Drinking Water Service Annual Report 2023-2024

SPID:476

This report has been prepared in accordance with the Guideline for the preparation, review and audit of Drinking Water Management Plans

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1. Service Provider Details

Detail	Information
SPID	476
Name	Bundaberg Regional Council
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Primary Contact	Mrs Helen Smith Water Governance Officer Mobile: 0427 384 326
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LGA covered by this plan	Bundaberg Regional Council
Water Service Schemes covered by this plan	Bundaberg, Kalkie, Gregory River, Gin Gin, Moore Park Beach, River Park, Rocky Point, Wallaville, Lake Monduran.

2. Glossary of Terms

(the) Act	*Water Supply (Safety and Reliability) Act 2008*
ADWG 2011	Australian Drinking Water Guidelines (2011) Published by the National Health and Medical Research Council of Australia.
ALS	Australian Laboratory Services
BRC	Bundaberg Regional Council
E. coli	Escherichia coli is a bacterium which is considered to be a superior indicator for detecting faecal contamination which could present a potential health risk.
CFU/100ml	Colony forming units per 100 millilitres
CCP	Critical Control Point
DAF	Diffused Air Floatation
DRDMW	Department of Regional Development, Manufacturing & Water
DWQMP	Drinking Water Quality Management Plan
F&SS	Forensic & Scientific Services (Queensland Government)
GWTP	Groundwater Treatment Plant/s
IMS	Integrated Management System
LIMS	Laboratory Information Management System
mg/L	Milligrams per litre
MIB	Methylisobomeol, is an organic chemical with a strong odour that can present with an algal bloom
NTU	Nephelometric Turbidity Units
PAC	Powder Activated Carbon
PFAS	Per- and poly - fluoroalkyl substances
QWSR	Queensland Water Supply Regulator
QH	Queensland Health
QCP	Quality Control Point
THM/s	Trihalomethanes are a group of chemicals that may be formed as a by-product when chlorine reacts with organic matter that can be found in some water sources.
TOC	Total Organic Carbon
WSA	Water Service Area
WTP	Water Treatment Plant
<	Less than
>	Greater than
µg/L	Micro-Grams per litre
µS/cm	Micro-Siemens per centimetre

3. Introduction

This is the Drinking Water Service annual report for Bundaberg Regional Council (BRC) for the 2023-2024 financial year.

BRC is a registered service provider with identification (SPID) number 476. BRC is operating under an approved DWQMP (Information Notice issued 9 May 2023) to ensure consistent supply of safe quality drinking water to protect public health. This is done through proactive identification and minimisation of public health related risks associated with drinking water.

This report documents the performance of BRC's drinking water services with respect to:

- The water quality performance of BRC's drinking water supply,
- The actions undertaken to implement the DWQMP, and
- The information BRC is required to provide to the Queensland Water Supply Regulator, Department of Regional Development, Manufacturing and Water (DRDMW) (the Regulator) in accordance with the *Water Supply (Safety and Reliability) Act 2008* (the Act).

This report is submitted to the Water Supply Regulator, DRDMW, to fulfil Council's regulatory requirement, and is also made available to customers through Council's website or for inspection upon request at Council offices.

This report has been prepared in accordance with the *Guideline for the preparation, review and audit of Drinking Water Quality Management Plans – October 2022* published by DRDMW.

4. Overview of Operations

BRC manages nine (9) Water Service Areas (WSA) summarised in Table 1 below.

Table 1. Summary of Schemes

Scheme (Population)	Water Source	Treatment Process	Treatment Capacity (ML/day)	Towns supplied
Bundaberg Water Service Area (WSA) (56,742)	Burnett River	Branyan Water Treatment Plant (WTP) – PAC Adsorption, coagulation, flocculation, clarification, sedimentation, filtration, and disinfection.	21	Bundaberg City, including Gooburrum
	Bores: - Heaps St - Peatey St - Lovers Walk - Powers St - offline* - Works Depot	Groundwater Treatment Plant (GWTP) - Aeration over limestone bed with disinfection	57.6 combined	
Kalkie WSA (20,956)	Burnett River via SunWater's Woongarra Main Channel	WTP - PAC adsorption, coagulation, flocculation, clarification (Inclined Plate Sedimentation Tank), filtration and disinfection.	17.3	The Port, Burnett Heads, Bargara, The Hummock, Innes Park, Coral Cove, Elliott Heads, Riverview
	Bundaberg WSA treated water supplement to Hummock reservoirs for consumption within the Kalkie WSA.			
Moore Park WSA (3,235)	SunWater Gooburrum Main Channel	Vecellios Rd WTP - Coagulation, flocculation, clarification (DAF), filtration and disinfection	2.16	Moore Park
	Zandes Bores 1 & 2	Murdochs Rd GWTP - Aeration over limestone process with disinfection		
River Park WSA (317)	SunWater irrigation holding dam	WTP - Coagulation, flocculation, clarification, filtration, and disinfection	1.5	River Park
Rocky Point WSA (221)	Bore	GWTP - Aeration over limestone process with disinfection	0.69	Rocky Point
Gregory River WSA (6,248)	Gregory River	WTP – PAC Adsorption, flocculation, coagulation, clarification (Inclined Plate Sedimentation Tank), and disinfection	4.3	Childers, Woodgate, Redridge, Forest Ridge, Kinkuna, Goodwood
Gin Gin WSA (1,479)	Gin Gin Creek & SunWater Channel	WTP – PAC Adsorption, coagulation, flocculation, clarification (Inclined Plate Sedimentation Tank), filtration, and disinfection	1	Gin Gin
Wallaville WSA (257)	Burnett River	WTP - coagulation, flocculation, clarification, filtration, and disinfection	2.5	Wallaville
Lake Monduran WSA (16 Water Connections – 40 people)	Fred Haigh Dam	WTP - coagulation, flocculation, filtration, and disinfection	0.86	Lake Monduran Tourist Park

* Powers St GWTP is no longer operational; the plant has been isolated and the bores supplying the plant have been decommissioned.

Figure 1 Overview Map of BRC's WSA's 2023-2024

5. DWQMP Implementation

In accordance with the Condition 7.6 of the Information Notice issued by DRDMW on 9 May 2023, the regular review of Council's approved DWQMP was completed on 27 June 2024 and notification on the outcomes and subsequent amendment of Council's DWQMP was submitted to the Regulator on 29 July 2024.

The regular review process involved information sessions held with multiple stakeholders within Water Services. The review of the DWQMP included updating the content of the plan to comply with the Regulators' *Guideline for the preparation, Review and audit of drinking water quality management plans*; updating Section 5 Kalkie WSA following the completed upgrade to the Kalkie Water Treatment Plant; and the addition of dedicated reticulation sample point locations within all WSA's networks.

Water Services Service Delivery team conducts daily toolbox and monthly meetings to discuss water (and sewerage) issues within the region. These meetings provide the opportunity to inform operators of the information provided in the approved DWQMP and the importance of operating under the plan. Members from the Technical Services (including the Governance team) and Business Improvements teams attend the monthly meetings to provide updates and information.

During the 2023-2024 reporting period there were no new operators recruited by Water Services. All new water operations staff are made aware of their role in relation to implementing the DWQMP and forms part of the onsite training provided.

Appendix B – provides a summary of the actions taken with regards to the Improvement actions captured within Council's Improvement Plan. Actions undertaken during the 2023-2024 financial year Council include:

- Construction of the trunk main pipeline connection to provide a treated water supply between Wallaville and Gin Gin WSA has commenced.
- Powers St GWTP (Bundaberg WSA) is no longer operational; the plant has been isolated and the bores supplying the plant have been decommissioned.
- Migration to a new Domain and Geo SCADA as part of the Operational Technology (OT) Strategy implementation.

5.1 Revisions made to the operational/verification monitoring.

BRC continues to carry out operational monitoring programs across all BRC water schemes, as per the approved DWQMP.

Following Council's notification to the Regulator that the increase to the microbial sampling frequency within the region could not be implemented at the time, an extension until 19 January 2024 was granted to complete the installation of the designated sample points and smoothly transition to the new monitoring program.

Council completed the installation of the dedicated sample points in January 2024 and sampling from the reviewed verification sample locations commenced at the required frequency to comply with the *Public Health Regulation 2018* requirements.

6. Notification to the Regulator under section 102 & 102A of the Act.

Notification to the Regulator is a requirement under Sections 102 and102A of the Act and Conditions 7.2 and 7.3 of the BRC Drinking Water Quality Management Plan Information Notice issued by DRDMW on 9 May 2023, for incidents where the quality of water supplied within the drinking water service does not comply with the water quality criteria and / or a prescribed incident / event has occurred in relation to service.

During the 2023-2024 financial year Council reported twenty-two (22) incidents / events to the Regulator. The majority of these are detections that were made during routine verification monitoring. Three (3) of the reports are for weather, fire and herbicide application events that occurred within the region.

6.1 Non-compliance with the water quality criteria and corrective and preventative actions undertaken.

Table 2 summarises the incidents reported to the Regulator during the 2023-2024 reporting year.

Table 2. DWQMP Incidents reported to the Regulator 2023-2024

Water Service Area	Parameter	Monitoring type	Incident Date	QWSR reference	Initial date reported to QWSR	Comments
Bundaberg Regional Council	weather event	event notification	23/01/2024	NA	23/01/2024	Bundaberg Regional Council was located within the potential impact zone of an impending weather event. This impending event triggered an email request for daily status updates to be provided to QWSR. Daily information updates were provided on 23/01/2024, 24/01/2024 and 25/01/2024. Email notification was received from QWSR on 25/01/2024- BRC was no longer required to provide daily status reports.
Bundaberg	Free chlorine	operational CCP	17/09/2023	DWI-476-23-10411	18/09/2023	A SCADA low chlorine alarm notification for the Heaps St GWTP was received by the operator. The operator attended site and identified both chlorine gas bottles were empty. Heaps St GWTP was isolated, and the gas bottles replaced. Chlorine residuals were checked on the outlet to the reticulation network - free chlorine 0.85ppm and total chlorine 0.89ppm. The plant was returned to normal operations. Closure advice for this incident was received on 11/10/2023.
	Disinfection failure	operational CCP	14/12/2023	DWI-476-23-10653	15/12/2023	A chlorine dosing system solenoid valve failure at the Peatey St GWTP resulted in the supply of non-disinfected water for ~30mins to the reticulation network. The plant was isolated and free chlorine readings in the reticulation network were undertaken by treatment team- all recorded free chlorine above 0.5mg/L. Investigation of the chlorine dosing system identified the fault as a potential blockage in the solenoid diaphram that inhibited the flow of the carrier water for the dosing system. The solenoid has been inspected and the issue has been rectified with the doing system functioning correctly. The assessment review of the SCADA alarm protocols identified the issue to be in the control limits set in the SCADA background configurations. The alarm limits have been reviewed and the low alarm limit has been adjusted. Solenoid valve was inspected, and issue rectified. Closure advice for this incident was received on 04/04/2024.
	pesticides	verification	Nov 22 / Feb 23	DWI-476-23-10323	06/07/2023	Powers St GWTP laboratory analysis results received for the routine quarterly pesticide sample program were assessed against ADWG and Qld Health pesticide assessment parameter limit spreadsheet (based on a review of past BRC detections of pesticides without ADWG limits). There were no detections of pesticides above the ADWG limits. The pesticide fipronil amide was detected above the Qld Health parameter limit. Power St GWTP has been taken offline and no longer supplies to the network. Closure advice was received on 20/09/2023.
	pesticides	verification	04/01/2024	DWI-476-24-11059	21/02/2024	Heaps St GWTP laboratory analysis results received for the routine quarterly pesticide sample program were assessed against ADWG and Qld Health pesticide assessment parameter limit spreadsheet (based on a review of past BRC detections of pesticides without ADWG limits). There were no detections of pesticides above the ADWG limits. The pesticide phenoxyethanol had not been detected previously. Following further advice provided by QWSR and Qld Health on 12/07/2024, the Qld Health pesticide assessment parameter limit spreadsheet was updated. Closure advice for this incident was received on 29/07/2024.
Gin Gin	pesticides	verification	04/01/2024	DWI-476-24-11059	21/02/2024	Laboratory analysis results received for the routine quarterly pesticide sample program were assessed against ADWG and Qld Health pesticide assessment parameter limit spreadsheet (based on a review of past BRC detections of pesticides without ADWG limits). There were no detections of pesticides above the ADWG limits. The pesticide phenoxyethanol had not been detected previously. Following further advice provided by QWSR and Qld Health on 12/07/2024, the Qld Health pesticide assessment parameter limit spreadsheet was updated. Closure advice for this incident was received on 29/07/2024.
Gregory River	Chlorate	verification	11/10/2023	DWI-476-23-10531	16/10/2023	The Chlorate level in the Childers Reservoir was detected above 0.8mg/L (ADWG interim health limit). No issue was identified, and the additional reservoir samples analysed from the same network returned compliant results. The follow-up reticulation samples taken from across the network returned compliant Chlorate results. Closure advice for this incident was received on 12/01/2024.
	fire event	event notification	31/10/2023	N/A	31/10/2023	A fire event occurred within the Gregory River Water Service Area, to the west of the Gregory River WTP. No impacts from the fire were experienced at the plant, within the treatment process or the reticulation supply. Operators continually monitored the situation and assessed for any potential impacts to the source water. The additional demand on the water supply was monitored and managed as required by the operational staff. Disaster status email updates were provided to QWSR for the duration of the fire event- 31/10/2023, 01/11/2023, 02/11/2023, 03/11/2023 and 04/11/2023.
	THM's	verification	06/12/2023	DWI-476-23-10676	18/12/2023	THM's were detected at one of three sample points in the reticulation network above 250µg/L (ADWG health limit). The remaining two sample points detected THM's at 240µg/L and 250µg/L respectively. The senior operator identified a fault with the plant thickener feed. A polymer dosing pump fault resulted in an increased organic load from the waste stream being returned back into the treatment process. The thickener was drained, and the plant returned to normal operation. The new works management system WTP walk-through action should prevent this issue from reoccurring. Closure advice for this incident was received on 28/06/2024.
	pesticides	verification	04/01/2024	DWI-476-24-11059	21/02/2024	Laboratory analysis results received for the routine quarterly pesticide sample program were assessed against ADWG and Qld Health pesticide assessment parameter limit spreadsheet (based on a review of past BRC detections of pesticides without ADWG limits). There were no detections of pesticides above the ADWG limits. The pesticide phenoxyethanol had not been detected previously. Following further advice provided by QWSR and Qld Health on 12/07/2024, the Qld Health pesticide assessment parameter limit spreadsheet was updated. Closure advice for this incident was received on 29/07/2024.
Lake Monduran	Total chlorine	operational CCP	23/08/2023	DWI-476-23-10372	23/08/2023	An incorrect SCADA online chlorine analyser reading at the plant was identified following onsite chlorine testing undertaken by the operator using a hand-held analyser. Additional chlorine readings were undertaken in the reticulation network. The operator conducted a filter backwash and flush. The SCADA online chlorine analyser was checked, the flow cell was cleaned and the KCl gel replaced in the sensor. Closure advice for this incident was received on 15/09/2023.

Table 2. DWQMP Incidents reported to the Regulator 2023-2024 continued

Water Service Area	Parameter	Monitoring type	Incident Date	QWSR reference	Initial date reported to QWSR	Comments
Lake Monduran continued	low Chlorine	operational CCP	07/09/2023	DWI-476-23-10393	07/09/2023	A SCADA low chlorine alarm notification was received by the operator. The plant was remotely isolated while the operator travelled to site. Onsite chlorine readings undertaken at the WTP to verify the SCADA analyser reading. Additional chlorine readings were taken within the reticulation network. A site inspection identified a dosing pump failure. The non-return/foot valve was replaced in the chlorine tank and pumping resumed. The operator emptied, cleaned and refilled the chlorine tank with fresh solution. Closure advice for this incident was received on 20/09/2023.
	low Chlorine	operational CCP	09/11/2023	DWI-476-23-10573	09/11/2023	An air lock was identified in the chlorine dosing pump that resulting in low chlorine levels. The air lock was cleared by flushing the lines with the aid of the fire hydrant located outside the plant. The operator manually dosed the reservoirs with chlorine and performed a manual filter backwash before returning the plant to normal operations. Closure advice for this incident was received on 2/01/2024.
	THM's	verification	02/11/2023	DWI-476-23-10582	14/11/2023	The THM exceedance was identified as part of the Monduran WTP project to improve sodium hypochlorite management practices at the site. The Monduran WTP was taken offline in March 2024 and water is being trucked into the supply area. Closure advice for this incident was received on 12/01/2024.
	pesticides	verification	04/01/2024	DWI-476-24-11059	21/02/2024	Laboratory analysis results received for the routine quarterly pesticide sample program were assessed against ADWG and Qld Health pesticide assessment parameter limit spreadsheet (based on a review of past BRC detections of pesticides without ADWG limits). There were no detections of pesticides above the ADWG limits. The pesticides phenoxyethanol and 5-Chloro-2-methyl-4-isothiazon have not been detected previously. Following further advice provided by QWSR and Qld Health on 12/07/2024, the Qld Health pesticide assessment parameter limit spreadsheet was updated. Closure advice for this incident was received on 29/07/2024.
	Chlorate (reticulation)	verification	14/02/2024	DWI-476-24-10864	23/02/2024	The Chlorate level in the reticulation network was detected above 0.8mg/L (ADWG interim health limit). No issue was identified. Onsite chlorine analysis undertaken at the Monduran WTP recorded 1.78 mg/L free chlorine, 2.09 mg/L total chlorine and turbidity 0.39 NTU. Closure advice for this incident was received on 27/06/2024.
	Chlorate (WTP reservoir)	verification	21/03/2024	DWI-476-24-11034	02/04/2024	Laboratory analysis results received included a chlorate reading for the Monduran WTP Reservoir of 24.06 mg/L, well above 0.8mg/L (ADWG interim health limit). The result was checked with laboratory staff. A valid chlorate reading is between 0- 2 mg/L and this result should have been reported as invalid. The Monduran WTP taken offline on 07/03/2024 and water is being trucked in to supply the service area. Closure advice for this incident was received on 27/06/2024.
River Park	herbicide application	operational	21/08/2023	DWI-476-23-10413	28/08/2023	Notification was received from SunWater regarding a scheduled herbicide application (Weedmaster Duo Dual Salt Technology), to treat for water lettuce, to the Woongarra Balancing Storage Lagoon that supplies the River Park WTP. The River Park WTP was isolated prior to the herbicide application and water was trucked into service area for the duration. Glyphosate levels were monitored in the raw water storage lagoon before and during the herbicide application. River Park WTP was returned into service on upon receipt of compliant results below the ADWG limit for Glyphosate and Total Glyphosate. The required actions to be undertaken by Council during herbicide applications to ensure there is no risk to public health have been captured in the DWQMP. Email information notification was sent to QWSR on 28/08/2023. As requested by QWSR, the initial notification report for this incident was submitted on 31/08/2023 and the investigation report was submitted on 21/08/2024.
Rocky Point	Total chlorine	operational CCP	15/09/2023	DWI-476-23-10410	17/09/2023	Residual chlorine at the plant was recorded at 0.7ppm. The operator dosed each reservoir with sodium hypochlorite bringing the levels to approximately 1.1ppm. The operator flushed the chlorine line with water, before reconnecting it, and then ran the sump for approximately 15mins to refill the line with chlorine. When the plant was switched back on, the sump over dosed chlorine to the reservoirs. Closure advice for this incident was received on 26/09/2023.
Wallaville	low Chlorine	operational CCP	09/11/2023	DWI-476-23-10574	09/11/2023	Operator investigation identified the pre-reservoir chlorine dosing points were split and resulted in no sodium hypochlorite being injected into the system. The chlorine dose fittings were repaired, and the plant returned to normal operation. No SCADA chlorine alarm notification was received by the operators. SCADA alarm protocols were reviewed and amended to mitigate any further risk of a similar incident occurring in the future and to ensure more timely alarm notifications are received by the operators. Closure advice for this incident was received on 12/01/2024.
	pesticides	verification	04/012024	DWI-476-24-11059	21/02/2024	Laboratory analysis results received for the routine quarterly pesticide sample program were assessed against ADWG and Qld Health pesticide assessment parameter limit spreadsheet (based on a review of past BRC detections of pesticides without ADWG limits). There were no detections of pesticides above the ADWG limits. The pesticides fluroxypyr, imazapic, metolachlor-OXA and metolachlor-ESA were detected above the Qld Health parameter limits. Following further advice provided by QWSR and Qld Health on 12/07/2024, the Qld Health pesticide assessment parameter limit spreadsheet was updated. Closure advice for this incident was received on 29/07/2024.
	Chlorate	verification	21/03/2024	DWI-476-24-10935	02/04/2024	The Chlorate level detected in the Wallaville WTP Reservoir was above 0.8mg/L (ADWG interim health limit). This exceedance was due to the degradation of the onsite sodium hypochlorite solution. Hot humid weather conditions experienced lead to a quicker than expected degrading of the hypo solution. Fresh sodium hypochlorite solution was delivered to the WTP. The sodium hypochlorite tank was cleaned and refilled. Closure advice for this incident was received on 26/06/2024.

7. Customer Complaints

BRC's Water Services monitors and investigates customer complaints received relating to drinking water quality. Reporting on the number of complaints received, the general details of complaints and the actions undertaken is a requirement that BRC must comply with in accordance with section 142(3)(g) of the Act.

Table 3 below provides a summary of the number and nature of customer complaints received during the 2023-2024 financial year.

Table 3. Water Quality Customer Complaints

WSA	Discoloured Water	Taste & Odour	Suspected Illness	Total Complaints
Bundaberg	36	8	2	**46**
Kalkie	7	3	0	**10**
Gregory River	1	1	0	**2**
Gin Gin	1	2	0	**3**
Moore Park	0	1	0	**1**
River Park	1	0	0	**1**
Wallaville	1	0	0	**1**
BRC Total Complaints	**47**	**15**	**2**	-

Please note that no customer complaints were received for the following WSA's – Lake Monduran & Rocky Point.

Discoloured Water (including Cloudy Water)

During 2023-2024 BRC received forty-seven (47) customer complaints relating to discoloured water across all WSA's, the majority of which were reported within the Bundaberg WSA.

Five (5) of these forty-seven (47) complaints related to cloudy water specifically. These complaints are primarily the result of sloughing of sediments in the water mains. At times, milky/white water can be experienced at the consumers tap. This is due to air being trapped within the water main and can occur following repair work when re-establishing the water mains back into service.

Generally, discolouration issues can be resolved quickly through operational corrective actions such as flushing.

Taste & Odour

Taste and odour complaints regarding potable water can be subjective as it depends on an individual's perception. During 2023-2024 BRC received fifteen (15) water quality complaints related to taste/odour. In some WSA's BRC can operate on either surface water and/or groundwater, this change can prompt complaints as there can be a slight change in the water taste and/or odour. The most common complaint descriptions included chlorine, chemical and earthy/dirt.

Due to varying raw surface water conditions, some Bundaberg Regional Council WSA's can experience Methylisoborneol (MIB) and Geosmin at levels above the taste threshold of 5ng/L.

When taste and/or odour complaints are received, Council contacts the customer to obtain further information regarding the matter. The latest water quality results for the WTP that supplies the water to property are checked and if no issues are identified the customer is provided information on what is potentially causing the taste/odour issue and why it is happening. If the matter persists the customer is advised that they can contact Council, and an operational crew will be sent out to flush the mains.

Suspected Illness

On occasions, complaints are received from customers who believe an illness they are experiencing may be associated with the water supply. BRC investigates all alleged illness complaints relating to its various potable water supplies, typically by testing the closest reticulation sampling point for the presence of *E. coli* and free chlorine residual levels.

During the 2023-2024 reporting year, there were no 'confirmed' cases of illness arising from the BRC water supply networks. The two (2) suspected illness complaints were complaints where the customer 'believed' the water was responsible for their suspected illness (allergic reaction and sickness due to PFAS). Review of the laboratory analysis for the water supplied to the properties were within the required ADWG health limits. The PFAS affected bores were taken offline in 2018 and the supply to that area is now from a different source. After the complaints were investigated by Council staff, it was recommended to the customers that they contact Queensland Health to investigate the matter further in aid of identifying the cause of the suspected illness. No request for further information to these complaints was received from Queensland Health.

8. DWQMP Review Outcomes

In accordance with Council's Information Notice Conditions 7.6 and 8.1, a regular review of the approved DWQMP, to ensure the DWQMP remains accurate and relevant to the drinking water service provided, must be conducted by 30 June 2024 and at intervals of two (2) years. Council completed DWQMP regular review by 27 June 2024 and submitted the outcomes to the Regulator on 29 July 2024. Following correspondence with DRDMW the submitted amendment application was withdrawn by BRC and the revised DWQMP and amendment application was re-submitted on the 6 September 2024.

DRDMW issued an Information Requirement Notice (IRN) to Council on 9 May 2023. Council submitted the required IRN response to the Regulator with the submitted outcomes of the regular review. See below for a summary of the IRN response made:

- An assessment of the additional treated water supplied from the Bundaberg WSA, via the Mellifont booster pump, to the Kalkie WSA was undertaken to include heavy metals/rare earth metals; THM's and the mixing of source waters.
- To ensure PFAS concentrations are reduced to an acceptable level with the blending of source water, the Power Street GWTP is no longer operational and the bores supplying the plant have been decommissioned. All references to the plant and its bores have been removed from the DWQMP.
- The Bundaberg WSA supply area risk assessment Table 4-21 has been updated to include Lanthanum in the surface water process step and heavy metals in the reticulation pipelines with the mitigating measures including meter replacement, mains replacement/repair and flushing.
- The Kalkie WSA risk assessment Table 5-13 has been updated to include heavy metals (Lead) in the reticulation pipelines with the mitigating measures including meter replacement, mains replacement/repair and flushing.

- Further content has been added to the River Park WSA risk assessment Table 7-12 regarding the actions undertaken by Council in the application of herbicide to the supply water.
- Sodium Hypochlorite management practices as a preventative measure relative to the removal of disinfection by-products (DBPs) precursors in solids' removal process has been included in the risk assessments for plants where Sodium Hypochlorite is used.
- The DWQMP has grouped all Bundaberg supply groundwater bores' risk assessment together into Table 4-9 as they draw from the same source and are seen to have the same associated hazards.
- Council undertook an assessment of the requirement to include THM verification monitoring in the Bundaberg GWTP schemes. Assessment showed there is very little to no organic matter in the raw water supply with reported dissolved organic carbon (DOC) levels less than the ALS LOR of 1mg/L and absorbance @ 254nm recorded a maximum of 0.079 cm^{-1}, and THM levels recorded below the ADWG limit 250 µg/L.
- DWQMP Appendix B Tables 45 and 46 have been updated to include the relevant WSA/treatment plant to indicate where detections have occurred.
- DWQMP Table 15-3 safe operational procedures (SOPs) have been updated to identify the relevant WSA/treatment plant and to align with the DWQMP Guidelines.
- A dedicated sample station has been installed on the Council verge of 10 Reddan Street, across the street from the Reddan St Sewage Pump Station sample point where Lanthanum has previously been detected. This sample point has been included in the verification monitoring sites listed in DWQMP Appendix A.

Table 4. DWQMP Review Outcomes

Regular Review Component	Findings	Actions	Action status	Responsible Officer / Role
Regular Review Date: 27 June 2024				
Service description	Removal of Powers St GWTP (Bundaberg WSA), information on non-potable service areas included.	Powers St GWTP is no longer operational (PFAS detection – did not supply directly to the reticulation network), bores supplying the plant have been decommissioned. Reference to plant removed from plan. Section 3.1.1 Non-Potable Service Areas information content added to DWQMP.	Completed, reviewed DWQMP submitted to Regulator on 29 July 2024, application withdrawn and resubmitted 6 September 2024.	Governance team / Service Delivery team / Plumbing Compliance team
Details of infrastructure	Asset information/descriptions updated including upgraded to Kalkie WTP, removal of Powers St GWTP (Bundaberg WSA), inclusion of Damascus Dam (Gin Gin WSA).	Information reviewed and updated, WTP infographics updated, information included on supply from Damascus Dam to Gin Gin WTP reference to Powers St GWTP removed.	Completed, reviewed DWQMP submitted to Regulator on 29 July 2024, application withdrawn and resubmitted 6 September 2024.	Governance team / Service Delivery team / External Consultant
Catchment characteristics and water quality data	Water quality performance data 2018 to 2023	Water quality data compiled and analysed, captured in DWQMP Appendix B Water Quality Analysis.	Completed, reviewed DWQMP submitted to Regulator on 29 July 2024, application withdrawn and resubmitted 6 September 2024.	Governance team / Service Delivery team
Hazard Identification and risk assessment	Risk assessment workshops	Risk assessments reviewed and updated to include the capture of heavy metals in the relevant process steps, assessment of the groundwater bore supply.	Completed, reviewed DWQMP submitted to Regulator on 29 July 2024, application withdrawn and resubmitted 6 September 2024.	Governance team / Service Delivery team
Documented procedures	Incorporated in overall document structure and layout	Operational procedures/SOP's reviewed and updated the relevant WSA/treatment plant identified and captured the transition to electronic data capture in FOCUS Works Management System. Text updated for documented development and review.	Completed, reviewed DWQMP submitted to Regulator on 29 July 2024, application withdrawn and resubmitted 6 September 2024.	Governance team / Service Delivery team
Information management and record keeping	Incorporated in overall document structure and layout	Document reviewed and content updated to include data capture in FOCUS and current asset management practices.	Completed, reviewed DWQMP submitted to Regulator on 29 July 2024, application withdrawn and resubmitted 6 September 2024.	Governance team / Service Delivery team
Risk Management & Record keeping	Risk management improvement actions	Risk management improvement actions reviewed to address all unacceptable risks and responsibilities assigned to appropriate staff. RMIP captured in Monday.com, accessible by Water Services staff. Improvement action review to be undertaken quarterly.	On going, reviewed DWQMP submitted to Regulator on 29 July 2024, application withdrawn and resubmitted 6 September 2024. Refer annual report Appendix B Page 29.	Governance team / Service Delivery team
Operational monitoring	Critical Control Point (CCP) and Operational Control Point (OCP) procedures	CCP and OCP procedures developed for all treatment plants/schemes based on industry best practice, monitoring tables updated to ensure frequency of monitoring consistent throughout Plan.	Completed, reviewed DWQMP submitted to Regulator on 29 July 2024, application withdrawn and resubmitted 6 September 2024. Operators reviewed CCP and OCP parameters as part of the 2024 DWQMP review.	Governance team / Service Delivery team / Central Laboratory team
Verification monitoring	Verification monitoring sample sites and analysis parameters.	Installation of dedicated sample bollards, directly into the water main, across all Water Service Areas to ensure compliance and accurate representation of water supplied to service areas. Analysis parameters checked to ensure accuracy and compliance.	Completed, reviewed DWQMP submitted to Regulator on 29 July 2024, application withdrawn and resubmitted 6 September 2024. Installation of the dedicated sample points completed and revised sample program testing commenced January 2024.	Governance team / Service Delivery team / Central Laboratory team
Other	Contact details	Contact details reviewed and updated.	Completed, reviewed DWQMP submitted to Regulator on 29 July 2024, application withdrawn and resubmitted 6 September 2024.	Governance team
	Priority customer list	Priority (vulnerable) customers identified and reviewed as key stakeholders supplied by Council, DWQMP Appendix F.	Completed, reviewed DWQMP submitted to Regulator on 29 July 2024, application withdrawn and resubmitted 6 September 2024.	Governance team / Service Delivery team

9. DWQMP Audit

In accordance with Council's Information Notice Conditions 7.7 and 8.2, an audit of the approved DWQMP, to verify data accuracy, assess compliance with the DWQMP and its relevance to the drinking water service, must be conducted by 30 June 2025 and at intervals of four (4) years.

No audit was required to be undertaken during the financial year 01/07/2023 to 30/06/2024.

10. Customer Service Standard Review

In accordance with the *Water Supply (Safety and Reliability) Act 2008* Section 120 the customer service standard (CSS) must be reviewed at least every five (5) years.

BRC Water Services Customer Service Standards was reviewed on 23/05/2024, no changes were made to the document and the CSS published version MD-6-017 Rev. 1.2 10/09/2019 on Council's website remains current.

Since October 2024, following the election of a new Mayor and Councillors and employment of a new CEO, Council has undergone major organisational restructure and change. The CSS is undergoing further review to align with the current Council structure and will be completed and published to Council's website early 2025.

11. Verification Monitoring – Water Quality Information & Summary

BRC undertakes verification monitoring across the drinking water network to ensure the provision of safe and reliable drinking water to our customers. Verification monitoring sites are utilised for sample collection for several monitoring programs undertaken by Councils Central Laboratory and ALS. The quantity and location of monitoring sites is provided in the following table:

Table 5. Monitoring Site Details per WSA

Water Service Areas	Minimum number of monitoring samples/week	Minimum number of monitoring samples/month	Number per BRC Scheme	Location of verification monitoring sites
Bundaberg	1	10	3 per week / 12 per month	BRC's DWQMP Appendix D
Kalkie	1	3	2 per week / 3 per month	
Gregory River	1	0	2 per week / 5 per month	
Gin Gin	1	0	1 per week / 1 per month	
Moore Park Beach	1	0	1 per week / 1 per month	
River Park	0	1	1 per month	
Rocky Point	0	1	1 per month	
Wallaville	0	1	1 per month	
Lake Monduran	0	1	1 per month	

Verification monitoring for 2023-2024 has not been compliant with the verification monitoring program as stated in the BRC DWQMP *Section 14.1 – Water Quality Monitoring*. Following Council's notification to the Regulator that the increase to the microbial sampling frequency within the region could not be implemented at the time, an extension until 19 January 2024 was granted to complete the installation of the designated sample points and smoothly transition to the new monitoring program.

From January 2024 Council has been compliant with the verification monitoring frequency stated in DWQMP Appendix D from January 2024. Microbiological verification monitoring raw data undertaken in 2023-2024 has been provided to confirm compliance from January 2024.

Council's Water Services team installed forty (40) designated verification water sample points across the region. The installation project was completed in January 2024 and monitoring at the frequency stated in the BRC DWQMP commenced.

To determine compliance, verification monitoring results are assessed against the following:

- Drinking water quality criteria prescribed in the *Public Health Regulation 2018,*
- Health guideline values in the ADWG (2011); and
- Water quality criteria stated in the *Water Quality and Reporting Guideline for a Drinking Water Service*.

The water quality data for 2023-2024 has been summarised in Appendix A, including the 12 month 'rolling' annual value *E.coli* compliance table. The reported statistics do not include results derived from repeat samples, or from emergency or investigative samples undertaken in response to an elevated result, as described in the ADWG (2011) section 10.3.1. 100% Microbial compliance was achieved for all BRC WSA's during the 2023-2024 financial year.

Appendix A. Summary of Compliance with Water Quality Criteria for Drinking Water

Result	Page(s)
WSA's Standard Water Analysis (SWA)	17-34
Pesticide	35-36
E. coli	37
THM's	38

Drinking water quality performance – Verification Monitoring – Bundaberg WSA

Parameter	Units	DWQMP requirement / Year	Scheme requirement / Year	Samples Collected / Year	Frequency of Sampling	Source	ADWG Health Value	No. of samples Exceeding ADWG Health Value	Minimum value	Maximum value	Comments
Microbiological											
E. coli	cfu/100mL	756	288	265	Week/Month	Reticulation	1	0	~	<1	
SPC	cfu/mL	756	288	265	Week/Month	Reticulation	~	~	<1	149	
Faecal Coliforms	cfu/100mL	756	288	265	Week/Month	Reticulation	~	~	<1	6	
Physical											
Chlorine (Free)	mg/L	756	288	265	Week/Month	Reticulation	5	0	0.05	3.0	
Chlorine (Total)	mg/L	756	288	265	Week/Month	Reticulation	5	0	0.05	3.2	
pH	pH units	756	288	265	Week/Month	Reticulation	~	~	6.4	8.6	
Conductivity	uS/cm	100	36	39	Quarterly	Reticulation	~	~	350	556	
Colour (True)	Pt-Co	100	36	39	Quarterly	Reticulation	15	0	~	0	
Turbidity	NTU	100	36	39	Quarterly	Reticulation	~	~	0.05	1.2	
Inorganic											
Alkalinity	mg/L	100	36	39	Quarterly	Reticulation	~	~	17	64	
Calcium Hardness	mg/L	100	36	39	Quarterly	Reticulation	~	~	19.8	45.6	
Chloride	mg/L	100	36	39	Quarterly	Reticulation	~	~	80.98	119.2	
Fluoride	mg/L	100	36	39	Quarterly	Reticulation	1.5	0	~	<0.15	
Hardness (Total)	mg/L	100	36	39	Quarterly	Reticulation	~	~	41.3	89.3	
Nitrate	mg/L	100	36	39	Quarterly	Reticulation	50	0	1.7	22.12	
Nitrite	mg/L	100	36	39	Quarterly	Reticulation	3	0	<0.10	0.19	
Phosphate (Dissolved)	mg/L	100	36	39	Quarterly	Reticulation	~	~	~	<0.40	
Potassium	mg/L	100	36	39	Quarterly	Reticulation	~	~	<1.0	2.72	
Magnesium	mg/L	100	36	39	Quarterly	Reticulation	~	~	4.66	12.46	
Sodium	mg/L	100	36	39	Quarterly	Reticulation	~	~	46.25	69.0	
Sulphate	mg/L	100	36	39	Quarterly	Reticulation	500	0	2.0	43.91	
Calcium	mg/L	100	36	39	Quarterly	Reticulation	~	~	7.94	18.26	
Total Dissolved Solids	mg/L	100	36	39	Quarterly	Reticulation	~	~	234.5	630.5	
Metals											
Aluminium	mg/L	48	18	18	Biannual	Reticulation	~	~	0.03	0.06	
Antimony	mg/L	48	18	18	Biannual	Reticulation	0.003	0	~	<0.001	
Arsenic	mg/L	48	18	18	Biannual	Reticulation	0.01	0	~	<0.001	
Barium	mg/L	48	18	18	Biannual	Reticulation	2	0	0.01	0.032	
Beryllium	mg/L	48	18	18	Biannual	Reticulation	0.06	0	~	<0.001	
Bismuth	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Boron	mg/L	48	18	18	Biannual	Reticulation	4	0	<0.05	0.07	
Caesium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Cadmium	mg/L	48	18	18	Biannual	Reticulation	0.002	0	~	<0.0001	
Cerium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Chromium	mg/L	48	18	18	Biannual	Reticulation	0.05	0	~	<0.001	
Cobalt	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Copper	mg/L	48	18	18	Biannual	Reticulation	2	0	0.003	0.122	
Dysprosium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Erbium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Gadolinium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Gallium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Hafnium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.01	

Holmium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Indium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Iron	mg/L	48	18	18	Biannual	Reticulation	~	~	<0.05	0.12	
Lanthanum	mg/L	48	18	18	Biannual	Reticulation	0.002	0	~	<0.001	
Lead	mg/L	48	18	18	Biannual	Reticulation	0.01	0	<0.001	0.005	
Lithium	mg/L	48	18	18	Biannual	Reticulation	~	~	<0.001	0.002	does not exceed Qld Health limit (0.006 mg/L)
Lutetium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Manganese	mg/L	48	18	18	Biannual	Reticulation	0.5	0	<0.001	0.002	
Molybdenum	mg/L	48	18	18	Biannual	Reticulation	0.05	0	~	<0.001	
Nickel	mg/L	48	18	18	Biannual	Reticulation	0.02	0	<0.001	0.005	
Neodymium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Praseodymium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Rubidium	mg/L	48	18	18	Biannual	Reticulation	~	~	<0.001	0.001	does not exceed Qld Health limit (0.009 mg/L)
Samarium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Selenium	mg/L	48	18	18	Biannual	Reticulation	0.01	0	~	<0.01	
Silver	mg/L	48	18	18	Biannual	Reticulation	0.1	0	~	<0.001	
Strontium	mg/L	48	18	18	Biannual	Reticulation	~	~	0.025	0.143	does not exceed Qld Health limit (0.801 mg/L)
Tellurium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.005	
Terbium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Tin	mg/L	48	18	18	Biannual	Reticulation	~	~	<0.001	0.001	
Titanium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.01	
Thallium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Thorium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Thuilium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Uranium	mg/L	48	18	18	Biannual	Reticulation	0.017	0	~	<0.001	
Vanadium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.01	
Ytterdium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Yttrium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.001	
Zinc	mg/L	48	18	18	Biannual	Reticulation	~	~	<0.005	0.028	
Zirconium	mg/L	48	18	18	Biannual	Reticulation	~	~	~	<0.005	
Miscellaneous											
THMs	µg/L	52	8	8	Quarterly	Reticulation	250	0	16	76	Refer to THM Summary Table Page 26
TOCs	mg/L	372	72	66	Monthly	Raw	~	~	2.98	8.74	
Chlorates	mg/L	192	48	64	Seasonal	Treated	0.8 (Interim)	0	<0.005	0.69	
MIB	ng/L	56	12	11	Monthly	Raw	~	~	1.1	9.6	
		56	12	11		Treated	~	~	<1.0	1.6	
Geosmin	ng/L	56	12	11	Monthly	Raw	~	~	<1.0	24.7	
		56	12	11		Treated	~	~	<1.0	2.3	
Algal Count	cells/mL	64	8	15	Seasonal	Raw	~	~	~	~	Biovolume assessed and reported to Qld Health and QWSR as required
PFAS	µg/L	24	24	13	Quarterly	Raw	0.07	**5**	<0.0002	0.496	Exceedances relate to the Powers St Bore, this supply has been isolated, and bores decommissioned.
Pesticide	µg/L	32	4	4	Quarterly	Raw	Refer to Pesticide Summary Table Page 24 Non-compliant sample reported to the Regulator (refer to Table 2 Page 9)				
		56	20	24	Quarterly	Treated					
Radiological	Bq/L	15 (7 ground / 8 surface)	5 groundwater / 1 surface	4 (ground water)	Groundwater 2yrs Surface Water 5yr	Treated	~	~	~	~	Gross Alpha result did not exceed 0.08 Bq/L, Gross Beta result did not exceed 0.12 Bq/L

Drinking water quality performance – Verification Monitoring – Kalkie WSA

Parameter	Units	DWQMP requirement / Year	Scheme requirement / Year	Samples Collected / Year	Frequency of Sampling	Source	ADWG Health Value	No. of samples Exceeding ADWG Health Value	Minimum value	Maximum value	Comments
Microbiological											
E. coli	cfu/100mL	756	132	120	Week/Month	Reticulation	1	0	~	<1	
SPC	cfu/mL	756	132	120	Week/Month	Reticulation	~	~	<1	>300	
Faecal Coliforms	cfu/100mL	756	132	120	Week/Month	Reticulation	~	~	~	<1	
Physical											
Chlorine (Free)	mg/L	756	132	120	Week/Month	Reticulation	5	0	0.5	2.09	
Chlorine (Total)	mg/L	756	132	120	Week/Month	Reticulation	5	0	0.77	2.4	
pH	pH units	756	132	120	Week/Month	Reticulation	~	~	7.0	7.6	
Conductivity	uS/cm	100	20	20	Quarterly	Reticulation	~	~	434	687	
Colour (True)	Pt-Co	100	20	20	Quarterly	Reticulation	15	0	~	0	
Turbidity	NTU	100	20	20	Quarterly	Reticulation	~	~	0.05	0.2	
Inorganic											
Alkalinity	mg/L	100	20	20	Quarterly	Reticulation	~	~	34	84	
Calcium Hardness	mg/L	100	20	20	Quarterly	Reticulation	~	~	34.6	52.7	
Chloride	mg/L	100	20	20	Quarterly	Reticulation	~	~	90.98	134.8	
Fluoride	mg/L	100	20	20	Quarterly	Reticulation	1.5	0	~	<0.15	
Hardness (Total)	mg/L	100	20	20	Quarterly	Reticulation	~	~	65.0	133.2	
Nitrate	mg/L	100	20	20	Quarterly	Reticulation	50	0	<1.0	11.97	
Nitrite	mg/L	100	20	20	Quarterly	Reticulation	3	0	~	<0.10	
Phosphate (Dissolved)	mg/L	100	20	20	Quarterly	Reticulation	~	~	~	<0.40	
Potassium	mg/L	100	20	20	Quarterly	Reticulation	~	~	<2.0	4.16	
Magnesium	mg/L	100	20	20	Quarterly	Reticulation	~	~	7.3	19.45	
Sodium	mg/L	100	20	20	Quarterly	Reticulation	~	~	53.75	81.06	
Sulphate	mg/L	100	20	20	Quarterly	Reticulation	500	0	14.88	70.88	
Calcium	mg/L	100	20	20	Quarterly	Reticulation	~	~	13.82	21.08	
Total Dissolved Solids	mg/L	100	20	20	Quarterly	Reticulation	~	~	290.8	460.3	
Metals											
Aluminium	mg/L	48	8	8	Biannual	Reticulation	~	~	0.02	0.06	
Antimony	mg/L	48	8	8	Biannual	Reticulation	0.003	0	~	<0.001	
Arsenic	mg/L	48	8	8	Biannual	Reticulation	0.01	0	~	<0.001	
Barium	mg/L	48	8	8	Biannual	Reticulation	2	0	0.032	0.046	
Beryllium	mg/L	48	8	8	Biannual	Reticulation	0.06	0	~	<0.001	
Bismuth	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Boron	mg/L	48	8	8	Biannual	Reticulation	4	0	<0.05	0.05	
Caesium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Cadmium	mg/L	48	8	8	Biannual	Reticulation	0.002	0	~	<0.0001	
Cerium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Chromium	mg/L	48	8	8	Biannual	Reticulation	0.05	0	~	<0.001	
Cobalt	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Copper	mg/L	48	8	8	Biannual	Reticulation	2	0	0.008	0.04	
Dysprosium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Erbium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Gadolinium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Gallium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Hafnium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.01	

Holmium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Indium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Iron	mg/L	48	8	8	Biannual	Reticulation	~	~	<0.05	0.1	
Lanthanum	mg/L	48	8	8	Biannual	Reticulation	0.002	0	~	<0.001	
Lead	mg/L	48	8	8	Biannual	Reticulation	0.01	0	<0.001	0.003	
Lithium	mg/L	48	8	8	Biannual	Reticulation	~	~	<0.001	0.001	does not exceed Qld Health limit (0.006 mg/L)
Lutetium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Manganese	mg/L	48	8	8	Biannual	Reticulation	0.5	0	<0.001	0.002	
Molybdenum	mg/L	48	8	8	Biannual	Reticulation	0.05	0	~	<0.001	
Nickel	mg/L	48	8	8	Biannual	Reticulation	0.02	0	~	<0.001	
Neodymium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Praseodymium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Rubidium	mg/L	48	8	8	Biannual	Reticulation	~	~	0.001	0.002	does not exceed Qld Health limit (0.009 mg/L)
Samarium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Selenium	mg/L	48	8	8	Biannual	Reticulation	0.01	0	~	<0.01	
Silver	mg/L	48	8	8	Biannual	Reticulation	0.1	0	~	<0.001	
Strontium	mg/L	48	8	8	Biannual	Reticulation	~	~	0.139	0.227	does not exceed Qld Health limit (0.801 mg/L)
Tellurium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.005	
Terbium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Tin	mg/L	48	8	8	Biannual	Reticulation	~	~	<0.001	0.004	
Titanium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.01	
Thallium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Thorium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Thuilium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Uranium	mg/L	48	8	8	Biannual	Reticulation	0.017	0	~	<0.001	
Vanadium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.01	
Ytterdium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Yttrium	mg/L	48	8	8	Biannual	Reticulation	~	~	~	<0.001	
Zinc	mg/L	48	8	8	Biannual	Reticulation	~	~	<0.005	0.088	
Zirconium	mg/L	48	8	8	Biannual	Reticulation	~	~		<0.005	
Miscellaneous											
THMs	µg/L	52	8	8	Quarterly	Reticulation	250	0	82	164	Refer to THM Summary Table Page 26
TOCs	mg/L	372	84	84	Monthly	Raw	~	~	2.51	8.69	
Chlorates	mg/L	192	16	24	Seasonal	Treated	0.8 (Interim)	0	0.13	0.78	
MIB	ng/L	56	12	9	Monthly	Raw	~	~	<1.0	8.0	
		56	12	9		Treated	~	~	<1.0	2.1	
Geosmin	ng/L	56	12	9	Monthly	Raw	~	~	<1.0	3.4	
		56	12	9		Treated	~	~	<1.0	1.4	
Algal Count	cells/mL	64	8	16	Seasonal	Raw	~	~	~	~	Biovolume assessed and reported to Qld Health and QWSR as required
Pesticide	µg/L	32	4	4	Quarterly	Raw	Refer to Pesticide Summary Table Page 24				
		56	4	4	Quarterly	Treated					
Radiological	Bq/L	15 (7 ground / 8 surface)	1 surface	0	Surface Water 5yr	Treated	~	~	~	~	Radiological sampling for surface water plants was not undertaken in 2023/24

Drinking water quality performance – Verification Monitoring – Moore Park WSA

Parameter	Units	DWQMP requirement / Year	Scheme requirement / Year	Samples Collected / Year	Frequency of Sampling	Source	ADWG Health Value	No. of samples Exceeding ADWG Health Value	Minimum value	Maximum value	Comments
Microbiological											
E. coli	cfu/100mL	756	60	63	Week/Month	Reticulation	1	0	~	<1	
SPC	cfu/mL	756	60	63	Week/Month	Reticulation	~	~	<1	51	
Faecal Coliforms	cfu/100mL	756	60	63	Week/Month	Reticulation	~	~	~	<1	
Physical											
Chlorine (Free)	mg/L	756	60	63	Week/Month	Reticulation	5	0	0.63	1.67	
Chlorine (Total)	mg/L	756	60	63	Week/Month	Reticulation	5	0	0.83	1.84	
pH	pH units	756	60	63	Week/Month	Reticulation	~	~	7.0	7.5	
Conductivity	uS/cm	100	8	8	Quarterly	Reticulation	~	~	449	490	
Colour (True)	Pt-Co	100	8	8	Quarterly	Reticulation	15	0	~	0	
Turbidity	NTU	100	8	8	Quarterly	Reticulation	~	~	0.05	0.25	
Inorganic											
Alkalinity	mg/L	100	8	8	Quarterly	Reticulation	~	~	24	44	
Calcium Hardness	mg/L	100	8	8	Quarterly	Reticulation	~	~	21.5	29.9	
Chloride	mg/L	100	8	8	Quarterly	Reticulation	~	~	94.68	113.5	
Fluoride	mg/L	100	8	8	Quarterly	Reticulation	1.5	0	~	<0.15	
Hardness (Total)	mg/L	100	8	8	Quarterly	Reticulation	~	~	44.4	66.6	
Nitrate	mg/L	100	8	8	Quarterly	Reticulation	50	0	6.31	12.05	
Nitrite	mg/L	100	8	8	Quarterly	Reticulation	3	0	~	<0.10	
Phosphate (Dissolved)	mg/L	100	8	8	Quarterly	Reticulation	~	~	~	<0.40	
Potassium	mg/L	100	8	8	Quarterly	Reticulation	~	~	~	<2.0	
Magnesium	mg/L	100	8	8	Quarterly	Reticulation	~	~	5.49	8.8	
Sodium	mg/L	100	8	8	Quarterly	Reticulation	~	~	57.23	68.44	
Sulphate	mg/L	100	8	8	Quarterly	Reticulation	500	0	7.51	22.91	
Calcium	mg/L	100	8	8	Quarterly	Reticulation	~	~	8.61	11.97	
Total Dissolved Solids	mg/L	100	8	8	Quarterly	Reticulation	~	~	300.8	322.9	
Metals											
Aluminium	mg/L	48	4	4	Biannual	Reticulation	~	~	0.01	0.02	
Antimony	mg/L	48	4	4	Biannual	Reticulation	0.003	0	~	<0.001	
Arsenic	mg/L	48	4	4	Biannual	Reticulation	0.01	0	~	<0.001	
Barium	mg/L	48	4	4	Biannual	Reticulation	2	0	0.027	0.029	
Beryllium	mg/L	48	4	4	Biannual	Reticulation	0.06	0	~	<0.001	
Bismuth	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Boron	mg/L	48	4	4	Biannual	Reticulation	4	0	~	0.06	
Caesium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Cadmium	mg/L	48	4	4	Biannual	Reticulation	0.002	0	~	<0.0001	
Cerium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	0.001	
Chromium	mg/L	48	4	4	Biannual	Reticulation	0.05	0	~	0.005	
Cobalt	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Copper	mg/L	48	4	4	Biannual	Reticulation	2	0	0.006	0.041	
Dysprosium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Erbium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Gadolinium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Gallium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Hafnium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.01	

Holmium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Indium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Iron	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.05	
Lanthanum	mg/L	48	4	4	Biannual	Reticulation	0.002	0	~	<0.001	
Lead	mg/L	48	4	4	Biannual	Reticulation	0.01	0	<0.001	0.002	
Lithium	mg/L	48	4	4	Biannual	Reticulation	~	~	0.002	0.004	does not exceed Qld Health limit (0.006 mg/L)
Lutetium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Manganese	mg/L	48	4	4	Biannual	Reticulation	0.5	0	~	0.003	
Molybdenum	mg/L	48	4	4	Biannual	Reticulation	0.05	0	~	<0.001	
Nickel	mg/L	48	4	4	Biannual	Reticulation	0.02	0	~	0.002	
Neodymium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Praseodymium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Rubidium	mg/L	48	4	4	Biannual	Reticulation	~	~	0.002	0.003	does not exceed Qld Health limit (0.009 mg/L)
Samarium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Selenium	mg/L	48	4	4	Biannual	Reticulation	0.01	0	~	<0.01	
Silver	mg/L	48	4	4	Biannual	Reticulation	0.1	0	~	<0.001	
Strontium	mg/L	48	4	4	Biannual	Reticulation	~	~	0.042	0.097	does not exceed Qld Health limit (0.801 mg/L)
Tellurium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.005	
Terbium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Tin	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Titanium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.01	
Thallium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Thorium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Thuilium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Uranium	mg/L	48	4	4	Biannual	Reticulation	0.017	0	~	<0.001	
Vanadium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.01	
Ytterdium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Yttrium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Zinc	mg/L	48	4	4	Biannual	Reticulation	~	~	<0.005	0.037	
Zirconium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.005	
Miscellaneous											
THMs	µg/L	52	8	8	Quarterly	Reticulation	250	0	82	164	Refer to THM Summary Table Page 26
TOCs	mg/L	312	12	11	Monthly	Raw	~	~	8.94	13.37	
		60	12	10		Treated	~	~	3.26	5.37	
Chlorates	mg/L	192	24	37	Seasonal	Treated	0.8 (Interim)	**1**	0.1	**1.12**	exceedance at Vecellios Rd reservoir, does not supply directly to reticulation, blended supply chlorate 0.31mg/L, internal BRC incident.
MIB	ng/L	56	4	6	Monthly	Raw	~	~	<1.0	3.6	
		56	4	6		Treated	~	~	~	<1.0	
Geosmin	ng/L	56	4	6	Monthly	Raw	~	~	<1.0	1.5	
		56	4	6		Treated	~	~	~	<1.0	
Algal Count	cells/mL	64	8	29	Seasonal	Raw	~	~	~	~	Biovolume assessed and reported to Qld Health and QWSR as required
Pesticide	µg/L	32	4	4	Quarterly	Raw	Refer to Pesticide Summary Table Page 24				
		56	8	8	Quarterly	Treated					
Radiological	Bq/L	15 (7 ground / 8 surface)	1 groundwater / 1 surface	1 (ground water)	Surface Water 5yr	Treated	~	~	~	~	Gross Alpha result did not exceed 0.07 Bq/L, Gross Beta result was detected at <0.10 Bq/L

Drinking water quality performance – Verification Monitoring – River Park WSA

Parameter	Units	DWQMP requirement / Year	Scheme requirement / Year	Samples Collected / Year	Frequency of Sampling	Source	ADWG Health Value	No. of samples Exceeding ADWG Health Value	Minimum value	Maximum value	Comments
Microbiological											
E. coli	cfu/100mL	756	12	18	Monthly	Reticulation	1	0	~	<1	
SPC	cfu/mL	756	12	18	Monthly	Reticulation	~	~	<1	27	
Faecal Coliforms	cfu/100mL	756	12	18	Monthly	Reticulation	~	~	~	<1	
Physical											
Chlorine (Free)	mg/L	756	12	18	Monthly	Reticulation	5	0	0.64	1.9	
Chlorine (Total)	mg/L	756	12	18	Monthly	Reticulation	5	0	1.05	2.3	
pH	pH units	756	12	18	Monthly	Reticulation	~	~	7.2	7.4	
Conductivity	uS/cm	100	4	4	Quarterly	Reticulation	~	~	622	752	
Colour (True)	Pt-Co	100	4	4	Quarterly	Reticulation	15	0	~	0	
Turbidity	NTU	100	4	4	Quarterly	Reticulation	~	~	0.1	0.2	
Inorganic											
Alkalinity	mg/L	100	4	4	Quarterly	Reticulation	~	~	59	102	
Calcium Hardness	mg/L	100	4	4	Quarterly	Reticulation	~	~	43.2	52.5	
Chloride	mg/L	100	4	4	Quarterly	Reticulation	~	~	89.22	135.46	
Fluoride	mg/L	100	4	4	Quarterly	Reticulation	1.5	0	~	<0.15	
Hardness (Total)	mg/L	100	4	4	Quarterly	Reticulation	~	~	105.0	125.2	
Nitrate	mg/L	100	4	4	Quarterly	Reticulation	50	0	<1.0	3.42	
Nitrite	mg/L	100	4	4	Quarterly	Reticulation	3	0	~	<0.10	
Phosphate (Dissolved)	mg/L	100	4	4	Quarterly	Reticulation	~	~	~	<0.40	
Potassium	mg/L	100	4	4	Quarterly	Reticulation	~	~	2.76	4.02	
Magnesium	mg/L	100	4	4	Quarterly	Reticulation	~	~	14.81	17.97	
Sodium	mg/L	100	4	4	Quarterly	Reticulation	~	~	68.97	83.42	
Sulphate	mg/L	100	4	4	Quarterly	Reticulation	500	0	44.24	72.28	
Calcium	mg/L	100	4	4	Quarterly	Reticulation	~	~	17.3	21.01	
Total Dissolved Solids	mg/L	100	4	4	Quarterly	Reticulation	~	~	416.7	503.8	
Metals											
Aluminium	mg/L	48	2	2	Biannual	Reticulation	~	~	0.04	0.06	
Antimony	mg/L	48	2	2	Biannual	Reticulation	0.003	0	~	<0.001	
Arsenic	mg/L	48	2	2	Biannual	Reticulation	0.01	0	~	<0.001	
Barium	mg/L	48	2	2	Biannual	Reticulation	2	0	0.02	0.044	
Beryllium	mg/L	48	2	2	Biannual	Reticulation	0.06	0	~	<0.001	
Bismuth	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Boron	mg/L	48	2	2	Biannual	Reticulation	4	0	~	<0.05	
Caesium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Cadmium	mg/L	48	2	2	Biannual	Reticulation	0.002	0	~	<0.0001	
Cerium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Chromium	mg/L	48	2	2	Biannual	Reticulation	0.05	0	~	<0.001	
Cobalt	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Copper	mg/L	48	2	2	Biannual	Reticulation	2	0	0.006	0.047	
Dysprosium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Erbium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Gadolinium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Gallium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Hafnium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.01	

Holmium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Indium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Iron	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.05	
Lanthanum	mg/L	48	2	2	Biannual	Reticulation	0.002	0	~	<0.001	
Lead	mg/L	48	2	2	Biannual	Reticulation	0.01	0	~	<0.001	
Lithium	mg/L	48	2	2	Biannual	Reticulation	~	~	<0.001	0.001	does not exceed Qld Health limit (0.006 mg/L)
Lutetium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Manganese	mg/L	48	2	2	Biannual	Reticulation	0.5	0	<0.001	0.007	
Molybdenum	mg/L	48	2	2	Biannual	Reticulation	0.05	0	~	<0.001	
Nickel	mg/L	48	2	2	Biannual	Reticulation	0.02	0	~	<0.001	
Neodymium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Praseodymium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Rubidium	mg/L	48	2	2	Biannual	Reticulation	~	~	<0.001	0.002	does not exceed Qld Health limit (0.009 mg/L)
Samarium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Selenium	mg/L	48	2	2	Biannual	Reticulation	0.01	0	~	<0.01	
Silver	mg/L	48	2	2	Biannual	Reticulation	0.1	0	~	<0.001	
Strontium	mg/L	48	2	2	Biannual	Reticulation	~	~	0.064	0.208	does not exceed Qld Health limit (0.801 mg/L)
Tellurium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.005	
Terbium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Tin	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Titanium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.01	
Thallium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Thorium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Thuilium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Uranium	mg/L	48	2	2	Biannual	Reticulation	0.017	0	~	<0.001	
Vanadium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.01	
Ytterdium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Yttrium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Zinc	mg/L	48	2	2	Biannual	Reticulation	~	~	0.019	0.048	
Zirconium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.005	
Miscellaneous											
THMs	µg/L	52	4	4	Quarterly	Reticulation	250	0	54	186	Refer to THM Summary Table Page 26
TOCs	mg/L	312	12	12	Monthly	Raw	~	~	6.72	12.06	
		60	12	12		Treated	~	~	2.98	5.08	
Chlorates	mg/L	192	8	12	Seasonal	Treated	0.8 (Interim)	0	0.02	0.69	
MIB	ng/L	56	4	7	Monthly	Raw	~	~	1.6	29.2	
		56	4	7		Treated	~	~	2.2	6.9	
Geosmin	ng/L	56	4	7	Monthly	Raw	~	~	<1.0	5.1	
		56	4	7		Treated	~	~	<1.0	5.3	
Algal Count	cells/mL	64	8	22	Seasonal	Raw	~	~	~	~	Biovolume assessed and reported to Qld Health and QWSR as required
Pesticide	µg/L	32	4	4	Quarterly	Raw	Refer to Pesticide Summary Table Page 24				
		56	4	4	Quarterly	Treated					
Radiological	Bq/L	15 (7 ground / 8 surface)	1 surface	0	Surface Water 5yr	Treated	~	~	~	~	Radiological sampling for surface water plants was not undertaken in 2023/24

Drinking water quality performance – Verification Monitoring – Rocky Point WSA

Parameter	Units	DWQMP requirement / Year	Scheme requirement / Year	Samples Collected / Year	Frequency of Sampling	Source	ADWG Health Value	No. of samples Exceeding ADWG Health Value	Minimum value	Maximum value	Comments
Microbiological											
E. coli	cfu/100mL	756	12	18	Monthly	Reticulation	1	0	~	<1	
SPC	cfu/mL	756	12	18	Monthly	Reticulation	~	~	<1	74	
Faecal Coliforms	cfu/100mL	756	12	18	Monthly	Reticulation	~	~	~	<1	
Physical											
Chlorine (Free)	mg/L	756	12	18	Monthly	Reticulation	5	0	0.39	1.88	
Chlorine (Total)	mg/L	756	12	18	Monthly	Reticulation	5	0	1.02	2.0	
pH	pH units	756	12	18	Monthly	Reticulation	~	~	7.1	7.4	
Conductivity	uS/cm	100	4	4	Quarterly	Reticulation	~	~	322	337	
Colour (True)	Pt-Co	100	4	4	Quarterly	Reticulation	15	0	~	0	
Turbidity	NTU	100	4	4	Quarterly	Reticulation	~	~	0.15	0.3	
Inorganic											
Alkalinity	mg/L	100	4	4	Quarterly	Reticulation	~	~	26	30	
Calcium Hardness	mg/L	100	4	4	Quarterly	Reticulation	~	~	20.8	28.8	
Chloride	mg/L	100	4	4	Quarterly	Reticulation	~	~	64.2	70.23	
Fluoride	mg/L	100	4	4	Quarterly	Reticulation	1.5	0	<0.15	0.15	
Hardness (Total)	mg/L	100	4	4	Quarterly	Reticulation	~	~	49.8	59.3	
Nitrate	mg/L	100	4	4	Quarterly	Reticulation	50	0	16.49	19.95	
Nitrite	mg/L	100	4	4	Quarterly	Reticulation	3	0	~	<0.10	
Phosphate (Dissolved)	mg/L	100	4	4	Quarterly	Reticulation	~	~	~	<0.40	
Potassium	mg/L	100	4	4	Quarterly	Reticulation	~	~	~	<2.0	
Magnesium	mg/L	100	4	4	Quarterly	Reticulation	~	~	6.95	7.47	
Sodium	mg/L	100	4	4	Quarterly	Reticulation	~	~	32.39	37.77	
Sulphate	mg/L	100	4	4	Quarterly	Reticulation	500	0	5.69	7.14	
Calcium	mg/L	100	4	4	Quarterly	Reticulation	~	~	8.32	11.54	
Total Dissolved Solids	mg/L	100	4	4	Quarterly	Reticulation	~	~	215.7	225.8	
Metals											
Aluminium	mg/L	48	2	2	Biannual	Reticulation	~	~	<0.01	0.01	
Antimony	mg/L	48	2	2	Biannual	Reticulation	0.003	0	~	<0.001	
Arsenic	mg/L	48	2	2	Biannual	Reticulation	0.01	0	~	<0.001	
Barium	mg/L	48	2	2	Biannual	Reticulation	2	0	0.098	0.099	
Beryllium	mg/L	48	2	2	Biannual	Reticulation	0.06	0	~	<0.001	
Bismuth	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Boron	mg/L	48	2	2	Biannual	Reticulation	4	0	<0.05	0.05	
Caesium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Cadmium	mg/L	48	2	2	Biannual	Reticulation	0.002	0	~	<0.0001	
Cerium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Chromium	mg/L	48	2	2	Biannual	Reticulation	0.05	0	~	<0.001	
Cobalt	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Copper	mg/L	48	2	2	Biannual	Reticulation	2	0	0.003	0.008	
Dysprosium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Erbium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Gadolinium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Gallium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Hafnium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.01	

Holmium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Indium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Iron	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.05	
Lanthanum	mg/L	48	2	2	Biannual	Reticulation	0.002	0	~	<0.001	
Lead	mg/L	48	2	2	Biannual	Reticulation	0.01	0	<0.001	0.003	
Lithium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	0.006	does not exceed Qld Health limit (0.006 mg/L)
Lutetium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Manganese	mg/L	48	2	2	Biannual	Reticulation	0.5	0	0.009	0.015	
Molybdenum	mg/L	48	2	2	Biannual	Reticulation	0.05	0	~	<0.001	
Nickel	mg/L	48	2	2	Biannual	Reticulation	0.02	0	~	<0.001	
Neodymium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Praseodymium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Rubidium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	0.006	does not exceed Qld Health limit (0.009 mg/L)
Samarium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Selenium	mg/L	48	2	2	Biannual	Reticulation	0.01	0	~	<0.01	
Silver	mg/L	48	2	2	Biannual	Reticulation	0.1	0	~	<0.001	
Strontium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	0.029	does not exceed Qld Health limit (0.801 mg/L)
Tellurium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.005	
Terbium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Tin	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Titanium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.01	
Thallium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Thorium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Thuilium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Uranium	mg/L	48	2	2	Biannual	Reticulation	0.017	0	~	<0.001	
Vanadium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.01	
Ytterdium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Yttrium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Zinc	mg/L	48	2	2	Biannual	Reticulation	~	~	<0.005	0.009	
Zirconium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.005	
Miscellaneous											
THMs	µg/L	52	4	4	Quarterly	Reticulation	250	0	14	31	Refer to THM Summary Table Page 26
TOCs	mg/L	312	12	12	Monthly	Raw	~	~	~	<1.0	
		60	12	12		Treated	~	~	~	<1.0	
Chlorates	mg/L	192	8	12	Seasonal	Treated	0.8 (Interim)	0	0.02	0.461	
Pesticide	µg/L	56	4	4	Quarterly	Treated	Refer to Pesticide Summary Table Page 24				
Radiological	Bq/L	15 (7 ground / 8 surface)	1 groundwater	1	Groundwater 2yrs	Treated	~	~	~	~	Gross Alpha result did not exceed 0.05 Bq/L, Gross Beta result was detected at<0.10 Bq/L

Drinking water quality performance – Verification Monitoring – Gregory River WSA

Parameter	Units	DWQMP requirement / Year	Scheme requirement / Year	Samples Collected / Year	Frequency of Sampling	Source	ADWG Health Value	No. of samples Exceeding ADWG Health Value	Minimum value	Maximum value	Comments
Microbiological											
E. coli	cfu/100mL	756	168	166	Week/Month	Reticulation	1	0	~	<1	
SPC	cfu/mL	756	168	166	Week/Month	Reticulation	~	~	<1	144	
Faecal Coliforms	cfu/100mL	756	168	166	Week/Month	Reticulation	~	~	~	<1	
Physical											
Chlorine (Free)	mg/L	756	168	166	Week/Month	Reticulation	5	0	0.21	2.5	
Chlorine (Total)	mg/L	756	168	166	Week/Month	Reticulation	5	0	0.37	3.4	
pH	pH units	756	168	166	Week/Month	Reticulation	~	~	6.5	7.7	
Conductivity	uS/cm	100	12	12	Quarterly	Reticulation	~	~	482	921	
Colour (True)	Pt-Co	100	12	12	Quarterly	Reticulation	15	0	~	0	
Turbidity	NTU	100	12	12	Quarterly	Reticulation	~	~	0.05	0.45	
Inorganic											
Alkalinity	mg/L	100	12	12	Quarterly	Reticulation	~	~	19	34	
Calcium Hardness	mg/L	100	12	12	Quarterly	Reticulation	~	~	14.2	29.0	
Chloride	mg/L	100	12	12	Quarterly	Reticulation	~	~	49.29	235.48	
Fluoride	mg/L	100	12	12	Quarterly	Reticulation	1.5	0	~	<0.15	
Hardness (Total)	mg/L	100	12	12	Quarterly	Reticulation	~	~	30.6	91.0	
Nitrate	mg/L	100	12	12	Quarterly	Reticulation	50	0	<1.0	1.01	
Nitrite	mg/L	100	12	12	Quarterly	Reticulation	3	0	<0.10	0.11	
Phosphate (Dissolved)	mg/L	100	12	12	Quarterly	Reticulation	~	~	~	<0.40	
Potassium	mg/L	100	12	12	Quarterly	Reticulation	~	~	3.04	3.42	
Magnesium	mg/L	100	12	12	Quarterly	Reticulation	~	~	3.95	15.55	
Sodium	mg/L	100	12	12	Quarterly	Reticulation	~	~	76.33	136.2	
Sulphate	mg/L	100	12	12	Quarterly	Reticulation	500	0	43.72	117.86	
Calcium	mg/L	100	12	12	Quarterly	Reticulation	~	~	5.67	11.61	
Total Dissolved Solids	mg/L	100	12	12	Quarterly	Reticulation	~	~	322.9	617.1	
Metals											
Aluminium	mg/L	48	6	6	Biannual	Reticulation	~	~	0.02	0.04	
Antimony	mg/L	48	6	6	Biannual	Reticulation	0.003	0	~	<0.001	
Arsenic	mg/L	48	6	6	Biannual	Reticulation	0.01	0	~	<0.001	
Barium	mg/L	48	6	6	Biannual	Reticulation	2	0	0.036	0.051	
Beryllium	mg/L	48	6	6	Biannual	Reticulation	0.06	0	~	<0.001	
Bismuth	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Boron	mg/L	48	6	6	Biannual	Reticulation	4	0	0.06	0.07	
Caesium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Cadmium	mg/L	48	6	6	Biannual	Reticulation	0.002	0	<0.0001	0.0002	
Cerium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Chromium	mg/L	48	6	6	Biannual	Reticulation	0.05	0	~	<0.001	
Cobalt	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Copper	mg/L	48	6	6	Biannual	Reticulation	2	0	0.002	0.007	
Dysprosium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Erbium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Gadolinium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Gallium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Hafnium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.01	

Holmium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Indium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Iron	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.05	
Lanthanum	mg/L	48	6	6	Biannual	Reticulation	0.002	0	~	<0.001	
Lead	mg/L	48	6	6	Biannual	Reticulation	0.01	0	<0.001	0.004	
Lithium	mg/L	48	6	6	Biannual	Reticulation	~	~	0.001	0.002	does not exceed Qld Health limit (0.006 mg/L)
Lutetium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Manganese	mg/L	48	6	6	Biannual	Reticulation	0.5	0	<0.001	0.003	
Molybdenum	mg/L	48	6	6	Biannual	Reticulation	0.05	0	~	<0.001	
Nickel	mg/L	48	6	6	Biannual	Reticulation	0.02	0	~	<0.001	
Neodymium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Praseodymium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Rubidium	mg/L	48	6	6	Biannual	Reticulation	~	~	0.003	0.004	does not exceed Qld Health limit (0.009 mg/L)
Samarium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Selenium	mg/L	48	6	6	Biannual	Reticulation	0.01	0	~	<0.01	
Silver	mg/L	48	6	6	Biannual	Reticulation	0.1	0	~	<0.001	
Strontium	mg/L	48	6	6	Biannual	Reticulation	~	~	0.084	0.141	does not exceed Qld Health limit (0.801 mg/L)
Tellurium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.005	
Terbium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Tin	mg/L	48	6	6	Biannual	Reticulation	~	~	<0.001	0.001	
Titanium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.01	
Thallium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Thorium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Thuilium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Uranium	mg/L	48	6	6	Biannual	Reticulation	0.017	0	~	<0.001	
Vanadium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.01	
Ytterdium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Yttrium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Zinc	mg/L	48	6	6	Biannual	Reticulation	~	~	<0.005	0.018	
Zirconium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.005	
Miscellaneous											
THMs	µg/L	52	12	12	Quarterly	Reticulation	250	**1**	114	**272**	Refer to THM Summary Table Page 26 and Table 2 page 9
TOCs	mg/L	372	36	36	Monthly	Raw	~	~	1.8	34.6	
Chlorates	mg/L	192	56	84	Seasonal	Treated	0.8 (Interim)	**1**	<0.02	**1.04**	Non-compliant sample reported to the Regulator (refer to Table 2 Page 9)
MIB	ng/L	56	4	10	Monthly	Raw	~	~	<1.0	1.9	
		56	4	10		Treated	~	~	~	<1.0	
Geosmin	ng/L	56	4	10	Monthly	Raw	~	~	<1.0	4.3	
		56	4	10		Treated	~	~	~	<1.0	
Algal Count	cells/mL	64	8	8	Seasonal	Raw	~	~	~	~	Biovolume assessed and reported to Qld Health and QWSR as required
Pesticide	µg/L	32	4	4	Quarterly	Raw	Refer to Pesticide Summary Table Page 24				
		56	4	4	Quarterly	Treated					
Radiological	Bq/L	15 (7 ground / 8 surface)	1 surface	0	Surface Water 5yr	Treated	~	~	~	~	Radiological sampling for surface water plants was not undertaken in 2023/24

Drinking water quality performance – Verification Monitoring – Gin Gin WSA

Parameter	Units	DWQMP requirement / Year	Scheme requirement / Year	Samples Collected / Year	Frequency of Sampling	Source	ADWG Health Value	No. of samples Exceeding ADWG Health Value	Minimum value	Maximum value	Comments
Microbiological											
E. coli	cfu/100mL	756	60	62	Week/Month	Reticulation	1	0	~	<1	
SPC	cfu/mL	756	60	62	Week/Month	Reticulation	~	~	<1	>300	
Faecal Coliforms	cfu/100mL	756	60	62	Week/Month	Reticulation	~	~	~	<1	
Physical											
Chlorine (Free)	mg/L	756	60	62	Week/Month	Reticulation	5	0	0.4	3.8	
Chlorine (Total)	mg/L	756	60	62	Week/Month	Reticulation	5	0	0.63	4.5	
pH	pH units	756	60	62	Week/Month	Reticulation	~	~	7.0	7.8	
Conductivity	uS/cm	100	8	8	Quarterly	Reticulation	~	~	418	530	
Colour (True)	Pt-Co	100	8	8	Quarterly	Reticulation	15	0	~	0	
Turbidity	NTU	100	8	8	Quarterly	Reticulation	~	~	0.05	0.25	
Inorganic											
Alkalinity	mg/L	100	12	12	Quarterly	Reticulation	~	~	19	34	
Calcium Hardness	mg/L	100	12	12	Quarterly	Reticulation	~	~	14.2	29.0	
Chloride	mg/L	100	12	12	Quarterly	Reticulation	~	~	49.29	235.48	
Fluoride	mg/L	100	12	12	Quarterly	Reticulation	1.5	0	~	<0.15	
Hardness (Total)	mg/L	100	12	12	Quarterly	Reticulation	~	~	30.6	91.0	
Nitrate	mg/L	100	12	12	Quarterly	Reticulation	50	0	<1.0	1.01	
Nitrite	mg/L	100	12	12	Quarterly	Reticulation	3	0	<0.10	0.11	
Phosphate (Dissolved)	mg/L	100	12	12	Quarterly	Reticulation	~	~	~	<0.40	
Potassium	mg/L	100	12	12	Quarterly	Reticulation	~	~	3.04	3.42	
Magnesium	mg/L	100	12	12	Quarterly	Reticulation	~	~	3.95	15.55	
Sodium	mg/L	100	12	12	Quarterly	Reticulation	~	~	76.33	136.2	
Sulphate	mg/L	100	12	12	Quarterly	Reticulation	500	0	43.72	117.86	
Calcium	mg/L	100	12	12	Quarterly	Reticulation	~	~	5.67	11.61	
Total Dissolved Solids	mg/L	100	12	12	Quarterly	Reticulation	~	~	322.9	617.1	
Metals											
Aluminium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.01	
Antimony	mg/L	48	4	4	Biannual	Reticulation	0.003	0	~	<0.001	
Arsenic	mg/L	48	4	4	Biannual	Reticulation	0.01	0	~	<0.001	
Barium	mg/L	48	4	4	Biannual	Reticulation	2	~	0.019	0.026	
Beryllium	mg/L	48	4	4	Biannual	Reticulation	0.06	0	~	<0.001	
Bismuth	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Boron	mg/L	48	4	4	Biannual	Reticulation	4	0	~	<0.05	
Caesium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Cadmium	mg/L	48	4	4	Biannual	Reticulation	0.002	0	~	<0.0001	
Cerium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Chromium	mg/L	48	4	4	Biannual	Reticulation	0.05	0	~	<0.001	
Cobalt	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Copper	mg/L	48	4	4	Biannual	Reticulation	2	0	0.01	0.406	
Dysprosium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Erbium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Gadolinium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Gallium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Hafnium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.01	

Holmium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Indium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Iron	mg/L	48	4	4	Biannual	Reticulation	~	~	<0.05	0.07	
Lanthanum	mg/L	48	4	4	Biannual	Reticulation	0.002	0	~	<0.001	
Lead	mg/L	48	4	4	Biannual	Reticulation	0.01	0	0.001	0.004	
Lithium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Lutetium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Manganese	mg/L	48	4	4	Biannual	Reticulation	0.5	0	<0.001	0.015	
Molybdenum	mg/L	48	4	4	Biannual	Reticulation	0.05	0	~	<0.001	
Nickel	mg/L	48	4	4	Biannual	Reticulation	0.02	0	~	<0.001	
Neodymium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Praseodymium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Rubidium	mg/L	48	4	4	Biannual	Reticulation	~	~	0.002	0.003	does not exceed Qld Health limit (0.009 mg/L)
Samarium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Selenium	mg/L	48	4	4	Biannual	Reticulation	0.01	0	~	<0.01	
Silver	mg/L	48	4	4	Biannual	Reticulation	0.1	0	~	<0.001	
Strontium	mg/L	48	4	4	Biannual	Reticulation	~	~	0.073	0.086	does not exceed Qld Health limit (0.801 mg/L)
Tellurium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.005	
Terbium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Tin	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Titanium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.01	
Thallium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Thorium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Thuilium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Uranium	mg/L	48	4	4	Biannual	Reticulation	0.017	0	~	<0.001	
Vanadium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.01	
Ytterdium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Yttrium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.001	
Zinc	mg/L	48	4	4	Biannual	Reticulation	~	~	0.012	0.196	
Zirconium	mg/L	48	4	4	Biannual	Reticulation	~	~	~	<0.005	
Miscellaneous											
THMs	µg/L	52	4	4	Quarterly	Reticulation	250	0	50	146	Refer to THM Summary Table Page 26
TOCs	mg/L	372	36	36	Monthly	Raw	~	~	2.06	10.5	
Chlorates	mg/L	192	16	24	Seasonal	Treated	0.8 (Interim)	0	0.02	0.51	
MIB	ng/L	56	12	12	Monthly	Raw	~	~	4.2	61.7	
		56	12	14		Treated	~	~	<1.0	6.9	
Geosmin	ng/L	56	12	12	Monthly	Raw	~	~	<1.0	14.8	
		56	12	14		Treated	~	~	<1.0	1.9	
Algal Count	cells/mL	64	8	10	Seasonal	Raw	~	~	~	~	Biovolume assessed and reported to Qld Health and QWSR as required
Pesticide	µg/L	32	4	4	Quarterly	Raw	Refer to Pesticide Summary Table Page 24 Non-compliant sample reported to the Regulator (refer to Table 2 Page 9)				
		56	4	4	Quarterly	Treated					
Radiological	Bq/L	15 (7 ground / 8 surface)	1 surface	0	Surface Water 5yr	Treated	~	~	~	~	Radiological sampling for surface water plants was not undertaken in 2023/24

Drinking water quality performance – Verification Monitoring – Wallaville WSA

Parameter	Units	DWQMP requirement / Year	Scheme requirement / Year	Samples Collected / Year	Frequency of Sampling	Source	ADWG Health Value	No. of samples Exceeding ADWG Health Value	Minimum value	Maximum value	Comments
Microbiological											
E. coli	cfu/100mL	756	12	25	Monthly	Reticulation	1	0	~	<1	
SPC	cfu/mL	756	12	25	Monthly	Reticulation	~	~	<1	92	
Faecal Coliforms	cfu/100mL	756	12	25	Monthly	Reticulation	~	~	~	<1	
Physical											
Chlorine (Free)	mg/L	756	12	25	Monthly	Reticulation	5	0	0.52	2.06	
Chlorine (Total)	mg/L	756	12	25	Monthly	Reticulation	5	0	0.88	2.5	
pH	pH units	756	12	25	Monthly	Reticulation	~	~	7.3	8.0	
Conductivity	uS/cm	100	4	4	Quarterly	Reticulation	~	~	325	915	
Colour (True)	Pt-Co	100	4	4	Quarterly	Reticulation	15	0	~	0	
Turbidity	NTU	100	4	4	Quarterly	Reticulation	~	~	0.15	0.35	
Inorganic											
Alkalinity	mg/L	100	4	4	Quarterly	Reticulation	~	~	96	106	
Calcium Hardness	mg/L	100	4	4	Quarterly	Reticulation	~	~	47.6	82.3	
Chloride	mg/L	100	4	4	Quarterly	Reticulation	~	~	156.77	218.33	
Fluoride	mg/L	100	4	4	Quarterly	Reticulation	1.5	0	<0.15	0.17	
Hardness (Total)	mg/L	100	4	4	Quarterly	Reticulation	~	~	112.9	198.5	
Nitrate	mg/L	100	4	4	Quarterly	Reticulation	50	0	<1.0	1.25	
Nitrite	mg/L	100	4	4	Quarterly	Reticulation	3	0	~	<0.10	
Phosphate (Dissolved)	mg/L	100	4	4	Quarterly	Reticulation	~	~	~	<0.40	
Potassium	mg/L	100	4	4	Quarterly	Reticulation	~	~	3.65	4.44	
Magnesium	mg/L	100	4	4	Quarterly	Reticulation	~	~	15.67	27.89	
Sodium	mg/L	100	4	4	Quarterly	Reticulation	~	~	81.1	96.42	
Sulphate	mg/L	100	4	4	Quarterly	Reticulation	500	0	9.58	15.72	
Calcium	mg/L	100	4	4	Quarterly	Reticulation	~	~	19.06	32.93	
Total Dissolved Solids	mg/L	100	4	4	Quarterly	Reticulation	~	~	217.8	613	
Metals											
Aluminium	mg/L	48	2	2	Biannual	Reticulation	~	~	0.01	0.02	
Antimony	mg/L	48	2	2	Biannual	Reticulation	0.003	0	~	<0.001	
Arsenic	mg/L	48	2	2	Biannual	Reticulation	0.01	0	~	<0.001	
Barium	mg/L	48	2	2	Biannual	Reticulation	2	0	0.049	0.069	
Beryllium	mg/L	48	2	2	Biannual	Reticulation	0.06	0	~	<0.001	
Bismuth	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Boron	mg/L	48	2	2	Biannual	Reticulation	4	0	~	<0.05	
Caesium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Cadmium	mg/L	48	2	2	Biannual	Reticulation	0.002	0	~	<0.0001	
Cerium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Chromium	mg/L	48	2	2	Biannual	Reticulation	0.05	0	~	<0.001	
Cobalt	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Copper	mg/L	48	2	2	Biannual	Reticulation	2	0	0.006	0.009	
Dysprosium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Erbium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Gadolinium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Gallium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Hafnium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	

Holmium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Indium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Iron	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.05	
Lanthanum	mg/L	48	2	2	Biannual	Reticulation	0.002	0	~	<0.001	
Lead	mg/L	48	2	2	Biannual	Reticulation	0.01	0	~	<0.001	
Lithium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Lutetium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Manganese	mg/L	48	2	2	Biannual	Reticulation	0.5	0	<0.001	0.003	
Molybdenum	mg/L	48	2	2	Biannual	Reticulation	0.05	0	~	<0.001	
Nickel	mg/L	48	2	2	Biannual	Reticulation	0.02	0	~	0.001	
Neodymium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Praseodymium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Rubidium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	0.002	does not exceed Qld Health limit (0.009 mg/L)
Samarium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Selenium	mg/L	48	2	2	Biannual	Reticulation	0.01	0	~	<0.01	
Silver	mg/L	48	2	2	Biannual	Reticulation	0.1	0	~	<0.001	
Strontium	mg/L	48	2	2	Biannual	Reticulation	~	~	0.188	0.419	does not exceed Qld Health limit (0.801 mg/L)
Tellurium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.005	
Terbium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Tin	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Titanium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.01	
Thallium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Thorium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Thuilium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Uranium	mg/L	48	2	2	Biannual	Reticulation	0.017	0	~	<0.001	
Vanadium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.01	
Ytterdium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Yttrium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.001	
Zinc	mg/L	48	2	2	Biannual	Reticulation	~	~	<0.005	0.006	
Zirconium	mg/L	48	2	2	Biannual	Reticulation	~	~	~	<0.005	
Miscellaneous											
THMs	µg/L	52	4	4	Quarterly	Reticulation	250	0	148	204	Refer to THM Summary Table Page 26
TOCs	mg/L	316	24	24	Monthly	Raw	~	~	3.51	10.88	
		60	12	12		Treated	~	~	2.61	5.08	
Chlorates	mg/L	192	8	12	Seasonal	Treated	0.8 (Interim)	**1**	0.15	**1.1**	Non-compliant sample reported to the Regulator (refer to Table 2 Page 9)
MIB	ng/L	56	4	7	Monthly	Raw	~	~	1.2	33.3	
		56	4	7		Treated	~	~	<1.0	4.6	
Geosmin	ng/L	56	4	7	Monthly	Raw	~	~	<1.0	5.7	
		56	4	7		Treated	~	~	1.4	4.2	
Algal Count	cells/mL	64	8	10	Seasonal	Raw	~	~	~	~	Biovolume assessed and reported to Qld Health and QWSR as required
Pesticide	µg/L	32	4	4	Quarterly	Raw	Refer to Pesticide Summary Table Page 24 Non-compliant sample reported to the Regulator (refer to Table 2 Page 9)				
		56	4	4	Quarterly	Treated					
Radiological	Bq/L	15 (7 ground / 8 surface)	1 surface	0	Surface Water 5yr	Treated	~	~	~	~	Radiological sampling for surface water plants was not undertaken in 2023/24

Drinking water quality performance – Verification Monitoring – Lake Monduran WSA

Parameter	Units	DWQMP requirement / Year	Scheme requirement / Year	Samples Collected / Year	Frequency of Sampling	Source	ADWG Health Value	No. of samples Exceeding ADWG Health Value	Minimum value	Maximum value	Comments
Microbiological											
E. coli	cfu/100mL	756	168	166	Week/Month	Reticulation	1	0	~	<1	
SPC	cfu/mL	756	168	166	Week/Month	Reticulation	~	~	<1	144	
Faecal Coliforms	cfu/100mL	756	168	166	Week/Month	Reticulation	~	~	~	<1	
Physical											
Chlorine (Free)	mg/L	756	168	166	Week/Month	Reticulation	5	0	0.21	2.5	
Chlorine (Total)	mg/L	756	168	166	Week/Month	Reticulation	5	0	0.37	3.4	
pH	pH units	756	168	166	Week/Month	Reticulation	~	~	6.5	7.7	
Conductivity	uS/cm	100	12	12	Quarterly	Reticulation	~	~	482	921	
Colour (True)	Pt-Co	100	12	12	Quarterly	Reticulation	15	0	~	0	
Turbidity	NTU	100	12	12	Quarterly	Reticulation	~	~	0.05	0.45	
Inorganic											
Alkalinity	mg/L	100	12	12	Quarterly	Reticulation	~	~	19	34	
Calcium Hardness	mg/L	100	12	12	Quarterly	Reticulation	~	~	14.2	29.0	
Chloride	mg/L	100	12	12	Quarterly	Reticulation	~	~	49.29	235.48	
Fluoride	mg/L	100	12	12	Quarterly	Reticulation	1.5	0	~	<0.15	
Hardness (Total)	mg/L	100	12	12	Quarterly	Reticulation	~	~	30.6	91.0	
Nitrate	mg/L	100	12	12	Quarterly	Reticulation	50	0	<1.0	1.01	
Nitrite	mg/L	100	12	12	Quarterly	Reticulation	3	0	<0.10	0.11	
Phosphate (Dissolved)	mg/L	100	12	12	Quarterly	Reticulation	~	~	~	<0.40	
Potassium	mg/L	100	12	12	Quarterly	Reticulation	~	~	3.04	3.42	
Magnesium	mg/L	100	12	12	Quarterly	Reticulation	~	~	3.95	15.55	
Sodium	mg/L	100	12	12	Quarterly	Reticulation	~	~	76.33	136.2	
Sulphate	mg/L	100	12	12	Quarterly	Reticulation	500	0	43.72	117.86	
Calcium	mg/L	100	12	12	Quarterly	Reticulation	~	~	5.67	11.61	
Total Dissolved Solids	mg/L	100	12	12	Quarterly	Reticulation	~	~	322.9	617.1	
Metals											
Aluminium	mg/L	48	6	6	Biannual	Reticulation	~	~	0.02	0.04	
Antimony	mg/L	48	6	6	Biannual	Reticulation	0.003	0	~	<0.001	
Arsenic	mg/L	48	6	6	Biannual	Reticulation	0.01	0	~	<0.001	
Barium	mg/L	48	6	6	Biannual	Reticulation	2	0	0.036	0.051	
Beryllium	mg/L	48	6	6	Biannual	Reticulation	0.06	0	~	<0.001	
Bismuth	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Boron	mg/L	48	6	6	Biannual	Reticulation	4	0	0.06	0.07	
Caesium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Cadmium	mg/L	48	6	6	Biannual	Reticulation	0.002	0	<0.0001	0.0002	
Cerium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Chromium	mg/L	48	6	6	Biannual	Reticulation	0.05	0	~	<0.001	
Cobalt	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Copper	mg/L	48	6	6	Biannual	Reticulation	2	0	0.002	0.007	
Dysprosium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Erbium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Gadolinium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Gallium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Hafnium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.01	

Holmium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Indium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Iron	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.05	
Lanthanum	mg/L	48	6	6	Biannual	Reticulation	0.002	0	~	<0.001	
Lead	mg/L	48	6	6	Biannual	Reticulation	0.01	0	<0.001	0.004	
Lithium	mg/L	48	6	6	Biannual	Reticulation	~	~	0.001	0.002	does not exceed Qld Health limit (0.006 mg/L)
Lutetium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Manganese	mg/L	48	6	6	Biannual	Reticulation	0.5	0	<0.001	0.003	
Molybdenum	mg/L	48	6	6	Biannual	Reticulation	0.05	0	~	<0.001	
Nickel	mg/L	48	6	6	Biannual	Reticulation	0.02	0	~	<0.001	
Neodymium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Praseodymium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Rubidium	mg/L	48	6	6	Biannual	Reticulation	~	~	0.003	0.004	does not exceed Qld Health limit (0.009 mg/L)
Samarium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Selenium	mg/L	48	6	6	Biannual	Reticulation	0.01	0	~	<0.01	
Silver	mg/L	48	6	6	Biannual	Reticulation	0.1	0	~	<0.001	
Strontium	mg/L	48	6	6	Biannual	Reticulation	~	~	0.084	0.141	does not exceed Qld Health limit (0.801 mg/L)
Tellurium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.005	
Terbium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Tin	mg/L	48	6	6	Biannual	Reticulation	~	~	<0.001	0.001	
Titanium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.01	
Thallium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Thorium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Thuilium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Uranium	mg/L	48	6	6	Biannual	Reticulation	0.017	0	~	<0.001	
Vanadium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.01	
Ytterdium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Yttrium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.001	
Zinc	mg/L	48	6	6	Biannual	Reticulation	~	~	<0.005	0.018	
Zirconium	mg/L	48	6	6	Biannual	Reticulation	~	~	~	<0.005	
Miscellaneous											
THMs	µg/L	52	4	4	Quarterly	Reticulation	250	0	68	232	Refer to THM Summary Table Page 26
TOCs	mg/L	312	24	16	Monthly	Raw	~	~	5.22	8.93	
		60	12	12		Treated	~	~	2.25	5.77	
Chlorates	mg/L	192	8	12	Seasonal	Treated	0.8 (Interim)	**1**	0.02	**24.06**	Non-compliant sample reported to the Regulator (refer to Table 2 Page 9)
MIB	ng/L	56	4	4	Monthly	Raw	~	~	3.0	13.2	
		56	4	7		Treated	~	~	2.3	10.0	
Geosmin	ng/L	56	4	4	Monthly	Raw	~	~	2.4	6.4	
		56	4	7		Treated	~	~	<1.0	4.7	
Algal Count	cells/mL	64	8	12	Seasonal	Raw	~	~	~	~	Biovolume assessed and reported to Qld Health and QWSR as required
Pesticide	µg/L	32	4	3	Quarterly	Raw	Refer to Pesticide Summary Table Page 24 Non-compliant sample reported to the Regulator (refer to Table 2 Page 9)				
		56	4	4	Quarterly	Treated					
Radiological	Bq/L	15 (7 ground / 8 surface)	1 surface	0	Surface Water 5yr	Treated	~	~	~	~	Radiological sampling for surface water plants was not undertaken in 2023/24

Verification Monitoring Results- All WSA's July 2023- June 2024- Pesticides Detected												
Scheme Name	Scheme Component	Parameter	Laboratory Name	Units	Limit of Reporting	Frequency of Sampling	Total No. samples collected	No. of Samples detected	ADWG Health Value (µg/L)	No. of samples exceeding ADWG	Min Value (µg/L)	Max Value (µg/L)
Bundaberg WSA	Branyan WTP Reservoir	Atrazine	ALS	µg/L	0.02	Quarterly	24	1	20	0	<0.02	0.02
		Atrazine, 2-hydroxy *	ALS	µg/L	0.01			1	NA		<0.01	0.02
		Dalapon 2,2-DPA	ALS	µg/L	0.2			2	500		<0.20	1.5
		Hexazinone	ALS	µg/L	0.01			2	400		<0.01	0.02
		Metolachlor	ALS	µg/L	0.01			3	300		<0.01	0.07
		Metolachlor ESA *	ALS	µg/L	0.02			4	NA		0.02	0.07
		Metolachlor-OXA *	ALS	µg/L	0.05			3	NA		<0.05	0.16
		Tebuthiuron *	ALS	µg/L	0.01			4	NA		<0.01	0.08
	Heaps St Reservoirs	Bromacil	ALS	µg/L	0.05			7	400		<0.05	0.27
		Fipronil amide *	ALS	µg/L	0.02			1	NA		<0.02	0.03
		Phenoxyethanol *	ALS	µg/L	0.05			2	NA		<0.05	1.60 **
	Power St Reservoir	Fipronil amide *	ALS	µg/L	0.02			1	NA		~	0.03
Gin Gin WSA	Gin Gin Reservoir	Dalapon 2,2-DPA	ALS	µg/L	0.2	Quarterly	4	4	500	0	0.4	1.6
		Phenoxyethanol *	ALS	µg/L	0.05			1	NA		<0.05	2.6 **
Gregory River WSA	Gregory Reservoir	Dalapon 2,2-DPA	ALS	µg/L	0.2	Quarterly	4	4	500	0	0.3	1.5
		Metolachlor ESA *	ALS	µg/L	0.02			2	NA		<0.02	0.03
		Phenoxyethanol *	ALS	µg/L	0.05			1	NA		<0.05	1.5 **
Kalkie WSA	Kalkie Reservoir	Atrazine, 2-hydroxy *	ALS	µg/L	0.01	Quarterly	4	1	NA	0	<0.01	0.02
		Dalapon 2,2-DPA	ALS	µg/L	0.2			2	500		<0.20	0.7
		Hexazinone	ALS	µg/L	0.01			2	400		<0.01	0.01
		Metolachlor	ALS	µg/L	0.01			1	300		<0.01	0.03
		Metolachlor ESA *	ALS	µg/L	0.02			2	NA		<0.02	0.06
		Metolachlor-OXA *	ALS	µg/L	0.05			2	NA		<0.05	0.16
		N-Butylbenzenesulfonamide *	ALS	µg/L	0.05			2	NA		<0.05	1.80
		Tebuthiuron (DI)*	ALS	µg/L	0.01			3	NA		<0.01	0.09
Lake Monduran WSA	Monduran Reservoir	Dalapon 2,2-DPA	ALS	µg/L	0.2	Quarterly	4	4	500	0	1.7	4.5
		Phenoxyethanol *	ALS	µg/L	0.05			1	NA		<0.05	0.1 **
		5-Chloro-2-methyl-4-isothiazon *	ALS	µg/L	0.02			1	NA		<0.02	0.1 **
Moore Park WSA	Murdochs Rd Groundwater Reservoir	Imidacloprid *	ALS	µg/L	0.02	Quarterly	8	4	NA	0	0.03	0.05
	Vecellios Rd Reservoir	Atrazine	ALS	µg/L	0.02			4	20		0.05	0.48
		Atrazine, 2-hydroxy *	ALS	µg/L	0.01			4	NA		0.03	0.10
		Dalapon 2,2-DPA	ALS	µg/L	0.2			4	500		0.3	0.8
		Desethyl Atrazine *	ALS	µg/L	0.01			4	NA		0.01	0.06
		Desisopropyl Atrazine *	ALS	µg/L	0.02			2	NA		<0.02	0.03
		Metolachlor	ALS	µg/L	0.01			2	300		<0.01	0.04
		Metolachlor ESA *	ALS	µg/L	0.02			2	NA		<0.02	0.04
		Metolachlor-OXA *	ALS	µg/L	0.05			1	NA		<0.05	0.06
River Park WSA	River Park Reservoir	Atrazine	ALS	µg/L	0.02	Quarterly	4	2	20	0	<0.02	0.04
		Atrazine, 2-hydroxy *	ALS	µg/L	0.01			4	NA		0.01	0.04
		Dalapon 2,2-DPA	ALS	µg/L	0.2			4	500		0.2	1.0
		Hexazinone	ALS	µg/L	0.05			4	400		<0.05	0.03
		Metolachlor	ALS	µg/L	0.01			2	300		0.03	0.14
		Metolachlor ESA *	ALS	µg/L	0.02			4	NA		0.04	0.11
		Metolachlor-OXA *	ALS	µg/L	0.05			3	NA		<0.05	0.15
		Tebuthiuron *	ALS	µg/L	0.01			4	NA		0.12	0.27
Wallaville WSA	Wallaville Reservoir	2,4-D	ALS	µg/L	0.05	Quarterly	4	1	30	0	<0.05	0.08
		Atrazine	ALS	µg/L	0.02			1	20		<0.02	0.03

Scheme Name	Scheme Component	Parameter	Laboratory Name	Units	Limit of Reporting	Frequency of Sampling	Total No. samples collected	No. of Samples detected	ADWG Health Value (µg/L)	No. of samples exceeding ADWG	Min Value (µg/L)	Max Value (µg/L)
Wallaville WSA continued	Wallaville Reservoir	Atrazine, 2-hydroxy *	ALS	µg/L	0.02	Quarterly	4	3	NA	0	<0.02	0.04
		Dalapon 2,2-DPA	ALS	µg/L	0.2			4	500		0.3	1.3
		Diuron	ALS	µg/L	0.02			1	20		<0.02	0.03
		Fluroxypyr *	ALS	µg/L	0.07			1	NA		<0.07	0.23 **
		Haloxyfop Acid	ALS	µg/L	0.02			1	1		<0.02	0.02
		Hexazinone	ALS	µg/L	0.05			4	400		<0.05	0.17
		Imazapic *	ALS	µg/L	0.01			1	NA		<0.01	0.09 **
		Metolachlor	ALS	µg/L	0.01			2	300		<0.01	0.81
		Metolachlor ESA *	ALS	µg/L	0.02			3	NA		<0.02	0.33 **
		Metolachlor-OXA *	ALS	µg/L	0.05			2	NA		<0.05	0.41 **
		Tebuthiuron *	ALS	µg/L	0.01			4	NA		0.13	0.59

The Bundaberg Regional Council carries out full and comprehensive pesticide analysis on the received laboratory results.

* Parameters do not have ADWG health limit – detection of these parameters were not reported to the Regulator as all detected levels were below levels previously checked by Qld Health (refer to BRC DWQMP Appendix C).

** Exceedances of the ADWG and Qld Health limits are reported to the Regulator, refer to Table 2 page 9.

Rolling 12-month annual value *E.coli* compliance – All WSA's July 2023 – June 2024

	Month											
% of samples which comply with the nil *E. coli* limit	July 2023	August 2023	September 2023	October 2023	November 2023	December 2023	January 20234	February 2024	March 2024	April 2024	May 2024	June 2024
Bundaberg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Kalkie	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Moore Park	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
River Park	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Rocky Point	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Gregory River	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Gin Gin	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Wallaville	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Lake Monduran	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Summary of Trihalomethane Sampling – 2023-2024					
Water Service Area	**Frequency of Sampling**	**Total No. of Samples**	**No. of Samples Exceeding ADWG Health Guideline of 250 µg/L**	**Value of Exceedances (µg/L)**	**Comments**
Bundaberg	Quarterly	8	0	-	
Kalkie	Quarterly	8	0	-	
Gregory River	Quarterly	12	**1**	272	Non-compliant sample reported to the Regulator (refer to Table 2 Page 9)
Moore Park	Quarterly	4	0	-	
Gin Gin	Quarterly	4	0	-	
River Park	Quarterly	4	0	-	
Rocky Point	Quarterly	4	0	-	
Wallaville	Quarterly	4	0	-	
Lake Monduran	Quarterly	4	0	-	
	Totals	**52**	**1**		

Appendix B. Implementation of the DWQMP Risk Management Improvement Program

System / Scheme	Reference ID	Improvement Items	Target Period	Action taken to date	Status and Revised target date	Responsibility
River Pk	22-01	Action: Options study for alternate water supply/treatment plant Rationale: Water is trucked upon CCP critical limit exceedance, but this is not a sustainable long-term solution for managing pathogen risk	2022-23	In progress, Planning study undertaken, Costing study underway.	2023-25	Service Delivery Manager
River Pk & Wallaville	22-02	Action: Investigate interim measures to improve sedimentation and filtration Rationale: Media is suspected to be an issue. This needs to be investigated and rectified whilst awaiting options study solution. Water is trucked upon CCP limit exceedance. CCPs to be reviewed on implementation of improvement measures	2022-23	In progress. River Park: media changed in 2022. Scheduled 'clean facility' maintenance action assigned in FOCUS for operators to inspect and clean clarifiers (clarifiers are drained, cleaned and refilled). Wallaville: construction of a trunk main pipeline connection is underway to provide a treated water supply between Wallaville and Gin Gin WSA. Information to be reviewed and updated in DWQMP on completion of the project.	2023-25	Service Delivery Manager
Wallaville	22-03	Action: Options assessment on treatment facility Rationale: Highly manual plant with limited remote visibility of processes. Water quality results indicate processes not working optimally.	2022-23	**Improvement action cancelled,** Construction of a trunk main pipeline connection is underway to provide a treated water supply between Wallaville and Gin Gin WSA.	**cancelled**	Planning & Delivery Manager
Wallaville	22-04	Action: Investigate second protozoan barrier Rationale: Highly manual plant with limited remote visibility of processes. Water quality results indicate processes not working optimally.	2022-23	**Improvement action cancelled,** Construction of a trunk main pipeline connection is underway to provide a treated water supply between Wallaville and Gin Gin WSA.	**cancelled**	Planning & Delivery Manager
Wallaville	22-05	Action: In depth review of filter operation & condition Rationale: Highly manual plant with limited remote visibility of processes. Water quality results indicate processes not working optimally.	2022-23	**Improvement action cancelled,** Construction of a trunk main pipeline connection is underway to provide a treated water supply between Wallaville and Gin Gin WSA.	**cancelled**	Service Delivery Manager
Heaps St, Power St, Works Depot, Gin Gin WTP	22-06	Action: Investigate options to increase chlorine C.t. (options review) Rationale: Chlorine Ct is substantially less than 15mg.min/L at sites without a contact tank	2022-23	In progress, close to completion. • A review of C.t. showed no issue at Heaps St. • Consultants engaged to review and complete options study for Gin Gin and Bundaberg Works Depot. • Powers St GWTP no longer operational, bores supplying the plant have been decommissioned.	2023-24	Process & Asset Manager
Heaps St, Power St, Works Depot,	22-07	Action: Engineering solution to increase chlorine C.t.at bore sites (e.g., move dose to before reservoirs at bore sites, Rationale: Chlorine Ct is substantially less than 15mg.min/L at sites without a contact tank	2023-24	In progress, close to completion. As per comment 22-06.	2023-24	Process & Asset Manager
Gin Gin	22-08	Action: Install baffling at Gin Gin CWT. Rationale: Current Ct at rest area is approximately 6.4mg.min/L	2022-23	In progress, close to completion, alternate option to address C.t. has been selected. As per comment 22-06	2024-25	Service Delivery Manager
All groundwater plants	22-09	Action: Trial enclosure of limestone bed at Lovers Walk Rationale: The open limestone beds are a potential source of vermin access and contamination.	2022-23	In progress, covered spraybed has been installed at Lovers Walk, in commissioning phase.	2023-24	Planning & Delivery Manager
All groundwater plants	22-10	Action: Review requirement for, and options to provide protozoan treatment barriers. Rationale: There is some evidence that aquifers are unconfined. There are currently no protozoan barriers	2024-25	In progress. Groundwater bore monitoring is under assessment.	2024-25	Process & Asset Manager
Bundaberg / ALL systems	22-11	Action: Review calibration and verification schedule of online turbidity analyser. Rationale: The individual filter turbidity analysers are critical instruments. They should be challenged regularly against verification standards and ensure calibration meets requirements.	2022-23	**Completed.** Calibration and verification schedule have been captured in FOCUS system A new maintenance contract to support has been arranged.	**completed**	Service Delivery Manager
Branyan WTP	22-12	Action: Review control philosophy for instigation of filter backwash, as part of wider review to establish Functional Specification.	2022-23	Delayed – 2025/26 automation upgrade required at plant first.	2025-26	Process & Asset Manager

System / Scheme	Reference ID	Improvement Items	Target Period	Action taken to date	Status and Revised target date	Responsibility
		Rationale: Filter backwash based on time will not meet all plant conditions (e.g., raw water challenge. Ideally, filter should backwash on turbidity, headloss or time.				
Bundaberg	22-13	Action: Review Power St disinfection requirements (ensure sufficient C.t) and consider whether water needs any additional treatment. Rationale: This is an untreated source which could re-contaminate surface water treated at Branyan WTP	2022-23	**Improvement action cancelled,** Powers St GWTP no longer operational, bores supplying the plant have been decommissioned.	**cancelled**	Process & Asset Manager
Gregory River	22-14	Action: Install actuator on clarifier inlet to close on power failure Rationale: Risk of dumping PAC tank into clarifiers in event of power outage	2022-23	**Completed.** Actuator installed on clarifier inlet and connected to SCADA.	**completed**	Service Delivery Manager
Kalkie	22-15	Action: Repair clear water tank and investigate permanent cover for module Rationale: Clear Water tank is inground with leaks which could potentially allow groundwater ingress. Currently controlled with pump to keep groundwater below tank level.	2022-23	In progress.	2023-24	Service Delivery Manager
Lake Monduran	22-16	Action: Investigate options for online water quality monitoring and control philosophy as part of wider review to establish Functional Specification. Rationale: Currently only online treated water quality monitoring and very limited SCADA control.	2022-23	Delayed – currently the plant is not in operation (water being trucked in from Gin Gin WSA).	2023-24	Process & Asset Manager
Whole of Service	22-17	Action: Investigate water quality induction for contractor management Rationale: To ensure all contractors are aware of water quality obligations when working on drinking water assets	2022-23	Delayed – 2025/26	2025-26	Business Services Manager
All	22-19	Action: Inspect and ensure vermin proofing meets requirements for all reservoirs. Rationale: Vermin proofing varies at different reservoirs (e.g., mesh size, vermin proofing of overflows). A standardised approach to be applied to ensure system integrity and allow operators to inspect against common standard.	2022-24	**Completed.** Treatments capture in FOCUS is currently underway. The option of a checklist is being considered.	**completed**	Service Delivery Manager
Lake Monduran	22-21	Action: Review drinking water Levels of Service in light of THM issues (e.g., non-potable supply, upgrade treatment process) Rationale: THM formation in this system has been problematic	2022-23	Delayed – currently the plant is not in operation (water being trucked in from Gin Gin WSA).	2023-24	Process & Asset Manager
All	22-22	Action: Review control functional specification / control philosophy for chlorination as part of wider review to establish Functional Specification. (note: this does not include implementation of updated control systems) Rationale: Chlorination is a CCP and an exceedance should shut down plant production to ensure safe water	2022-23	In progress, a few automation updates remaining.	2023-24	Process & Asset Manager
All	22-23	Action: Review/formalise flushing protocol Rationale: To standardise the approach for water quality outcomes across all WSAs	2022-23	Delayed – 2025/26	2025-26	Service Delivery Manager
All groundwater plants	22-24	Action: Groundwater study to understand need for further treatment barriers Rationale: Some bores have been impacted by salinity wedges, nitrates & PFAS. A better understanding is required of potential interaction between surface and subsurface flows and the unconfined aquifers and pathogen risk.	2024-25	**Completed.** Assessment of bore analysis data undertaken shows no current concern regarding salinity and nitrates. PFAS monitoring to continue.	**completed**	Planning & Delivery Manager
All surface plants	22-25	Action: Filter asset and media condition inspection. Rationale: Loss of media is evident and cause must be established and rectified to ensure reliable filtration (Vecellios Road) Breakthroughs above alert limit are occurring more often and require investigation of cause (Branyan). Filters generally operate well, however overdue for inspection (Gin Gin). While this is a new plant, filter media is old/aged in some plants. A regime of routine inspections is good practice and will allow forward planning for replacement (Gregory). High turbidity's in clear water tank - require investigation of cause (Kalkie).	2022-24 (2-year program)	In progress. Vecellios Rd and Gin Gin – refer to external CWT report for recommendations. Branyan and Kalkie – filter inspections included in 'walk around' actions in FOCUS.	2022-24	Service Delivery Manager
Branyan WTP	22-26	Action: Investigate installation of flow indication on push water for polymer dosing Rationale: Flow indication will allow direct detection of low/no flow on settling aid	2022-23	In progress, due for completion late 2024.	2023-24	Process & Asset Manager
Gin Gin	22-27	Action: Investigate methods to monitor & improve filter ripening. Rationale: Filter ripening should not exceed 15 minutes	2023-24	**Completed.**	**completed**	Service Delivery Manager
Gin Gin	22-29	Action: Review control philosophy for filter operation Rationale: Filtrate currently monitored on inlet to clearwater reservoir. Filters should have individual online turbidity monitoring.	2022-23	**Completed.** Control philosophy updated and analysers installed.	**completed**	Process & Asset Manager
Kalkie	22-30	Action: Introduce interim shift-based sub-natant turbidity monitoring (grab samples) Rationale: As an OCP, Operators need to be able to measure performance of process of dissolved air flotation	2022-23	**Completed.**	**completed**	Service Delivery Manager

System / Scheme	Reference ID	Improvement Items	Target Period	Action taken to date	Status and Revised target date	Responsibility
Kalkie	22-31	Action: Investigate filter turbidity monitoring and controls for filtration process, including backwash triggers & ripening parameters, and aligned to HBT framework Rationale: Each individual filter should ideally be monitored continuously for turbidity, with ability to interlock when CCP is exceeded. Currently the plant is interlocked on CW turbidity with sample point after the CW reservoir (ie in beginning of reticulation)	2022-23	**Completed.**	**completed**	Planning & Delivery Manager
Kalkie, Gin Gin, Gregory River	22-32	Action: Review functional description on chlorine dosing at rechlorination site Rationale: Re-chlorination is an OCP. Currently fixed paced dosing. There may be an opportunity for better dose control	2023-24	In progress.	2023-24	Process & Asset Manager
Kalkie	22-33	Action: Review functional specification of supernatant return (ie location of discharge into storage dam) Rationale: The current location for discharge is close to inlet pumping and does not guarantee less than 10% return to head of plant, especially when the plant is offline while supernatant continues to be discharged	2022-23	**Completed.**	**completed**	Service Delivery Manager
Lake Monduran	22-34	Action: Investigate options and justification for a second protozoan barrier Rationale: Unprotected surface water catchment. Highly manual plant with limited remote visibility of processes. Water quality results indicate processes not working optimally.	2024-25	Delayed – currently the plant is not in operation (water being trucked in from Gin Gin WSA).	2024-25	Planning & Delivery Manager
Moore Pk (Vecellios Rd)	22-35	Action: Review OCP limits on subnatant Rationale: If subnatant turbidity is too high can result in overload on filters.	2022-23	In progress, Consultant engaged, study undertaken, further action required.	2023-24	Service Delivery Manager
Wallaville	22-36	Action: Repair inlet works at Wallaville Rationale: Subsidence around inlet works	2023-24	**Improvement action cancelled,** Construction of a trunk main pipeline connection is underway to provide a treated water supply between Wallaville and Gin Gin WSA.	**cancelled**	Service Delivery Manager
Whole of Service	22-37	Action: Develop maintenance schedule framework as part of asset management system. Rationale: A well-developed AMS is essential to ensure continued supply of safe water	2024-25	No action taken to date.	2024-25	Planning & Delivery Manager
Whole of Service	22-38	Action: Develop water quality safety checklist as part of SWMS Rationale: A well-developed AMS is essential to ensure continued supply of safe water	2023-24	Delayed – 2025/26. Currently working on permit to work safety improvements.	2025-26	Service Delivery Manager
Whole of Service	22-39	Action: Develop and implement a Verification of Competence process Rationale: VoCs will ensure operators are familiar with operational variations at different sites.	2024-25	No action taken to date.	2024-25	Service Delivery Manager
Whole of Service	22-40	Action: Review governance of control changes and CCPs Rationale: Access to change setpoints in SCADA needs to consider the level of process risk to ensure OCPs & especially CCPs are functioning within specification.	2023-24	In progress.	2023-24	Process & Asset Manager
Whole of Service	22-42	Action: Review operational monitoring at all plants including OCP/CCP to ensure samples are representative of the processes they are monitoring Rationale: Sampling programs should be periodically reviewed to ensure they are still representative.	2024-25	**Completed.** Operators have reviewed OCP and CCP parameters for the treatment plants as part of the 2024 DWQMP review.	**completed**	Process & Asset Manager
Whole of Service	22-43	Action: Implement OT strategy Rationale: The OT strategy has been developed to manage risk to control systems from cyber security threats. As more control systems and remote monitoring/control is introduced OT security is essential.	2022-23	In progress. Migration to a new Domain and GeoSCADA underway. Expected completion late 2024.	2023-24	Process & Asset Manager
Whole of Service	22-44	Action: Review and formalise emergency preparedness Rationale: Currently rely heavily on operator experience and knowledge in an emergency (eg flood). Documenting response plans/actions will improve knowledge across the team and the response	2024-25	No action taken to date.	2024-25	Business Services Manager
Whole of Service	22-45	Action: Work with industry bodies (e.g., Queensland Water) in planning for operator shortage Rationale: Recruitment of trained/experienced operators is a growing problem across the industry.	2022-23	**Completed.** Water Industry Worker – Qld Water Trainee position/program in place.	**completed**	Branch Manager
Kalkie	22-47	Action: PAC contact tank under construction (Construct PAC Tank) Rationale: Kalkie is undergoing major upgrades to replace aging plant & equipment and improve reliability	2022-23	**Completed.** New plant commissioned 2023.	**completed**	Planning & Delivery Manager
All surface plants	22-49	Action: Alternate coagulants under investigation Rationale: Coagulant used across all WSAs is primarily based on experience and legacy. BRC is undertaking a review to ensure appropriate coagulant is being used for the water quality challenges and plant design	2022-24	In progress.	2022-24	Service Delivery Manager

System / Scheme	Reference ID	Improvement Items	Target Period	Action taken to date	Status and Revised target date	Responsibility
Bundaberg, Gin Gin	22-50	Action: Investigate options to maintain <10% limit on supernatant return Rationale: Current fixed rate flow of supernatant means drop in plant flow may result in above 10% return rate. Reliant on Operators knowing not to drop flow rates lower than threshold	2023-24	In progress.	2023-24	Process & Asset Manager
Branyan WTP	22-51	Action: Identify method to ensure PAC dosing is occurring correctly Rationale: Flow sensors only detect carrier water flow, not correct PAC dispensing	2023-24	In progress.	2023-24	Process & Asset Manager
Branyan WTP	22-52	Action: Undertake assessment and rectification of subsidence at inlet Rationale: Ongoing erosion of bank and subsidence noted in local area around inlet works	2023-24	Deferred – monitoring erosion at inlet	2024-26	Service Delivery Manager
Gregory River	22-53	Action: Rectify existing damages to inlet works Rationale: Inlet works are damaged.	2023-24	**Completed.**	**completed**	Service Delivery Manager
Vecellios Road	22-54	Action: Review coagulant dose control philosophy Rationale: Fluctuations in plant flow can result in slight over/under dosing	2023-24	In progress, Consultant engaged, study undertaken, further action required.	2023-24	Service Delivery Manager
All systems	22-55	Action: Review processes for sharing of operational information Rationale: Operators need to be aware of status of operational challenges and cross-seeding of system knowledge amongst all operators.	2022-23	**Completed.** Operators are rotated around the different treatment plants. Information shared at toolbox meetings.	**completed**	Service Delivery Manager
Vecellios Rd, River Pk	22-56	Action: Review need/options for PAC dosing. Rationale: Triggers for dosing PAC should be relative to risk and consistent across WSAs.	2023-24	In progress. Consultant engaged; options study report completed.	2023-24	Service Delivery Manager
Whole of Service	22-57	Action: Lock replacement program to limit access to sites Rationale: This is an ongoing program to improve site security	2022-23	**Completed.** Locks have been updated across all sites.	**completed**	Service Delivery Manager
Kalkie	24-01	Action: Cover the externally located filters and enclose the area. Rationale: Protect the filters from exposure to the environment – vermin proof.	2025-26	No action taken to date.	2025-26	Service Delivery Manager