



Unitywater

Serving you today, investing in tomorrow.

Drinking Water Quality Management Plan

Annual Report 2020-2021

Report Details

Report Writer Water Quality Officer

References Drinking Water Quality Management Plan Version 11a
 Drinking Water Quality Management Plan Version 9a
 Department of Regional Development, Manufacturing and Water Annual Report Guidelines

Document Version and Modification Control

Date	Name	Position	Modification/Action
16/07/2021	Z. Lamont	Water Quality Officer	Draft
16/07/2021	B. Austin	Water Quality Technician	Draft
29/07/2021	J. Wain	Water Quality Manager	Draft
29/07/2021	N. Airs	Manager Water Solutions	Final

Service Provider Details

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Glossary of Terms	
<	Less than
>	Greater than
ADWG	Australian Drinking Water Guidelines (2011). Published by the National Health and Medical Research Council of Australia
DWQP	Drinking Water Quality Performance Report
AS/NZ 3500	<i>Australian New Zealand Standard 3500</i>
CCP	Critical Control Point
CFU/100mL	Colony forming units per 100 millilitres
DRDMW	Department of Regional Development, Manufacturing and Water (the regulator)
DWDS	Drinking Water Distribution System
DWQMP	Drinking Water Quality Management Plan
<i>E. coli</i>	<i>Escherichia coli</i> , a bacterium which may indicate the presence of faecal contamination and therefore potential health risk
FY 2020-21	Financial year 2020-21
HACCP	Hazard Analysis and Critical Control Point. An approach for managing the risk of drinking water supply contamination
Intelex	Unitywater safety incident reporting system for matters such as injury & notifications/hazard/near miss/equipment damage and is also our standards certification management system for audits and investigations.
mg/L	Milligrams per litre
ML	Megalitres
mpn/100 mL	Most probable number per 100 millilitres
NPI	Northern Pipeline Interconnector
NTU	Nephelometric Turbidity Units
OFI	Opportunities For Improvement
OPRP	Operational Pre Requisite Program
RA	Risk Assessment
RMIP	Risk Management Improvement Plan
ROMM	Regional Operations Manager Meeting
SEQ	South East Queensland
SCADA	Supervisory Control and Data Acquisition
SHEQ	Safety Health Environment and Quality (Unitywater work area)
<i>the Act</i>	<i>Water Supply (Safety & Reliability) Act 2008</i>
VOC	Verification Of Competency
WQ	Water Quality
WTP	Water Treatment Plant

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1. Introduction

This report documents the performance of Unitywater’s drinking water service with respect to water quality and performance in implementing the Drinking Water Quality Management Plan (DWQMP) as required under the *Water Supply (Safety and Reliability) Act 2008 (the Act)*. This report documents Unitywater’s performance for the period 1 July 2020 to 30 June 2021 and should be read in conjunction with the [Drinking Water Quality Performance Report 2020-2021 \(Appendix A\)](#).

The report aligns with the requirements of the reporting template published by the Regulator and addresses the reporting requirements under Section 142(3) of *the Act*. Table 1 identifies the section of the report that addresses reporting requirement under Section 142(3) of *the Act*.

Table 1 – Sections of report that address reporting requirement under Section 142(3) of *the Act*

Section Ref #	Legislative Requirement under Section 142(3) of <i>the Act</i>	Content Guide	Section of this Report
-	Overview of operations (optional)	Contextual information of the water supply schemes that this annual report relates to.	Section 2
142(3) b	Actions taken to implement the DWQMP	Description of activities undertaken during the reporting period to implement the DWQMP: <ul style="list-style-type: none"> Progress in implementing the risk management improvement program (RMIP) Revisions made to the operational monitoring program Amendments made to the DWQMP 	Section 3
142(3) f	Compliance with water quality criteria for drinking water	<ul style="list-style-type: none"> Verification monitoring results summary for the reporting period Commentary on water quality results, the Australian Drinking Water Guidelines and <i>E. coli</i> results 	Section 4 Appendix A
142(3) e	Notifications to the Regulator under sections 102 and 102A of <i>the Act</i>	<ul style="list-style-type: none"> Non-compliances with the water quality criteria and corrective and preventive actions undertaken Prescribed incidents or events reported to the Regulator and corrective and preventive actions undertaken 	Section 5
142(3) g	Customer complaints related to water quality	<ul style="list-style-type: none"> Summary of water quality complaints Summary of events and corrective action 	Section 6 Appendix B
142(3) d	Findings and recommendations of the DWQMP auditor	<ul style="list-style-type: none"> Regulatory audit summary of findings Outcomes of the DWQMP review 	Section 7
142(3) c	Outcome of the DWQMP review and how issues raised have been addressed	<ul style="list-style-type: none"> Amendment of the DWQMP 	Section 8

2. Overview of Operations

Unitywater provides water and sewerage services to the Moreton Bay, Sunshine Coast and Noosa local authority regions. Unitywater operates and maintains more than \$3.8 billion of water and sewerage infrastructure, supplying services to residential and business customers spread across 5,924 square kilometres.

Unitywater receives treated water from the bulk water supplier Seqwater. The Unitywater service area during the 2020-21 financial year had 4 supply regions, which are then broken down into 14 schemes. These regions include:

- **NPI South (Southern Grid)** – Caboolture, Bribie Island, Woodford, Redcliffe, Pine Rivers South, Pine Rivers North
- **NPI North (Northern Grid)** – Noosa, Maroochy North (South Maroochy River); Maroochy South, Caloundra Coastal; Caloundra Railway Towns, Maleny
- **Dayboro** – Dayboro
- **Kenilworth** – Kenilworth

Additional information is available in the 2020-21 Drinking water quality performance report ([Appendix A](#)).

3. Actions taken to implement the Drinking Water Quality Management Plan

Unitywater's DWQMP has evolved since the first revision was submitted in 2011 and it will continue to be updated as risk management improvement actions are completed and operational philosophies change. A description of the implementation progress and related updates made during 2020-2021 are provided in this section and section **Error! Reference source not found.** The three sub sections below are included to meet the requirements described in section 3 of the [DRDMW Drinking Water Quality Management Plan report template](#).

3.1. Risk management improvement action progress

Of the actions identified in the current Risk Management Improvement Program (Table 7, of the approved DWQMP version 9a), all actions have been completed and closed.

3.2. Revisions made to the operational monitoring program to assist in maintaining the compliance with water quality criteria in verification monitoring

A summary of the operational monitoring program revisions undertaken during the reporting period are included below.

- **ISO 22000:2018 Surveillance Audit** – Unitywater maintains certification against ISO 22000:2018 food safety management system, which is internationally recognised as best practice for the management of water quality. A component of the certification is the Hazard Analysis Critical Control Point (HACCP) process. The HACCP Plan describes the control measures for significant risks including critical control points (CCPs), prerequisite programs and operational prerequisite programs (OPRPs).

The most recent independent audit against ISO 22000:2018 was completed in December 2020. The audit assessed our operational practices, work procedures, process / document control, and much more. This was a surveillance audit which found all audited components adhere to the guidelines, therefore no non-conformances or opportunities for improvement were received.

3.3. Amendments made to the Drinking Water Quality Management Plan

The DWQMP version 9a was reviewed and version 11 of the DWQMP was submitted to the regulator in December 2020. From this a conditional approval was received from the regulator on 6th May 2021. The additional approval condition outlined requirements for Unitywater to review and update the Incident Management Plan (IMP) by 30th June 2021 and resubmit the DWQMP under section 99a of *the Act*. To address this condition, Unitywater included the condition under the Risk Management Improvement Plan (RMIP) with the following actions:

Finalise the review and update of the Incident Management Plan and include-

- the process for management of cyber security events and hazardous events in general
- how events are notified to the regulator
- updated references to new departmental names i.e. Department of Regional Development, Manufacturing and water.

This was completed and submitted to the regulator by the due date.

Along with the updated IMP in appendix 10, the DWQMP version 11a includes amendments to Section 6 'Hazard Identification and Risk Management', Section 6.6 'Risk management improvement program (RMIP)', and Section 7.2 'Verification monitoring and evaluation of results'. The verification monitoring program will continue to evolve in response to water quality trends and the growth of Unitywater's network.

4. Compliance with water quality criteria for drinking water

Unitywater provides an annual summary of water quality performance to customers, available on the Unitywater website www.unitywater.com. The 2020-21 Drinking Water Quality Performance Report ([Appendix A](#)) meets the requirements for the water quality performance aspect of this document. Please note that the reported statistics do not include results derived from repeat samples, or from emergency or investigative samples undertaken in response to an elevated result.

The 2020-21 Drinking Water Quality Performance Report includes a summary of the verification monitoring results. Key points include:

- Unitywater meets the requirements set by the *Public Health Regulation 2018* for drinking water, with 99.96% of all samples free of *E. coli*.
- Unitywater meets the chemical (health-related) performance requirements of the Australian Drinking Water Guidelines 2011 for every chemical tested in each of the 4 regions.

5. Notifications to the regulator under sections 102 and 102A of *the Act*

5.1. Summary of notifications

There were two notifications made to the regulator during the financial year, both were for *E. coli* detections in drinking water. In both instances follow-up actions found that there were no unusual network activity or flows, and the sites did not demonstrate a history of *E. coli* exceedances. In subsequent follow up samples, there were no *E. coli* detections.

Incident Description:

There was an *E. coli* detection from a routine sample taken on 23/11/20 at Buderim – Fountain Rd from sample tap MS02DS. The result was 2 MPN/100mL in the presence of 0.7 mg/L free chlorine and 1.85 mg/L total chlorine.

Corrective and Preventative Actions:

Immediate actions included follow-up sampling and investigation of water quality results, network pressures and flows and sampling conditions. Based on the findings of investigative actions, it was concluded that the *E. coli* detection was a sampling/ analysis anomaly and not reflective of water quality in the network.

Follow-up sample results:

A follow-up sample on 24/11/20 and an additional follow-up sample on 30/11/20 both returned results of <1MPN/100ml *E. coli*.

Incident Description:

There was an *E. coli* detection from a routine sample taken on 7/4/21 at Bongaree - Fifth Avenue from sample tap BI04DS. The result was 1 MPN/100mL in the presence of <0.1 mg/L free chlorine and <0.1 mg/L total chlorine.

Corrective and Preventative Actions:

Immediate corrective actions included flushing at the sample point and adjacent hydrants, inline chlorine dosing at the sample point, and temporary reconfiguration of reservoir setpoints to optimise chlorine levels in the network. Investigative actions assessed network and sampling conditions and water quality results and determined that the *E. coli* detection was a sampling anomaly caused by adverse sampling conditions including moderate rain and overhanging vegetation and was therefore not reflective of water quality in the reticulation network. To prevent further occurrences, the sampling team will be proactive in raising facilities requests to have overhanging vegetation removed from sampling sites.

Follow-up sample results:

Three follow-up samples taken at the sample site and adjacent sampling points returned results of <1 MPN/100ml *E. coli*.

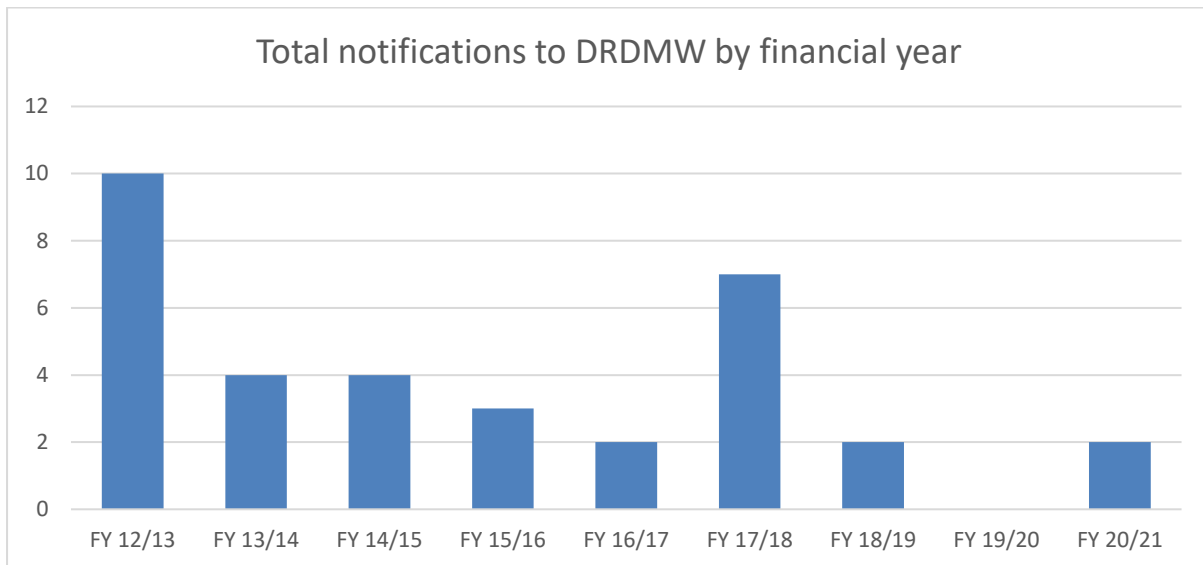


Figure 1 – total number of notifications to DRDMW by financial year

6. Customer complaints related to water quality

Please note that Unitywater refers to water quality complaints as water quality ‘enquiries’ for categorisation purposes. The majority of customer water quality enquiries received by Unitywater are typically related to dirty water. This is often due to sediment disturbance after network events (i.e. burst mains) which have an impact on water flow direction and/or velocity. Taste and odour enquiries are the other major contributor, followed by ‘Other’ and ‘Health’. Taste and odour enquiries are often related to changes in source water quality, and/or disinfectant residual levels.

Table 2 provides a summary of the water quality enquiries received by region.

During the reporting period, Unitywater received 420 customer water quality enquiries. This is an increase from the previous financial year 2019-2020 (414 enquiries received).

Due to the number of enquiries received in the 2020-2021 period, details of each individual case has not been included in this report. Instead, a summary of the water quality enquiry clusters is included in Table 3 (Appendix B).

Table 2 – Customer water quality enquiries by region FY2020-2021

2020-21 Water supply Region	Water Enquiry Type					Total	Connected Population (Estimated)	per 1000 customers
	Dirty/ Milky	Taste/Odour	Health	Other				
NPI South	179	67	4	14	264	678,989	0.39	
NPI North	103	35	7	10	155	554,013	0.28	
Dayboro	1	0	0	0	1	2,415	0.41	
Kenilworth	0	0	0	0	0	1,202	0.00	
Total	283	102	11	24	420	1,236,619	0.34	

The following graph shows our 2020-21 performance compared to previous years:

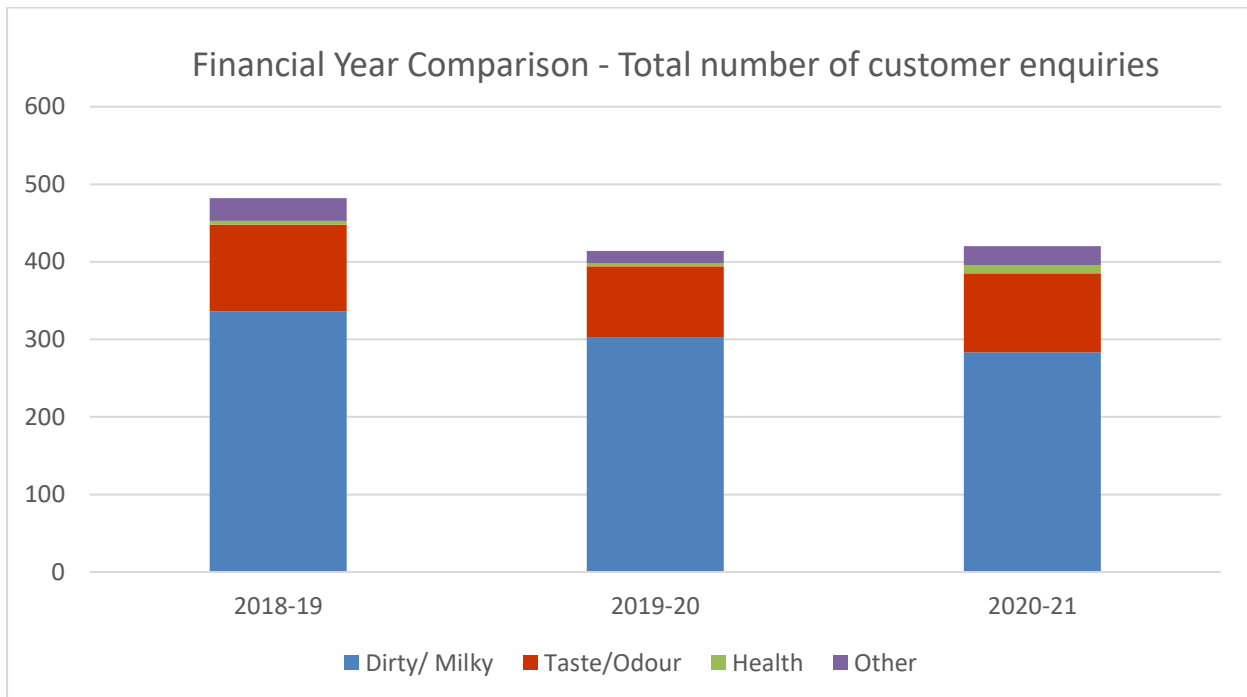


Figure 2 – Water quality enquiry type comparison

6.1. Discussion of water quality enquiries received

The majority of customer water quality enquiries are related to dirty/milky water (67.4%). Taste and odour enquiries were the other major category of customer enquiries (24.3%), followed by other (5.7%) and health (2.6%).

The NPI South Region received the highest number of enquiries with 264 enquires (0.39 per 1000 customers) in 2020-21. Of these, 68% related to dirty/ milky water.

The following is a breakdown summary of each category of customer enquiries.

Health – All health enquiries were prioritised for investigation. A typical response involved a network investigation, a site visit and onsite investigation, onsite monitoring / sampling of chlorine and verbal assurance to the customer, as per Unitywater procedures.

Dirty / Milky water – Planned and unplanned works, network activity / atypical flow trends and internal plumbing issues equated for the majority of the dirty / milky water customer complaints throughout the distribution network.

The typical response to general dirty / milky enquiries was a low velocity hydrant flush in proximity to the customer’s address, sampling of chlorine and verbal assurance to the customer by visiting crew members.

Taste / Odour – Planned and unplanned works, dosing facilities / disinfection changes, network configuration (e.g. end of line / water age) and internal plumbing issues equated for the majority of the taste / odour water customer complaints throughout the distribution network.

Depending on the nature and cause of the enquiry, a typical response to taste / odour ranged from low velocity flushing, to site investigations, sampling of chlorine and / or verbal assurance to the customer.

7. Findings and recommendations of the Drinking Water Quality Management Plan audit

Unitywater undertook a regular (external) audit of its DWQMP in February 2021. Version 9a and Version 11 of the DWQMP were both provided to the auditor. At the time of the audit, Version 11a had been submitted to the regulator for amendment approval. The audit found the DWQMP to be current, comprehensive and consistent with industry best practice, and awarded Unitywater with full compliance with the audit requirements. The audit identified two potential opportunities for improvement which have been scheduled for action in 2021. These were:

- Improvement of the process to manage vegetation around reservoirs.
- Implementation of a process to reconcile LIMS registrations to the verification monitoring program.

The next regulatory audit of the DWQMP is required to be completed by 5th April 2025.

8. Outcome of the review of the DWQMP and how issues raised have been addressed

Following the ISO 22000 surveillance audit in December 2020, and the completion of the DWQMP scheme-based operational risk assessments, Unitywater's updated DWQMP Version 11 was submitted in December 2020 and conditional approval received from the regulator in May 2021. At the request of the regulator, the IMP as detailed in the RMIP was reviewed and resubmitted to the regulator under section 99a of *the Act* in June 2021. The amendment included the updated IMP for managing water quality and cyber security incidents, and also the scheme-based operational risk assessments and updated RMIP.

In pursuit of continual improvement, Unitywater continue to maintain our water quality governance approach through the Safe Water Steering Group. The purpose of this Steering Group is to provide strategic oversight and direction in meeting Unitywater's commitment to ensuring delivery of safe drinking water to our customers, contained within Unitywater's Drinking Water Quality Policy. In support of this objective, the steering group also oversees implementation of the approved DWQMP and ISO 22000 framework.



Appendix A – 2020-21 Drinking Water Quality Performance Report

This report is uploaded to the Unitywater webpage for customer access. Please click the link below:

<https://www.unitywater.com/about-us/our-business/water-quality/water-quality-testing-and-reports>

Appendix B – Water quality enquiry cluster investigation summary

Event Number	Event Date	Trigger Description	Dirty / Milky	Taste / Odour	Health	Other	Investigation commentary	Corrective action undertaken
1189	29/07/2020	Any WQ Enquiry: 4 in 24 hours, single DMA	5	0	0	0	Associated with planned works – PTW63049 – 100mm water main connection. As part of charging the new main, flows were suddenly and significantly increased through the DMA causing the turbulent water. Note that positive pressure was always maintained.	Reactive flushing was undertaken to restore water quality
1190	5/09/2020	Any WQ Enquiry: 3 in 12 hours, single DMA	4	0	0	0	Associated with planned works – PTW65613 – repair leaking 100mm retic main. Whilst undertaking this work, the crews correctly identified the leak on the TWM which had to be repaired reactively (WO 6861803) resulting in a pocket of air entering the main.	Reactive flushing was undertaken to restore water quality
1191	5/09/2020	Any WQ Enquiry: 4 in 24 hours, single DMA	4	0	0	0	Associated with planned works – PTW65613 – repair leaking 100mm retic main. Whilst undertaking this work, the crews correctly identified the leak on the TWM which had to be repaired reactively (WO 6861803) resulting in a pocket of air entering the main.	Reactive flushing was undertaken to restore water quality
1192	15/09/2020	Health, Taste or Odour: 2 in 10 hours, single DMA	0	1	1	0	Due to an "administration error"; multiple SR's raised incorrectly against the one property for a single enquiry	Singular customer complaint was investigated / resolved as per typical process
1193	15/09/2020	Health, Taste or Odour: 2 in 10 hours, single DMA	0	2	1	0	Due to an "administration error"; multiple SR's raised incorrectly against the one property for a single enquiry	Singular customer complaint was investigated / resolved as per typical process

1194	16/09/2020	Any WQ Enquiry: 3 in 12 hours, single DMA	0	2	1	0	Due to an "administration error"; multiple SR's raised incorrectly against the one property for a single enquiry	Singular customer complaint was investigated / resolved as per typical process
1195	21/09/2020	Health, Taste or Odour: 2 in 10 hours, single DMA	0	2	0	0	No fault found; internal issue detected at one property only	Crews attended to both properties on 2 separate occasions to investigate the cause of the water quality enquiries and customer were engaged / consulted
1196	2/10/2020	Any WQ Enquiry: 4 in 24 hours, single DMA	14	0	0	0	Associated with unplanned works – 675mm Callaghan Rd TWM break. There was difficulty removing air from the main as part of the recharge works which in turn created turbulence and numerous calls for dirty / milky water in the downstream DBAY DMA.	Reactive flushing was undertaken to restore water quality
1197	2/10/2020	Any WQ Enquiry: 3 in 12 hours, single DMA	9	0	0	0	Associated with unplanned works – 675mm Callaghan Rd TWM break. There was difficulty removing air from the main as part of the recharge works which in turn created turbulence and numerous calls for dirty / milky water in the downstream DBAY DMA.	Reactive flushing was undertaken to restore water quality
1198	2/10/2020	Any WQ Enquiry: 6 in 24 hours, WQ Report	14	0	0	0	Associated with unplanned works – 675mm Callaghan Rd TWM break. There was difficulty removing air from the main as part of the recharge works which in turn created turbulence and numerous calls for dirty / milky water in the downstream DBAY DMA.	Reactive flushing was undertaken to restore water quality
1199	-	-	-	-	-	-	This event number was skipped; system error	-
1200	11/11/2020	Any WQ Enquiry: 4 in 24 hours, single DMA	9	0	0	0	Due to planned works - WO7020617 - fire flow testing resulting in localised scouring velocities causing turbulence / dirty water	Reactive flushing was undertaken to restore water quality

1201	11/11/2020	Any WQ Enquiry: 6 in 24 hours, WQ Report	11	0	0	0	Due to planned works - WO7020617 - fire flow testing resulting in localised scouring velocities causing turbulence / dirty water	Reactive flushing was undertaken to restore water quality
1202	11/11/2020	Any WQ Enquiry: 3 in 12 hours, single DMA	8	0	0	0	Due to planned works - WO7020617 - fire flow testing resulting in localised scouring velocities causing turbulence / dirty water	Reactive flushing was undertaken to restore water quality
1203	12/11/2020	Health, Taste or Odour: 2 in 10 hours, single DMA	0	2	0	0	Due to an "administration error"; multiple SR's raised incorrectly against the one property for a single complaint	Singular customer complaint was investigated / resolved as per typical process
1204	16/11/2020	Any WQ Enquiry: 6 in 24 hours, WQ Report	5	1	0	0	Due to unplanned works - WO7203731 - break on the 100mm internal fire service @ the Warner Tavern. The result of this was scouring velocities throughout the DMA (+30L/s) creating turbulence and numerous dirty water complaints.	Reactive flushing was undertaken to restore water quality
1205	16/11/2020	Any WQ Enquiry: 4 in 24 hours, single DMA	5	0	0	0	Due to unplanned works - WO7203731 - break on the 100mm internal fire service @ the Warner Tavern. The result of this was scouring velocities throughout the DMA (+30L/s) creating turbulence and numerous dirty water complaints.	Reactive flushing was undertaken to restore water quality
1206	22/01/2021	Any WQ Enquiry: 4 in 24 hours, single DMA	4	0	0	0	Due to network activity; council contractors working in the immediate upstream vicinity accessed the water network as part of stormwater upgrade works creating turbulence / dirty water	Reactive flushing was undertaken to restore water quality
1207	22/01/2021	Any WQ Enquiry: 3 in 12 hours, single DMA	4	0	0	0	Due to network activity; council contractors working in the immediate upstream vicinity accessed the water network as part of stormwater upgrade works creating turbulence / dirty water	Reactive flushing was undertaken to restore water quality

1208	22/01/2021	Any WQ Enquiry: 6 in 24 hours, WQ Report	5	1	0	0	Due to network activity; council contractors working in the immediate upstream vicinity accessed the water network as part of stormwater upgrade works creating turbulence / dirty water	Reactive flushing was undertaken to restore water quality
1209	1/02/2021	Health, Taste or Odour: 2 in 10 hours, single DMA	0	2	0	0	No fault found; these were two unrelated complaints that were dealt with on an individual basis. An internal issue was confirmed at 1 property	Individual customer complaints were investigated / resolved as per typical process
1210	24/02/2021	Health, Taste or Odour: 2 in 10 hours, single DMA	0	1	1	0	Due to administration error; 2 SR's raised against the same property, the first was incorrectly raised as an illness complaint	This complaint was responded to following the usual water quality enquiry process



End of report.