004		0.005	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004	0.005	0.005	0.005
	Imidacloprid	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Diketonnitrile (DKN)	µg/L	0.01			0.02			–	–	–	–	–	–	–	–	–	–	–	–	–
	Haloxypop	µg/L	0.1			0.1			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Imazapic	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Isoxaflutole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organophosphorous Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fungicides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calculations																					
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			0.9			0.15	0.20	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			0.9			0.15	0.20	0.15	0.10	0.15	0.15	0.15	0.10	0.15	0.15	0.20	0.20	0.25
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.32			0.14	0.18	0.14	0.10	0.09	0.09	0.09	0.09	0.09	0.07	0.07	0.06	0.04
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			0.94			0.50	0.50	0.59	0.50	0.53	0.58	0.58	0.58	0.64	0.64	0.70	0.70	0.70
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			0.82			0.34	0.36	0.39	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.45	0.45	0.45
	Particulate Phosphorus (PP) (PP = [TP] – [TP filtered])	mg/L	0.01			0.42			0.06	0.06	0.10	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06



A.8 Riverslea (Downstream Potential Change Area Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	22 Jul 2024	27 Aug 2024	25 Sep 2024	23 Oct 2024	27 Nov 2024	04 Dec 2024	15 Jan 2025	26 Feb 2025	12 Mar 2025	09 Apr 2025	28 May 2025	23 Jun 2025	17 Jul 2025
Field																				
Temperature (Field)	°C	0		15.3	31.3			27.0	25.2	23.7	24.9	25.1	25.1	25.1	25.1	25.1	25.6	25.6	25.6	25.6
pH (Field)	-	0		7.3	8.4	6.5	8.5	7.3	7.4	7.3	7.2	7.1	7.2	7.2	7.2	7.1	7.1	7.1	7.1	7.1
Electrical Conductivity (field)	µS/cm	0			269		445	166	172	166	162	167	167	167	172	172	172	174	177	177
DO (Field)	mg/L	0						5.1	5.2	5.2	5.3	5.6	5.6	5.6	5.6	5.1	5.0	5.2	5.6	6.0
Redox Potential (Field)	mV	0			141			167	158	167	158	156	156	167	159	156	152	149	152	152
Total Dissolved Solids (Field)	mg/L	0						112	112	112	112	112	112	112	112	113	113	114	115	115
DO % Saturation (Field)	%	0		89	101	85	110	63	67	65	67	71	71	71	68	63	62	63	68	73
Turbidity (Field)	NTU	0			190.5		50	79	84	87	90	87	87	87	87	83	92	83	83	83
Inorganics								-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			77			-	-	57	57	53	53	48	48	51	51	51	53	55
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	57	57	53	53	48	48	51	51	51	53	55
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Suspended Solids (Lab)	mg/L	5			109.75		85	18	12	11	9	9	7	7	7	7	7	7	<5	7
Ammonia as N	mg/L	0.01	0.9		0.03		0.02	0.02	0.02	0.02	0.02	0.02	0.02	<0.01	<0.01	0.02	0.02	0.02	0.01	0.01
Chloride	mg/L	1			33			-	-	13	13	15	15	16	16	17	17	17	18	19
Nitrogen (Total)	mg/L	0.1			1.25		0.5	0.75	0.70	0.75	0.70	0.70	0.70	0.70	0.70	0.70	0.75	0.70	0.65	0.65
Nitrogen (Total) (filtered)	mg/L	0.1			1.35			0.55	0.50	0.55	0.50	0.50	0.50	0.50	0.50	0.60	0.60	0.60	0.50	0.50
Nitrite + Nitrate as N	mg/L	0.01			0.29		0.06	0.10	0.09	0.07	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.28		0.05	0.19	0.18	0.19	0.18	0.18	0.18	0.17	0.17	0.17	0.17	0.17	0.16	0.16
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.08	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.08	0.08
Total Dissolved Solids (Lab)	mg/L	10						180	171	180	188	180	192	180	180	183	199	203	203	203
Nitrate (as N)	mg/L	0.01			0.29			0.10	0.09	0.07	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.05		0.02	0.06	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Fluoride	mg/L	0.1			0.1			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1
Kjeldahl Nitrogen Total	mg/L	0.1			0.95			0.65	0.70	0.70	0.70	0.70	0.70	0.65	0.65	0.70	0.70	0.70	0.65	0.65
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			10		15	-	-	2	2	3	3	3	3	4	4	4	4	5
Metals								-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		1.28			-	-	0.250	0.250	0.210	0.210	0.250	0.250	0.210	0.210	0.210	0.170	0.165
Iron (filtered)	mg/L	0.05			0.69			-	-	0.32	0.32	0.31	0.31	0.32	0.32	0.31	0.31	0.31	0.31	0.31
Manganese (filtered)	mg/L	0.001	1.9		0.013			-	-	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Copper (filtered)	mg/L	0.001	0.0014		0.003			-	-	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hardness as CaCO3 (filtered)	mg/L	1			90			-	-	46	46	45	45	43	43	45	45	45	46	46
Total Anions								-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			16			-	-	10	10	10	10	9	9	10	10	10	10	11
Potassium (filtered)	mg/L	1			5			-	-	4	4	4	4	4	4	4	4	4	4	4
Sodium (filtered)	mg/L	1			26			-	-	14	14	15	15	15	15	15	15	15	15	16
Magnesium (filtered)	mg/L	1			12			-	-	4	4	5	5	4	4	5	5	5	5	5
Herbicides								-	-	-	-	-	-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.04			-	-	0.08	0.08	0.06	0.06	0.04	0.04	0.04	0.04	0.04	0.03	0.03
Diuron	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexazinone	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	0.10	0.10	0.10	0.10	0.09	0.09	0.08	0.08	0.08	0.07	0.07
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.67			-	-	0.34	0.34	0.39	0.39	0.44	0.44	0.44	0.44	0.44	0.44	0.39
Terbutryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10



Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	22 Jul 2024	27 Aug 2024	25 Sep 2024	23 Oct 2024	27 Nov 2024	04 Dec 2024	15 Jan 2025	26 Feb 2025	12 Mar 2025	09 Apr 2025	28 May 2025	23 Jun 2025	17 Jul 2025
Other								–	–	–	–	–	–	–	–	–	–	–	–	–
Chlorantraniliprole	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tebuconazole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic								–	–	–	–	–	–	–	–	–	–	–	–	–
Terbutylazine	µg/L	0.01			0.02			–	–	<0.01	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01
NA								–	–	–	–	–	–	–	–	–	–	–	–	–
Fipronil	µg/L	0.01	0.018		0.01			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fluproponate	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Thiamethoxam	µg/L	0.02			0.01			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorophyll a	mg/L	0.001			0.004		0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Imidacloprid	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pesticides								–	–	–	–	–	–	–	–	–	–	–	–	–
Diketonnitrile (DKN)	µg/L	0.01			0.02			–	–	–	–	–	–	–	–	–	–	–	–	–
Haloxypop	µg/L	0.1			0.1			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Imazapic	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Isoxaflutole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organophosphorous Pesticides								–	–	–	–	–	–	–	–	–	–	–	–	–
Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	µg/L	0.01	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fungicides								–	–	–	–	–	–	–	–	–	–	–	–	–
Propiconazole	µg/L	0.05			0.025			–	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calculations																				
Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			0.9			0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			0.9			0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.32			0.10	0.10	0.12	0.10	0.10	0.10	0.10	0.10	0.09	0.06	0.04	0.03	0.03
Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			0.94			0.64	0.62	0.65	0.62	0.65	0.65	0.61	0.61	0.66	0.70	0.66	0.61	0.61
Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			0.82			0.39	0.37	0.39	0.40	0.38	0.39	0.39	0.39	0.40	0.45	0.49	0.43	0.43
Particulate Phosphorus (PP) (PP = [TP] - [TP filtered])	mg/L	0.01			0.42			0.10	0.09	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.08	0.07	0.07



A.9 Weir US (Downstream Potential Change Area Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	22 Jul 2024	27 Aug 2024	25 Sep 2024	23 Oct 2024	27 Nov 2024	04 Dec 2024	15 Jan 2025	26 Feb 2025	12 Mar 2025	09 Apr 2025	28 May 2025	23 Jun 2025	17 Jul 2025
Field																				
Temperature (Field)	°C	0		15.3	31.3			26.2	25.2	23.9	25.2	25.8	25.8	25.8	25.8	25.8	26.3	26.3	26.3	26.3
pH (Field)	-	0		7.3	8.4	6.5	8.5	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.4	7.4
Electrical Conductivity (field)	µS/cm	0		269			445	164	164	164	163	164	164	165	167	171	175	175	184	184
DO (Field)	mg/L	0						5.0	5.0	5.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.2	5.7	5.7
Redox Potential (Field)	mV	0			141			161	161	159	158	159	145	145	145	126	120	120	120	120
Total Dissolved Solids (Field)	mg/L	0						105	113	108	104	109	109	113	113	114	114	114	120	120
DO % Saturation (Field)	%	0		89	101	85	110	55	56	58	60	60	60	61	61	61	60	61	68	68
Turbidity (Field)	NTU	0			190.5		50	104	93	104	100	97	97	97	97	94	96	93	74	74
Inorganics								-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			77			-	-	56	56	55	55	53	53	52	52	52	53	55
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	56	56	55	55	53	53	52	52	52	53	55
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Suspended Solids (Lab)	mg/L	5			109.75		85	17	11	11	10	10	10	10	10	9	9	9	7	7
Ammonia as N	mg/L	0.01	0.9		0.03		0.02	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02
Chloride	mg/L	1			33			-	-	15	15	16	16	17	17	17	17	17	17	18
Nitrogen (Total)	mg/L	0.1			1.25		0.5	0.80	0.80	0.75	0.70	0.70	0.70	0.75	0.75	0.75	0.70	0.70	0.70	0.70
Nitrogen (Total) (filtered)	mg/L	0.1			1.35			0.65	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.55	0.55	0.45	0.45
Nitrite + Nitrate as N	mg/L	0.01			0.29		0.06	0.15	0.14	0.12	0.09	0.08	0.08	0.05	0.05	0.05	0.02	0.01	0.01	0.01
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.28		0.05	0.25	0.24	0.25	0.24	0.22	0.22	0.21	0.20	0.20	0.20	0.20	0.20	0.20
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.10	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07
Total Dissolved Solids (Lab)	mg/L	10						192	188	192	195	192	195	195	195	192	189	189	194	198
Nitrate (as N)	mg/L	0.01			0.29			0.15	0.14	0.12	0.09	0.08	0.08	0.05	0.05	0.05	0.02	0.01	0.01	0.01
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.05		0.02	0.09	0.08	0.08	0.07	0.07	0.07	0.05	0.05	0.05	0.04	0.04	0.04	0.04
Fluoride	mg/L	0.1			0.1			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Kjeldahl Nitrogen Total	mg/L	0.1			0.95			0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.65	0.70	0.70	0.60	0.60
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			10		15	-	-	2	2	3	3	3	3	4	4	4	4	5
Metals								-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		1.28			-	-	0.250	0.250	0.205	0.205	0.250	0.250	0.255	0.255	0.255	0.250	0.205
Iron (filtered)	mg/L	0.05			0.69			-	-	0.32	0.32	0.30	0.30	0.31	0.31	0.32	0.32	0.32	0.32	0.32
Manganese (filtered)	mg/L	0.001	1.9		0.013			-	-	0.012	0.012	0.017	0.017	0.016	0.016	0.019	0.019	0.019	0.016	0.014
Copper (filtered)	mg/L	0.001	0.0014		0.003			-	-	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hardness as CaCO3 (filtered)	mg/L	1			90			-	-	40	40	43	43	40	40	43	43	43	46	46
Total Anions								-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			16			-	-	9	9	10	10	9	9	10	10	10	10	10
Potassium (filtered)	mg/L	1			5			-	-	5	5	5	5	5	5	5	5	5	4	4
Sodium (filtered)	mg/L	1			26			-	-	14	14	15	15	16	16	16	16	16	16	17
Magnesium (filtered)	mg/L	1			12			-	-	5	5	5	5	5	5	5	5	5	5	5
Herbicides								-	-	-	-	-	-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.04			-	-	0.08	0.08	0.06	0.06	0.07	0.07	0.05	0.05	0.05	0.03	0.03
Diuron	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexazinone	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	0.11	0.11	0.11	0.11	0.10	0.10	0.09	0.09	0.09	0.08	0.08
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.67			-	-	0.39	0.39	0.42	0.42	0.44	0.44	0.46	0.46	0.46	0.44	0.42
Terbutryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	22 Jul 2024	27 Aug 2024	25 Sep 2024	23 Oct 2024	27 Nov 2024	04 Dec 2024	15 Jan 2025	26 Feb 2025	12 Mar 2025	09 Apr 2025	28 May 2025	23 Jun 2025	17 Jul 2025
Other									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Tebuconazole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic									–	–	–	–	–	–	–	–	–	–	–	–	–
	Terbutylazine	µg/L	0.01			0.02			–	–	<0.01	<0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01	<0.01	<0.01
NA									–	–	–	–	–	–	–	–	–	–	–	–	–
	Fipronil	µg/L	0.01	0.018		0.01			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Fluproponate	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Thiamethoxam	µg/L	0.02			0.01			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chlorophyll a	mg/L	0.001			0.004		0.005	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	Imidacloprid	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Diketonnitrile (DKN)	µg/L	0.01			0.02			–	–	–	–	–	–	–	–	–	–	–	–	–
	Haloxypop	µg/L	0.1			0.1			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Imazapic	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Isoxaflutole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organophosphorous Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fungicides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calculations																					
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			0.9			0.15	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.20	0.15	0.15	0.20	0.20
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			0.9			0.15	0.20	0.20	0.20	0.20	0.15	0.15	0.10	0.15	0.10	0.10	0.20	0.20
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.32			0.19	0.16	0.16	0.16	0.14	0.14	0.09	0.07	0.07	0.06	0.06	0.06	0.04
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			0.94			0.55	0.56	0.57	0.57	0.57	0.57	0.58	0.58	0.63	0.67	0.67	0.60	0.60
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			0.82			0.41	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.43	0.39	0.39	0.39
	Particulate Phosphorus (PP) (PP = [TP] – [TP filtered])	mg/L	0.01			0.42			0.12	0.11	0.12	0.12	0.12	0.12	0.12	0.11	0.11	0.11	0.11	0.07	0.07



A.10 Weir DS (Downstream Potential Change Area Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	22 Jul 2024	27 Aug 2024	25 Sep 2024	23 Oct 2024	27 Nov 2024	04 Dec 2024	15 Jan 2025	26 Feb 2025	12 Mar 2025	09 Apr 2025	28 May 2025	23 Jun 2025	17 Jul 2025
Field																				
Temperature (Field)	°C	0		15.3	31.3			28.5	28.3	26.8	25.2	26.8	26.6	26.6	26.6	26.6	26.0	26.0	26.0	26.0
pH (Field)	-	0		7.3	8.4	6.5	8.5	7.7	7.6	7.6	7.5	7.5	7.5	7.5	7.5	7.5	7.4	7.4	7.4	7.4
Electrical Conductivity (field)	µS/cm	0			269		445	177	177	179	180	181	181	181	181	182	182	184	188	188
DO (Field)	mg/L	0						8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.0	8.0	8.0	8.0
Redox Potential (Field)	mV	0			141			143	140	130	120	130	113	104	104	98	98	92	98	98
Total Dissolved Solids (Field)	mg/L	0						117	117	118	118	119	119	119	119	120	120	120	123	123
DO % Saturation (Field)	%	0		89	101	85	110	100	100	99	99	99	99	99	99	99	99	99	99	99
Turbidity (Field)	NTU	0			190.5		50	107	93	109	93	91	91	91	91	91	93	91	86	86
Inorganics								-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			77			-	-	56	56	56	56	56	56	55	55	55	56	56
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	56	56	56	56	56	56	55	55	55	56	56
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Suspended Solids (Lab)	mg/L	5			109.75		85	18	13	12	11	10	11	11	11	9	9	9	8	8
Ammonia as N	mg/L	0.01	0.9		0.03		0.02	0.05	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.04	0.03	0.03
Chloride	mg/L	1			33			-	-	14	14	16	16	17	17	18	18	18	19	19
Nitrogen (Total)	mg/L	0.1			1.25		0.5	0.85	0.80	0.85	0.80	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.60	0.60
Nitrogen (Total) (filtered)	mg/L	0.1			1.35			0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Nitrite + Nitrate as N	mg/L	0.01			0.29		0.06	0.15	0.14	0.13	0.12	0.11	0.11	0.08	0.07	0.07	0.04	0.04	0.02	0.02
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.28		0.05	0.21	0.19	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.19	0.18	0.18
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.11	0.10	0.09	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Total Dissolved Solids (Lab)	mg/L	10						190	184	190	184	179	181	184	184	183	183	183	189	193
Nitrate (as N)	mg/L	0.01			0.29			0.15	0.14	0.13	0.12	0.11	0.11	0.07	0.06	0.06	0.03	0.03	0.02	0.02
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.05		0.02	0.08	0.08	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05
Fluoride	mg/L	0.1			0.1			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Kjeldahl Nitrogen Total	mg/L	0.1			0.95			0.75	0.70	0.75	0.70	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.60	0.60
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.5	0.4	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			10		15	-	-	2	2	3	3	3	3	3	3	3	3	4
Metals								-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		1.28			-	-	0.070	0.070	0.055	0.055	0.070	0.070	0.150	0.150	0.150	0.230	0.155
Iron (filtered)	mg/L	0.05			0.69			-	-	0.14	0.14	0.08	0.08	0.14	0.14	0.22	0.22	0.22	0.29	0.30
Manganese (filtered)	mg/L	0.001	1.9		0.013			-	-	0.010	0.010	0.015	0.015	0.019	0.019	0.027	0.027	0.027	0.019	0.015
Copper (filtered)	mg/L	0.001	0.0014		0.003			-	-	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hardness as CaCO3 (filtered)	mg/L	1			90			-	-	48	48	47	47	46	46	46	46	46	46	47
Total Anions								-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			16			-	-	11	11	11	11	10	10	10	10	10	10	11
Potassium (filtered)	mg/L	1			5			-	-	4	4	4	4	4	4	4	4	4	4	4
Sodium (filtered)	mg/L	1			26			-	-	16	16	16	16	16	16	17	17	17	17	17
Magnesium (filtered)	mg/L	1			12			-	-	5	5	5	5	5	5	5	5	5	5	5
Herbicides								-	-	-	-	-	-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.04			-	-	0.07	0.07	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.04	0.04
Diuron	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexazinone	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.67			-	-	0.40	0.40	0.41	0.41	0.41	0.41	0.43	0.43	0.43	0.41	0.41
Terbutryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	22 Jul 2024	27 Aug 2024	25 Sep 2024	23 Oct 2024	27 Nov 2024	04 Dec 2024	15 Jan 2025	26 Feb 2025	12 Mar 2025	09 Apr 2025	28 May 2025	23 Jun 2025	17 Jul 2025
Other									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Tebuconazole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic									–	–	–	–	–	–	–	–	–	–	–	–	–
	Terbutylazine	µg/L	0.01			0.02			–	–	<0.01	<0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
NA									–	–	–	–	–	–	–	–	–	–	–	–	–
	Fipronil	µg/L	0.01	0.018		0.01			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Fluproponate	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Thiamethoxam	µg/L	0.02			0.01			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chlorophyll a	mg/L	0.001			0.004		0.005	0.002	0.003	0.004	0.003	0.004	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002
	Imidacloprid	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Diketoneitrile (DKN)	µg/L	0.01			0.02			–	–	–	–	–	–	–	–	–	–	–	–	–
	Haloxypop	µg/L	0.1			0.1			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Imazapic	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Isoxaflutole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organophosphorous Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fungicides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calculations																					
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			0.9			0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			0.9			0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.15	0.15	0.15	0.15	0.10	0.15
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.32			0.19	0.17	0.15	0.13	0.13	0.13	0.12	0.10	0.10	0.08	0.07	0.07	0.06
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			0.94			0.70	0.67	0.70	0.67	0.62	0.62	0.62	0.62	0.62	0.62	0.58	0.58	0.58
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			0.82			0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.46	0.53	0.46	0.46
	Particulate Phosphorus (PP) (PP = [TP] – [TP filtered])	mg/L	0.01			0.42			0.10	0.09	0.10	0.09	0.10	0.11	0.11	0.10	0.10	0.10	0.10	0.08	0.08



A.11 Hanrahan (Downstream Potential Change Area Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	24 Jul 2024	28 Aug 2024	24 Sep 2024	22 Oct 2024	19 Nov 2024	03 Dec 2024	14 Jan 2025	27 Feb 2025	11 Mar 2025	23 Apr 2025	20 May 2025	17 Jun 2025	15 Jul 2025
Field																				
Temperature (Field)	°C	0		15.3	31.3			26.5	24.6	23.9	24.6	26.0	26.0	26.0	26.0	26.0	26.3	26.3	26.3	26.3
pH (Field)	-	0		7.3	8.4	6.5	8.5	7.7	7.8	7.8	7.8	7.7	7.8	7.8	7.8	7.8	7.7	7.6	7.6	7.6
Electrical Conductivity (field)	µS/cm	0			269		445	170	170	175	170	175	175	184	186	192	192	198	204	204
DO (Field)	mg/L	0						8.6	8.7	8.6	8.5	8.2	8.2	8.2	8.2	7.7	7.7	7.7	7.7	7.7
Redox Potential (Field)	mV	0			141			137	123	123	123	125	123	123	125	122	122	125	128	128
Total Dissolved Solids (Field)	mg/L	0						111	116	120	116	120	114	120	121	123	123	125	129	129
DO % Saturation (Field)	%	0		89	101	85	110	98	100	98	96	96	97	97	97	96	96	96	96	96
Turbidity (Field)	NTU	0			190.5		50	92	73	81	88	81	81	81	81	81	88	83	83	88
Inorganics																				
Alkalinity (total) as CaCO3	mg/L	1			77			-	-	58	58	56	56	58	58	56	56	56	58	62
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	58	58	56	56	58	58	56	56	56	58	62
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	1	1	1	1	1	1	1	1	1	1	1
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	1	1	1	1	1	1	1	1	1	1	1
Total Suspended Solids (Lab)	mg/L	5			109.75		85	30	29	23	16	15	15	15	15	14	14	14	12	12
Ammonia as N	mg/L	0.01	0.9		0.03		0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01
Chloride	mg/L	1			33			-	-	16	16	18	18	19	19	19	19	19	19	20
Nitrogen (Total)	mg/L	0.1			1.25		0.5	1.0	1.0	0.9	0.8	0.8	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.7
Nitrogen (Total) (filtered)	mg/L	0.1			1.35			0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Nitrite + Nitrate as N	mg/L	0.01			0.29		0.06	0.15	0.12	0.09	0.06	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.28		0.05	0.25	0.24	0.22	0.20	0.18	0.18	0.18	0.18	0.18	0.18	0.16	0.15	0.15
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.11	0.11	0.09	0.07	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Total Dissolved Solids (Lab)	mg/L	10						225	221	210	201	200	198	198	198	198	198	200	200	201
Nitrate (as N)	mg/L	0.01			0.29			0.15	0.12	0.09	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Nitrite (as N)	mg/L	0.01						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.05		0.02	0.09	0.08	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Fluoride	mg/L	0.1			0.1			-	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Kjeldahl Nitrogen Total	mg/L	0.1			0.95			0.8	0.8	0.8	0.8	0.7	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			10		15	-	-	2	2	3	3	3	3	3	3	3	3	4
Metals																				
Aluminium (filtered)	mg/L	0.01	0.055		1.28			-	-	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.155
Iron (filtered)	mg/L	0.05			0.69			-	-	0.24	0.24	0.28	0.28	0.24	0.24	0.28	0.28	0.28	0.32	0.30
Manganese (filtered)	mg/L	0.001	1.9		0.013			-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper (filtered)	mg/L	0.001	0.0014		0.003			-	-	0.0020	0.0020	0.0015	0.0015	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hardness as CaCO3 (filtered)	mg/L	1			90			-	-	50	50	49	49	48	48	47	47	47	48	49
Total Anions																				
Calcium (filtered)	mg/L	1			16			-	-	12	12	12	12	11	11	11	11	11	11	12
Potassium (filtered)	mg/L	1			5			-	-	4	4	4	4	4	4	4	4	4	4	4
Sodium (filtered)	mg/L	1			26			-	-	15	15	15	15	15	15	16	16	16	17	18
Magnesium (filtered)	mg/L	1			12			-	-	5	5	5	5	5	5	5	5	5	5	5
Herbicides																				
Atrazine-desethyl	µg/L	0.1			0.05			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Atrazine	µg/L	0.01	13		0.04			-	-	0.07	0.07	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.04	0.03
Diuron	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexazinone	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.09
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.67			-	-	0.31	0.31	0.30	0.30	0.31	0.31	0.37	0.37	0.37	0.31	0.30
Terbutryn	µg/L	0.01			0.01			-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Triclopyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	24 Jul 2024	28 Aug 2024	24 Sep 2024	22 Oct 2024	19 Nov 2024	03 Dec 2024	14 Jan 2025	27 Feb 2025	11 Mar 2025	23 Apr 2025	20 May 2025	17 Jun 2025	15 Jul 2025
Other																					
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Tebuconazole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic																					
	Terbutylazine	µg/L	0.01			0.02			–	–	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
NA																					
	Fipronil	µg/L	0.01	0.018		0.01			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Fluproponate	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Thiamethoxam	µg/L	0.02			0.01			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chlorophyll a	mg/L	0.001			0.004		0.005	0.003	0.005	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
	Imidacloprid	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pesticides																					
	Diketonnitrile (DKN)	µg/L	0.01			0.02			–	–	–	–	–	–	–	–	–	–	–	–	–
	Haloxypop	µg/L	0.1			0.1			–	–	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Imazapic	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Isoxaflutole	µg/L	0.01			0.005			–	–	<0.01	<0.01	0.013	0.013	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organophosphorous Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fungicides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calculations																					
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			0.9			0.35	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			0.9			0.35	0.30	0.30	0.30	0.30	0.25	0.20	0.20	0.20	0.20	0.15	0.15	0.15
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.32			0.18	0.17	0.16	0.15	0.12	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			0.94			0.78	0.77	0.74	0.70	0.65	0.59	0.59	0.59	0.63	0.63	0.63	0.63	0.63
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			0.82			0.38	0.36	0.37	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.37	0.38	0.38
	Particulate Phosphorus (PP) (PP = [TP] - [TP filtered])	mg/L	0.01			0.42			0.13	0.12	0.11	0.10	0.10	0.10	0.11	0.10	0.10	0.10	0.09	0.09	0.09



A.12 Glenroy Rd (Downstream Potential Change Area Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	31 Jul 2024	28 Aug 2024	24 Sep 2024	22 Oct 2024	19 Nov 2024	05 Dec 2024	14 Jan 2025	25 Feb 2025	11 Mar 2025	29 Apr 2025	20 May 2025	17 Jun 2025	15 Jul 2025
Field																				
Temperature (Field)	°C	0		15.3	31.3			26.1	24.6	25.2	25.7	26.4	26.4	26.4	26.0	26.0	26.0	26.6	26.6	26.6
pH (Field)	-	0		7.3	8.4	6.5	8.5	7.9	7.9	7.9	8.0	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
Electrical Conductivity (field)	µS/cm	0			269		445	163	163	172	163	172	172	163	163	175	181	191	198	202
DO (Field)	mg/L	0						7.9	8.1	8.5	8.9	8.5	8.5	8.5	8.5	8.5	8.4	8.4	8.4	8.4
Redox Potential (Field)	mV	0			141			126	126	122	118	122	115	115	118	116	116	116	123	116
Total Dissolved Solids (Field)	mg/L	0						104	109	112	109	112	112	107	108	119	119	125	129	131
DO % Saturation (Field)	%	0		89	101	85	110	97	98	98	99	98	101	101	101	101	101	102	101	101
Turbidity (Field)	NTU	0			190.5		50	88	70	57	43	46	46	46	46	46	48	48	48	61
Inorganics								-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			77			-	-	64	64	61	61	58	58	57	57	57	58	61
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	64	64	61	61	58	58	57	57	57	58	61
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Suspended Solids (Lab)	mg/L	5			109.75		85	19	11	11	11	11	11	11	11	11	11	12	12	12
Ammonia as N	mg/L	0.01	0.9		0.03		0.02	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02
Chloride	mg/L	1			33			-	-	18	18	20	20	21	21	22	22	22	22	22
Nitrogen (Total)	mg/L	0.1			1.25		0.5	0.80	0.80	0.75	0.70	0.70	0.65	0.65	0.65	0.65	0.65	0.65	0.60	0.60
Nitrogen (Total) (filtered)	mg/L	0.1			1.35			0.60	0.60	0.55	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.40	0.40
Nitrite + Nitrate as N	mg/L	0.01			0.29		0.06	0.16	0.14	0.09	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.28		0.05	0.22	0.21	0.19	0.17	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.13
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.12	0.11	0.10	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09
Total Dissolved Solids (Lab)	mg/L	10						213	194	189	183	179	171	171	171	171	175	175	179	197
Nitrate (as N)	mg/L	0.01			0.29			0.16	0.14	0.09	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.05		0.02	0.10	0.10	0.09	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07
Fluoride	mg/L	0.1			0.1			-	-	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	0.1	0.1
Kjeldahl Nitrogen Total	mg/L	0.1			0.95			0.75	0.70	0.65	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			10		15	-	-	2	2	3	3	3	3	3	3	3	3	3
Metals								-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		1.28			-	-	0.180	0.180	0.185	0.185	0.180	0.180	0.185	0.185	0.185	0.180	0.175
Iron (filtered)	mg/L	0.05			0.69			-	-	0.26	0.26	0.26	0.26	0.25	0.25	0.26	0.26	0.26	0.26	0.26
Manganese (filtered)	mg/L	0.001	1.9		0.013			-	-	0.004	0.004	0.005	0.005	0.004	0.004	0.005	0.005	0.005	0.005	0.005
Copper (filtered)	mg/L	0.001	0.0014		0.003			-	-	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hardness as CaCO3 (filtered)	mg/L	1			90			-	-	50	50	53	53	50	50	50	50	50	50	53
Total Anions								-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			16			-	-	12	12	12	12	12	12	11	11	11	12	12
Potassium (filtered)	mg/L	1			5			-	-	6	6	5	5	5	5	5	5	5	4	5
Sodium (filtered)	mg/L	1			26			-	-	15	15	16	16	15	15	16	16	16	17	18
Magnesium (filtered)	mg/L	1			12			-	-	5	5	6	6	5	5	6	6	6	6	6
Herbicides								-	-	-	-	-	-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.04			-	-	0.10	0.10	0.08	0.08	0.10	0.10	0.08	0.08	0.08	0.05	0.04
Diuron	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexazinone	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.67			-	-	0.28	0.28	0.28	0.28	0.28	0.28	0.33	0.33	0.33	0.28	0.28
Terbutryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10



Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	31 Jul 2024	28 Aug 2024	24 Sep 2024	22 Oct 2024	19 Nov 2024	05 Dec 2024	14 Jan 2025	25 Feb 2025	11 Mar 2025	29 Apr 2025	20 May 2025	17 Jun 2025	15 Jul 2025
Other								–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1		0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Tebuconazole	µg/L	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic								–	–	–	–	–	–	–	–	–	–	–	–	–
	Terbutylazine	µg/L	0.01		0.02			–	–	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
NA								–	–	–	–	–	–	–	–	–	–	–	–	–
	Fipronil	µg/L	0.01	0.018	0.01			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Fluproponate	µg/L	0.1		0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Thiamethoxam	µg/L	0.02		0.01			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chlorophyll a	mg/L	0.001		0.004		0.005	0.002	0.003	0.003	0.002	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.003	0.002
	Imidacloprid	µg/L	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pesticides								–	–	–	–	–	–	–	–	–	–	–	–	–
	Diketonnitrile (DKN)	µg/L	0.01		0.02			–	–	–	–	–	–	–	–	–	–	–	–	–
	Haloxypop	µg/L	0.1		0.1			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Imazapic	µg/L	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Isoxaflutole	µg/L	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organophosphorous Pesticides								–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01	0.02			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01	0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fungicides								–	–	–	–	–	–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05		0.025			–	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calculations																				
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01		0.9			0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01		0.9			0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.15	0.15	0.20	0.20	0.20	0.20
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01		0.32			0.23	0.20	0.18	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.10	0.05
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01		0.94			0.72	0.66	0.63	0.60	0.60	0.57	0.57	0.56	0.58	0.58	0.58	0.58	0.60
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01		0.82			0.41	0.37	0.36	0.35	0.35	0.35	0.35	0.35	0.34	0.34	0.34	0.34	0.30
	Particulate Phosphorus (PP) (PP = [TP] - [TP filtered])	mg/L	0.01		0.42			0.08	0.07	0.06	0.06	0.06	0.06	0.06	0.08	0.06	0.06	0.06	0.06	0.06



A.13 The Gap (Downstream Potential Change Area Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	05 Dec 2024	16 Jan 2025	25 Feb 2025	13 Mar 2025	10 Apr 2025	21 May 2025	18 Jun 2025	16 Jul 2025
Field															
Temperature (Field)	°C	0		15.3	31.3			25.8	27.3	26.3	26.9	26.3	26.3	26.2	26.0
pH (Field)	-	0		7.3	8.4	6.5	8.5	7.8	7.6	7.5	7.4	7.4	7.4	7.5	7.5
Electrical Conductivity (field)	µS/cm	0			269		445	218	220	218	209	200	209	218	220
DO (Field)	mg/L	0						7.4	7.3	7.2	7.1	6.9	6.9	6.9	7.1
Redox Potential (Field)	mV	0			141			90	99	105	107	109	116	124	128
Total Dissolved Solids (Field)	mg/L	0						142	143	142	136	130	136	142	143
DO % Saturation (Field)	%	0		89	101	85	110	84	84	84	84	84	83	84	83
Turbidity (Field)	NTU	0			190.5		50	34	48	62	73	85	100	85	100
Inorganics								-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			77			-	-	-	-	-	-	-	-
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	-	-	-	-	-	-
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	-	-	-	-	-	-
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	-	-	-	-	-	-
Total Suspended Solids (Lab)	mg/L	5			109.75		85	<5	<5	5	<5	5	7	5	7
Ammonia as N	mg/L	0.01	0.9		0.03		0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
Chloride	mg/L	1			33			-	-	-	-	-	-	-	-
Nitrogen (Total)	mg/L	0.1			1.25		0.5	0.70	0.70	0.70	0.70	0.70	0.80	0.70	0.70
Nitrogen (Total) (filtered)	mg/L	0.1			1.35			-	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Nitrite + Nitrate as N	mg/L	0.01			0.29		0.06	<0.01	0.07	0.13	0.15	0.13	0.15	0.17	0.17
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.28		0.05	0.12	0.15	0.17	0.18	0.19	0.21	0.19	0.18
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.08	0.08	0.08	0.10	0.11	0.11	0.11	0.11
Total Dissolved Solids (Lab)	mg/L	10						178	183	187	192	196	203	209	210
Nitrate (as N)	mg/L	0.01			0.29			<0.01	0.07	0.13	0.15	0.13	0.15	0.17	0.17
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.05		0.02	0.04	0.07	0.08	0.09	0.09	0.09	0.09	0.09
Fluoride	mg/L	0.1			0.1			-	-	-	-	-	-	-	-
Kjeldahl Nitrogen Total	mg/L	0.1			0.95			0.50	0.55	0.60	0.65	0.70	0.70	0.70	0.65
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			10		15	-	-	-	-	-	-	-	-
Metals								-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		1.28			-	-	-	-	-	-	-	-
Iron (filtered)	mg/L	0.05			0.69			-	-	-	-	-	-	-	-
Manganese (filtered)	mg/L	0.001	1.9		0.013			-	-	-	-	-	-	-	-
Copper (filtered)	mg/L	0.001	0.0014		0.003			-	-	-	-	-	-	-	-
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	-	-	-	-	-	-
Hardness as CaCO3 (filtered)	mg/L	1			90			-	-	-	-	-	-	-	-
Total Anions								-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			16			-	-	-	-	-	-	-	-
Potassium (filtered)	mg/L	1			5			-	-	-	-	-	-	-	-
Sodium (filtered)	mg/L	1			26			-	-	-	-	-	-	-	-
Magnesium (filtered)	mg/L	1			12			-	-	-	-	-	-	-	-
Herbicides								-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	-	-	-	-	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	-	-	-	-	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	-	-	-	-	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	-	-	-	-	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.04			-	-	-	-	-	-	0.06	0.04
Diuron	µg/L	0.02			0.01			-	-	-	-	-	-	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	-	-	-	-	<10	<10
Hexazinone	µg/L	0.02			0.01			-	-	-	-	-	-	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	-	-	-	-	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	-	-	-	-	0.03	0.03
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	-	-	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	-	-	-	-	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	-	-	-	-	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	-	-	-	-	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.67			-	-	-	-	-	-	0.28	0.27
Terbutryn	µg/L	0.01			0.01			-	-	-	-	-	-	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	-	-	-	-	<10	<10



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	05 Dec 2024	16 Jan 2025	25 Feb 2025	13 Mar 2025	10 Apr 2025	21 May 2025	18 Jun 2025	16 Jul 2025
Other									–	–	–	–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	–	–	–	–	<0.1	<0.1
	Tebuconazole	µg/L	0.01			0.005			–	–	–	–	–	–	<0.01	<0.01
Organic									–	–	–	–	–	–	–	–
	Terbutylazine	µg/L	0.01			0.02			–	–	–	–	–	–	<0.01	<0.01
NA									–	–	–	–	–	–	–	–
	Fipronil	µg/L	0.01	0.018		0.01			–	–	–	–	–	–	<0.01	<0.01
	Fluproponate	µg/L	0.1			0.05			–	–	–	–	–	–	<0.1	<0.1
	Thiamethoxam	µg/L	0.02			0.01			–	–	–	–	–	–	<0.02	<0.02
	Chlorophyll a	mg/L	0.001			0.004		0.005	0.004	0.003	0.002	0.002	0.002	0.002	0.001	0.001
	Imidacloprid	µg/L	0.01			0.005			–	–	–	–	–	–	<0.01	<0.01
Pesticides									–	–	–	–	–	–	–	–
	Diketoneitrile (DKN)	µg/L	0.01			0.02			–	–	–	–	–	–	–	–
	Haloxypop	µg/L	0.1			0.1			–	–	–	–	–	–	<0.1	<0.1
	Imazapic	µg/L	0.01			0.005			–	–	–	–	–	–	<0.01	<0.01
	Isoxaflutole	µg/L	0.01			0.005			–	–	–	–	–	–	<0.01	<0.01
Organophosphorous Pesticides									–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	–	–	–	–	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01		0.005			–	–	–	–	–	–	<0.01	<0.01
Fungicides									–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	–	–	–	–	<0.05	<0.05
Calculations																
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			0.9			–	0.10	0.15	0.20	0.20	0.20	0.25	0.20
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			0.9			0.10	0.10	0.10	0.15	0.20	0.20	0.20	0.20
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.32			0.03	0.08	0.13	0.16	0.13	0.16	0.18	0.18
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			0.94			0.50	0.54	0.58	0.63	0.68	0.69	0.68	0.63
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			0.82			–	0.42	0.42	0.42	0.42	0.42	0.41	0.40
	Particulate Phosphorus (PP) (PP = [TP] – [TP filtered])	mg/L	0.01			0.42			<0.05	0.06	0.08	0.09	0.09	0.10	0.09	0.09



A.14 Etna Ck (Downstream Potential Change Area Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	05 Dec 2024	16 Jan 2025	25 Feb 2025	13 Mar 2025	10 Apr 2025	21 May 2025	18 Jun 2025	16 Jul 2025
Field															
Temperature (Field)	°C	0		15.3	31.3			26.2	28.0	29.0	28.9	28.8	27.5	26.2	26.2
pH (Field)	-	0		7.3	8.4	6.5	8.5	7.4	7.4	7.4	7.3	7.3	7.3	7.3	7.3
Electrical Conductivity (field)	µS/cm	0			269		445	207	211	215	211	215	220	225	220
DO (Field)	mg/L	0						6.4	6.3	6.2	6.3	6.2	6.3	6.4	6.6
Redox Potential (Field)	mV	0			141			102	102	103	110	118	120	123	123
Total Dissolved Solids (Field)	mg/L	0						135	138	140	138	140	143	146	143
DO % Saturation (Field)	%	0		89	101	85	110	83	83	83	83	83	82	81	82
Turbidity (Field)	NTU	0			190.5		50	43	44	43	44	44	55	66	67
Inorganics								-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			77			-	-	-	-	-	-	-	-
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	-	-	-	-	-	-
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	-	-	-	-	-	-
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	-	-	-	-	-	-
Total Suspended Solids (Lab)	mg/L	5			109.75		85	<5	<5	<5	<5	<5	<5	<5	<5
Ammonia as N	mg/L	0.01	0.9		0.03		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Chloride	mg/L	1			33			-	-	-	-	-	-	-	-
Nitrogen (Total)	mg/L	0.1			1.25		0.5	0.60	0.65	0.70	0.75	0.80	0.80	0.80	0.80
Nitrogen (Total) (filtered)	mg/L	0.1			1.35			-	0.60	0.65	0.60	0.60	0.60	0.60	0.60
Nitrite + Nitrate as N	mg/L	0.01			0.29		0.06	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.02	0.06
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.28		0.05	0.16	0.15	0.13	0.15	0.13	0.15	0.16	0.16
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09
Total Dissolved Solids (Lab)	mg/L	10						175	164	175	181	186	191	196	206
Nitrate (as N)	mg/L	0.01			0.29			<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.02	0.06
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.05		0.02	0.06	0.06	0.05	0.06	0.05	0.06	0.06	0.07
Fluoride	mg/L	0.1			0.1			-	-	-	-	-	-	-	-
Kjeldahl Nitrogen Total	mg/L	0.1			0.95			0.60	0.60	0.60	0.65	0.70	0.70	0.70	0.70
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			10		15	-	-	-	-	-	-	-	-
Metals								-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		1.28			-	-	-	-	-	-	-	-
Iron (filtered)	mg/L	0.05			0.69			-	-	-	-	-	-	-	-
Manganese (filtered)	mg/L	0.001	1.9		0.013			-	-	-	-	-	-	-	-
Copper (filtered)	mg/L	0.001	0.0014		0.003			-	-	-	-	-	-	-	-
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	-	-	-	-	-	-
Hardness as CaCO3 (filtered)	mg/L	1			90			-	-	-	-	-	-	-	-
Total Anions								-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			16			-	-	-	-	-	-	-	-
Potassium (filtered)	mg/L	1			5			-	-	-	-	-	-	-	-
Sodium (filtered)	mg/L	1			26			-	-	-	-	-	-	-	-
Magnesium (filtered)	mg/L	1			12			-	-	-	-	-	-	-	-
Herbicides								-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	-	-	-	-	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	-	-	-	-	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	-	-	-	-	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	-	-	-	-	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.04			-	-	-	-	-	-	0.03	0.03
Diuron	µg/L	0.02			0.01			-	-	-	-	-	-	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	-	-	-	-	<10	<10
Hexazinone	µg/L	0.02			0.01			-	-	-	-	-	-	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	-	-	-	-	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	-	-	-	-	0.02	0.03
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	-	-	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	-	-	-	-	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	-	-	-	-	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	-	-	-	-	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.67			-	-	-	-	-	-	0.39	0.37
Terbutryn	µg/L	0.01			0.01			-	-	-	-	-	-	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	-	-	-	-	<10	<10



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	05 Dec 2024	16 Jan 2025	25 Feb 2025	13 Mar 2025	10 Apr 2025	21 May 2025	18 Jun 2025	16 Jul 2025
Other									–	–	–	–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	–	–	–	–	<0.1	<0.1
	Tebuconazole	µg/L	0.01			0.005			–	–	–	–	–	–	<0.01	<0.01
Organic									–	–	–	–	–	–	–	–
	Terbutylazine	µg/L	0.01			0.02			–	–	–	–	–	–	<0.01	<0.01
NA									–	–	–	–	–	–	–	–
	Fipronil	µg/L	0.01	0.018		0.01			–	–	–	–	–	–	<0.01	<0.01
	Fluproponate	µg/L	0.1			0.05			–	–	–	–	–	–	<0.1	<0.1
	Thiamethoxam	µg/L	0.02			0.01			–	–	–	–	–	–	<0.02	<0.02
	Chlorophyll a	mg/L	0.001			0.004		0.005	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001
	Imidacloprid	µg/L	0.01			0.005			–	–	–	–	–	–	<0.01	<0.01
Pesticides									–	–	–	–	–	–	–	–
	Diketonnitrile (DKN)	µg/L	0.01			0.02			–	–	–	–	–	–	–	–
	Haloxypop	µg/L	0.1			0.1			–	–	–	–	–	–	<0.1	<0.1
	Imazapic	µg/L	0.01			0.005			–	–	–	–	–	–	<0.01	<0.01
	Isoxaflutole	µg/L	0.01			0.005			–	–	–	–	–	–	<0.01	<0.01
Organophosphorous Pesticides									–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	–	–	–	–	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01		0.005			–	–	–	–	–	–	<0.01	<0.01
Fungicides									–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	–	–	–	–	<0.05	<0.05
Calculations																
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			0.9			–	0.10	0.10	0.10	0.15	0.20	0.20	0.20
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			0.9			0.10	0.10	0.10	0.10	0.10	0.15	0.20	0.15
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.32			0.01	0.02	0.02	0.03	0.03	0.05	0.07	0.09
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			0.94			0.58	0.59	0.60	0.64	0.68	0.68	0.68	0.67
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			0.82			–	0.48	0.59	0.48	0.46	0.43	0.45	0.43
	Particulate Phosphorus (PP) (PP = [TP] – [TP filtered])	mg/L	0.01			0.42			0.06	0.06	0.05	0.06	0.06	0.06	0.06	0.06



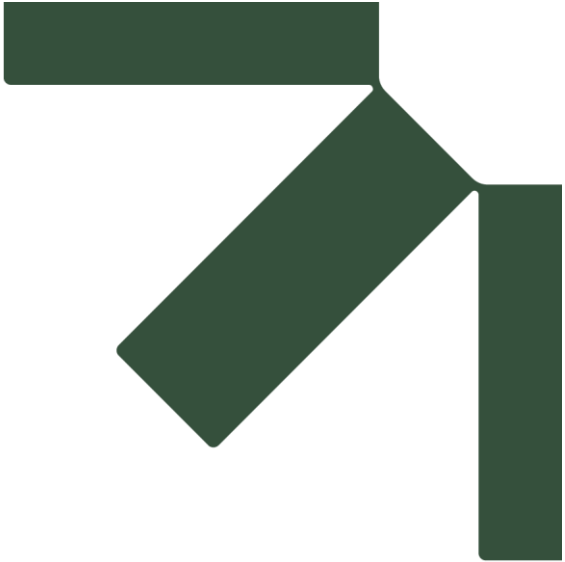
A.15 FRW (Downstream Potential Change Area Site)

Parameter	Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	31 Jul 2024	29 Aug 2024	26 Sep 2024	24 Oct 2024	21 Nov 2024	05 Dec 2024	16 Jan 2025	25 Feb 2025	13 Mar 2025	10 Apr 2025	21 May 2025	18 Jun 2025	16 Jul 2025
Field																				
Temperature (Field)	°C	0		15.3	31.3			25.5	24.4	24.9	25.3	25.3	25.3	25.3	25.3	25.3	25.6	25.6	25.6	25.6
pH (Field)	-	0		7.3	8.4	6.5	8.5	7.3	7.2	7.2	7.2	7.2	7.2	7.2	7.1	7.1	7.1	7.1	7.1	7.1
Electrical Conductivity (field)	µS/cm	0			269		445	183	169	178	187	191	191	191	191	192	192	200	210	210
DO (Field)	mg/L	0						6.9	6.8	6.8	6.7	6.7	6.7	6.7	6.7	6.7	6.6	6.6	6.5	6.6
Redox Potential (Field)	mV	0			141			127	129	126	123	126	121	121	112	110	110	117	121	124
Total Dissolved Solids (Field)	mg/L	0						123	120	121	122	124	124	124	124	127	127	130	137	137
DO % Saturation (Field)	%	0		89	101	85	110	78	80	77	77	76	76	78	81	78	78	78	78	78
Turbidity (Field)	NTU	0			190.5		50	99	87	68	50	48	48	43	43	43	48	48	48	59
Inorganics								-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity (total) as CaCO3	mg/L	1			77			-	-	47	47	44	44	47	47	48	48	48	49	51
Alkalinity (Bicarbonate as CaCO3)	mg/L	1						-	-	47	47	44	44	47	47	48	48	48	49	51
Alkalinity (Carbonate as CaCO3)	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity (Hydroxide) as CaCO3	mg/L	1						-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Suspended Solids (Lab)	mg/L	5			109.75		85	16	13	11	9	8	8	<5	<5	<5	<5	<5	7	7
Ammonia as N	mg/L	0.01	0.9		0.03		0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Chloride	mg/L	1			33			-	-	21	21	25	25	28	28	28	28	28	28	29
Nitrogen (Total)	mg/L	0.1			1.25		0.5	0.95	0.90	0.90	0.90	0.85	0.85	0.75	0.70	0.70	0.70	0.70	0.70	0.70
Nitrogen (Total) (filtered)	mg/L	0.1			1.35			0.70	0.70	0.65	0.60	0.60	0.70	0.60	0.60	0.60	0.50	0.50	0.50	0.50
Nitrite + Nitrate as N	mg/L	0.01			0.29		0.06	0.20	0.18	0.18	0.18	0.13	0.13	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Total Phosphorus as P (Organic Phosphate as P)	mg/L	0.01			0.28		0.05	0.21	0.19	0.18	0.17	0.16	0.16	0.14	0.14	0.14	0.14	0.14	0.14	0.16
Total Phosphorus as P (Organic Phosphate as P) (filtered)	mg/L	0.01						0.12	0.12	0.11	0.09	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.08
Total Dissolved Solids (Lab)	mg/L	10						216	212	203	193	191	185	178	178	178	178	178	187	187
Nitrate (as N)	mg/L	0.01			0.29			0.20	0.18	0.18	0.18	0.13	0.13	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Nitrite (as N)	mg/L	0.01						<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P (Orthophosphate as P)	mg/L	0.01			0.05		0.02	0.10	0.09	0.08	0.07	0.05	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.04
Fluoride	mg/L	0.1			0.1			-	-	0.1	0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Kjeldahl Nitrogen Total	mg/L	0.1			0.95			0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.65	0.60	0.60	0.60	0.60	0.60
Kjeldahl Nitrogen Total (filtered)	mg/L	0.1						0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1			10		15	-	-	3	3	4	4	4	4	4	4	4	4	4
Metals								-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminium (filtered)	mg/L	0.01	0.055		1.28			-	-	0.150	0.150	0.155	0.155	0.150	0.150	0.135	0.135	0.135	0.150	0.150
Iron (filtered)	mg/L	0.05			0.69			-	-	0.22	0.22	0.28	0.28	0.22	0.22	0.25	0.25	0.25	0.27	0.30
Manganese (filtered)	mg/L	0.001	1.9		0.013			-	-	0.005	0.005	0.007	0.007	0.005	0.005	0.007	0.007	0.007	0.008	0.008
Copper (filtered)	mg/L	0.001	0.0014		0.003			-	-	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Zinc (filtered)	mg/L	0.005	0.008		0.0025			-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hardness as CaCO3 (filtered)	mg/L	1			90			-	-	43	43	45	45	46	46	45	45	45	46	48
Total Anions								-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (filtered)	mg/L	1			16			-	-	9	9	9	9	9	9	9	9	9	9	10
Potassium (filtered)	mg/L	1			5			-	-	4	4	4	4	4	4	4	4	4	4	4
Sodium (filtered)	mg/L	1			26			-	-	19	19	19	19	19	19	20	20	20	21	21
Magnesium (filtered)	mg/L	1			12			-	-	5	5	5	5	5	5	5	5	5	5	6
Herbicides								-	-	-	-	-	-	-	-	-	-	-	-	-
Atrazine-desethyl	µg/L	0.1			0.05			-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Metribuzin	µg/L	0.02			0.02			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4-D	µg/L	10	280		10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ametryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	µg/L	0.01	13		0.04			-	-	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03
Diuron	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexazinone	µg/L	0.02			0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methyl-4-chlorophenoxyacetic acid	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Metolachlor	µg/L	0.01	0.46		0.05			-	-	0.04	0.04	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.03	0.03
Metsulfuron Methyl	µg/L	5	0.018		5			-	-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Pendimethalin	µg/L	0.05			0.05			-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Propazine	µg/L	0.01			0.005			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	µg/L	0.02	3.2		0.01			-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tebuthiuron	µg/L	0.02	2.2		1.67			-	-	0.98	0.98	0.75	0.75	0.52	0.52	0.51	0.51	0.51	0.49	0.48
Terbutryn	µg/L	0.01			0.01			-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triclopyr	µg/L	10			10			-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10



Parameter		Unit	LOR	ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	Pre Action Baseline (Fitzroy) Low	Pre Action Baseline (Fitzroy) High	EPP WQO (Fitzroy) Low	EPP WQO (Fitzroy) High	31 Jul 2024	29 Aug 2024	26 Sep 2024	24 Oct 2024	21 Nov 2024	05 Dec 2024	16 Jan 2025	25 Feb 2025	13 Mar 2025	10 Apr 2025	21 May 2025	18 Jun 2025	16 Jul 2025
Other									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorantraniliprole	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Tebuconazole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic									–	–	–	–	–	–	–	–	–	–	–	–	–
	Terbutylazine	µg/L	0.01			0.02			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NA									–	–	–	–	–	–	–	–	–	–	–	–	–
	Fipronil	µg/L	0.01	0.018		0.01			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Fluproponate	µg/L	0.1			0.05			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Thiamethoxam	µg/L	0.02			0.01			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chlorophyll a	mg/L	0.001			0.004		0.005	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	Imidacloprid	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Diketonnitrile (DKN)	µg/L	0.01			0.02			–	–	–	–	–	–	–	–	–	–	–	–	–
	Haloxypop	µg/L	0.1			0.1			–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Imazapic	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Isoxaflutole	µg/L	0.01			0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organophosphorous Pesticides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Chlorpyrifos	µg/L	0.02	0.01		0.02			–	–	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Diazinon	µg/L	0.01	0.01		0.005			–	–	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fungicides									–	–	–	–	–	–	–	–	–	–	–	–	–
	Propiconazole	µg/L	0.05			0.025			–	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calculations																					
	Particulate Nitrogen (PN) (PN = [TN] - [TN filtered])	mg/L	0.01			0.9			0.40	0.40	0.40	0.40	0.40	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	Particulate Organic Nitrogen (PON) (PON = [TKN] - [TKN-filtered])	mg/L	0.01			0.9			0.40	0.40	0.40	0.40	0.30	0.20	0.15	0.15	0.15	0.15	0.15	0.10	0.15
	Dissolved Inorganic Nitrogen (DIN) (DIN = [NH3] + [NOx])	mg/L	0.01			0.32			0.25	0.24	0.24	0.23	0.22	0.22	0.13	0.09	0.08	0.08	0.08	0.08	0.08
	Organic Nitrogen (ON) (ON = [TKN] - [NH3])	mg/L	0.01			0.94			0.70	0.70	0.70	0.70	0.70	0.68	0.66	0.62	0.60	0.60	0.60	0.59	0.59
	Dissolved Organic Nitrogen (DON) (DON = [TN filtered] - [DIN])	mg/L	0.01			0.82			0.38	0.40	0.38	0.40	0.40	0.40	0.43	0.43	0.43	0.41	0.40	0.40	0.40
	Particulate Phosphorus (PP) (PP = [TP] - [TP filtered])	mg/L	0.01			0.42			0.09	0.08	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09





Appendix B Pearsons Correlation Results



Table B-1 Pearson Correlation Coefficients Between Water Quality and Instantaneous Flow for the Reporting Period

Parameter	Upstream					Within Impoundment				Downstream					
	Mackenzie R		Don R	Dawson R		Fitzroy R									
	Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Field															
Temperature (Field)	0.028 (0.979)	1.748 (0.108)	0.749 (0.47)	0.32 (0.755)	0.853 (0.403)	0.567 (0.578)	0.522 (0.61)	1.186 (0.255)	1.483 (0.151)	0.572 (0.573)	1.358 (0.202)	0.738 (0.467)	0.849 (0.405)	-0.073 (0.943)	1.061 (0.299)
pH (Field)	-4.131 (0.004)	-2.468 (0.031)	-1.381 (0.195)	-0.566 (0.583)	-1.589 (0.126)	-1.054 (0.314)	-0.815 (0.432)	-1.392 (0.194)	-2.658 (0.014)	-1.267 (0.217)	-4.549 (0.001)	-3.955 (0.001)	-3.245 (0.004)	-2.092 (0.057)	-1.622 (0.118)
Electrical Conductivity (field)	1.744 (0.125)	-0.331 (0.747)	-1.21 (0.251)	-2.102 (0.059)	-2.428 (0.024)	-1.092 (0.298)	-1.189 (0.259)	-0.935 (0.372)	-3.52 (0.002)	-3.44 (0.002)	-0.405 (0.693)	-4.05(<0.001)	-4.46 (<0.001)	1.824 (0.091)	-4.35 (<0.001)
DO (Field)	-1.429 (0.196)	-4.334 (0.001)	-0.794 (0.444)	0.648 (0.53)	-0.454 (0.655)	-1.376 (0.188)	-1.408 (0.181)	-2.938 (0.011)	-0.3 (0.767)	-1.244 (0.226)	-1.133 (0.281)	-2.565 (0.017)	-0.838 (0.411)	-1.842 (0.088)	0.33 (0.744)
Redox Potential (Field)	1.183 (0.276)	1.158 (0.271)	-0.427 (0.677)	0.496 (0.629)	-0.603 (0.552)	-0.416 (0.685)	-0.144 (0.888)	0.593 (0.566)	0.64 (0.529)	0.649 (0.522)	0.147 (0.886)	1.755 (0.092)	0.993 (0.331)	1.533 (0.149)	1.534 (0.138)
Total Dissolved Solids (Field)	1.764 (0.121)	-0.354 (0.73)	-1.212 (0.251)	-2.084 (0.061)	-2.488 (0.021)	-1.201 (0.255)	-1.31 (0.217)	-0.9 (0.389)	-1.9 (0.07)	-3.103 (0.005)	-0.275 (0.789)	-3.585 (0.001)	-4.44 (<0.001)	1.81 (0.093)	-4.46 (<0.001)
DO % Saturation (Field)	-2.593 (0.036)	-3.005 (0.012)	-0.425 (0.679)	1.715 (0.114)	-0.271 (0.789)	-1.239 (0.233)	-1.338 (0.202)	-1.543 (0.145)	0.68 (0.503)	-1.054 (0.302)	-0.171 (0.867)	-2.535 (0.018)	-0.504 (0.619)	-1.94 (0.074)	1.115 (0.276)
Turbidity (Field)	1.31 (0.232)	2.361 (0.038)	2.768 (0.018)	2.23 (0.048)	5.168 (<0.001)	3.14 (0.009)	2.44 (0.033)	1.237 (0.244)	1.951 (0.064)	4.453 (<0.001)	3.988 (0.002)	3.656 (0.001)	7.076 (<0.001)	0.863 (0.405)	9.434 (<0.001)
Inorganics															
Alkalinity (total) as CaCO3			0.342 (0.746)	-3.212 (0.024)	-1.154 (0.313)	-1.44 (0.21)	-1.631 (0.164)	-1.325 (0.242)	-0.728 (0.507)	-1.08 (0.341)	-0.238 (0.821)	-3.477 (0.018)			2.093 (0.104)
Alkalinity (Bicarbonate as CaCO3)			0.342 (0.746)	-3.212 (0.024)	-1.375 (0.241)	-1.44 (0.21)	-1.631 (0.164)	-1.325 (0.242)	-0.728 (0.507)	-1.08 (0.341)	-0.238 (0.821)	-3.477 (0.018)			2.093 (0.104)
Total Suspended Solids (Lab)	2.557 (0.038)			0.817 (0.431)	9.845 (<0.001)				4.733 (<0.001)	5.588 (<0.001)		8.772 (<0.001)			
Ammonia as N					-0.381 (0.707)				2.053 (0.052)					-0.098 (0.923)	
Chloride			-1.422 (0.214)	-1.41 (0.218)	-1.403 (0.233)	-2.195 (0.08)	-2.572 (0.05)	-0.348 (0.742)	-0.013 (0.99)	-0.414 (0.7)	-0.404 (0.703)	-0.541 (0.612)			-1.057 (0.35)
Nitrogen (Total)	1.506 (0.176)	1.789 (0.101)	2.26 (0.045)	1.03 (0.325)	-0.651 (0.522)	1.774 (0.095)	2.799 (0.014)	0.606 (0.554)	1.57 (0.129)	4.515 (<0.001)	4.018 (0.002)	2.689 (0.013)	2.808 (0.01)	0.725 (0.481)	4.445 (<0.001)
Nitrogen (Total) (filtered)	0.822 (0.438)	2.725 (0.021)	3.662 (0.004)	2.102 (0.062)	-0.651 (0.522)	0.439 (0.67)	-0.006 (0.996)	-0.14 (0.892)	-0.021 (0.984)	-0.414 (0.683)	4.024 (0.002)	1.101 (0.282)	0.313 (0.757)	-0.818 (0.429)	0.338 (0.739)
Nitrite + Nitrate as N					0.197 (0.845)					-1.109 (0.278)		0.059 (0.953)	-1.347 (0.191)		0.38 (0.708)
Total Phosphorus as P	0.416 (0.69)	2.383 (0.036)	1.242 (0.24)	0.479 (0.641)	0.703 (0.49)	2.684 (0.016)	3.596 (0.003)	0.542 (0.597)	1.801 (0.084)	6.787 (<0.001)	8.233 (<0.001)	3.881 (0.001)	5.2 (<0.001)	-0.443 (0.665)	6.034 (<0.001)
Total Phosphorus as P (filtered)	0.715 (0.498)	1.652 (0.127)	0.991 (0.343)	0.584 (0.571)	0.586 (0.564)	1.158 (0.271)	1.018 (0.331)	2.608 (0.026)	0.917 (0.369)	0.802 (0.43)	5.142 (<0.001)	0.262 (0.796)	0.158 (0.875)	-0.748 (0.468)	1.614 (0.12)
Total Dissolved Solids (Lab)	3.261 (0.014)	7.379 (<0.001)	-0.339 (0.741)	0.833 (0.423)	3.34 (0.003)	3.134 (0.01)	2.56 (0.027)	-0.364 (0.723)	-2.359 (0.027)	0.553 (0.585)	4.134 (0.002)	-1.063 (0.298)	-0.7 (0.491)	1.536 (0.148)	1.124 (0.272)
Nitrate (as N)					0.197 (0.845)					-1.094 (0.285)		0.071 (0.944)	-1.347 (0.191)		0.38 (0.708)
Reactive Phosphorus as P (Orthophosphate as P)	0.484 (0.643)	1.756 (0.107)	0.696 (0.501)	0.25 (0.807)	0.786 (0.44)	1.984 (0.073)		1.921 (0.084)	0.302 (0.765)	1.369 (0.184)	6.583 (<0.001)	-0.853 (0.402)	-0.469 (0.643)	-0.979 (0.346)	1.084 (0.289)
Kjeldahl Nitrogen Total	0.405 (0.697)	1.247 (0.238)	2.26 (0.045)	0.318 (0.756)	-0.672 (0.509)	2.481 (0.026)	2.994 (0.01)	0.299 (0.77)	1.743 (0.095)	6.135 (<0.001)	3.655 (0.004)	3.62 (0.001)	4.593 (<0.001)	1.21 (0.248)	5.18 (<0.001)
Kjeldahl Nitrogen Total (filtered)	0.175 (0.866)	2.636 (0.023)	2.624 (0.024)	0.6 (0.56)	-0.975 (0.34)	0.522 (0.61)	0.159 (0.876)	-0.135 (0.895)	0.011 (0.991)	0.288 (0.776)	3.759 (0.003)	1.262 (0.219)	0.926 (0.364)	-0.248 (0.808)	-0.19 (0.851)
Sulfate as SO4			-0.745 (0.49)		-1.161 (0.31)	-0.307 (0.771)	-0.155 (0.883)	0.071 (0.946)	0.541 (0.618)	-0.313 (0.77)	0.204 (0.846)	-0.061 (0.954)			0.522 (0.629)
Metals															
Aluminium (filtered)						4.715 (0.005)		2.79 (0.038)							-0.981 (0.382)
Iron (filtered)					-0.708 (0.518)	2.866 (0.035)		2.004 (0.101)							-1.822 (0.143)
Manganese (filtered)			-0.676 (0.529)	-0.617 (0.564)	-0.217 (0.838)	1.241 (0.27)	3.106 (0.027)	0.983 (0.371)	-0.324 (0.762)	-0.464 (0.667)	2.828 (0.037)				-0.593 (0.585)
Copper (filtered)				-0.062 (0.953)	-1.229 (0.287)		0.224 (0.832)	9.718 (<0.001)		-0.713 (0.515)					
Hardness as CaCO3 (filtered)			-0.889 (0.415)	-4.169 (0.009)	-2.697 (0.054)	-2.34 (0.066)	-3.499 (0.017)	-1.091 (0.325)	-1.664 (0.172)	-1.264 (0.275)	-1.884 (0.118)	-2.857 (0.036)			1.359 (0.246)
Total Anions															
Calcium (filtered)			-0.532 (0.617)	-3.576 (0.016)	-3.615 (0.022)	-2.116 (0.088)	-2.079 (0.092)	-1.028 (0.351)	-1.207 (0.294)	-1.371 (0.242)	-2.227 (0.076)	-3.356 (0.02)			1.151 (0.314)
Potassium (filtered)			1.41 (0.218)	-2.826 (0.037)	0.007 (0.995)	0.708 (0.511)	0.434 (0.682)		1.49 (0.211)	3.277 (0.031)	2.476 (0.056)	-0.037 (0.972)			0.152 (0.886)
Sodium (filtered)			-0.896 (0.412)	-1.782 (0.135)	-2.733 (0.052)	-1.572 (0.177)	-1.62 (0.166)	-0.766 (0.478)	-0.255 (0.812)	-0.091 (0.932)	0.278 (0.792)	-1.14 (0.306)			-0.522 (0.629)
Magnesium (filtered)			-1.099 (0.322)	-4.971 (0.004)	-1.761 (0.153)	-2.363 (0.064)	-5.364 (0.003)	-1.152 (0.301)	-2.462 (0.07)	-0.837 (0.45)	-0.996 (0.365)	-1.93 (0.111)			1.242 (0.282)



Parameter	Upstream					Within Impoundment				Downstream					
	Mackenzie R		Don R	Dawson R		Fitzroy R									
	Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Herbicides															
Metolachlor		3.646 (0.015)				4.37 (0.007)	-0.301 (0.775)	-0.698 (0.516)	-0.96 (0.35)	-0.922 (0.369)	1.668 (0.156)	0.202 (0.842)	0.342 (0.736)	3.955 (0.005)	1.665 (0.113)
Tebuthiuron		4.669 (0.005)	0.262 (0.804)	1.799 (0.132)	-1.577 (0.134)	-0.241 (0.819)	-0.242 (0.819)	0.419 (0.693)	-1.159 (0.262)	-1.184 (0.252)	4.574 (0.006)	-0.114 (0.91)	0.206 (0.839)		-0.15 (0.882)
Organic															
Terbutylazine		-0.921 (0.399)													
NA															
Inorganic Nitrogen as N - Filtered					0.608 (0.549)				-0.105 (0.917)	-0.934 (0.36)	3.332 (0.007)	0.477 (0.638)	-1.035 (0.311)	-0.355 (0.728)	-0.292 (0.773)
Chlorophyll a	-1.305 (0.233)		-1.169 (0.267)	-0.867 (0.405)		-0.697 (0.496)	2.302 (0.037)	-0.869 (0.4)			0.143 (0.889)	-1.342 (0.192)			
Diketoneitrile (DKN)									1.988 (0.065)						
Biota															
Total Cyanophytes						-0.455 (0.672)									

grey shading denotes p-values less than the Bonferroni adjusted significance value (0.0125)
values in brackets present Pearson correlation significance value as p.



Table B-2 Pearson Correlation Coefficients Between Water Quality and 7 Day Prior Flow for the Reporting Period

Parameter	Upstream					Within Impoundment				Downstream					
	Mackenzie R		Don R	Dawson R		Fitzroy R									
	Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Field															
Temperature (Field)	-0.114 (0.913)	0.981 (0.348)	0.351 (0.733)	0.699 (0.499)	0.72 (0.479)	0.663 (0.517)	0.618 (0.546)	0.619 (0.545)	1.454 (0.159)	0.526 (0.604)	1.068 (0.308)	0.913 (0.37)	0.648 (0.523)	0.021 (0.983)	0.823 (0.419)
pH (Field)	-4.055 (0.005)	-1.207 (0.253)	-1.383 (0.194)	-0.195 (0.849)	-1.542 (0.137)	-1.155 (0.273)	-0.918 (0.378)	-0.873 (0.401)	-1.942 (0.064)	-1.198 (0.243)	-2.463 (0.032)	-3.451 (0.002)	-2.811 (0.01)	-2.392 (0.033)	-1.224 (0.233)
Electrical Conductivity (field)	1.814 (0.113)	0.519 (0.614)	-0.995 (0.341)	-1.946 (0.078)	-2.459 (0.022)	-1.202 (0.255)	-1.284 (0.226)	-1.644 (0.129)	-2.463 (0.022)	-2.805 (0.01)	-0.58 (0.574)	-3.474 (0.002)	-3.65 (0.001)	2.206 (0.046)	-4.13 (<0.001)
DO (Field)	-1.265 (0.246)	-2.279 (0.044)	-0.6 (0.561)	0.297 (0.772)	-0.327 (0.747)	-1.458 (0.164)	-1.512 (0.153)	-0.988 (0.339)	-0.375 (0.711)	-0.971 (0.341)	-0.754 (0.467)	-2.568 (0.017)	-0.789 (0.438)	-2.368 (0.034)	0.686 (0.499)
Redox Potential (Field)	1.244 (0.254)	0.699 (0.499)	-0.125 (0.903)	-0.066 (0.948)	-0.376 (0.711)	-0.437 (0.67)	0.061 (0.953)	-0.281 (0.784)	-0.108 (0.915)	0.349 (0.73)	0.05 (0.961)	1.632 (0.116)	0.848 (0.405)	1.383 (0.19)	1.316 (0.201)
Total Dissolved Solids (Field)	1.836 (0.109)	0.488 (0.635)	-0.991 (0.343)	-1.922 (0.081)	-2.524 (0.019)	-1.321 (0.213)	-1.414 (0.185)	-1.737 (0.11)	-1.753 (0.093)	-2.777 (0.01)	-0.432 (0.674)	-3.558 (0.002)	-3.665 (0.001)	2.152 (0.051)	-4.20 (<0.001)
DO % Saturation (Field)	-2.494 (0.041)	-0.843 (0.417)	-0.373 (0.716)	1.305 (0.219)	-0.167 (0.869)	-1.27 (0.222)	-1.39 (0.186)	-0.617 (0.547)	0.679 (0.504)	-0.701 (0.49)	0.189 (0.854)	-2.482 (0.02)	-0.54 (0.595)	-2.441 (0.03)	1.126 (0.271)
Turbidity (Field)	1.517 (0.173)	1.008 (0.335)	2.935 (0.014)	2.003 (0.07)	5.929 (<0.001)	3.478 (0.005)	2.682 (0.021)	4.455 (0.001)	0.914 (0.371)	2.857 (0.009)	2 (0.071)	2.598 (0.017)	5.247 (<0.001)	0.606 (0.556)	6.789 (<0.001)
Inorganics															
Alkalinity (total) as CaCO3			0.342 (0.746)	-3.207 (0.024)	-1.209 (0.293)	-1.638 (0.162)	-1.747 (0.141)	-1.019 (0.355)	-0.74 (0.5)	-1.051 (0.352)	-0.175 (0.868)	-3.403 (0.019)			2.153 (0.098)
Alkalinity (Bicarbonate as CaCO3)			0.342 (0.746)	-3.207 (0.024)	-1.515 (0.204)	-1.638 (0.162)	-1.747 (0.141)	-1.019 (0.355)	-0.74 (0.5)	-1.051 (0.352)	-0.175 (0.868)	-3.403 (0.019)			2.153 (0.098)
Total Suspended Solids (Lab)	2.651 (0.033)			0.741 (0.474)	9.024 (<0.001)				1.905 (0.069)	3.363 (0.003)		3.331 (0.003)			
Ammonia as N					-0.516 (0.611)				1.748 (0.094)					0.061 (0.952)	
Chloride			-1.422 (0.214)	-1.299 (0.251)	-1.224 (0.288)	-2.214 (0.078)	-2.588 (0.049)	-0.101 (0.923)	-0.013 (0.99)	-0.391 (0.716)	-0.429 (0.686)	-0.529 (0.62)			-0.933 (0.404)
Nitrogen (Total)	1.357 (0.217)	0.944 (0.366)	1.344 (0.206)	0.642 (0.534)	-0.537 (0.597)	1.883 (0.078)	2.919 (0.011)	3.649 (0.002)	1.126 (0.271)	3.183 (0.004)	1.888 (0.086)	1.552 (0.134)	2.36 (0.027)	0.765 (0.458)	3.354 (0.003)
Nitrogen (Total) (filtered)	0.844 (0.427)	1.091 (0.301)	1.872 (0.091)	1.912 (0.085)	-0.169 (0.867)	0.574 (0.579)	0.082 (0.936)	-0.078 (0.939)	0.296 (0.77)	-0.309 (0.76)	2.108 (0.061)	1.096 (0.284)	0.224 (0.825)	-0.74 (0.474)	0.131 (0.897)
Nitrite + Nitrate as N					0.44 (0.664)					-1.353 (0.189)		-0.579 (0.568)	-1.639 (0.115)		-0.127 (0.9)
Total Phosphorus as P	0.456 (0.662)	1.412 (0.186)	0.434 (0.673)	0.184 (0.858)	0.421 (0.678)	2.861 (0.011)	3.814 (0.002)	4.624 (<0.001)	1.499 (0.147)	4.353 (<0.001)	3.227 (0.008)	2.842 (0.009)	4.422 (<0.001)	-0.689 (0.503)	5.087 (<0.001)
Total Phosphorus as P (filtered)	0.841 (0.428)	1.402 (0.189)	0.274 (0.789)	0.365 (0.722)	0.394 (0.697)	1.388 (0.193)	1.245 (0.239)	1.488 (0.165)	2.369 (0.027)	1.961 (0.062)	2.812 (0.017)	1.402 (0.174)	0.569 (0.575)	-0.985 (0.343)	1.335 (0.194)
Total Dissolved Solids (Lab)	3.633 (0.008)	3.751 (0.003)	-0.41 (0.69)	0.918 (0.378)	3.191 (0.004)	3.372 (0.006)	2.869 (0.015)	2.493 (0.03)	-2.056 (0.051)	0.479 (0.636)	3.085 (0.01)	-1.081 (0.291)	-0.96 (0.347)	1.688 (0.115)	0.88 (0.388)
Nitrate (as N)					0.44 (0.664)					-1.36 (0.187)		-0.588 (0.562)	-1.639 (0.115)		-0.127 (0.9)
Reactive Phosphorus as P (Orthophosphate as P)	0.57 (0.586)	1.308 (0.218)	0.103 (0.92)	0.028 (0.978)	0.592 (0.56)	2.157 (0.054)		3.71 (0.003)	1.509 (0.145)	2.365 (0.026)	3.024 (0.012)	0.362 (0.721)	0.02 (0.984)	-1.209 (0.248)	1.23 (0.231)
Kjeldahl Nitrogen Total	0.246 (0.813)	0.722 (0.485)	1.344 (0.206)	0.112 (0.913)	-0.604 (0.552)	2.605 (0.021)	3.057 (0.009)	3.864 (0.002)	1.312 (0.203)	4.221 (<0.001)	1.763 (0.106)	2.36 (0.027)	3.858 (0.001)	1.319 (0.21)	4.178 (<0.001)
Kjeldahl Nitrogen Total (filtered)	0.166 (0.873)	1.021 (0.329)	1.458 (0.173)	1.107 (0.292)	-0.648 (0.523)	0.623 (0.544)	0.224 (0.826)	-0.021 (0.983)	0.537 (0.596)	0.524 (0.605)	2.17 (0.053)	2.062 (0.05)	0.95 (0.352)	-0.135 (0.895)	-0.179 (0.86)
Sulfate as SO4			-0.745 (0.49)		-1.016 (0.367)	-0.574 (0.591)	-0.433 (0.683)	0.298 (0.778)	0.572 (0.598)	-0.311 (0.771)	0.094 (0.929)	-0.14 (0.894)			0.443 (0.681)
Metals															
Aluminium (filtered)						5.554 (0.003)		3.01 (0.03)							-1.11 (0.329)
Iron (filtered)					-0.882 (0.428)	2.418 (0.06)		2.471 (0.056)							-1.957 (0.122)
Manganese (filtered)			-0.676 (0.529)	-0.645 (0.547)	-0.349 (0.744)	0.728 (0.499)	2.083 (0.092)	0.841 (0.439)	-0.326 (0.76)	-0.463 (0.667)	2.68 (0.044)				-0.667 (0.542)
Copper (filtered)				-0.035 (0.974)	-1.245 (0.281)		0.446 (0.675)	5.326 (0.003)		-0.705 (0.52)					
Hardness as CaCO3 (filtered)			-0.889 (0.415)	-4.223 (0.008)	-2.296 (0.083)	-2.559 (0.051)	-4.137 (0.009)	-0.709 (0.51)	-1.651 (0.174)	-1.223 (0.288)	-1.87 (0.12)	-2.956 (0.032)			1.744 (0.156)
Total Anions															
Calcium (filtered)			-0.532 (0.617)	-3.781 (0.013)	-3.132 (0.035)	-2.301 (0.07)	-2.329 (0.067)	-0.667 (0.534)	-1.196 (0.298)	-1.328 (0.255)	-2.195 (0.08)	-3.353 (0.02)			1.211 (0.292)
Potassium (filtered)			1.41 (0.218)	-2.977 (0.031)	0.001 (1)	0.594 (0.578)	0.384 (0.717)		1.463 (0.217)	3.331 (0.029)	2.776 (0.039)	0.049 (0.963)			0.136 (0.899)
Sodium (filtered)			-0.896 (0.412)	-1.673 (0.155)	-2.29 (0.084)	-2.392 (0.062)	-2.357 (0.065)	-0.436 (0.681)	-0.243 (0.82)	-0.071 (0.947)	0.308 (0.771)	-1.157 (0.3)			-0.441 (0.682)
Magnesium (filtered)			-1.099 (0.322)	-4.463 (0.007)	-1.516 (0.204)	-2.596 (0.048)	-7.17 (0.001)	-0.753 (0.485)	-2.466 (0.069)	-0.802 (0.467)	-0.99 (0.368)	-2.056 (0.095)			1.734 (0.158)



Parameter	Upstream					Within Impoundment				Downstream					
	Mackenzie R		Don R	Dawson R		Fitzroy R									
	Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Herbicides															
Metolachlor		3.674 (0.014)				6.527 (0.001)	-0.249 (0.813)	-0.907 (0.406)	-0.957 (0.351)	-0.756 (0.459)	1.676 (0.155)	-0.551 (0.589)	-0.475 (0.641)	4.585 (0.003)	0.614 (0.547)
Tebuthiuron		4.561 (0.006)	0.262 (0.804)	2.197 (0.079)	-1.9 (0.076)	-0.662 (0.537)	-0.663 (0.537)	0.504 (0.636)	-0.942 (0.359)	-0.643 (0.529)	3.885 (0.012)	-0.428 (0.674)	-0.323 (0.75)		-0.447 (0.66)
Organic															
Terbutylazine		-0.897 (0.411)													
NA															
Inorganic Nitrogen as N - Filtered					0.841 (0.41)				-0.386 (0.703)	-1.423 (0.167)	2.582 (0.026)	-0.207 (0.838)	-1.518 (0.143)	-0.527 (0.607)	-0.524 (0.605)
Chlorophyll a	-1.26 (0.248)		-1.222 (0.247)	-0.762 (0.462)		-0.794 (0.439)	2.111 (0.053)	-0.742 (0.47)			-0.507 (0.622)	-1.255 (0.222)			
Diketonitrile (DKN)									0.655 (0.522)						
Biota															
Total Cyanophytes						-0.471 (0.662)									

grey shading denotes p-values less than the Bonferroni adjusted significance value (0.0125)
red shading denotes p-values less than the significance value (0.05)
values in brackets present Pearson correlation significance value as p.



Table B-3 Pearson Correlation Coefficients Between Water Quality and 30 Day Prior Flow for the Reporting Period

Parameter	Upstream					Within Impoundment				Downstream					
	Mackenzie R		Don R	Dawson R		Fitzroy R									
	Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Field															
Temperature (Field)	0.335 (0.747)	0.756 (0.465)	0.038 (0.97)	0.523 (0.611)	0.352 (0.728)	1.321 (0.205)	1.314 (0.21)	1.555 (0.141)	1.772 (0.089)	1.586 (0.125)	0.785 (0.449)	0.367 (0.716)	0.774 (0.447)	0.818 (0.427)	1.626 (0.116)
pH (Field)	-4.157 (0.004)	-0.97 (0.353)	-0.24 (0.815)	-0.256 (0.802)	-0.936 (0.359)	-1.508 (0.16)	-1.028 (0.326)	-1.17 (0.267)	-1.97 (0.061)	-0.85 (0.404)	-2.763 (0.018)	-2.28 (0.032)	-3.616 (0.001)	-2.964 (0.01)	-1.245 (0.225)
Electrical Conductivity (field)	1.479 (0.183)	0.825 (0.427)	0.222 (0.828)	-2.101 (0.06)	-1.431 (0.166)	-1.181 (0.263)	-1.217 (0.249)	-1.456 (0.173)	-2.301 (0.03)	-2.91 (0.007)	-0.667 (0.519)	-1.739 (0.095)	-3.755 (0.001)	2.072 (0.057)	-3.912 (0.001)
DO (Field)	-1.717 (0.13)	-1.814 (0.097)	0.327 (0.75)	0.389 (0.704)	-0.135 (0.894)	-3.12 (0.007)	-2.406 (0.031)	-1.819 (0.089)	-1.201 (0.241)	-0.677 (0.504)	-0.651 (0.528)	-1.714 (0.099)	-1.051 (0.304)	-3.222 (0.006)	0.544 (0.591)
Redox Potential (Field)	1.051 (0.328)	0.731 (0.48)	-0.713 (0.49)	-0.006 (0.996)	0.857 (0.4)	-0.236 (0.817)	1.31 (0.217)	-1.311 (0.216)	-0.669 (0.51)	0.198 (0.845)	0.43 (0.676)	1.925 (0.066)	0.957 (0.348)	1.003 (0.333)	0.244 (0.809)
Total Dissolved Solids (Field)	1.473 (0.184)	0.793 (0.444)	0.231 (0.821)	-2.077 (0.062)	-1.493 (0.149)	-1.251 (0.237)	-1.304 (0.219)	-1.49 (0.164)	-1.821 (0.081)	-2.776 (0.01)	-0.483 (0.639)	-1.677 (0.106)	-3.862 (0.001)	1.944 (0.072)	-3.81 (0.001)
DO % Saturation (Field)	-2.502 (0.041)	-0.226 (0.825)	0.723 (0.485)	1.321 (0.213)	-0.02 (0.984)	-2.66 (0.017)	-1.925 (0.075)	-0.945 (0.359)	-1.601 (0.122)	0.797 (0.433)	-0.021 (0.983)	-1.768 (0.09)	-0.767 (0.451)	-3.056 (0.009)	-0.637 (0.53)
Turbidity (Field)	1.012 (0.345)	0.651 (0.528)	-0.178 (0.862)	2.209 (0.049)	2.534 (0.019)	3.018 (0.012)	2.251 (0.046)	2.914 (0.014)	1.095 (0.285)	2.324 (0.029)	2.879 (0.015)	2.118 (0.046)	4.659 (<0.001)	0.196 (0.848)	4.043 (<0.001)
Inorganics															
Alkalinity (total) as CaCO3			0.257 (0.808)	-3.284 (0.022)	-1.367 (0.23)	-0.012 (0.991)	-0.253 (0.81)	-0.292 (0.782)	-0.867 (0.426)	-1.062 (0.337)	-0.958 (0.382)	-0.935 (0.393)			0.046 (0.965)
Alkalinity (Bicarbonate as CaCO3)			0.257 (0.808)	-3.284 (0.022)	-1.832 (0.126)	-0.012 (0.991)	-0.253 (0.81)	-0.292 (0.782)	-0.867 (0.426)	-1.062 (0.337)	-0.958 (0.382)	-0.935 (0.393)			0.046 (0.965)
Total Suspended Solids (Lab)	1.89 (0.101)			0.78 (0.452)	1.242 (0.227)				1.14 (0.266)	2.342 (0.027)		0.769 (0.45)			
Ammonia as N					-0.623 (0.539)				0.634 (0.532)					-0.224 (0.826)	
Chloride			-1.479 (0.199)	-1.426 (0.213)	-1.106 (0.319)	-0.507 (0.634)	-0.552 (0.605)	-0.194 (0.854)	-0.499 (0.639)	-0.562 (0.598)	-0.418 (0.693)	-0.691 (0.52)			-0.709 (0.51)
Nitrogen (Total)	1.679 (0.137)	0.756 (0.465)	0.132 (0.897)	0.662 (0.522)	-0.189 (0.852)	1.995 (0.063)	2.653 (0.019)	4.203 (0.001)	1.353 (0.188)	2.892 (0.008)	4.272 (0.001)	2.411 (0.024)	2.756 (0.011)	1.406 (0.181)	2.852 (0.009)
Nitrogen (Total) (filtered)	0.983 (0.358)	-0.97 (0.353)	0.192 (0.852)	1.97 (0.077)	0.974 (0.341)	1.688 (0.122)	0.355 (0.73)	0.001 (0.999)	1.957 (0.063)	0.554 (0.584)	2.018 (0.071)	2.147 (0.043)	0.497 (0.624)	-0.136 (0.894)	0.29 (0.774)
Nitrite + Nitrate as N					1.259 (0.221)					-0.052 (0.959)		2.635 (0.015)	-0.534 (0.598)		0.379 (0.708)
Total Phosphorus as P	0.497 (0.635)	0.948 (0.364)	-0.422 (0.681)	0.331 (0.747)	0.436 (0.667)	2.572 (0.02)	3.041 (0.009)	3.368 (0.004)	1.665 (0.108)	3.067 (0.005)	5.694 (<0.001)	2.283 (0.032)	4.61 (<0.001)	-0.999 (0.335)	3.981 (0.001)
Total Phosphorus as P (filtered)	0.94 (0.378)	1.105 (0.293)	-0.504 (0.624)	0.518 (0.615)	0.569 (0.575)	3.362 (0.006)	3.035 (0.011)	4.594 (0.001)	5.847 (<0.001)	4.174 (<0.001)	4.836 (0.001)	3.517 (0.002)	1.195 (0.244)	-0.988 (0.34)	1.709 (0.1)
Total Dissolved Solids (Lab)	2.917 (0.022)	2.665 (0.022)	0.349 (0.734)	1.136 (0.28)	1.314 (0.202)	4.491 (0.001)	3.931 (0.002)	2.233 (0.047)	-1.073 (0.294)	0.515 (0.611)	3.286 (0.007)	0.444 (0.661)	-0.04 (0.968)	2.193 (0.046)	1.263 (0.218)
Nitrate (as N)					1.259 (0.221)					-0.116 (0.908)		2.598 (0.016)	-0.534 (0.598)		0.379 (0.708)
Reactive Phosphorus as P (Orthophosphate as P)	0.619 (0.556)	1.276 (0.228)	-0.71 (0.493)	0.15 (0.883)	0.906 (0.375)	3.283 (0.007)		6.785 (<0.001)	2.861 (0.009)	3.714 (0.001)	5.76 (<0.001)	3.048 (0.006)	0.768 (0.45)	-1.04 (0.316)	2.392 (0.025)
Kjeldahl Nitrogen Total	0.636 (0.545)	0.318 (0.756)	0.132 (0.897)	0.132 (0.897)	-0.336 (0.74)	2.484 (0.026)	2.533 (0.025)	3.436 (0.004)	1.144 (0.264)	3.312 (0.003)	4.204 (0.001)	2.25 (0.034)	3.62 (0.001)	1.677 (0.116)	3.084 (0.005)
Kjeldahl Nitrogen Total (filtered)	0.394 (0.705)	0.577 (0.576)	0.069 (0.946)	1.169 (0.267)	0.267 (0.792)	1.368 (0.194)	0.483 (0.638)	-0.014 (0.989)	1.533 (0.138)	1.04 (0.308)	1.707 (0.116)	1.893 (0.071)	0.69 (0.497)	0.165 (0.872)	-0.23 (0.82)
Sulfate as SO4			-0.686 (0.523)		-0.817 (0.451)	1.26 (0.263)	1.439 (0.21)	1.293 (0.252)	0.702 (0.514)	0.809 (0.455)	0.623 (0.56)	0.411 (0.698)			-0.007 (0.994)
Metals															
Aluminium (filtered)						0.248 (0.814)		0.16 (0.879)							-0.327 (0.757)
Iron (filtered)					-1.121 (0.313)	0.924 (0.398)		0.285 (0.787)							-0.394 (0.71)
Manganese (filtered)			-0.574 (0.591)	-0.634 (0.554)	-0.216 (0.837)	4.29 (0.008)	2.659 (0.045)	0.728 (0.499)	0.293 (0.781)	-0.154 (0.884)	0.919 (0.4)				-0.077 (0.941)
Copper (filtered)				-0.15 (0.886)	-0.925 (0.398)		-0.7 (0.515)	-0.175 (0.868)	0.441 (0.677)	-0.174 (0.869)					
Hardness as CaCO3 (filtered)			-0.92 (0.4)	-4.16 (0.009)	-2.29 (0.071)	-0.249 (0.813)	-0.23 (0.828)	0.462 (0.664)	-0.339 (0.748)	-0.757 (0.483)	-1.077 (0.33)	-0.659 (0.539)			-0.708 (0.51)
Total Anions															
Calcium (filtered)			-0.583 (0.585)	-3.535 (0.017)	-3.423 (0.019)	-0.257 (0.807)	-0.159 (0.88)	0.297 (0.778)	-0.301 (0.775)	-0.69 (0.521)	-1.132 (0.309)	-0.931 (0.395)			-0.028 (0.979)
Potassium (filtered)			1.316 (0.245)	-2.657 (0.045)	-0.175 (0.868)	0.597 (0.577)	0.349 (0.741)		-0.393 (0.71)	-0.183 (0.862)	-0.137 (0.896)	-0.681 (0.526)			-0.109 (0.917)
Sodium (filtered)			-0.941 (0.39)	-1.815 (0.129)	-1.898 (0.116)	1.219 (0.277)	1.002 (0.362)	0.257 (0.808)	-0.239 (0.82)	-0.657 (0.54)	-0.594 (0.579)	-0.61 (0.569)			-0.425 (0.688)
Magnesium (filtered)			-1.112 (0.317)	-5.131 (0.004)	-1.359 (0.232)	-0.204 (0.846)	-0.263 (0.803)	0.736 (0.495)	-0.524 (0.623)	-0.9 (0.409)	-0.859 (0.43)	-0.259 (0.806)			-1.08 (0.329)



Parameter	Upstream					Within Impoundment				Downstream					
	Mackenzie R		Don R	Dawson R		Fitzroy R									
	Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Herbicides															
Metolachlor		-0.163 (0.877)				0.052 (0.961)	-0.096 (0.927)	0.324 (0.759)	-0.422 (0.678)	-0.311 (0.76)	0.559 (0.6)	-0.172 (0.865)	-0.087 (0.932)	0.231 (0.823)	0.73 (0.474)
Tebuthiuron		1.21 (0.281)	0.219 (0.836)	1.738 (0.143)	-1.846 (0.082)	2.562 (0.051)	2.543 (0.052)	3.268 (0.022)	0.69 (0.498)	1.182 (0.252)	2.365 (0.064)	0.866 (0.398)	0.512 (0.615)		-0.012 (0.99)
Organic															
Terbutylazine		-0.6 (0.574)													
NA															
Inorganic Nitrogen as N - Filtered					1.339 (0.194)				0.85 (0.404)	-0.469 (0.643)	3.53 (0.005)	2.489 (0.02)	-0.601 (0.553)	-0.234 (0.819)	-0.384 (0.704)
Chlorophyll a	-1.565 (0.162)		-0.914 (0.38)	-0.754 (0.467)		-1.497 (0.154)	0.639 (0.533)	-1.206 (0.247)			-1.156 (0.272)	-1.155 (0.259)			
Diketonitrile (DKN)									0.666 (0.515)						
Biota															
Total Cyanophytes						-0.479 (0.657)									

grey shading denotes p-values less than the Bonferroni adjusted significance value (0.0125)
red shading denotes p-values less than the significance value (0.05)
values in brackets present Pearson correlation significance value as p.



Table B-4 Pearson Correlation Coefficients Between Water Quality and 90 Days Prior Flow for the Reporting Period

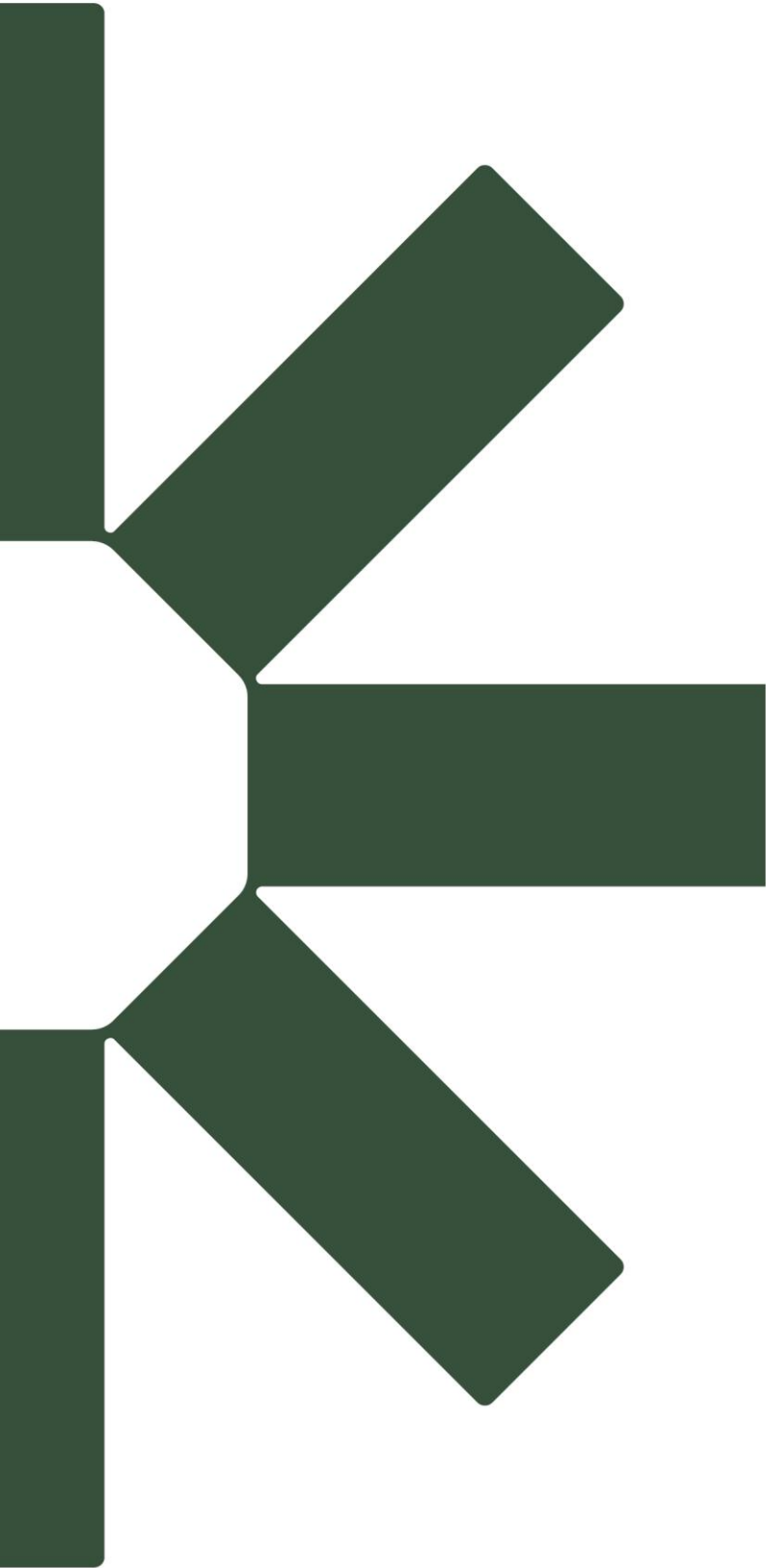
Parameter	Upstream					Within Impoundment				Downstream					
	Mackenzie R		Don R	Dawson R		Fitzroy R									
	Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Field															
Temperature (Field)	-0.824 (0.437)	-0.425 (0.679)	-1.338 (0.208)	-0.493 (0.632)	-1.708 (0.101)	0.278 (0.785)	0.227 (0.823)	-0.067 (0.947)	-0.966 (0.343)	-0.669 (0.509)	-0.49 (0.634)	-0.749 (0.461)	-1.634 (0.116)	-1.331 (0.204)	-1.059 (0.3)
pH (Field)	-2.707 (0.03)	-1.517 (0.158)	-1.338 (0.208)	-0.827 (0.426)	-1.691 (0.104)	-0.794 (0.444)	-0.924 (0.375)	-0.304 (0.767)	0.605 (0.551)	0.91 (0.372)	-1.643 (0.129)	-0.264 (0.794)	-1.434 (0.165)	-1.047 (0.313)	0.106 (0.917)
Electrical Conductivity (field)	3.464 (0.01)	1.311 (0.216)	-1.338 (0.208)	-1.797 (0.1)	-1.275 (0.215)	-0.52 (0.613)	-0.499 (0.628)	0.458 (0.656)	1.305 (0.204)	0.429 (0.672)	0.842 (0.418)	0.668 (0.511)	-0.649 (0.523)	2.897 (0.012)	-0.681 (0.502)
DO (Field)	-0.725 (0.492)	-0.595 (0.564)	-1.338 (0.208)	1.72 (0.113)	-0.189 (0.852)	-1.869 (0.08)	-0.476 (0.641)	-0.632 (0.537)	-0.517 (0.61)	1.552 (0.133)	0.808 (0.436)	0.669 (0.51)	0.296 (0.77)	-1.063 (0.306)	0.991 (0.331)
Redox Potential (Field)	1.431 (0.195)	1.157 (0.272)	-1.338 (0.208)	1.171 (0.267)	0.714 (0.483)	1.44 (0.178)	0.89 (0.393)	-0.417 (0.685)	-0.554 (0.585)	-0.354 (0.726)	1.523 (0.156)	1.418 (0.169)	1.168 (0.255)	1.294 (0.217)	1.741 (0.094)
Total Dissolved Solids (Field)	3.579 (0.009)	1.267 (0.231)	-1.338 (0.208)	-1.812 (0.097)	-1.259 (0.221)	-0.478 (0.642)	-0.437 (0.671)	0.573 (0.578)	1.356 (0.188)	0.29 (0.774)	1.105 (0.293)	0.508 (0.616)	-0.764 (0.452)	2.659 (0.019)	-0.667 (0.511)
DO % Saturation (Field)	-2.73 (0.029)	0.072 (0.944)	-1.338 (0.208)	3.001 (0.012)	-0.826 (0.417)	-2.1 (0.052)	-0.551 (0.59)	-0.781 (0.447)	0.322 (0.75)	0.743 (0.464)	0.968 (0.354)	0.504 (0.619)	-0.346 (0.732)	-1.607 (0.13)	-0.436 (0.666)
Turbidity (Field)	1.455 (0.189)	0.186 (0.856)	-1.338 (0.208)	1.342 (0.207)	1.878 (0.074)	1.829 (0.095)	1.206 (0.253)	1.379 (0.195)	-0.619 (0.542)	0.603 (0.552)	1.528 (0.155)	0.115 (0.909)	2.288 (0.033)	1.093 (0.294)	2.867 (0.008)
Inorganics															
Alkalinity (total) as CaCO3			-0.873 (0.422)	-0.496 (0.641)	0.049 (0.962)	0.986 (0.369)	0.788 (0.466)	0.781 (0.47)	0.34 (0.748)	0.202 (0.848)	1.464 (0.203)	0.045 (0.966)			0.985 (0.37)
Alkalinity (Bicarbonate as CaCO3)			-0.873 (0.422)	-0.496 (0.641)	0.445 (0.675)	0.986 (0.369)	0.788 (0.466)	0.781 (0.47)	0.34 (0.748)	0.202 (0.848)	1.464 (0.203)	0.045 (0.966)			0.985 (0.37)
Total Suspended Solids (Lab)	6.67 (<0.001)			0.02 (0.985)	-0.334 (0.741)				-0.334 (0.741)	0.582 (0.566)		-0.523 (0.606)			
Ammonia as N					-1.026 (0.315)				-0.66 (0.516)			0.775 (0.474)		0.42 (0.681)	
Chloride			0.211 (0.841)	0.183 (0.862)	-1.264 (0.262)	0.349 (0.742)	0.447 (0.674)	1.361 (0.232)	1.299 (0.251)	1.274 (0.259)	0.919 (0.4)	1.555 (0.133)			-0.99 (0.368)
Nitrogen (Total)	0.484 (0.643)	0.347 (0.735)	-1.628 (0.132)	-0.043 (0.967)	-0.222 (0.826)	0.67 (0.512)	2.57 (0.022)	1.878 (0.08)	3.216 (0.004)	1.543 (0.135)	4.425 (0.001)	0.827 (0.417)	2.074 (0.049)	1.269 (0.225)	2.988 (0.006)
Nitrogen (Total) (filtered)	0.47 (0.653)	0.039 (0.97)	-1.315 (0.218)	1.778 (0.106)	1.459 (0.159)	0.989 (0.346)	-0.32 (0.756)	-0.475 (0.645)	0.585 (0.564)	-0.022 (0.983)	1.786 (0.104)	2.312 (0.03)	-0.682 (0.502)	-0.619 (0.546)	-0.42 (0.678)
Nitrite + Nitrate as N					3.353 (0.003)					-0.71 (0.484)		0.927 (0.363)	0.748 (0.462)		2.431 (0.023)
Total Phosphorus as P	0.3 (0.773)	0.531 (0.606)	-1.381 (0.195)	-0.26 (0.8)	0.288 (0.776)	1.533 (0.145)	2.189 (0.046)	1.663 (0.117)	0.979 (0.337)	0.994 (0.33)	2.976 (0.013)	3.244 (0.003)	2.773 (0.011)	-0.335 (0.743)	4.531 (<0.001)
Total Phosphorus as P (filtered)	-0.074 (0.943)	0.685 (0.508)	-1.616 (0.134)	0.238 (0.816)	0.533 (0.599)	2.193 (0.051)	2.155 (0.054)	2.247 (0.046)	2.661 (0.014)	2.626 (0.015)	3.345 (0.007)	1.453 (0.159)	1.527 (0.14)	0.307 (0.763)	2.429 (0.023)
Total Dissolved Solids (Lab)	3.124 (0.017)	1.872 (0.088)	0.494 (0.631)	0.268 (0.793)	1.69 (0.105)	3.345 (0.007)	3.413 (0.006)	2.601 (0.025)	0.271 (0.788)	1.635 (0.115)	2.95 (0.013)	2.299 (0.031)	1.465 (0.157)	4.83 (<0.001)	2.331 (0.028)
Nitrate (as N)					3.353 (0.003)					-0.741 (0.466)		4.001 (0.001)	0.748 (0.462)		2.431 (0.023)
Reactive Phosphorus as P (Orthophosphate as P)	-0.094 (0.928)	1 (0.339)	-1.472 (0.169)	-0.164 (0.873)	0.578 (0.569)	2.299 (0.042)		3.356 (0.006)	0.944 (0.354)	1.487 (0.15)	3.697 (0.004)	1.402 (0.174)	1.683 (0.106)	0.341 (0.738)	5.554 (<0.001)
Kjeldahl Nitrogen Total	-0.464 (0.657)	0.049 (0.962)	-1.628 (0.132)	-0.93 (0.372)	-0.483 (0.634)	1.005 (0.332)	2.668 (0.019)	1.685 (0.116)	3.314 (0.003)	1.782 (0.087)	4.07 (0.002)	0.385 (0.704)	1.904 (0.07)	0.992 (0.338)	2.388 (0.025)
Kjeldahl Nitrogen Total (filtered)	-0.273 (0.793)	-0.348 (0.734)	-1.738 (0.11)	-0.317 (0.757)	0.079 (0.937)	0.601 (0.558)	-0.215 (0.833)	-0.497 (0.628)	0.078 (0.939)	0.361 (0.721)	1.379 (0.195)	2.33 (0.067)	-1.119 (0.275)	-0.656 (0.522)	-1.15 (0.261)
Sulfate as SO4			1.5 (0.194)		-1.076 (0.331)	0.332 (0.753)	0.329 (0.755)	1.523 (0.188)	1.785 (0.134)	2.324 (0.068)	2.097 (0.09)	0.045 (0.966)			1.622 (0.166)
Metals															
Aluminium (filtered)						0.044 (0.967)		0.081 (0.939)							0.427 (0.687)
Iron (filtered)					2.013 (0.1)	0.964 (0.379)		0.593 (0.579)							0.087 (0.934)
Manganese (filtered)			1.368 (0.23)	-0.661 (0.538)	3.104 (0.027)	0.645 (0.547)	0.262 (0.804)	-0.969 (0.377)	-0.488 (0.646)	-0.696 (0.517)	0.092 (0.93)				-0.479 (0.652)
Copper (filtered)				-3.14 (0.026)	0.181 (0.864)		-1.283 (0.256)	-0.556 (0.602)	0.481 (0.651)	-0.333 (0.752)					
Hardness as CaCO3 (filtered)			0.648 (0.545)	-0.257 (0.807)	-1.74 (0.142)	0.538 (0.614)	0.713 (0.508)	1.466 (0.203)	1.054 (0.34)	0.997 (0.364)	0.708 (0.51)	0.378 (0.721)			-0.089 (0.933)
Total Anions															
Calcium (filtered)			0.182 (0.863)	-0.257 (0.808)	-1.26 (0.263)	0.862 (0.428)	1.21 (0.28)	1.545 (0.183)	1.288 (0.254)	1.281 (0.257)	0.941 (0.39)	0.164 (0.876)			0.891 (0.414)
Potassium (filtered)			-1.217 (0.278)	0.517 (0.627)	-0.074 (0.944)	0.947 (0.387)	0.599 (0.575)		-0.903 (0.408)	-0.523 (0.624)	-0.37 (0.727)	-1.15 (0.302)			2.346 (0.066)
Sodium (filtered)			0.011 (0.992)	-0.186 (0.86)	-1.549 (0.182)	0.785 (0.468)	0.648 (0.545)	1.808 (0.13)	1.624 (0.165)	0.585 (0.584)	0.772 (0.475)	0.83 (0.444)			-0.685 (0.524)
Magnesium (filtered)			0.915 (0.402)	-0.27 (0.798)	-1.76 (0.139)	0.138 (0.896)	0.225 (0.831)	1.274 (0.259)	0.754 (0.485)	0.686 (0.523)	0.234 (0.824)	0.669 (0.533)			-0.608 (0.57)



Parameter	Upstream					Within Impoundment				Downstream					
	Mackenzie R		Don R	Dawson R		Fitzroy R									
	Coolmaringa	Apis Ck Rd	Rannes	Beckers	Boolburra	Yarra Rd	The Pocket	Riverslea	Weir US	Weir DS	Hanrahan	Glenroy Rd	The Gap	Etna Ck	FRW
Herbicides															
Metolachlor		-0.481 (0.651)				-0.642 (0.549)	-0.655 (0.541)	-0.645 (0.547)	-0.751 (0.462)	-0.676 (0.507)	-0.705 (0.512)	-0.545 (0.592)	-0.566 (0.579)	-0.516 (0.62)	-0.087 (0.931)
Tebuthiuron		-0.208 (0.844)	-0.928 (0.396)	0.61 (0.568)	0.451 (0.658)	0.509 (0.632)	0.553 (0.604)	0.101 (0.923)	0.174 (0.864)	0.488 (0.631)	0.234 (0.824)	0.404 (0.691)	0.14 (0.89)		-0.356 (0.726)
Organic															
Terbutylazine		-0.986 (0.37)													
NA															
Inorganic Nitrogen as N - Filtered					2.5 (0.02)				-0.542 (0.593)	-1.421 (0.168)	2.164 (0.053)	1.675 (0.107)	0.873 (0.392)	1.385 (0.188)	0.471 (0.641)
Chlorophyll a	-0.081 (0.937)		-0.12 (0.906)	-1.338 (0.208)		-1.852 (0.083)	0.892 (0.387)	-0.811 (0.43)			-0.127 (0.901)	0.368 (0.716)			
Diketonitrile (DKN)									-0.503 (0.622)						
Biota															
Total Cyanophytes						-1.185 (0.302)									

grey shading denotes p-values less than the Bonferroni adjusted significance value (0.0125)
red shading denotes p-values less than the significance value (0.05)
values in brackets present Pearson correlation significance value as p.





Making Sustainability Happen