

Annual Drinking Water Quality Report 2019-20

Section A - Summary



Declaration

I declare that the information provided in this Annual Drinking Water Quality Report for Tasmanian Water and Sewerage Corporation Pty Ltd ABN 47 162 220 653 in its capacity as a water and sewerage corporation licensed under the *Water and Sewerage Industry Act 2008* is complete and accurate.



Michael Brewster
Chief Executive Officer
Date: 30/09/2020

Document approval and issue notice

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Introduction

We are pleased to provide our FY2019-20 Annual Drinking Water Quality Report (ADWQR) as required under section 129B of the *Public Health Act 1997* and specified under section 13 of the Tasmanian Drinking Water Quality Guidelines 2015 (TDWQG).

This ADWQR consolidates information on each drinking water supply system against performance targets set out in the Australian Drinking Water Guidelines 2011 (ADWG).

The FY2019-20 ADWQR is comprised of two sections:

- Section A – provides a state-wide overview of our drinking water supply systems and performance against the ADWG, as well as detailing our strategies to improve drinking water quality performance
- Section B – contains a detailed summary of each of our drinking water supply systems and a detailed assessment of performance against ADWG.

All supporting data used in this report is available on our website through our [Water Quality Portal](#).

Executive summary

Capital investments

During FY2019-20 a total of \$57.8 million in capital expenditure was delivered across a wide range of drinking water projects addressing compliance, growth and renewals of our water assets.

Furthermore, key improvements progressed during the financial year include:

- Completion of a new water treatment plant (WTP) at Grassy to supply the townships of Grassy and Currie on King Island
- Construction of a new pipeline to supply the Somerset and Wynyard areas from the Pet River system (Burnie) and enable the Cam River WTP to be decommissioned
- Installation of granular-activated carbon filters at the Coles Bay WTP to help with the removal of organic carbon and taste and odour compounds
- Increased treatment of drinking water at the Adventure Bay WTP
- Commencement of upgrade works at our largest WTP, Bryn Estyn.

Drinking water risk reduction

Over the past year a reduction in drinking water risks for our customers has been achieved through:

- The construction of a WTP on King Island and the interconnection of two systems, which led to the improved water quality and reliability outcomes
- Improved WTP performance through water system optimisation
- Improvements in compliance with industry practice in water supply networks through an ongoing focus on network residual disinfection capability
- Improvement in operational compliance and staff awareness relating to water safety with a focus on Critical Control Points and Operational Control Points
- An external audit of our Drinking Water Quality Risk Management Plan in November 2019, with no major non-conformances identified.

Customer impacts

The focus has been to address the key source of customer complaints related to drinking water.

One incident-based boil water alert (BWA) was issued during the year (Greater Hobart - Lauderdale) due to an elevated *E.coli* result and follow-up investigations determined the original result to be a false positive due to *E.vulneris*.

All breaches of ADWG or CCPs were formally investigated and reviewed for the purposes of determining root causes and to facilitate targeted improvements in processes and infrastructure with a view to minimising the risk of repeat incidents. In each case, the incident review included an assessment of the risk that such an incident could occur in other systems across the state. Where the level of risk warranted action, plans have been put in place to minimise such risks.

Compliance outcomes

The percentage of systems compliant with Tasmanian Drinking Water Quality Guidelines (TDWQG) microbiological guidelines was 100 per cent, which means that 100 per cent of customers received microbiologically compliant water.¹

Smithton had a single sample with a metal concentration above ADWG health limits. Subsequent testing returned results that were within the guidelines.

Coles Bay had one sample with one disinfection-by-product (DBP) above ADWG health limits. The introduction of an activated carbon process at the WTP has significantly improved subsequent results.

There were no detections of fluoride in laboratory samples above the ADWG limit of 1.5 mg/L. Six systems (Deloraine, Forth, Longford, North Esk, West Tamar and Leven River/Whitehills) failed to maintain an average dose of fluoride between 0.8-1.1 mg/L. This is an increase from two systems in the previous year and has resulted in a decrease of approximately 10 per cent in the percentage of the serviced population receiving compliant fluoride. Systems were impacted by infrastructure failures resulting in the respective dosing systems being off-line for extended periods of time. Several infrastructure upgrades are planned for FY2020-21 to address these failures.

Assessment of compliance against the drinking water sampling program (correct sample number and frequency) forms part of the compliance assessment prescribed in the ADWG, TDWQG and our Drinking Water Quality Risk Management Plan (DWQRMP). Sampling programs for all systems were complete.

Looking Forward

Looking ahead, we are planning to invest \$74.8 million on further improvements to drinking water quality during FY2020-21, through measures such as treatment plant upgrades, system optimisation initiatives and other risk reduction activities. The work is included in our Price and Service Plan and funded through revenue and increased borrowings. Projects include:

- Upgrade to the Bryn Estyn WTP
- Upgrade to the Forth WTP
- Upgrades to multiple fluoride dosing stations.

¹ This excludes customers outside TasWater serviced land who receive untreated water.

1. Approach to drinking water quality management

Drinking water is an important product, and as a trusted and respected provider of essential services to homes and businesses across Tasmania we are committed to supplying safe and good quality drinking water.

To ensure consistent management of drinking water from catchment to customer, the 12-element risk management framework detailed in our DWQRMP is adopted, which demonstrates compliance with the ADWG framework. The DWQRMP identifies risks to drinking water systems and the management practices adopted to mitigate these risks.

The ADWG provide definitions for two sets of guideline values:

- **Health-related guideline value** — The concentration or measure of a water quality characteristic that, based on present knowledge, does not result in any significant risk to the health of the consumer over a lifetime of consumption
- **Aesthetic-related guideline value** – The concentration or measure of a water quality characteristic that is associated with the acceptability of water to the consumer e.g. taste and odour.

Samples are collected and tested in each drinking water supply in accordance with the sampling requirements prescribed in the ADWG, the TDWQG and our DWQRMP. For further information on the compliance assessment framework utilised throughout this report, refer to Section 5.

2. Drinking water supply systems

Drinking water is sourced from 72 catchments located around Tasmania across a range of geographic and climatic zones.

As of the 30 June 2020, there were 61 drinking water supply systems (refer Table 1).

2.1 List of drinking water supply systems

Table 1: Potable drinking water supply systems with status as of 30th June 2020

System	Status	Catchment/ water source	Connections	Population	Treatment Process	Fluoridated supply
Adventure Bay	Potable	Bore	1	1	Disinfection only	No
Bicheno	Potable	Aspley River	1028	1082	Full treatment	Yes
Bothwell	Potable	Clyde River	324	580	Full treatment	No
Bracknell	Potable	Liffey River	186	417	Full treatment	No
Bridport	Potable	Brid River	1059	1229	Full treatment	Yes
Bronte Park	Potable	Bronte Canal	65	46	Full treatment	No
Bushy Park	Potable	Lake Fenton	124	247	Full treatment	Yes
Cam River	Potable	Cam River	4477	8915	Full treatment	Yes
Campbell Town	Potable	Elizabeth River	789	1352	Full treatment	Yes
Coles Bay	Potable	Saltwater Creek	277	152	Full treatment	No
Conara/Epping	Potable	South Esk	67	155	Full treatment	No
Cornwall	Potable	Fanshaft Spring/ unnamed watercourse	48	80	Full treatment	No
Deep Creek	Potable	Deep Creek	2347	4697	Full treatment	Yes
Deloraine	Potable	Meander River	1334	2731	Full treatment	Yes
Distillery Creek	Potable	Distillery Creek / St Patricks River	13617	27018	Full treatment	Yes
Dover	Potable	Esperance River	744	1225	Full treatment	Yes
Dowlings Creek	Potable	Dowlings Creek	102	214	Full treatment	No
Ellendale	Potable	Jones River	76	137	Full treatment	No
Fentonbury/Westerway	Potable	Lake Fenton	132	258	Full treatment	Yes
Fingal	Potable	South Esk River	399	711	Full treatment	No
Forth River	Potable	Forth River	18851	37666	Full treatment	Yes
Gawler River	Potable	Gawler River	6030	12271	Full treatment	Yes

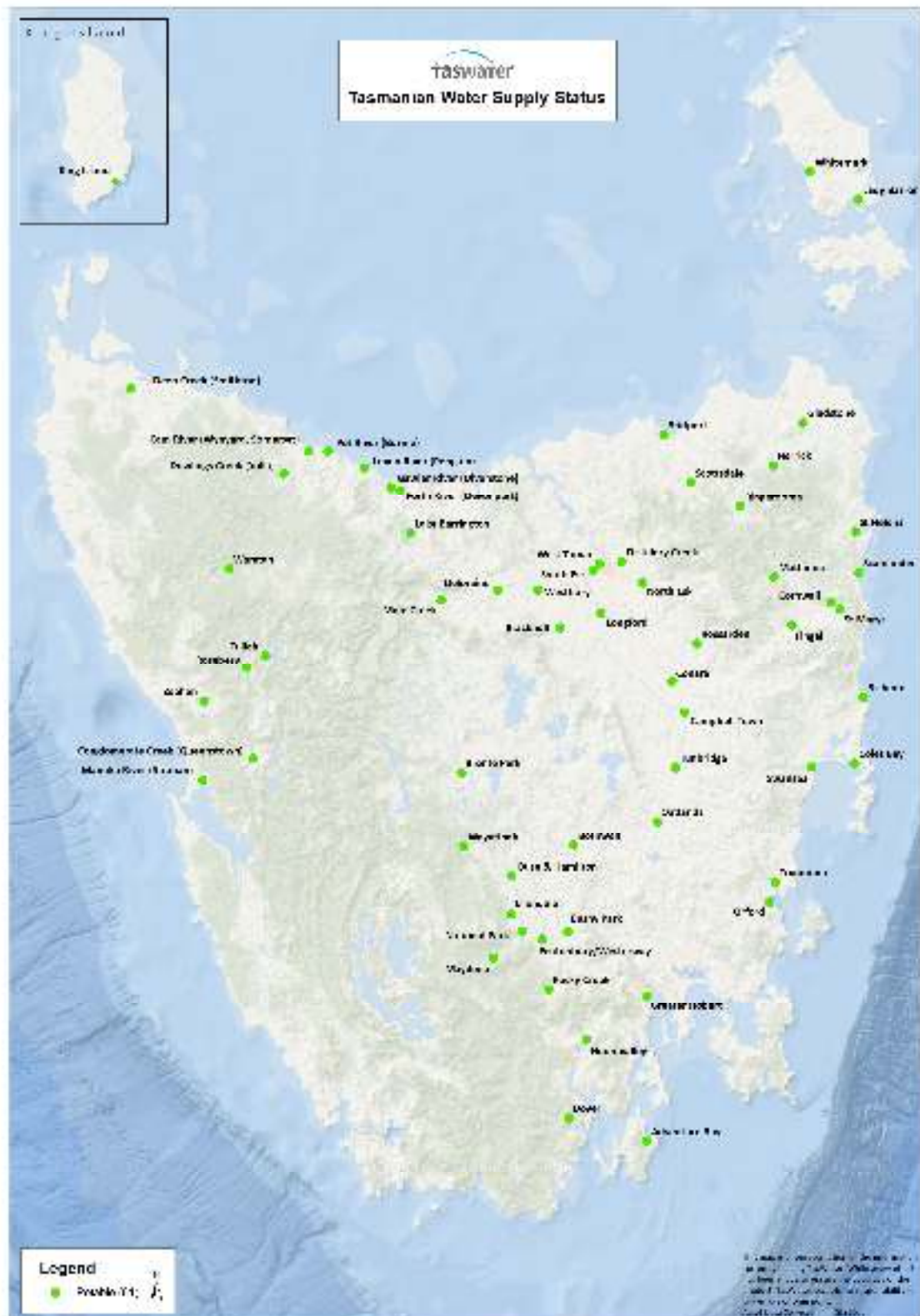
Gladstone	Potable	Ringarooma River	83	119	Full treatment	No
Greater Hobart	Potable	Multiple Sources	93956	201274	Full treatment (1)	Yes
					Disinfection only (3)	
Herrick	Potable	Cascade and Frome dams	27	60	Full treatment	No
Huon Valley	Potable	Huon River	4275	8605	Full treatment	Yes
King Island	Potable	Grassy River	599	1041	Full treatment	Yes
Lady Barron	Potable	Bore	111	156	Full treatment	No
Lake Barrington	Potable	Lake Barrington	1218	2466	Full treatment	Yes
Leven River	Potable	Leven River	2231	4580	Full treatment	Yes
Longford	Potable	Macquarie River	4537	9565	Full treatment	Yes
Manuka River	Potable	Manuka River	559	764	Full treatment	Yes
Mathinna	Potable	South Esk	81	132	Full treatment	No
Maydena	Potable	Unnamed tributary	140	217	Full treatment	No
Mole Creek	Potable	Weir	199	385	Full treatment	No
National Park	Potable	Lake Fenton	29	39	Full treatment	Yes
North Esk	Potable	North Esk	14738	31207	Full treatment	Yes
Oatlands	Potable	Blackman River	489	867	Full treatment	Yes
Orford	Potable	Prosser River	1177	851	Full treatment	Yes
Ouse and Hamilton	Potable	Derwent River	280	441	Full treatment	No
Pet River	Potable	Pet River	9007	17695	Full treatment	Yes
Queenstown	Potable	Conglomerate Creek	1384	2081	Full treatment	Yes
Ringarooma System	Potable	Dunn's Creek Dam/ Ringarooma River	616	1024	Full treatment	Yes
Rocky Creek	Potable	Rocky Creek	555	1269	Full treatment	Yes
Rosebery	Potable	Mountain Creek / Stitt River	673	799	Full treatment	Yes
Rossarden	Potable	Aberfoyle Creek	32	36	Full treatment	No
Scamander	Potable	Scamander River	505	655	Full treatment	Yes
Scottsdale	Potable	Great Forester River / Brid River	1314	2752	Full treatment	Yes

South Esk	Potable	Lake Trevallyn	5272	11402	Full treatment	Yes
St Helens	Potable	Georges River	1865	2361	Full treatment	Yes
St Marys	Potable	Bore	365	602	Full treatment	Yes
Swansea	Potable	Swan River / Meredith River	891	1266	Full treatment	Yes
Triabunna	Potable	Maclaines Creek / Brady's Creek	543	942	Full treatment	Yes
Tullah	Potable	Lake Rosebery	196	207	Full treatment	No
Tunbridge	Potable	Blackman River	116	198	Full treatment	No
Waratah	Potable	Waratah River	133	183	Full treatment	Yes
Wayatinah	Potable	Lake Liapootah	63	39	Full treatment	No
West Tamar	Potable	Lake Trevallyn	9591	20472	Full treatment	Yes
Westbury	Potable	Meander River	1162	2319	Full treatment	Yes
Whitemark	Potable	Pats River	177	260	Full treatment	No
Zeehan	Potable	Parting Creek	690	998	Full treatment	Yes
Total	61		211,956	431,513		

2.2 Location of drinking water supply systems

The location and system status (as of 30 June 2020) of all drinking water systems is shown in Figure 1.

Figure 1: Locations and status of drinking water systems.



2.3 Source water catchments

The drinking water catchments for each drinking water system are identified in Table 1. Each catchment has a comprehensive water quality monitoring program including specific monitoring for microbes, metals, pesticides and herbicides.

3. Quality of drinking water for FY2019-20

Routine compliance monitoring of water supply systems was conducted throughout FY2019-20. Water sampling was undertaken based on analysis of the ADWG requirements and was also informed by internal risk assessments to ensure sampling represented the water quality received by customers.

The frequency of monitoring is established in the compliance program, which has been designed in accordance with the recommendations in the ADWG and TDWQG. A risk-based approach was used to specify the chemical parameters included in the monitoring program.

The compliance program includes health parameters including microbiological, metals, and disinfection by-products (DBPs). Furthermore, the program includes aesthetic parameters such as chlorine residual, turbidity, pH and colour (see Appendix A).

All laboratory samples were analysed by National Association of Testing Authorities (NATA) accredited laboratories.

3.1 System performance

Table 2: High level health performance outcome for drinking water supply systems (against ADWG health-regulated parameters) (☑ = compliant, ☒ = non-compliant)

System	Status	Status changes	Compliance program completeness	Microbiological performance	Fluoride performance	Metals performance	DBP performance
Adventure Bay	Potable		☑	☑	n/a	☑	☑
Bicheno	Potable		☑	☑	☑	☑	☑
Bothwell	Potable		☑	☑	n/a	☑	☑
Bracknell	Potable		☑	☑	n/a	☑	☑
Bridport	Potable		☑	☑	☑	☑	☑
Bronte Park	Potable		☑	☑	n/a	☑	☑
Bushy Park	Potable		☑	☑	n/a	☑	☑
Cam River	Potable		☑	☑	☑	☑	☑
Campbell Town	Potable		☑	☑	☑	☑	☑
Coles Bay	Potable		☑	☑	n/a	☑	☒ ¹
Conara	Potable		☑	☑	n/a	☑	☑
Cornwall	Potable		☑	☑	n/a	☑	☑
Deep Creek	Potable		☑	☑	☑	☒ ²	☑
Deloraine	Potable		☑	☑	☒ ³	☑	☑
Distillery Creek	Potable		☑	☑	☑	☑	☑
Dover	Potable		☑	☑	☑	☑	☑
Dowlings Creek	Potable		☑	☑	n/a	☑	☑
Ellendale	Potable		☑	☑	n/a	☑	☑
Fentonbury/Westerway	Potable		☑	☑	n/a	☑	☑
Fingal	Potable		☑	☑	n/a	☑	☑
Forth River	Potable		☑	☑	☒ ³	☑	☑
Gawler River	Potable		☑	☑	☑	☑	☑
Gladstone	Potable		☑	☑	n/a	☑	☑

Greater Hobart	Potable	TBWA lifted	✓	✓	✓	✓	✓
Herrick	Potable		✓	✓	n/a	✓	✓
Huon Valley	Potable		✓	✓	✓	✓	✓
King Island	Potable		✓	✓	✓	✓	✓
Lady Barron	Potable		✓	✓	n/a	✓	✓
Lake Barrington	Potable		✓	✓	✓	✓	✓
Leven River	Potable		✓	✓	✗ ³	✓	✓
Longford	Potable		✓	✓	✗ ³	✓	✓
Manuka River	Potable		✓	✓	✓	✓	✓
Mathinna	Potable		✓	✓	n/a	✓	✓
Maydena	Potable		✓	✓	n/a	✓	✓
Mole Creek	Potable		✓	✓	n/a	✓	✓
National Park	Potable		✓	✓	n/a	✓	✓
North Esk	Potable		✓	✓	✗ ³	✓	✓
Oatlands	Potable		✓	✓	✓	✓	✓
Orford	Potable		✓	✓	✓	✓	✓
Ouse and Hamilton	Potable		✓	✓	n/a	✓	✓
Pet River	Potable		✓	✓	✓	✓	✓
Queenstown	Potable		✓	✓	✓	✓	✓
Ringarooma	Potable		✓	✓	✓	✓	✓
Rocky Creek	Potable		✓	✓	✓	✓	✓
Rosebery	Potable		✓	✓	✓	✓	✓
Rossarden	Potable		✓	✓	n/a	✓	✓
Scamander	Potable		✓	✓	✓	✓	✓
Scottsdale	Potable		✓	✓	✓	✓	✓
South Esk	Potable		✓	✓	✓	✓	✓
St Helens	Potable		✓	✓	✓	✓	✓
St Marys	Potable		✓	✓	✓	✓	✓
Swansea	Potable		✓	✓	✓	✓	✓
Triabunna	Potable		✓	✓	✓	✓	✓
Tullah	Potable		✓	✓	n/a	✓	✓
Tunbridge	Potable		✓	✓	n/a	✓	✓
Waratah	Potable		✓	✓	✓	✓	✓
Wayatinah	Potable		✓	✓	n/a	✓	✓
West Tamar	Potable		✓	✓	✗ ³	✓	✓
Westbury	Potable		✓	✓	✓	✓	✓
Whitemark	Potable		✓	✓	n/a	✓	✓
Zeehan	Potable		✓	✓	✓	✓	✓

1. DBP compliance assessment was deemed non-compliant against ADWG: refer to Table 6.4.
2. Metals compliance assessment was deemed non-compliant against ADWG: refer to Table 6.3.
3. Fluoride dosing station was non-compliant against the Fluoride Code of Practice: refer to Table 3.

3.2 Microbiological performance

Each drinking water system is sampled in accordance with the sampling frequency specified in the compliance sampling program.

A drinking water system is to be assessed for microbiological contamination in relation to *E.coli* and a system is deemed to have passed if greater than 98 per cent of samples over 12 months are free of *E.coli* (Section 13, TDWG).

The FY2019-20 microbiological performance is assessed against two indicators with the following results:

- 100.0 per cent (61 of 61) of systems met microbiological compliance (greater than 98 per cent of samples in systems were free of *E.coli*)
- 100 per cent of the serviced population achieved microbiological compliance.

A detailed summary of *E.coli* detections in potable systems is at Appendix B.

Note: *E.vulneris* Investigation

Identification the phylotype/phenotype of each *E.coli* detection to provide an indication of the source of the *E.coli* has improved the risk mitigation process. This work has led to the reclassification of three *E.coli* detections as *E.vulneris*.

E.vulneris is an environmental organism but not an indicator of faecal contamination. Hence the detections at Claremont, Lauderdale and Midway Point have not been counted as non-compliant microbiological results. Work is continuing to determine ways to identify the source and prevent further false positive results due to *E.vulneris*.

It has been agreed with the Department of Health (DoH) for compliance purposes that an *E.vulneris* detection will be recorded as <1 *E.coli*.

3.3 Metals performance

Monitoring for the presence of metals is a requirement under the TDWQG and is undertaken in line with the risk-based approach promoted by the ADWG. Sampling programs are designed specifically for each drinking water system based on the site-specific risks.

During FY2019-20 there was one system affected by a single ADWG metals exceedance (Smithton). The details of each ADWG metal exceedance are described in Appendix C.

3.4 Disinfection-by-product performance

In previous years, Coles Bay has experienced several instances where DBP concentrations were above the ADWG limits. Installation of granular activated carbon (GAC) at Coles Bay WTP has assisted with removing the DBP precursors, which resulted in only one detection of DBPs above the ADWG health limit. This exceedance occurred prior to the installation of the GAC. Details of each DBP exceedance are described in Appendix D.

3.5 Fluoride performance

At the end of FY2019-20 there were 39 fluoride dosing systems across Tasmania. The average fluoride concentration should be maintained between 0.8 milligrams per litre and 1.1 milligrams per litre. Six fluoride dosing stations underperformed against this regulatory metric. (Refer to Table 3).

Table 3: Non-compliances against fluoride metrics in FY2018-19

Fluoridated water supply	Average of all [F] samples within the 0.8-1.1 mg/L range
Deloraine	Non-compliant (0.7 mg/L)
Forth	Non-compliant (0.7 mg/L)
Longford	Non-compliant (0.7 mg/L)
North Esk	Non-compliant (0.7 mg/L)
West Tamar	Non-compliant (0.7 mg/L)
Leven River (Whitehills)	Non-compliant (0.5 mg/L)

An assessment of the three performance metrics for fluoride performance is shown in Table 4.

Table 4: Regulatory outcome for fluoridation systems in FY2018-19

Metric	Compliant	Non-compliant
Average of all [F] samples within the 0.8 -1.1 mg/L range	33	6
90% of all [F] samples are equal or less than 1.1 mg/L	39	0
No sample should exceed 1.5 mg/L (ADWG limit)	39	0

3.6 Incident-based BWAs

In the FY2019-20 reporting period one incident based BWA was issued to mitigate risks to customers while investigation and remediation actions took place (refer to Table 5). Drinking water quality non-compliance is recorded in the event of a material breach of the TDWQG.

Table 5: List of temporary BWAs issued in the FY2018-19 reporting period

Town	System	Dates	Nature of event
Lauderdale	Greater Hobart - Clarence supply	05/11/2019 – 07/11/2019	<p>A BWA was issued on 5 November for Lauderdale and surrounding areas due to an elevated <i>E.coli</i> result.</p> <p>The system was flushed, and subsequent samples were clear.</p> <p>The BWA was lifted on 7 November 2019.</p> <p>The original detection was reclassified as <i>E.vulneris</i>. Refer to section 3.2 for further details.</p>

3.7 Compliance assessment

As previously noted, samples must be collected and tested in accordance with sampling requirements specified in each drinking water system compliance sample program (refer to section 5.2). The compliance sample program specifies the frequency of sampling as well as the required number of tests. All sample programs were complete for all systems.

3.8 Maintaining water quality to customer tap

Chlorine is widely used in the treatment of drinking water throughout the world to control microbiological contaminants such as bacteria and viruses. Chlorine has an important role to play in maintaining the microbiological quality of water from the WTP to the customer tap. It also provides a final barrier against microbiological recontamination. Residual levels >0.2 mg/L are considered the minimum required to provide an effective defence against minor and uncommon recontamination events (e.g. vermin ingress). Maintaining a healthy residual has also been proven to reduce aesthetic complaints from excessive biological growth.

The operational target for chlorine residual levels is a range between 0.3mg/L to 0.6 mg/L with a minimum of >0.2 mg/L. A review of historic chlorine performance indicated underperformance against the operational target of >0.2 mg/L.

A number of activities were initiated to improve performance and included education, review of sampling points, network cleaning programs in high risk systems, increased monitoring, review of water age and storage levels in tanks and a focus on residuals through setting dose rates.

In the FY2019-20 reporting period, the average chlorine residual across sampling locations was below the ADWG health guideline level (5 mg/L) and the chlorine residual averages were maintained within the operational range for most systems while all systems were above the critical lower limit of 0.2 mg/L.

The focus in FY2020-21 will be the implementation of a network maintenance strategy as part of a holistic risk management approach to water distribution networks including network audits, remote operated vehicle inspections, chlorine dosing targets and hygienic work practises.

3.9 Aesthetic quality

The aesthetic quality of drinking water is not a health concern. Common aesthetic considerations include discolouration and cloudiness, taste and odour. However, this does have the potential to significantly affect community acceptance of drinking water. Complaints are further described in relevant individual system performance reports (Section B).

Discolouration and cloudiness are commonly caused by small particles of sediment suspended in water. The accumulation of sediment within the mains is often attributed to corrosion of distribution assets (particularly where there is ageing infrastructure) and is often attributed to the accumulation of sediment within the mains.

During disturbances (such as flushing of the mains or change in flow rate or flow direction in the pipes) sediment may become mobilised. These issues are not considered harmful to health, but TasWater appreciates that a supply which is discoloured in this manner can be aesthetically unacceptable.

Taste and odour can vary significantly, impacting consumers differently depending on individual sensitivities. Customers are encouraged to contact TasWater, so assistance can be provided with identifying the cause.

Earthy/musty issues impacting entire towns are typically caused by algae or bacteria metabolites in the source water. At certain periods in their seasonal lifecycle typically in warmer months they can release small amounts of the chemicals 2-Methylisoborneol (MIB) and Geosmin. These compounds may be noticeable by consumers at levels as low as five parts per billion. These chemicals are not harmful to human health but can taste unpleasant.

3.10 Customer complaints

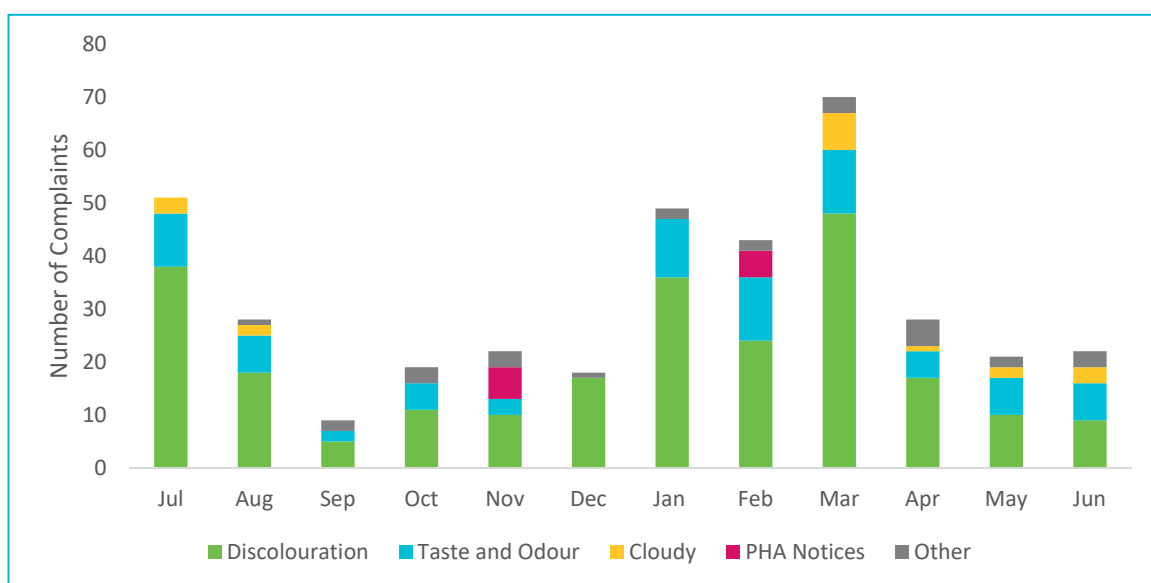
Throughout the FY2019-20 reporting period there were a total of 380 customer complaints relating to drinking water quality, a reduction of 73 per cent from 1,419 complaints in FY2018-19. A more proactive approach to dealing with customer concerns and enquiries at the first point of contact

resulted in a significant reduction of in the total number of water quality complaints. This figure relates to all complaints which were received via the call centre or in written form, including Ombudsman enquiries.

In this period 243 complaints were received regarding discolouration, 81 regarding taste/odour issues, 18 related to cloudy water, 11 related to public health alerts (BWA/ DNC), and 27 that were unable to be classified into the previous categories.

All complaints are investigated and under the provisions of the TasWater customer charter we are required to get back to the customer within 10 working days of receiving a complaint.

Figure 2: Types of customer complaints grouped by month for the FY2019-20 reporting period



The focus in FY2020-21 will be to improve the complaints recording process, enabling improved reporting and response to deliver a targeted reduction in water quality complaints.

Further details on complaints received are listed in the relevant individual system performance reports (Section B).

4. Current and future planning and works

4.1 Water supply improvement program

The King Island Infrastructure Improvement Project was completed in FY2019-20 to ensure the water supply meets ADWG. The project included construction of a new WTP at Grassy and construction of a treated water pipeline to deliver treated water to the towns of Grassy and Currie.

Over the next few years, strategic projects at Bryn Estyn, Forth and Leven WTPs will continue providing safe drinking water into the future. The WTPs are high priority due to the age of the assets and the size of the populations serviced by these plants. The upgrades are designed to increase capacity to deliver required demand and meet all water quality targets, as well as reduce the potential for taste and odour issues. Investment in ultra-violet disinfection units and in upgrades to fluoride dosing systems will improve the robustness of our WTPs.

4.2 Water system optimisation program

During FY2019-20, improvements in the performance and risk management capability of water treatment and distribution assets continued through the delivery of our Water System Optimisation Program.

Key highlights include:

- Improvement in operational compliance and staff awareness relating to water safety through our ongoing focus on CCP and OCP
- Improvement in compliance with industry practice in our water supply networks through an ongoing focus on network residual disinfection
- The realisation of operational improvements arising from ongoing technical and network assessments and
- Improved visibility of operational performance data to the organisation.

4.3 Water quality portal

To improve reporting transparency, drinking water data is available through an interactive map web-based platform (web application). The web application is updated with compliance results on a monthly basis. The public interface is designed to simplify the way water quality information is shared.

5. Reporting methodology

This section is intended to assist the reader with interpreting drinking water quality results and system performance statistics detailed throughout this document.

5.1 Understanding this report

This report meets the requirements specified under Tasmania's regulatory framework to ensure safe drinking water. The following legislation and other instruments apply to this ADWQR:

- *Fluoridation Act 1968*
- *Public Health Act 1997*
- *Fluoridation Regulations 2019*
- *Australian Drinking Water Quality Guidelines*
- *Tasmanian Drinking Water Quality Guidelines 2015*
- *Tasmanian Code of Practice for the Fluoridation of Public Water Supplies 2018.*

Furthermore, the DWQRMP details risk-based requirements for drinking water supply systems.

For the purpose of this report, all data is assessed in relation to the health and aesthetic guidelines specified in the ADWG. The ADWG provide an authoritative reference to the water industry on what defines safe and good quality water, how it can be achieved and how it can be assured.

Each drinking water system identified in this document is addressed in detail to meet the requirements specified under the relevant legislation. This ensures the management of each drinking water system meets regulatory obligations within the legislation and protects the public's health.

This report focuses on specific requirements outlined within the above legislation:

- Microbiological compliance
- Non-microbiological compliance
- Public Health Alerts (Boil Water Alerts and Do Not Consume notices) and
- Fluoridation.

5.2 Compliance sampling program

Compliance monitoring is conducted in the distribution network and is a verification of the water quality customers receive. Samples are collected and tested for all drinking water systems in accordance with sampling requirements prescribed in the ADWG, TDWQG and the DWQRMP.

Drinking water quality monitoring confirms the final quality of water that is supplied to consumers. Therefore, sampling is required to be undertaken throughout the distribution network. This is performed at compliance sample points reflective of the quality of water supplied to customers' properties (e.g. at or close to water meters). The locations and numbers of compliance sampling points within a distribution system are determined by the complexity of the drinking water system. The compliance program considers populations and uses the ADWG methodology.

It should be noted in addition to the compliance sampling program, which samples the water the customer receives, additional operational and event-based monitoring is undertaken, which is outside the scope of this report. However, where an exceedance against ADWG has occurred in operational or event-based monitoring, it is disclosed in Section B.

5.3 Assessing microbiological compliance

The TDWQG require drinking water supplies to be sampled and tested at an accredited laboratory for *Escherichia coli* (*E. coli*) in accordance with the specified frequency outlined in the compliance sample program.

The compliance sampling program for microbiological compliance relates to the population serviced and dictates the number of samples required to verify the safety of the water to the consumer. Supplies servicing under 1,000 people require one sample per week, whereas populations greater than 1,000 people require more than one sample as specified in the ADWG.

Microbiological compliance is assessed for microbiological contamination in relation to *E.coli* and a system is deemed to have passed if greater than 98 percent of samples over 12 months are free of *E.coli*.

Where an exceedance has occurred at either a compliance or operational monitoring location, it is included in Appendix B of this report.

5.4 Assessing non-microbiological compliance

The TDWQG require our drinking water supplies to be sampled and tested in accordance with the compliance monitoring program set out in our DWQRMP.

In the reporting period monitoring programs are implemented for non-microbiological (physical and chemical) ADWG health-regulated parameters. Sampling programs for non-microbiological parameters including metals and DBPs may differ between systems and is dependent on risk. For historic trends, performance figures, where available, are entered from previous annual reports. It is to be noted that previous programs may differ from those defined in this year's report. To achieve compliance, 100 per cent of the samples tested must comply with the ADWG health targets.

Where an exceedance has occurred at a compliance monitoring location, it will be included in the appendix of Section A. Furthermore, where ADWG non-microbiological exceedances occurred at an operational monitoring point they are listed in Section B in the relevant drinking water supply system.

5.5 Assessing fluoride compliance

The ADWG health-based guideline value for fluoride has been set at 1.5 mg/L for fluoridated water supplies.

The *Tasmanian Code of Practice for the Fluoridation of Public Water Supplies 2018* (CoP) set minimum requirements for fluoridation operation and service delivery. These minimum requirements are consistent with the requirements of the *Fluoridation Act 1968* and *Fluoridation Regulations 2019*.

As the regulated entity the operating target is 1.00 mg/L fluoride in treated water. The fluoride target is specified as a concentration rather than a dose rate and assessed against the following metrics:

- Meet a compliance exposure target over a reporting year, that the average concentration of all fluoride samples taken within the reticulation network fall within the fluoride concentration operating range of 0.8 mg/L – 1.1 mg/L
- Meet a compliance performance target over a reporting year, that at least 90 per cent of all fluoride samples taken within a reticulation network are equal to or less than 1.1 mg/L
- Never allow the fluoride concentration to exceed 1.5 mg/L in any of the samples taken from within the reticulation network. A system that records a fluoride concentration greater than 1.5 mg/L will be assessed as non-compliant for that reporting period.

The samples taken from the fluoridated water reticulation supply are analysed and tested by a NATA-accredited laboratory at least twice in each calendar month.

5.6 System issues

A record of incidents and issues reported throughout the year and how they were addressed is maintained in the Incident Reporting Information System (IRIS). System incidents relate to laboratory test exceedances above the health limits specified in the ADWG (see Appendix A).

6. Appendices

6.1 Appendix A - Summary of ADWG health, physico-chemical and aesthetic limits

Parameter	Operational target	ADWG health	ADWG aesthetic	Comment
Microbiological				
Escherichia coli (<i>E. coli</i>) (MPN/100mL)	<1	<1	–	TDWQG guideline for microbial quality <1 MPN/100mL
Metals ADWG health regulated				
Antimony total (mg/L)	–	0.003	–	ADWG Health
Arsenic inorganic (mg/L)	–	0.01	–	ADWG Health
Barium total (mg/L)	–	2	–	ADWG Health
Boron (mg/L)	–	4	–	ADWG Health
Cadmium total (mg/L)	–	0.002	–	ADWG Health
Chromium (mg/L)	–	0.05	–	ADWG Health
Copper total (mg/L)	–	2	1	ADWG Health
Lead total (mg/L)	–	0.01	–	ADWG Health
Manganese total (mg/L)	–	0.5	0.1	ADWG Health
Mercury total (mg/L)	–	0.001	–	ADWG Health
Molybdenum total (mg/L)	–	0.05	–	ADWG Health
Nickel total (mg/L)	–	0.02	–	ADWG Health
Selenium total (mg/L)	–	0.01	–	ADWG Health
Disinfection by-products				
Chloroacetic acid (mg/L)	–	0.15	–	ADWG Health
Dichloroacetic acid (mg/L)	–	0.1	–	ADWG Health
Trichloroacetic acid (mg/L)	–	0.1	–	ADWG Health
Total trihalomethanes (mg/L)	–	0.25	–	ADWG Health
Fluoride				
Fluoride (mg/L)	1.0	1.5	–	DoH regulations & ADWG Health
General physico-chemical parameters				
Chlorine residual (mg/L)	> 0.2 to <0.8	5	0.6	ADWG Aesthetic
pH (pH Units)	6.5 to 8.5	N/A	NA	–
Turbidity (NTU)	<1	N/A	< 5	–

6.2 Appendix B - Summary of *E. coli* detections in drinking water systems

System	Treatment process	Detection date	Nature of event	Outcomes
Claremont	Full treatment	08/10/2019	Routine sample (8/10/2019) taken from GOSTE112 (Supply-operational) detected 1 MPN/100mL <i>E. coli</i> . Department of Health (DoH) was immediately notified. The system was flushed, and subsequent samples were clear of <i>E. coli</i> .	System flushed with clean water Subsequent samples clear of <i>E. coli</i> The original detection was reclassified as <i>E. vulneris</i> #
Smithton	Full treatment	28/10/2019	Routine sample (28/10/2019) taken from 024SMSP0501 (Supply) detected 6.2 MPN/100mL <i>E. coli</i> . Department of Health (DoH) was immediately notified. The system was flushed, and subsequent samples were clear of <i>E. coli</i> .	Reported to DoH Subsequent sample clear of <i>E. coli</i>
Clarence - Lauderdale	Full treatment	04/11/2019	A water sample taken at Lauderdale Reservoir on 4/11/2019 was positive for <i>E. coli</i> which resulted in the issue of a BWA for the surrounding areas. Subsequent samples were clear and the BWA was lifted on 7 November 2019.	BWA issued due to elevated result System flushed with clean water Subsequent samples clear of <i>E. coli</i> The original detection was reclassified as <i>E. vulneris</i> #
Yolla	Full treatment	02/12/2019	Routine sample (2/12/2019) taken from 103YLSPO001 (Supply) detected 2.0 MPN/100mL <i>E. coli</i> . Department of Health (DoH) was notified. The system was flushed, and subsequent samples were clear of <i>E. coli</i> .	Reported to DoH Subsequent sample clear of <i>E. coli</i>
Clarence - Midway Point	Full treatment	17/03/2020	A water sample taken on 17 March 2020 at Midway Point was positive for <i>E. coli</i> . Subsequent samples were clear, and no further action was required.	Reported to DoH Subsequent sample clear of <i>E. coli</i> The original detection was reclassified as <i>E. vulneris</i> #
Hobart - Waterworks	Full treatment	21/04/2020	Routine sample (21/04/2020) taken from WRSTE09 (Supply) detected 1.0 MPN/100mL <i>E. coli</i> . Department of Health (DoH) was notified. Extensive sampling undertaken, with all subsequent samples clear of <i>E. coli</i> .	Reported to DoH Subsequent sample clear of <i>E. coli</i>
Forth	Full treatment	29/04/2020	Routine sample (29/04/2020) taken from 073LTSP0301 (Supply) detected 1.0 MPN/100mL <i>E. coli</i> . Department of Health (DoH) was notified. The reservoir was drained, and extensive sampling undertaken. All subsequent samples were clear of <i>E. coli</i> .	Reported to DoH Subsequent sample clear of <i>E. coli</i>

As agreed with the Department of Health *E. coli* detections subsequently identified as *E. vulneris* will not be included in the overall system statistics. For compliance calculations, an *E. vulneris* detection will be recorded as <1 *E. coli*.

6.3 Appendix C - Summary of metals exceedances in compliance sample programs

System	Treatment process	Detection date	Detection details	Outcomes
Deep Creek	Full Treatment	17/01/2020	Routine quarterly sample (17/01/2020) taken from 024SMSP0401 (Supply) detected 3.7 ug/L mercury. Department of Health (DoH) was notified. System was flushed, and subsequent samples were clear.	Reported to DoH System flushed Subsequent sample clear of mercury

6.4 Appendix D - Summary of disinfection-by-product exceedances in compliance sample programs

System	Treatment process	Detection date	Detection details	Outcomes
Coles Bay	Full Treatment	07/01/2020	Total Trihalomethane exceedance in compliance sample at GCSTE86 Coles Bay/Park Esplanade of 255 ug/L	Reported to DoH

6.5 Appendix E – Occurrences of non-reportable exceedances (rounding)

Parameter	ADWG Limit (µg/L)	Rounded Limit (µg/L)	Non-reportable exceedance
Trichloroacetic Acid	100	150	ADWG exceedance in compliance sample at EDSTE62 Ellendale on 12/09/2019 of 101 µg/L
			ADWG exceedance in compliance sample at EDSTE62 Ellendale on 08/04/2020 of 104 µg/L
			ADWG exceedance in compliance sample at EDSTE62 Ellendale on 30/04/2020 of 105 µg/L
			ADWG exceedance in compliance sample at EDSTE62 Ellendale on 07/05/2020 of 103 µg/L
			ADWG exceedance in compliance sample at EDSTE62 Ellendale on 29/06/2020 of 117 µg/L
			ADWG exceedance in compliance sample at FBSTE03 Fentonbury on 25/07/2019 of 132 µg/L
			ADWG exceedance in compliance sample at HRW51W07 Herrick on 30/08/2019 of 113 µg/L
			ADWG exceedance in compliance sample at HRW51W07 Herrick on 14/11/2019 of 103 µg/L
			ADWG exceedance in compliance sample at HRW51W06 Herrick Reservoir on 03/09/2019 of 101 µg/L
			ADWG exceedance in compliance sample at HRW51W06 Herrick Reservoir on 08/10/2019 of 101 µg/L
			ADWG exceedance in compliance sample at HRW51W06 Herrick Reservoir on 12/11/2019 of 105 µg/L
			ADWG exceedance in compliance sample at HRW51W06 Herrick Reservoir on 21/04/2020 of 112 µg/L
Total Trihalomethane	250	255	ADWG exceedance in compliance sample at GCSTE86 Coles Bay on 21/01/2020 of 254 µg/L

7. List of acronyms/terms of reference

Acronym/term	Definition
ADWG	Australian Drinking Water Guidelines
BWA	Boil Water Alert (used for microbiological non-compliances) water must be boiled before consumption
CCP	Critical control points
CoP	Tasmanian Code of Practise for the Fluoridation of Public Water Supplies 2018
DNC	Do Not Consume
DBPs	Disinfection by-products
DoH	Department of Health
DWQRMP	Drinking Water Quality Risk Management Plan
<i>E.coli</i>	Escherichia coli
FY	Financial year
GAC	Granular activated carbon
IRIS	Incident Reporting Information System
mg/L	Milligrams per litre
MIB	2-Methylisoborneol
MPN/100mL	Most probable number per 100 millilitres
NATA	National Association of Testing Authorities
NTU	Nephelometric turbidity unit (measure of turbidity)
PHA	Public Health Alert (the water cannot be safely consumed) when non-microbiological samples are non-compliant (i.e. any parameter that has a corresponding ADWG health-related guideline value exceeded)
Physico-chemical	Physical and chemical properties
Potable	Water classified fit for consumption by DoH
TBWA	A temporary Boil Water Alert can be issued by TasWater at the direction of the Director of Public Health in order to protect the public
TDWQG	Tasmanian Drinking Water Quality Guidelines (the Guidelines issued by the Director of Public Health under the <i>Public Health Act 1997</i>)
µg/L	Micrograms per litre
UV	Ultra violet
Water Supply	A water supply controlled by the regulated entity that is used for supplying water to the public and intended for human consumption
WTP	Water treatment plant

Annual Drinking Water Quality Report 2019-20

Section B - Summary



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Acronyms and Terms of Reference

ADWG	Australian Drinking Water Guidelines
Mean	Average measurement
DoH	Department of Health
DBPs	Disinfection By-products
DAFF	Dissolved Air Flotation to remove suspended matter
<i>E.coli</i>	Escherichia coli
Nanofiltration	Filtration of nanoparticles
FSA	fluorosilicic acid
gas Cl	Gaseous chlorine
GAC	Granular Activated Carbon filter
HU	Hazen unit (measure of colour (true))
kL	kilolitre
Max	Maximum measurement
ML	Megalitres
µg/L	Micrograms per litre
mg/L	Milligrams per litre
Min	Minimum measurement
M	Monthly
MPN/100mL	Most probably number per 100 millilitres
NTU	Nephelometric turbidity unit (measure of turbidity)
n/a	not applicable
PAC	Powdered activated carbon
PHA	Public Health Alert
Q	Quarterly
Clarification	Removal of all kinds of particles, sediments, oil, natural organic matter, and colour
Sat.	Saturated
NaF	Sodium fluoride
Flocculation	The removal of fine particulates
TBA	To be advised
TBC	To be confirmed
2M	Twice a month
UF Membrane	Ultrafiltration membrane
UV	Ultraviolet light
Potable	Water classified fit for consumption by DoH
W	Weekly
WTP	Water treatment plant

1. Adventure Bay drinking water system

1.1. System summary (2019–20)

Adventure Bay drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	1
Population serviced	1
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	52	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	1	Taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Regional Towns Water Supply Program	Upgrade	Not Started	TBD	TBD
WTP Upgrade	Chlorination Upgrade	In Progress	2020/2021	\$40,000

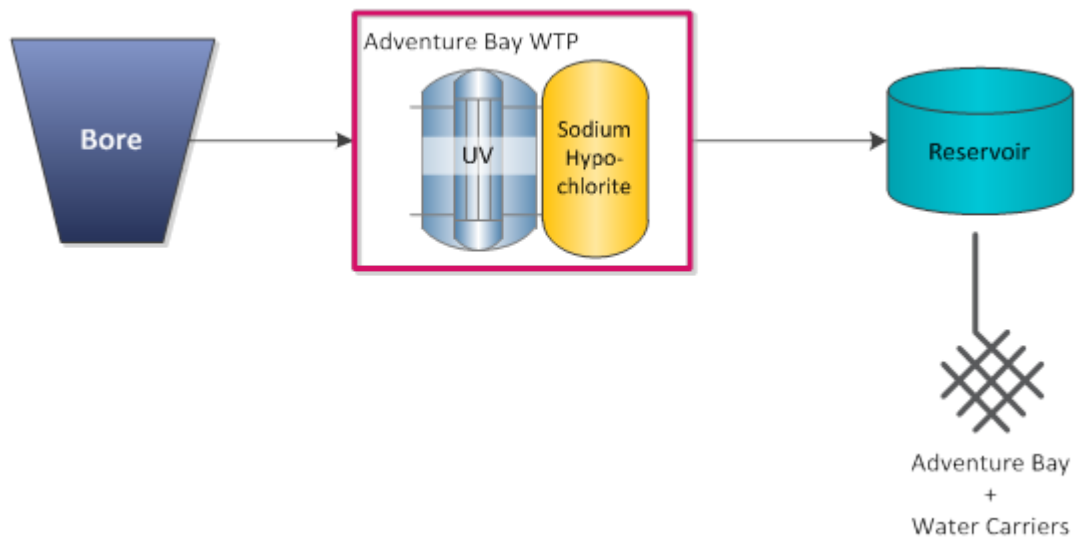


Figure 1.1-a Adventure Bay system schematic

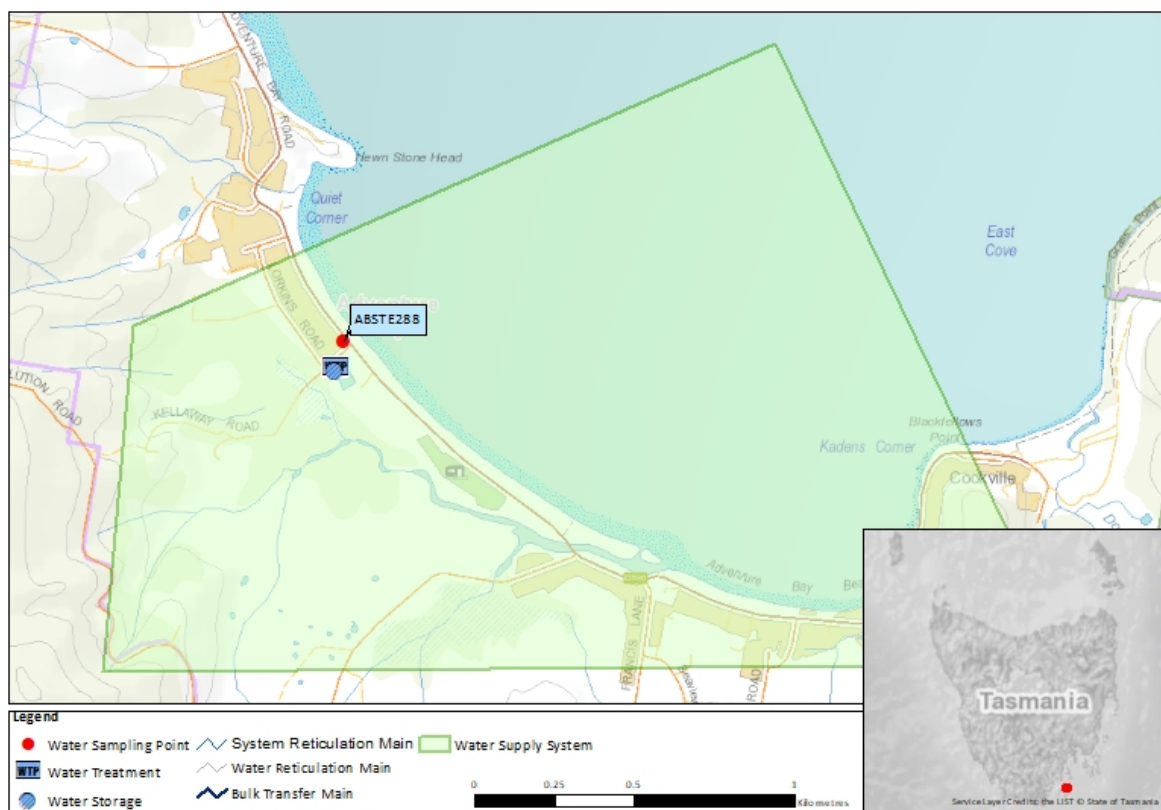


Figure 1.1-b Map of Adventure Bay monitoring system

1.2. Summary of annual reticulation compliance (2019–20)

Table 1.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Shop Sample Tap	ABSTE288	W	Q	Q	n/a	Q	n/a
Number Planned Samples		52	4	4	n/a	4	n/a
Number Samples Tested		52	4	4	n/a	4	n/a

1.3. Summary of current and historic performance (2015–20)

Table 1.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	98.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	n/a	n/a	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

1.4. Analysis of current health performance (2019–20)

Table 1.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 1.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	0.0004
Barium	2	mg/L	4	0	100	0.0009	0.0007	0.0010
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0011	0.0010	0.0014
Copper	2	mg/L	4	0	100	0.0307	0.0216	0.0350
Lead	0.01	mg/L	4	0	100	0.0006	0.0005	0.0006
Manganese	0.5	mg/L	4	0	100	0.0110	0.0089	0.0123
Mercury	0.001	mg/L	4	0	100	0.00003	<0.00003	0.00005
Molybdenum	0.05	mg/L	4	0	100	0.0010	0.0009	0.0011
Nickel	0.02	mg/L	4	0	100	0.0009	0.0007	0.0012
Selenium	0.01	mg/L	4	0	100	0.0001	0.0001	0.0002

Table 1.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	33	18	63
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	6
Trichloroacetic acid	100	µg/L	4	0	100	42	15	93
Total trihalomethanes	250	µg/L	4	0	100	73	66	83

Table 1.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.48	0	2.20
Colour True	HU	15	4.33	0	14
pH	Units	6.5 – 8.5	7.13	5.76	7.78
Turbidity	NTU	1	0.44	0	1.80

1.5. Analysis of overall system performance (2019–20)

Table 1.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

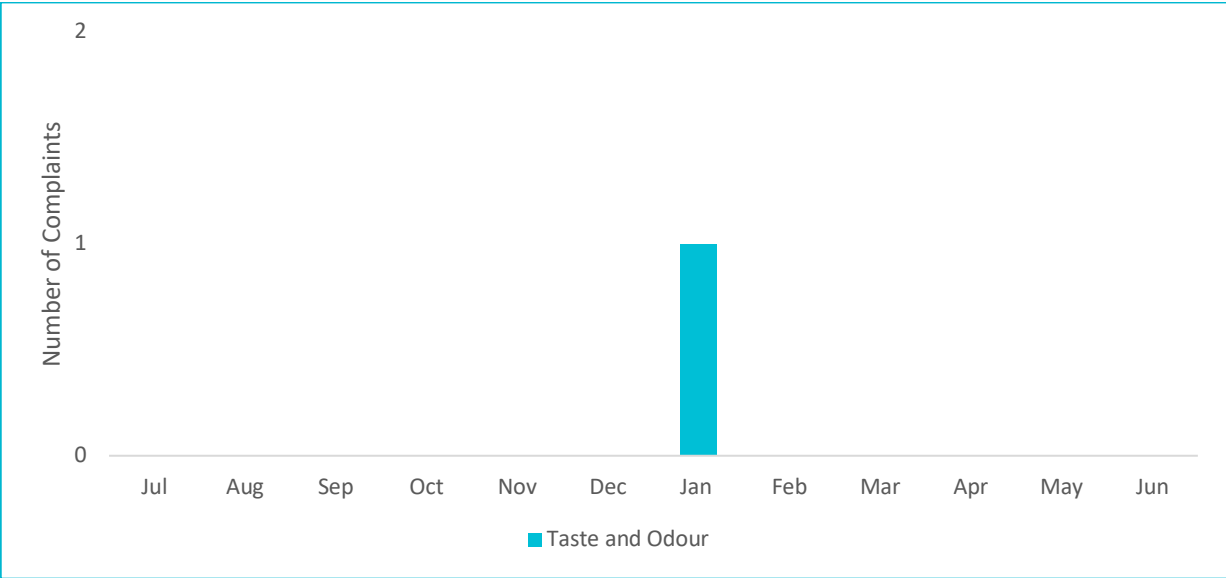


Figure 1.5-b Water quality customer complaints by month and type

2. Bicheno drinking water system

2.1. System summary (2019–20)

Bicheno drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	1,028
Population serviced	1,082
Fluoride	Sodium Fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	53	0
Fluoride	100.0%	<input checked="" type="checkbox"/>	100.0%	48	0
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
<input checked="" type="checkbox"/> Compliant <input type="checkbox"/> Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	10	Discolouration, taste and odour, other (illness)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP renewal program	Instrument Upgrade	In Progress	2020/2021	\$83,000

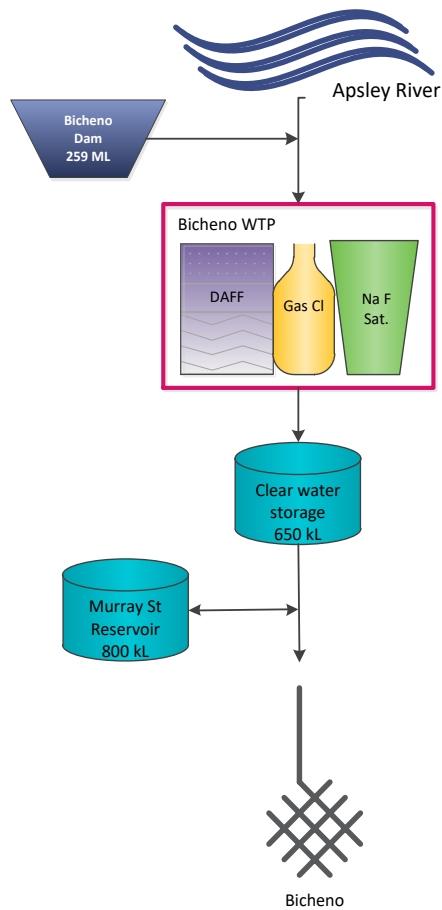


Figure 2.1-a Bicheno system schematic

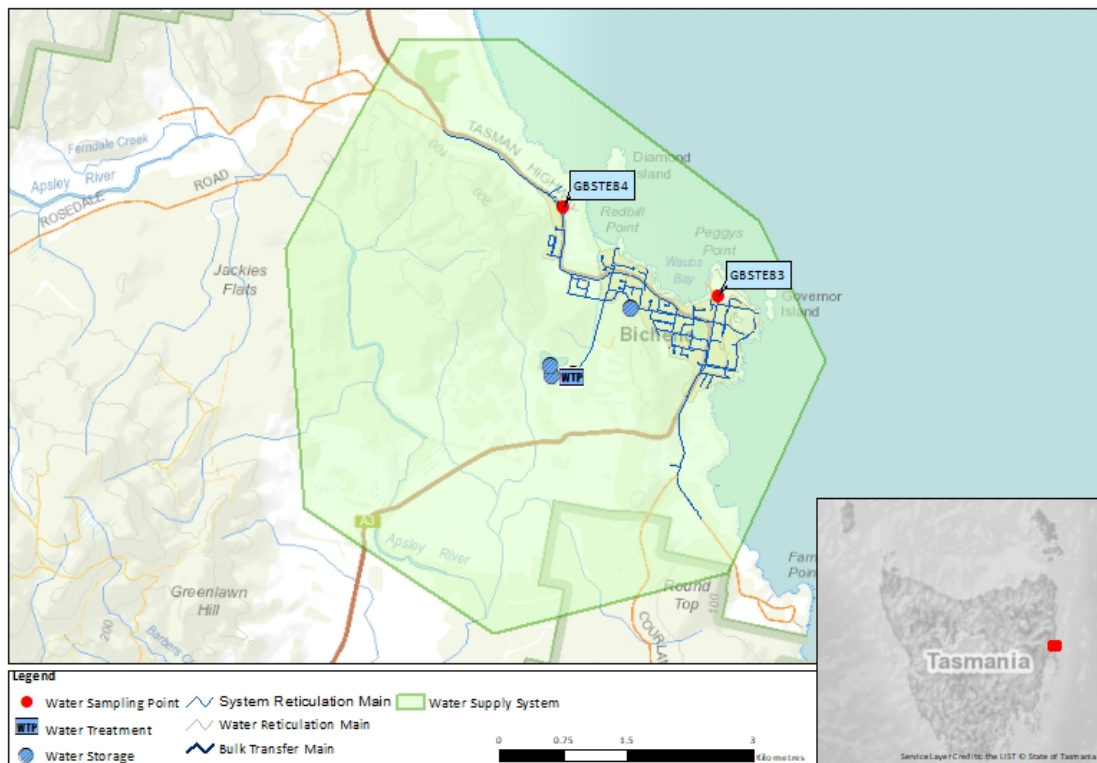


Figure 2.1-b Map of Bicheno monitoring system

2.2. Summary of annual reticulation compliance (2019–20)

Table 2.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Bicheno Primary School/Garden Tap	GBSTE83	W	Q	Q	2M	Q	n/a
Bicheno/47 Tasman Hwy next to SPS	GBSTE84	n/a	n/a	n/a	2M	n/a	M
Number Planned Samples		53	4	4	48	4	12
Number Samples Tested		53	4	4	48	4	12

2.3. Summary of current and historic performance (2015–20)

Table 2.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

2.4. Analysis of current health performance (2019–20)

Table 2.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 2.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.8
90% of F results are equal to or less than 1.1 mg/L	92%

Table 2.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	0.0004
Barium	2	mg/L	4	0	100	0.0030	0.0026	0.0032
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0050	0.0036	0.0086
Lead	0.01	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Manganese	0.5	mg/L	4	0	100	0.0006	0.0004	0.0008
Mercury	0.001	mg/L	4	0	100	0.00005	<0.00003	0.0001
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0002	0.0001	0.0002
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 2.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	2.3	1	3
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	1.8	1	2
Total trihalomethanes	250	µg/L	4	0	100	29	27	32

Table 2.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.45	0.09	0.74
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.11	6.55	7.71
Turbidity	NTU	1	0.20	0.10	0.50

2.5. Analysis of overall system performance (2019–20)

Table 2.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

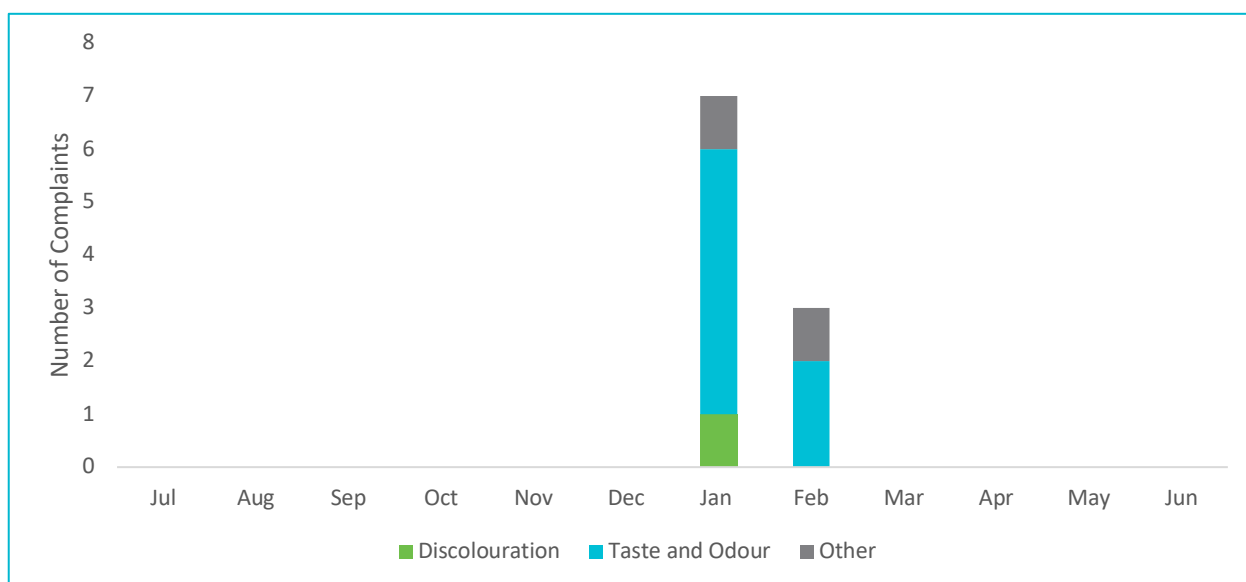


Figure 2.5-b Water quality customer complaints by month and type

3. Bothwell drinking water system

3.1. System summary (2019–20)

Bothwell drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	324
Population serviced	580
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	1	Discolouration

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal Program	Reservoir Pipework	In Progress	2020/2021	\$60,000

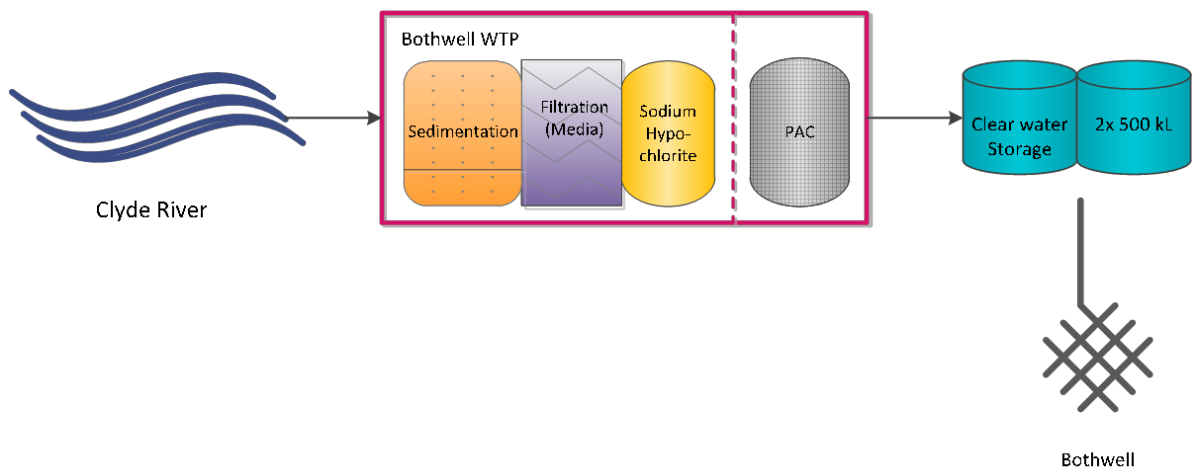


Figure 3.1-a Bothwell system schematic

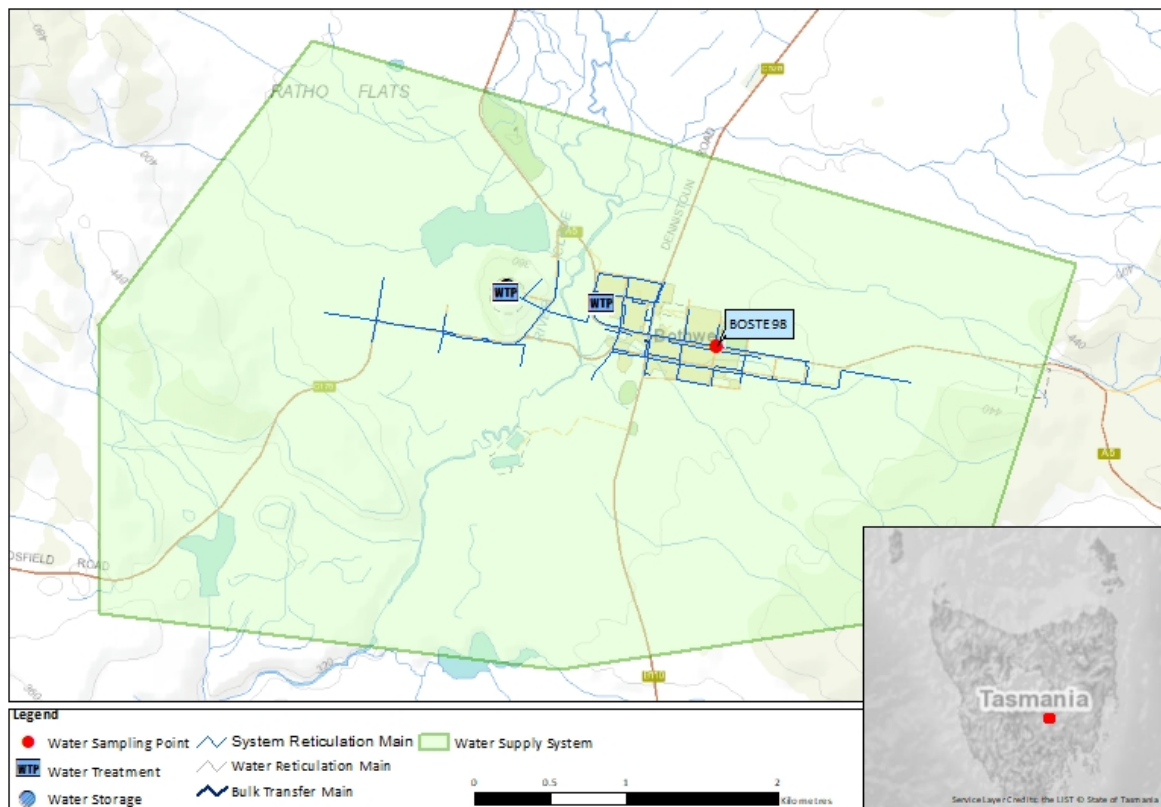


Figure 3.1-b Map of Bothwell monitoring system

3.2. Summary of annual reticulation compliance (2019–20)

Table 3.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Bothwell/Michael St, Sample Tap	BOSTE98	W	Q	Q	n/a	Q	n/a
Number Planned Samples		53	4	4	n/a	4	n/a
Number Samples Tested		53	4	4	n/a	4	n/a

3.3. Summary of current and historic performance (2015–20)

Table 3.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

3.4. Analysis of current health performance (2019–20)

Table 3.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 3.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0174	0.0142	0.0212
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0002
Copper	2	mg/L	4	0	100	0.0031	0.0021	0.0038
Lead	0.01	mg/L	4	0	100	0.0001	<0.0001	0.0003
Manganese	0.5	mg/L	4	0	100	0.0137	0.0054	0.0199
Mercury	0.001	mg/L	4	0	100	0.00006	<0.00003	0.00009
Molybdenum	0.05	mg/L	4	0	100	0.0001	<0.0001	0.0002
Nickel	0.02	mg/L	4	0	100	0.0005	0.0005	0.0005
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 3.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	5	4	6
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	4	2	7
Total trihalomethanes	250	µg/L	4	0	100	66	44	80

Table 3.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.58	0.15	1.08
Colour True	HU	15	0.63	<1	1
pH	Units	6.5 – 8.5	7.25	6.89	7.80
Turbidity	NTU	1	0.24	0.10	1.40

3.5. Analysis of overall system performance (2019–20)

Table 3.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

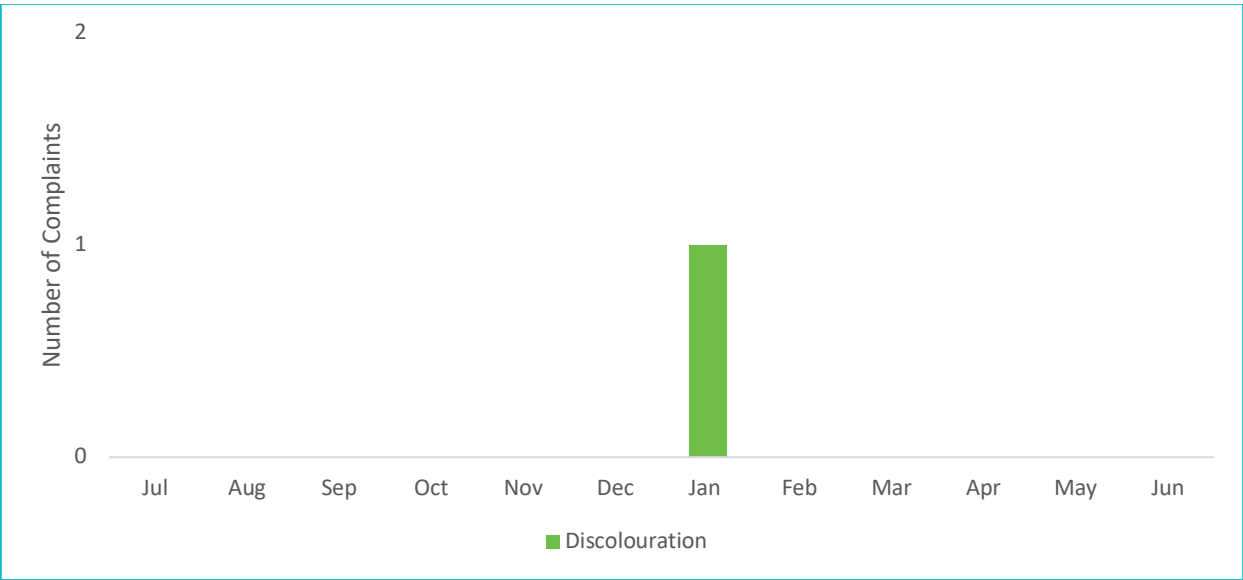


Figure 3.5-b Water quality customer complaints by month and type

4. Bracknell drinking water system

4.1. System summary (2019–20)

Bracknell drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	186
Population serviced	417
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal Program	Chlorine & PAC Dosing Systems	TBA	2021/2022	\$380,000

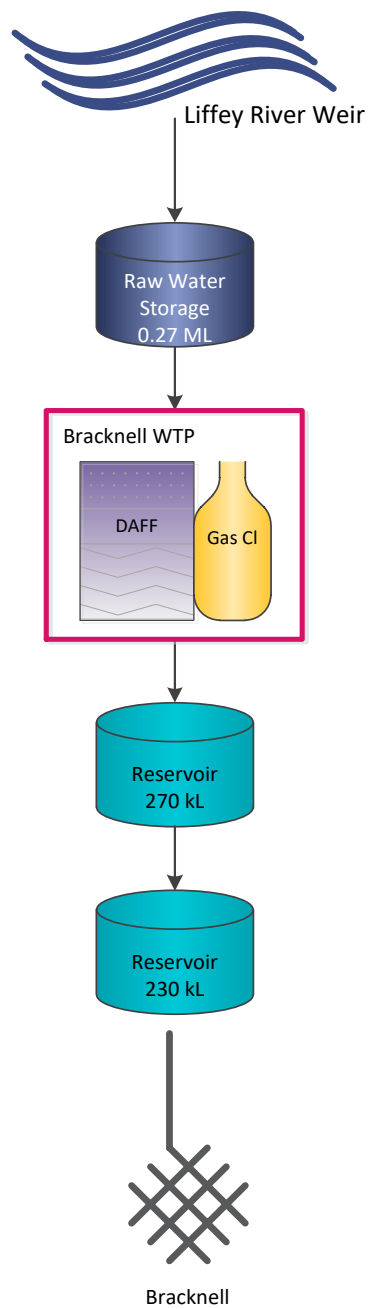


Figure 4.1-a Bracknell system schematic

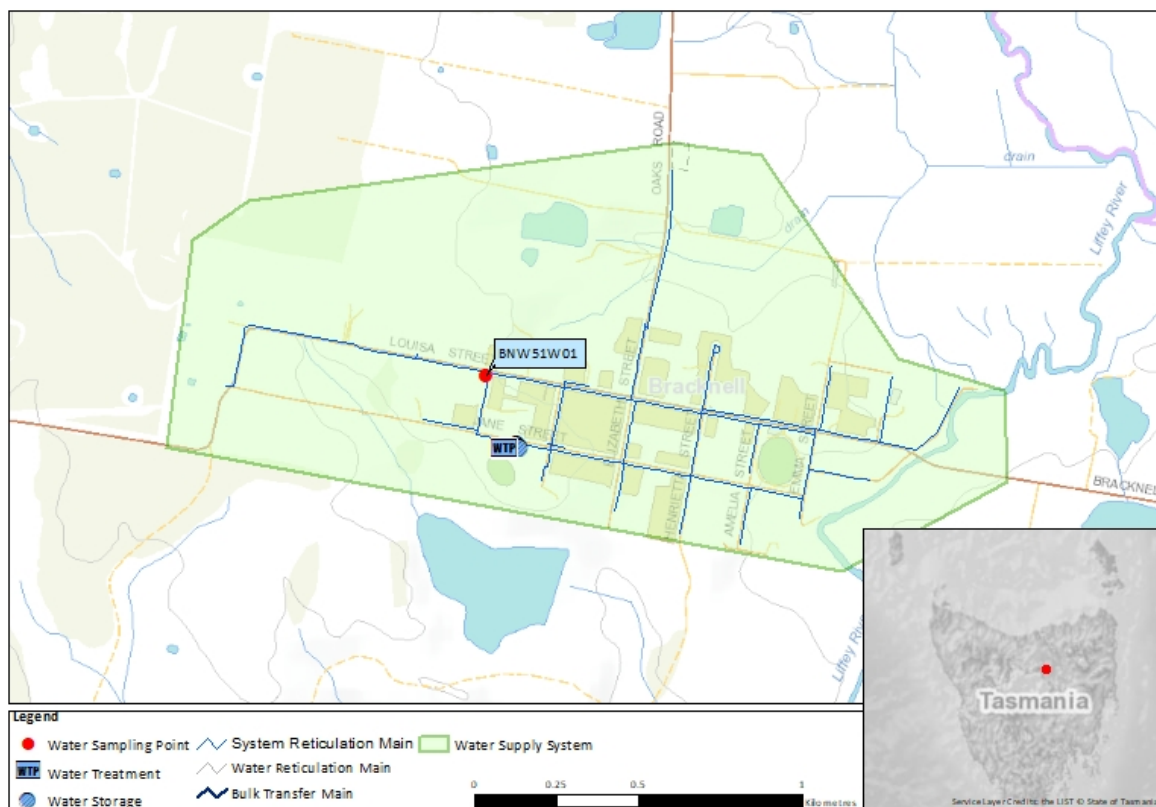


Figure 4.1-b Map of Bracknell monitoring system

4.2. Summary of annual reticulation compliance (2019–20)

Table 4.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Bracknell/Louisa Street	BNW51W01	W	Q	Q	n/a	Q	n/a
Number Planned Samples		53	4	4	n/a	4	n/a
Number Samples Tested		53	4	4	n/a	4	n/a

4.3. Summary of current and historic performance (2015–20)

Table 4.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

4.4. Analysis of current health performance (2019–20)

Table 4.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 4.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0087	0.0075	0.0100
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0033	0.0025	0.0042
Lead	0.01	mg/L	4	0	100	0.0003	0.0002	0.0003
Manganese	0.5	mg/L	4	0	100	0.0020	0.0010	0.0034
Mercury	0.001	mg/L	4	0	100	0.00012	<0.00003	0.00017
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0002	0.0002	0.0003
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 4.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	7	5	9
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	8.5	5	11
Total trihalomethanes	250	µg/L	4	0	100	18	11	21

Table 4.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.98	0.46	1.50
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.19	6.46	7.82
Turbidity	NTU	1	0.20	0.10	0.30

4.5. Analysis of overall system performance (2019–20)







Table 4.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

5. Bridport drinking water system

5.1. System summary (2019–20)

Bridport drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	1,059
Population serviced	1,229
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%		98.0%	104	0
Fluoride	100.0%		100.0%	48	0
Metals	100.0%		100.0%	4	0
DBPs	100.0%		100.0%	4	0
 Compliant  Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	1	Taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Fluoride Upgrade	Replacement of FSA Tank	In Progress	2020/2021	\$120,000
WTP Renewal Program	Chlorination Upgrade	TBA	2021/2022	\$250,000
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$61,000

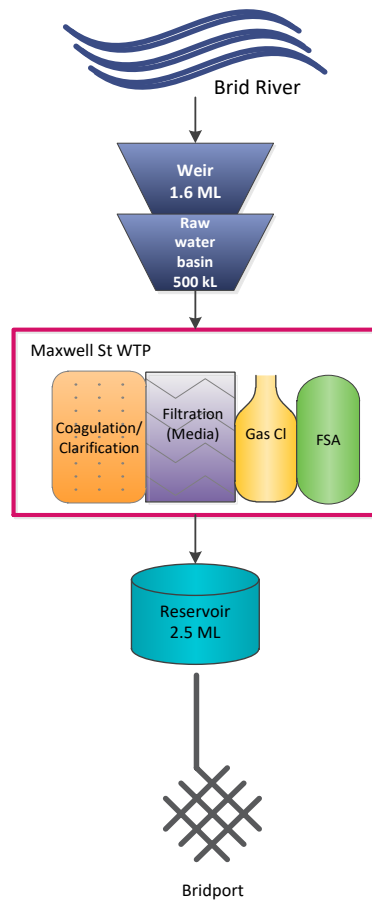


Figure 5.1-a Bridport system schematic

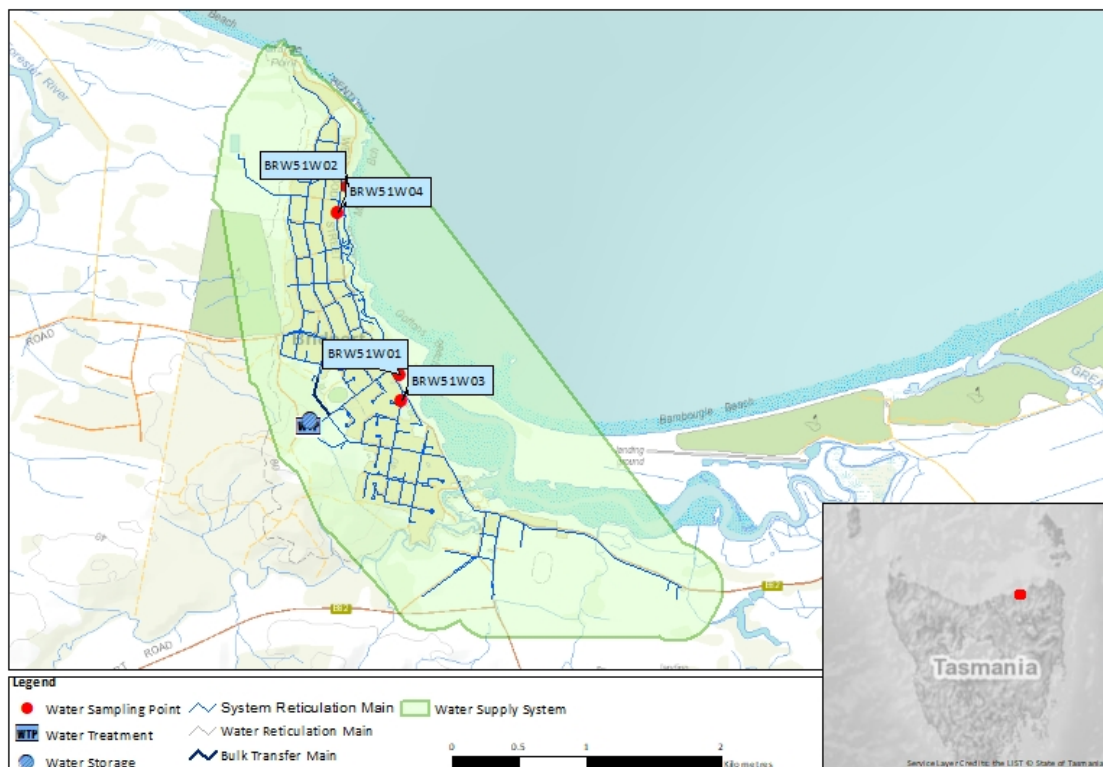


Figure 5.1-b Map of Bridport monitoring system

5.2. Summary of annual reticulation compliance (2019–20)

Table 5.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Bridport/Emma Street	BRW51W03	W	Q	Q	2M	Q	n/a
Bridport/Bently St down from Pier	BRW51W04	W	n/a	n/a	2M	n/a	n/a
Number Planned Samples		104	4	4	48	4	n/a
Number Samples Tested		104	4	4	48	4	n/a

5.3. Summary of current and historic performance (2015–20)

Table 5.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

5.4. Analysis of current health performance (2019–20)

Table 5.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 5.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 5.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0191	0.0172	0.0210
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Copper	2	mg/L	4	0	100	0.0076	0.0061	0.0101
Lead	0.01	mg/L	4	0	100	0.0008	0.0005	0.0010
Manganese	0.5	mg/L	4	0	100	0.0193	0.0120	0.0322
Mercury	0.001	mg/L	4	0	100	0.00013	<0.00003	0.00036
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0005	0.0004	0.0007
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	0.0001

Table 5.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	6.5	4	8
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	8	2	17
Total trihalomethanes	250	µg/L	4	0	100	54	39	72

Table 5.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.76	0.15	1.31
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.08	6.66	7.80
Turbidity	NTU	1	0.33	0.10	1.90

5.5. Analysis of overall system performance (2019–20)

Table 5.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

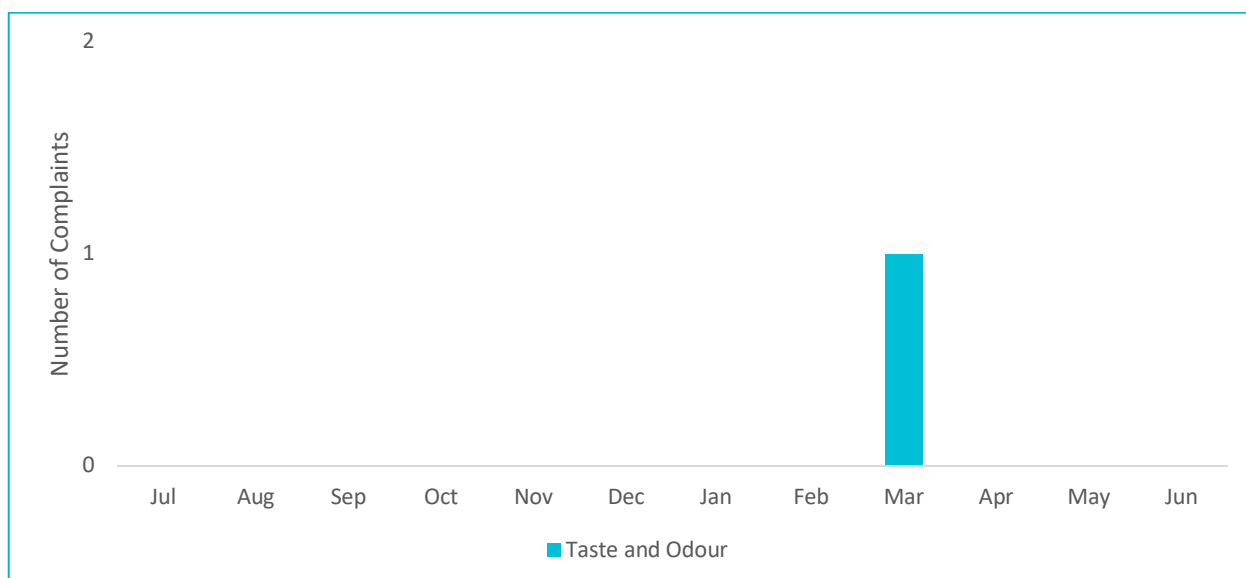


Figure 5.5-b Water quality customer complaints by month and type

6. Bronte Park drinking water system

6.1. System summary (2019–20)

Bronte Park drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	65
Population serviced	46
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

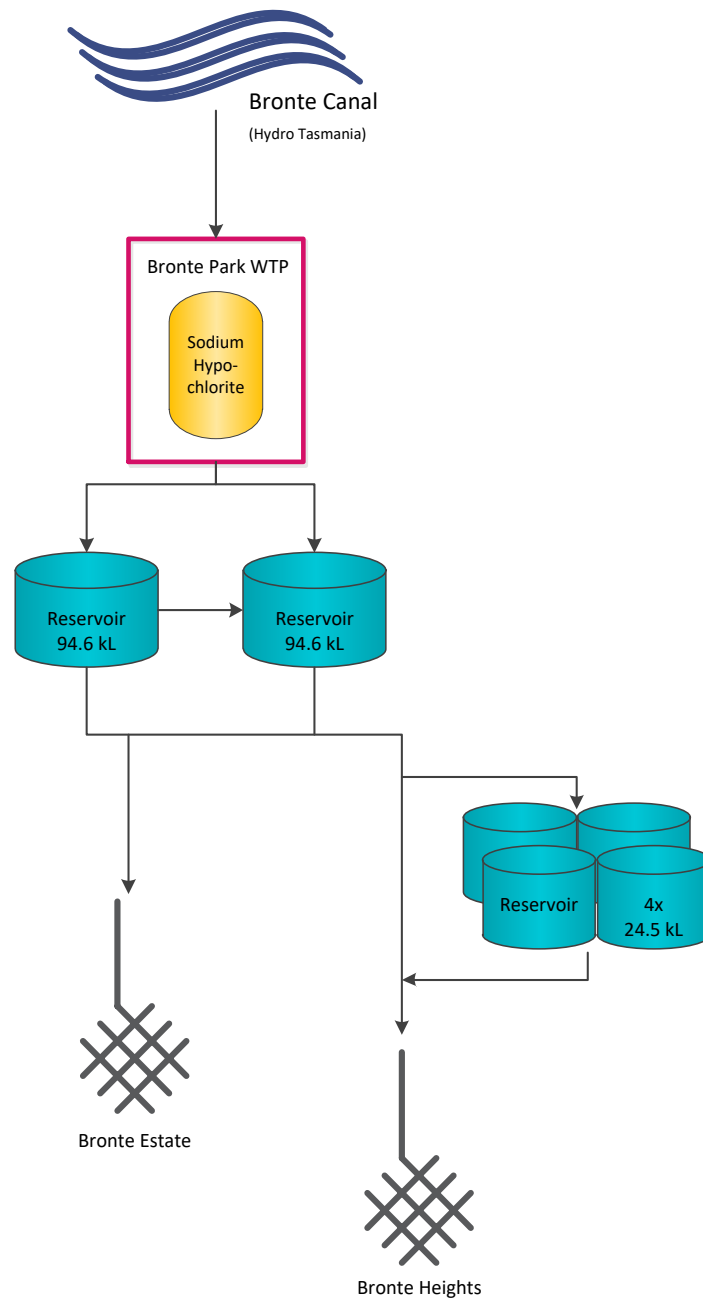


Figure 6.1-a Bronte Park system schematic

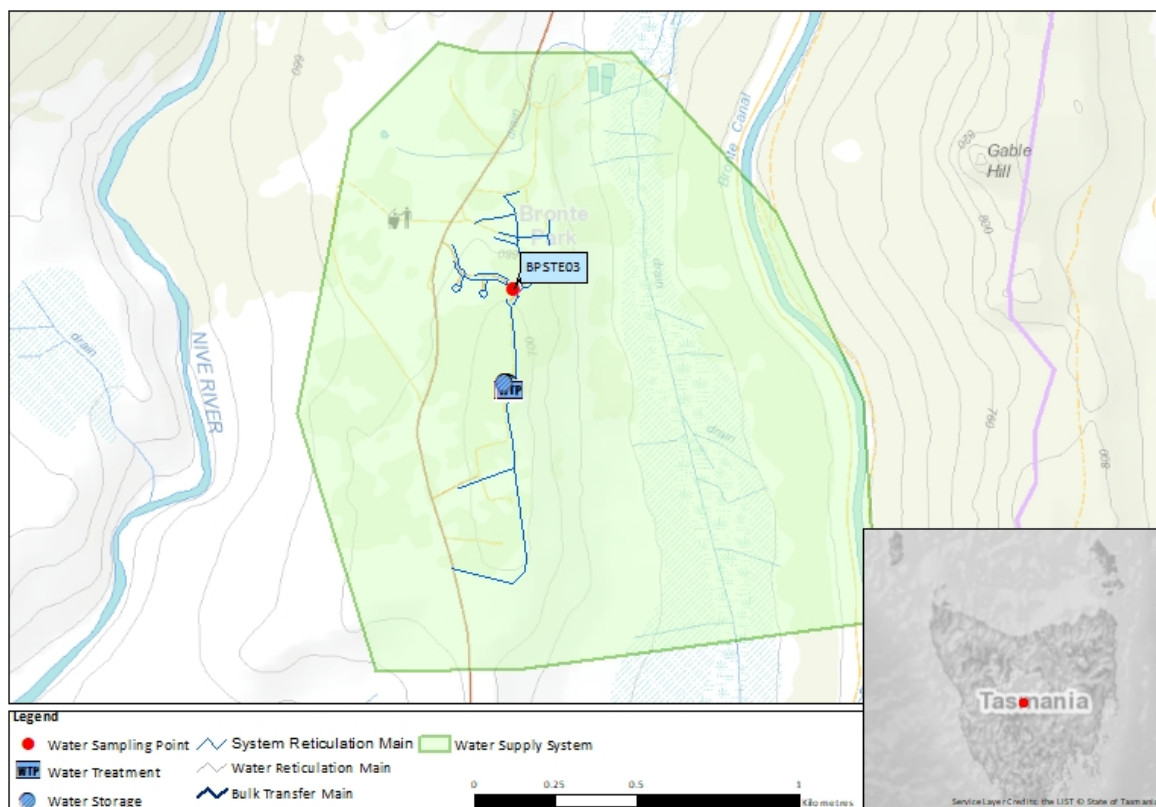


Figure 6.1-b Map of Bronte Park monitoring system

6.2. Summary of annual reticulation compliance (2019–20)

Table 6.2-a Sampling program

Planned compliance sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Bronte Park/50 Bronte Estate Rd	BPSTE03	W	Q	Q	n/a	Q	n/a
Number Planned Samples		53	4	4	n/a	4	n/a
Number Samples Tested		53	4	4	n/a	4	n/a

6.3. Summary of current and historic performance (2015–20)

Table 6.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	n/a	80.8%	87.3%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	n/a	100.0%	100.0%	100.0%	100.0%
Disinfection by products	n/a	91.7%	100.0%	100.0%	100.0%
<div> <div></div> Compliant <div></div> Non-compliant </div>					

6.4. Analysis of current health performance (2019–20)

Table 6.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 6.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0026	0.0022	0.0033
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0053	0.0039	0.0061
Lead	0.01	mg/L	4	0	100	0.0003	0.0002	0.0005
Manganese	0.5	mg/L	4	0	100	0.0034	0.0021	0.0053
Mercury	0.001	mg/L	4	0	100	0.00004	<0.00003	0.00006
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 6.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	20	8	29
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	29	14	38
Total trihalomethanes	250	µg/L	4	0	100	33	26	40

Table 6.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.79	0.55	1.01
Colour True	HU	15	0.88	<1	2
pH	Units	6.5 – 8.5	7.69	6.97	8.00
Turbidity	NTU	1	0.23	0.10	1.60

6.5. Analysis of overall system performance (2019–20)

Table 6.5-a Summary of system issues/public health warnings with notification details

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

7. Bushy Park drinking water system

7.1. System summary (2019–20)

Bushy Park drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	124
Population serviced	247
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	8	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

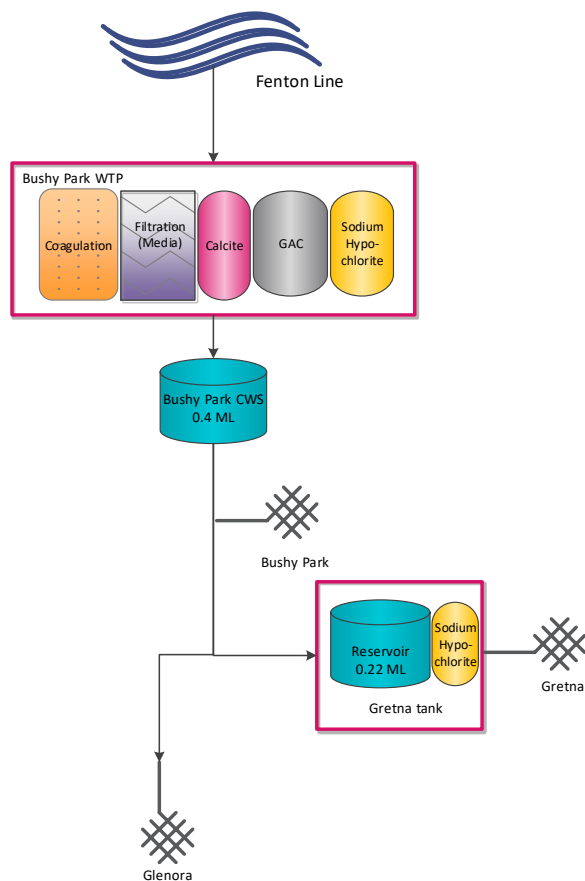


Figure 7.1-a Bushy Park system schematic

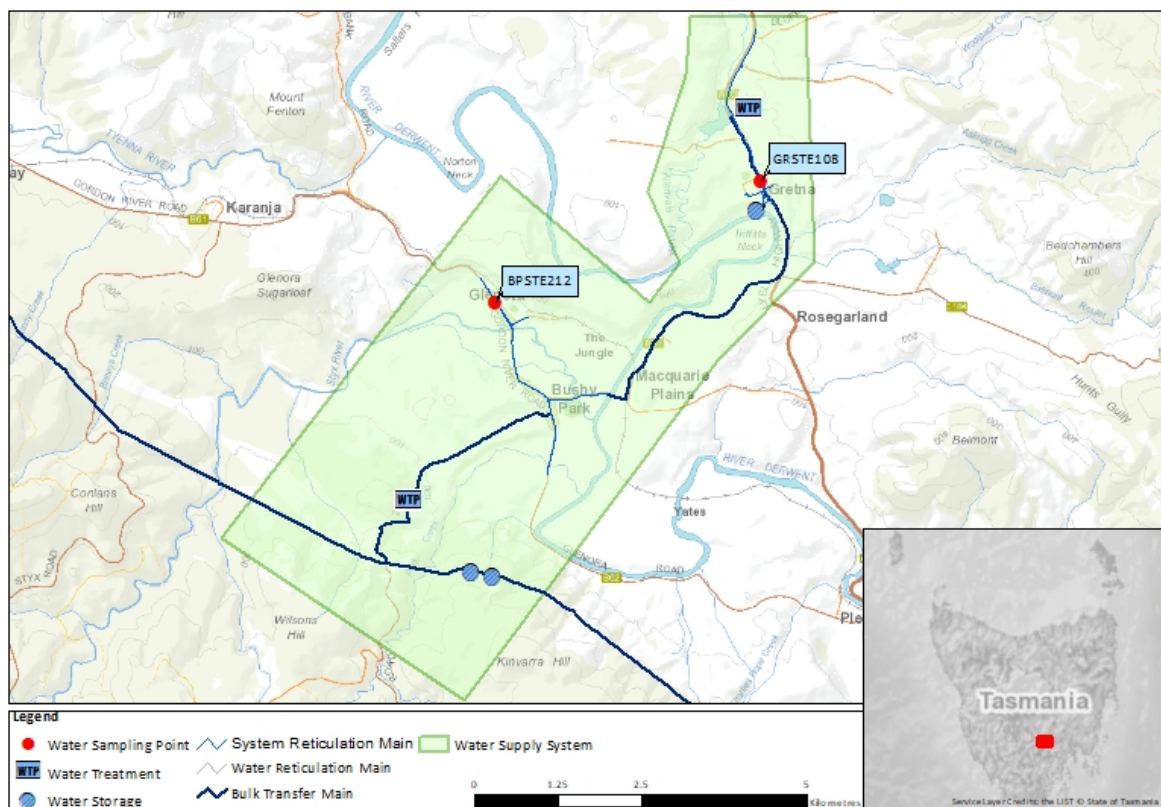


Figure 7.1-b Map of Bushy Park monitoring system

7.2. Summary of annual reticulation compliance (2019–20)

Table 7.2-a Sampling program

Planned compliance sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Glenora/Glenora Fire Station	BPSTE212	W	Q	Q	n/a	Q	n/a
Gretna/Opp. 3449 Lyell Hwy	GRSTE108	W	Q	Q	n/a	Q	n/a
Number Planned Samples		106	8	8	n/a	8	n/a
Number Samples Tested		106	8	8	n/a	8	n/a

7.3. Summary of current and historic performance (2015–20)

Table 7.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	n/a	n/a	n/a	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	n/a	n/a	n/a	100.0%	100.0%
Disinfection by products	n/a	n/a	n/a	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

7.4. Analysis of current health performance (2019–20)

Table 7.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 7.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	8	0	100	0.0032	0.0024	0.0046
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	0.0001	<0.0001	0.0002
Copper	2	mg/L	8	0	100	0.0038	0.0012	0.0074
Lead	0.01	mg/L	8	0	100	0.0004	0.0002	0.0007
Manganese	0.5	mg/L	8	0	100	0.0003	<0.0001	0.0013
Mercury	0.001	mg/L	8	0	100	0.00005	<0.00003	0.00007
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0001	<0.0001	0.0002
Selenium	0.01	mg/L	8	0	100	0.0001	<0.0001	0.0003

Table 7.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	9	5	15
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	17	10	23
Total trihalomethanes	250	µg/L	8	0	100	56	30	81

Table 7.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.69	0.37	1.84
Colour True	HU	15	1.06	<1	4
pH	Units	6.5 – 8.5	7.42	6.90	8.12
Turbidity	NTU	1	0.29	0.10	0.90

7.5. Analysis of overall system performance (2019–20)

Table 7.5-a Summary of system issues/public health warnings with notification details

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

8. Cam River drinking water system

8.1. System summary (2019–20)

Cam River drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	4,477
Population serviced	8,915
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	212	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	8	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	10	Discolouration

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Decommissioning of WTP	Decommissioning of WTP	Complete	2020/2021	TBC

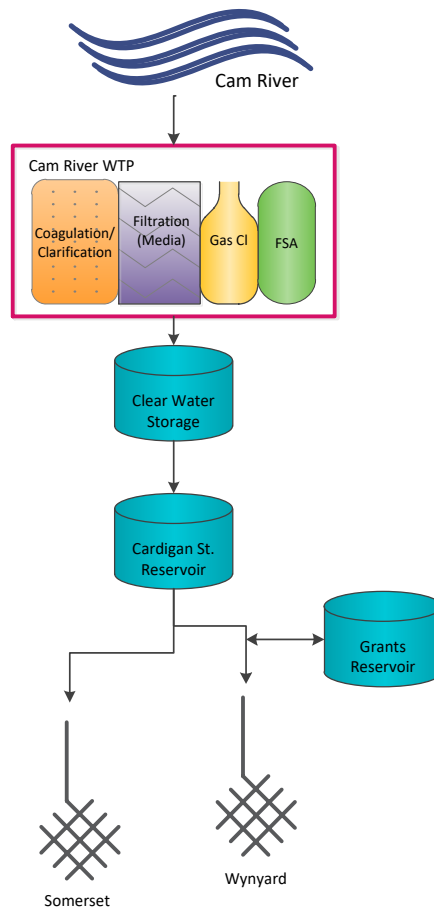


Figure 8.1-a Cam River system schematic

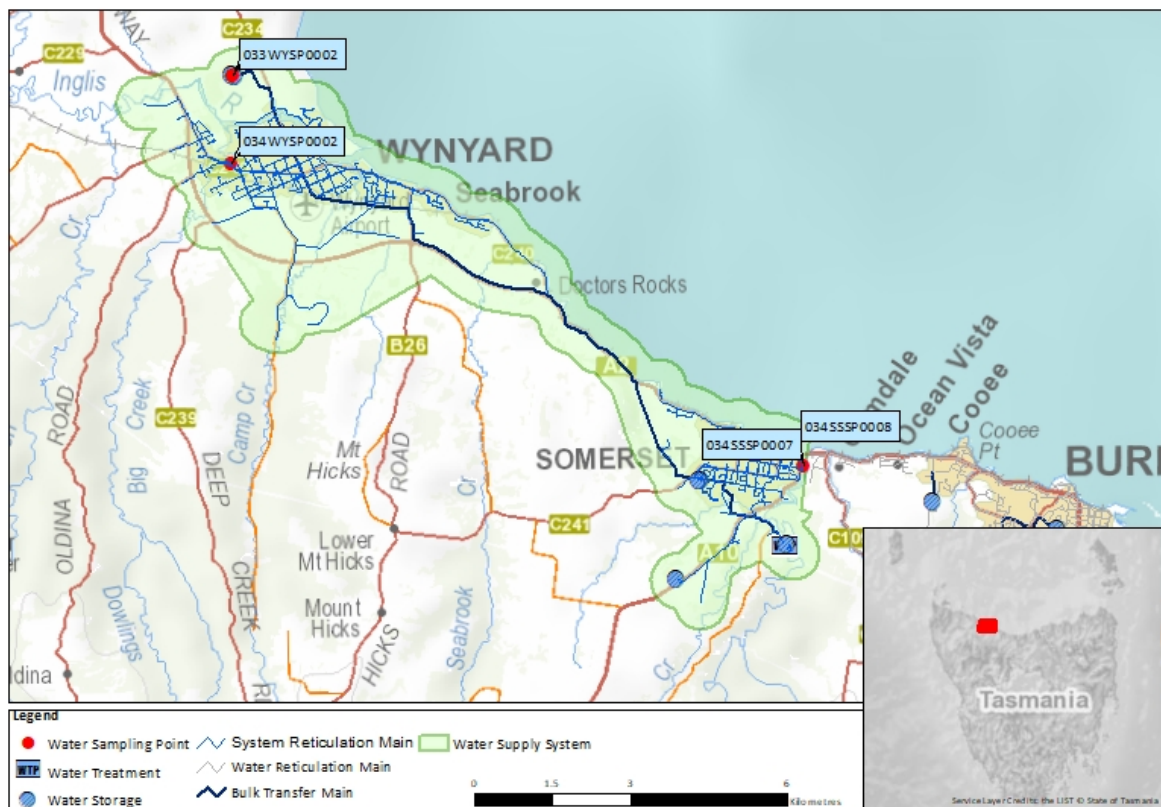


Figure 8.1-b Map of Cam River monitoring system

8.2. Summary of annual reticulation compliance (2019–20)

Table 8.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Wynyard/Wynyard Grants Reservoir	033WYSP0002	W	n/a	n/a	n/a	n/a	n/a
Somerset/Murchison Highway Sampling Point	034SSSP0007	W	n/a	n/a	n/a	n/a	n/a
Somerset/Somerset Surf Club	034SSSP0008 ¹	W	Q	Q	2M	n/a	n/a
Somerset/16 Somerset Esplanade	SOMST01	W	Q	Q	2M	n/a	n/a
Wynyard/Big Creek Sampling Point	034WYSP0002	W	Q	Q	2M	Q	n/a
Number Planned Samples		212	8	8	48	4	n/a
Number Samples Tested		212	8	8	48	4	n/a

8.3. Summary of current and historic performance (2015–20)

Table 8.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	99.4%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

¹ Replaced by SOMST01 1st May 2020

8.4. Analysis of current health performance (2019–20)

Table 8.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 8.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 8.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	0.0003
Barium	2	mg/L	8	0	100	0.0083	0.0065	0.0113
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	0.0002	0.0002	0.0003
Copper	2	mg/L	8	0	100	0.0026	0.0005	0.0115
Lead	0.01	mg/L	8	0	100	0.0002	<0.0001	0.0005
Manganese	0.5	mg/L	8	0	100	0.0120	0.0018	0.0276
Mercury	0.001	mg/L	8	0	100	0.00010	<0.00003	0.00042
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0005	0.0002	0.0007
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

Table 8.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	8.4	5	13
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	8	3	13
Total trihalomethanes	250	µg/L	8	0	100	58	37	80

Table 8.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.82	0.42	1.28
Colour True	HU	15	1.25	<1	3
pH	Units	6.5 – 8.5	7.34	6.41	8.48
Turbidity	NTU	1	0.30	0	2.80

8.5. Analysis of overall system performance (2019–20)

Table 8.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

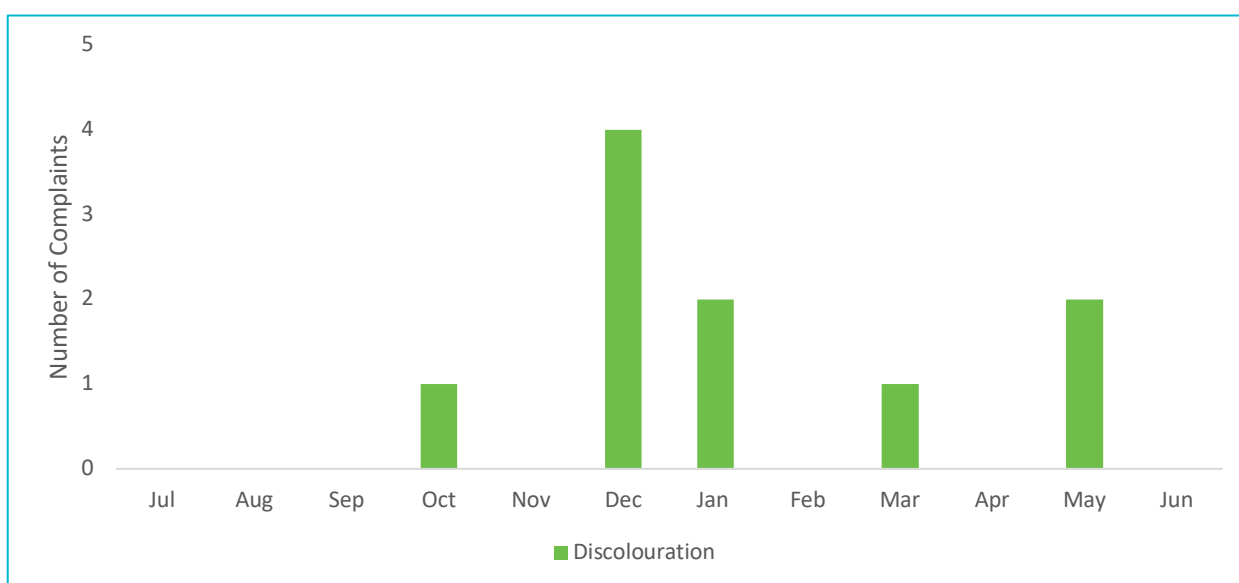


Figure 8.5-b Water quality customer complaints by month and type

9. Campbell Town drinking water system

9.1. System summary (2019–20)

Campbell Town drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	789
Population serviced	1,352
Fluoride	Sodium Fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	104	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div>■ Compliant ■ Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	3	Discolouration, taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$20,000
WTP Renewal Program	Media Replacement & Pipework	TBA	2022/2023	\$150,000

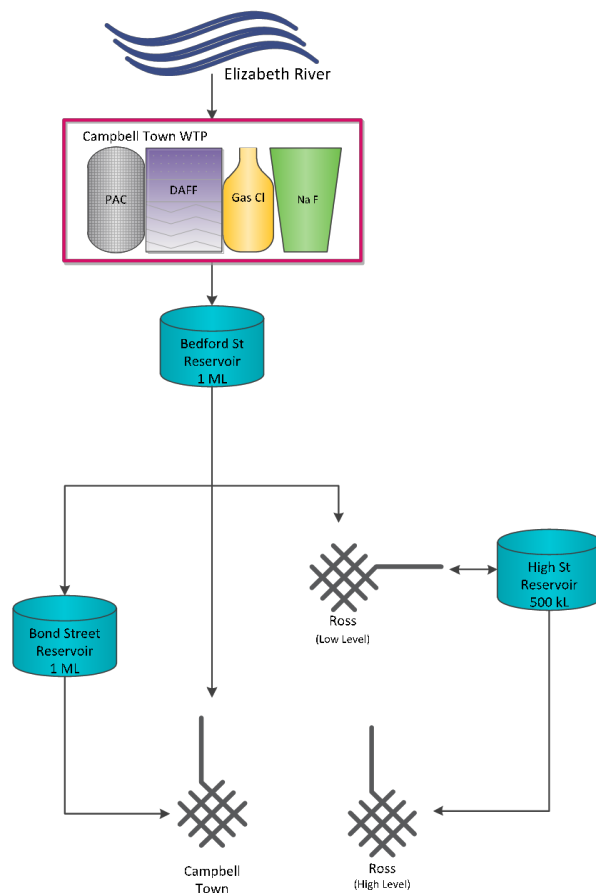


Figure 9.1-a Campbell Town system schematic

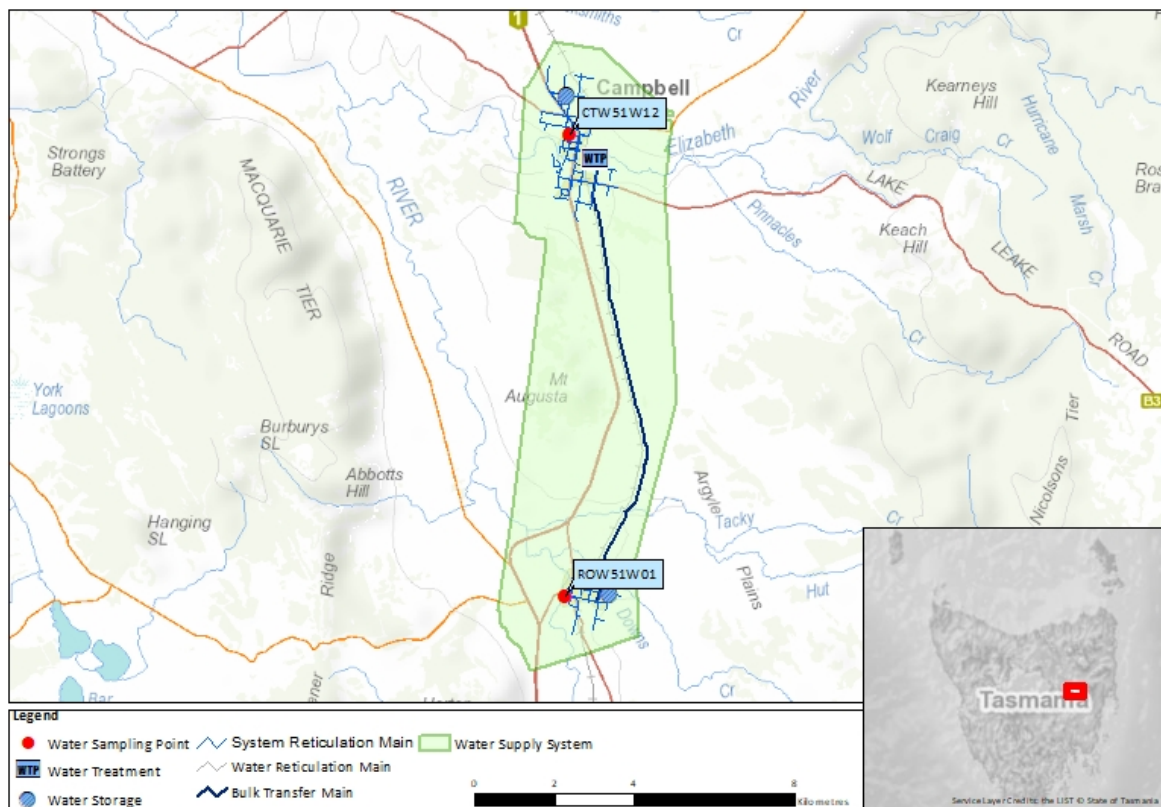


Figure 9.1-b Map of Campbell Town monitoring system

9.2. Summary of annual reticulation compliance (2019–20)

Table 9.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Campbell Town/Cnr Bridge St & Hamilton St (#2)	CTW51W12	W	n/a	n/a	2M	n/a	n/a
Ross/ Bridge St SPS	ROW51W01	W	Q	Q	2M	Q	n/a
Number Planned Samples		104	4	4	48	4	n/a
Number Samples Tested		104	4	4	48	4	n/a

9.3. Summary of current and historic performance (2015–20)

Table 9.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

9.4. Analysis of current health performance (2019–20)

Table 9.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 9.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 9.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0106	0.0082	0.0121
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0140	0.0092	0.0245
Lead	0.01	mg/L	4	0	100	0.0012	0.0006	0.0020
Manganese	0.5	mg/L	4	0	100	0.0019	0.0016	0.0021
Mercury	0.001	mg/L	4	0	100	0.00006	<0.00003	0.00011
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0003	0.0002	0.0003
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 9.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	10	6	12
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	3
Trichloroacetic acid	100	µg/L	4	0	100	14	5	34
Total trihalomethanes	250	µg/L	4	0	100	70	50	95

Table 9.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.48	0.13	1.04
Colour True	HU	15	0.63	<1	1
pH	Units	6.5 – 8.5	7.06	6.69	7.66
Turbidity	NTU	1	0.35	0.10	2.70

9.5. Analysis of overall system performance (2019–20)

Table 9.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

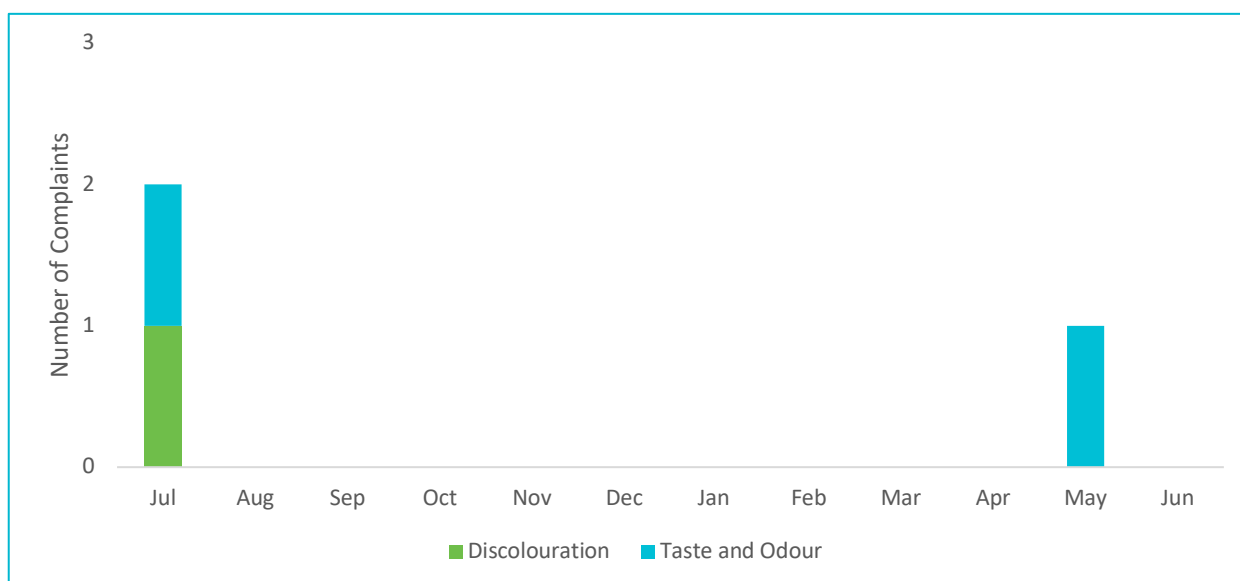







Figure 9.5-b Water quality customer complaints by month and type

10. Coles Bay drinking water system

10.1. System summary (2019–20)

Coles Bay drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	277
Population serviced	152
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%		98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%		100.0%	4	0
DBPs	97.9%		100.0%	12	1
 Compliant  Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	1	Elevated DBPs
Public health warnings issued	0	
Notifications made to DoH	2	DBP exceedances in sampling program, one under rounding limit
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Upgrade	GAC Installation	Complete	Complete	\$390,000

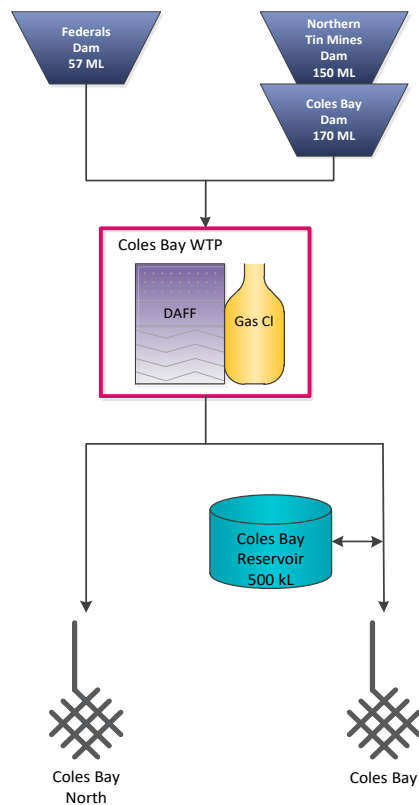


Figure 10.1-a Coles Bay system schematic

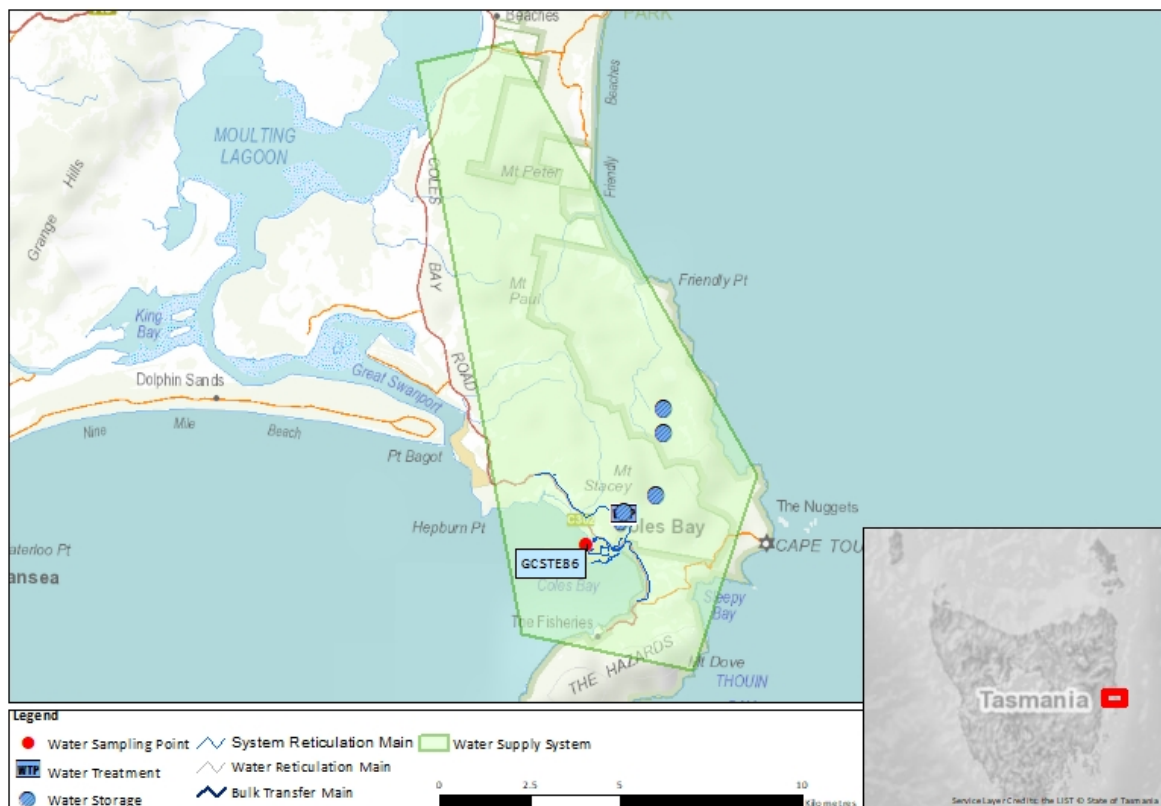


Figure 10.1-b Map of Coles Bay monitoring system

10.2. Summary of annual reticulation compliance (2019–20)

Table 10.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Coles Bay/Park Esp. NEW Sample Tap	GCSTE86	W	Q	M	n/a	Q	n/a
Number Planned Samples		53	4	12	n/a	4	n/a
Number Samples Tested		53	4	12	n/a	4	n/a

10.3. Summary of current and historic performance (2015–20)

Table 10.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	94.0%	90.0%	87.5% ²	91.7%	97.9%
<div> ■ Compliant ■ Non-compliant </div>					

10.4. Analysis of current health performance (2019–20)

Table 10.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
Total Trihalomethanes	07/01/2020	255 µg/L in regular compliance sampling (relevant to compliance assessment)	Y

² Capital improvements identified to improve ongoing disinfection-by-product compliance

Table 10.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0065	0.0049	0.0083
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0002
Copper	2	mg/L	4	0	100	0.0029	0.0021	0.0038
Lead	0.01	mg/L	4	0	100	0.0003	0.0002	0.0006
Manganese	0.5	mg/L	4	0	100	0.0009	0.0007	0.0012
Mercury	0.001	mg/L	4	0	100	0.00003	<0.00003	0.00006
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0004	0.0003	0.0007
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	0.0001

Table 10.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	12	0	100	7	<1	19
Monochloroacetic acid	150	µg/L	12	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	12	0	100	4	<1	11
Total trihalomethanes	250	µg/L	12	1	67	71	34	255

Table 10.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.60	0.10	1.94
Colour True	HU	15	0.60	<1	1
pH	Units	6.5 – 8.5	7.26	6.77	7.89
Turbidity	NTU	1	0.48	0.20	0.80

10.5. Analysis of overall system performance (2019–20)

Table 10.5-a Summary of system issues/public health warnings

Summary of System issues			
Date	Description	DoH notification required	DoH notification complete
07/01/2020	Total trihalomethane exceedance of 255 µg/L in compliance sample.	✓	✓
21/01/2020	Total trihalomethane exceedance of 254 µg/L in compliance sample. Does not exceed rounding limit	✓	✓

11. Conara drinking water system

11.1. System summary (2019–20)

Conara drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	67
Population serviced	155
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	105	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	8	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

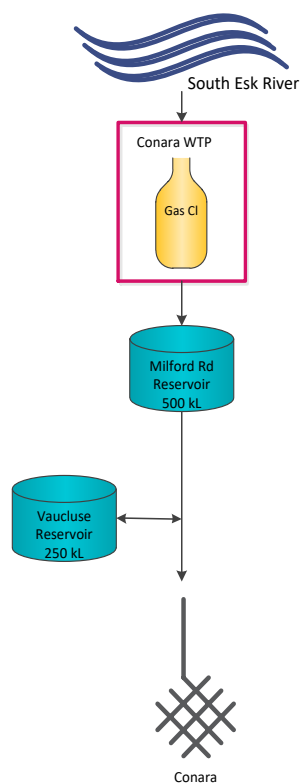


Figure 11.1-a Conara system schematic

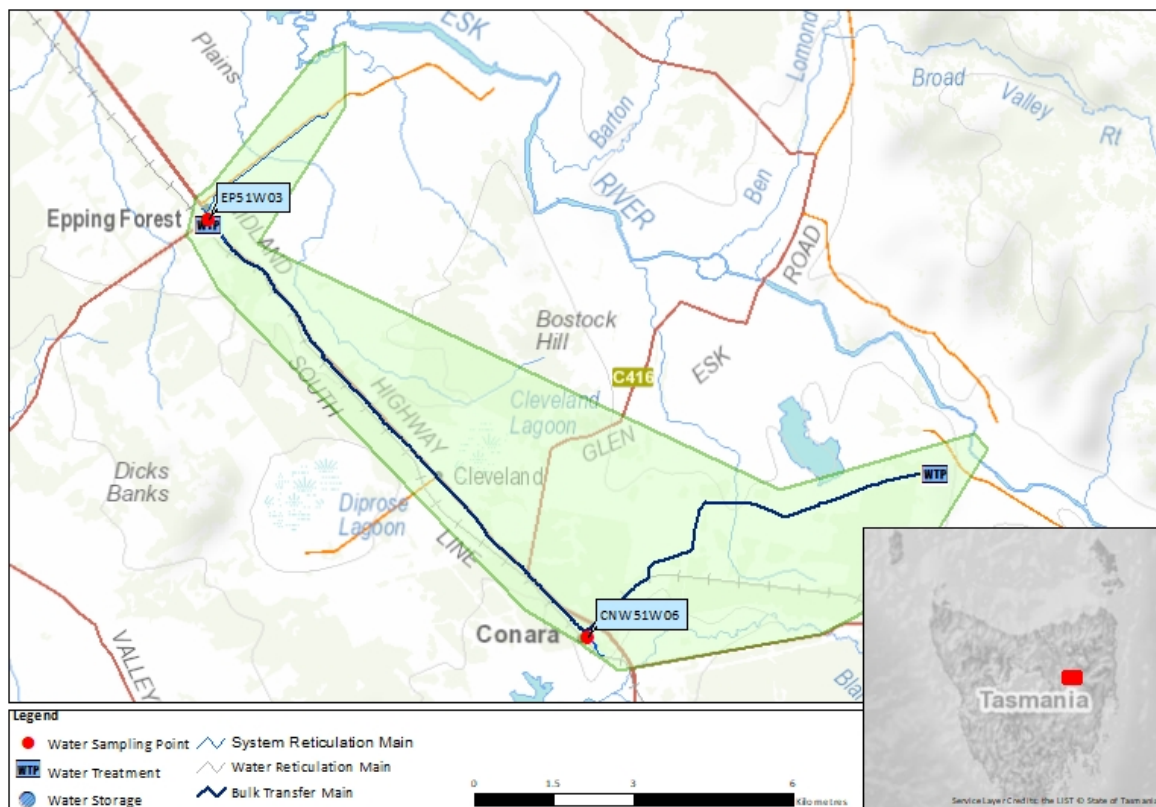


Figure 11.1-b Map of Conara monitoring system

11.2. Summary of annual reticulation compliance (2019–20)

Table 11.2-a Sampling program

Planned compliance sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Conara/Cnr Conara Rd and Panec St	CNW51W06	W	Q	Q	n/a	Q	n/a
Epping/4 Barton Rd	EP51W03	W	Q	Q	n/a	Q	n/a
Number Planned Samples		105	8	8	n/a	8	n/a
Number Samples Tested		105	8	8	n/a	8	n/a

11.3. Summary of current and historic performance (2015–20)

Table 11.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100%	100%	98.1%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100%	97.9%	100.0%	100.0%	100.0%
Disinfection by products	81.0%	75.0%	87.5% ³	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

11.4. Analysis of current health performance (2019–20)

Table 11.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

³ Planned improvements to WTP to improve disinfection of raw water when turbidity increases during flood events and improve disinfection-by-product compliance

Table 11.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	0.0004
Barium	2	mg/L	8	0	100	0.0096	0.0049	0.0258
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	<0.0001	<0.0001	0.0001
Copper	2	mg/L	8	0	100	0.0054	0.0028	0.0079
Lead	0.01	mg/L	8	0	100	0.0005	0.0001	0.0013
Manganese	0.5	mg/L	8	0	100	0.0017	0.0001	0.0050
Mercury	0.001	mg/L	8	0	100	0.00005	<0.00003	0.00008
Molybdenum	0.05	mg/L	8	0	100	0.0002	<0.0001	0.0006
Nickel	0.02	mg/L	8	0	100	0.0004	0.0001	0.0007
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

Table 11.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	4	<1	15
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	5	<1	23
Total trihalomethanes	250	µg/L	8	0	100	25	4	82

Table 11.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.65	0.36	1.15
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.27	6.69	8.26
Turbidity	NTU	1	0.24	0.10	0.60

11.5. Analysis of overall system performance (2019–20)

Table 11.5-a Summary of system issues/public health warnings with notification details

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

12. Cornwall drinking water system

12.1. System summary (2019–20)

Cornwall drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	48
Population serviced	80
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div> ■ Compliant ■ Non-compliant </div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

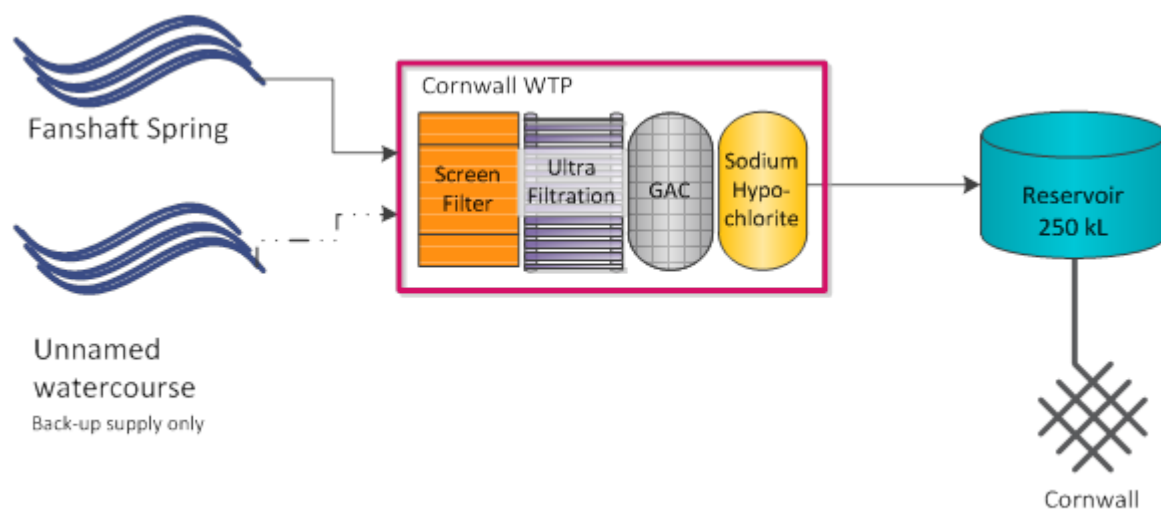


Figure 12.1-a Cornwall system schematic

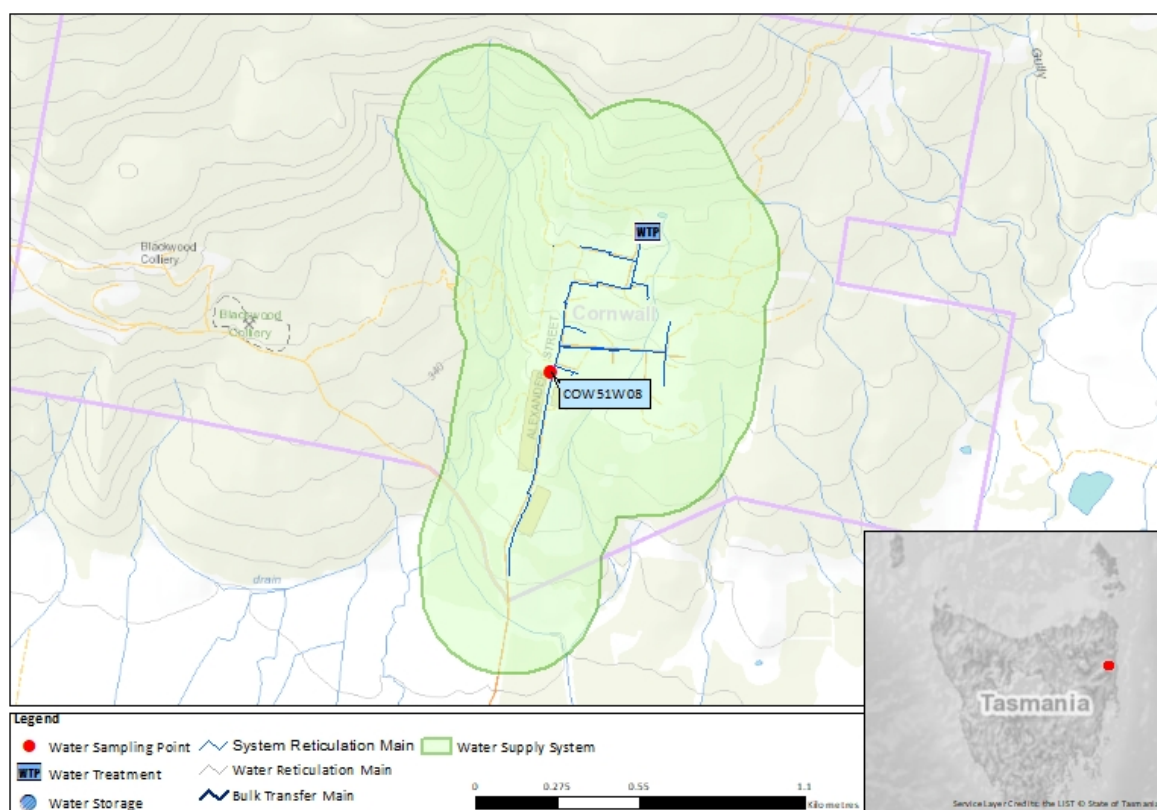


Figure 12.1-b Map of Cornwall monitoring system

12.2. Summary of annual reticulation compliance (2019–20)

Table 12.2-a Sampling program

Planned compliance sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Cornwall/37-41 Alexander St	COW51W08	W	Q	Q	n/a	Q	n/a
Number Planned Samples		53	4	4	n/a	4	n/a
Number Samples Tested		53	4	4	n/a	4	n/a

12.3. Summary of current and historic performance (2015–20)

Table 12.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	67.0%	91.7%	91.7% ⁴	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	n/a	n/a	n/a	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

12.4. Analysis of current health performance (2019–20)

Table 12.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

⁴ System was subject to PHA when *E. coli* exceeded ADWG

Table 12.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	14	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	14	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	14	0	100	0.1470	0.1343	0.1771
Cadmium	0.002	mg/L	14	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	14	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	14	0	100	0.0233	0.0176	0.0324
Lead	0.01	mg/L	14	0	100	0.0008	0.0006	0.0010
Manganese	0.5	mg/L	14	0	100	<0.0001	<0.0001	<0.0001
Mercury	0.001	mg/L	14	0	100	0.00008	0.00005	0.00012
Molybdenum	0.05	mg/L	14	0	100	0.0008	0.0006	0.0009
Nickel	0.02	mg/L	14	0	100	0.0003	0.0002	0.0003
Selenium	0.01	mg/L	14	0	100	<0.0001	<0.0001	0.0001

Table 12.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	<1	<1	4
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	<1	<1	3
Total trihalomethanes	250	µg/L	4	0	100	15	8	22

Table 12.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.74	0.43	0.97
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.35	6.58	8.30
Turbidity	NTU	1	0.23	0.10	0.80

12.5. Analysis of overall system performance (2019–20)

Table 12.5-a Summary of system issues/public health warnings with notification details

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

13. Deep Creek drinking water system

13.1. System summary (2019–20)

Deep Creek drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	2,347
Population serviced	4,697
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	99.5%	☑	98.0%	212	1
Fluoride	100.0%	☑	100.0%	48	0
Metals	99.0%	☒	100.0%	12	1
DBPs	100.0%	☑	100.0%	48	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	1	<i>E. coli</i> exceedance, mercury exceedance
Public health warnings issued	0	
Notifications made to DOH	1	<i>E. coli</i> exceedance, mercury exceedance
Customer complaints	2	Discolouration, taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Rechlorination Massey Reservoir	In Progress	2020/2021	\$80,000
WTP Renewal Program	Alum Tank Refurbishment	In Progress	2020/2021	\$50,000
Fluoride Upgrade	Replacement of FSA Tank	In Progress	TBD	TBD

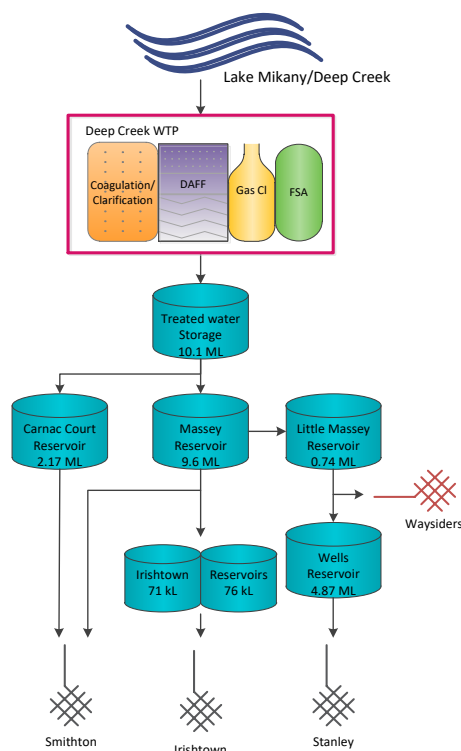


Figure 13.1-a Deep Creek system schematic



Figure 13.1-b Map of Deep Creek monitoring system

13.2. Summary of annual reticulation compliance (2019–20)

Table 13.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Smithton/Irishtown Fire Station	023SMSP0106	W	Q	Q	2M	n/a	n/a
Smithton/Marine Park Sample Point (Stanley)	024SMSP0401	W	Q	Q	2M	Q	n/a
Smithton/Nelson St Sample Point	024SMSP0501	W	n/a	n/a	n/a	n/a	n/a
Smithton/Scotchtown Rd Sample Point	024SMSP0601	W	Q	Q	n/a	Q	n/a
Number Planned Samples		212	12	12	48	8	n/a
Number Samples Tested		212	12	12	48	8	n/a

13.3. Summary of current and historic performance (2015–20)

Table 13.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	99.0%	100.0%	100.0%	100.0%	99.5%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	99.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

13.4. Analysis of current health performance (2019–20)

Table 13.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
<i>E. coli</i>	2/12/2019	<i>E. coli</i> of 6 MPN/100mL in monthly compliance sample	✓
Mercury	17/01/2020	Mercury of 0.0037 mg/L in monthly compliance sample	✓

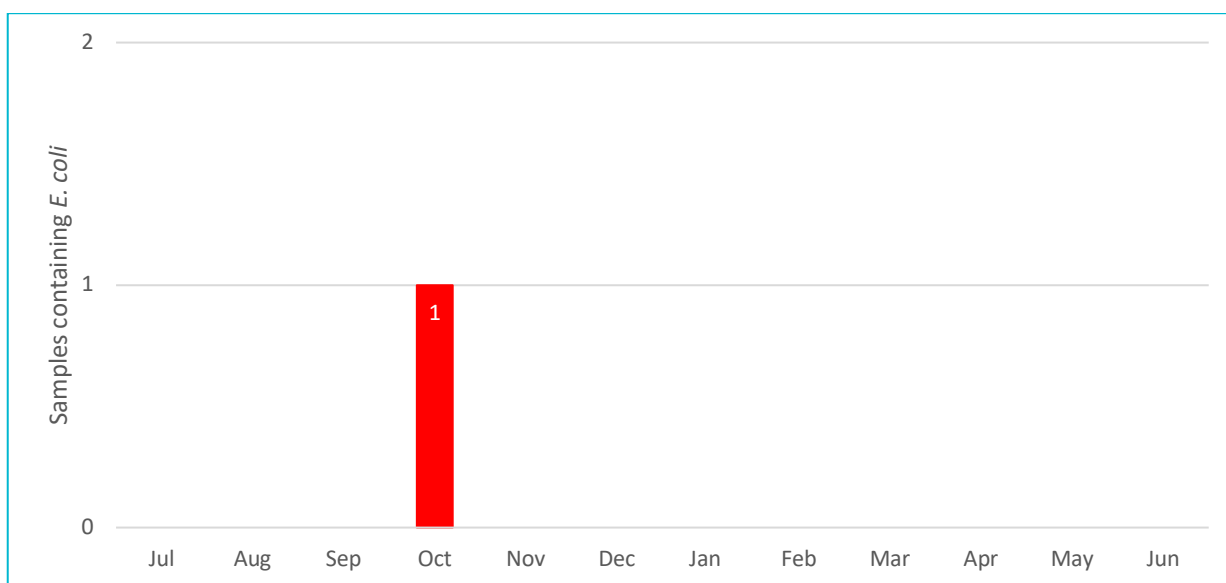


Figure 13.4-b Microbiological non-compliances by month

Table 13.4-c Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 13.4-d Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	12	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	12	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	12	0	100	0.0118	0.0081	0.0194
Cadmium	0.002	mg/L	12	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	12	0	100	0.0003	0.0001	0.0005
Copper	2	mg/L	12	0	100	0.0012	0.0007	0.0025
Lead	0.01	mg/L	12	0	100	0.0002	<0.0001	0.0004
Manganese	0.5	mg/L	12	0	100	0.0062	0.0012	0.0139
Mercury	0.001	mg/L	12	0	100	0.00034	<0.00003	0.00370
Molybdenum	0.05	mg/L	12	0	100	<0.0001	<0.0001	0.0001
Nickel	0.02	mg/L	12	0	100	0.0007	0.0004	0.0013
Selenium	0.01	mg/L	12	0	100	<0.0001	<0.0001	0.0002

Table 13.4-e Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	12	0	100	9	2	20
Monochloroacetic acid	150	µg/L	12	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	12	0	100	8	2	18
Total trihalomethanes	250	µg/L	12	0	100	85	63	112

Table 13.4-f General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.59	0	2.22
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.26	6.62	7.98
Turbidity	NTU	1	0.25	0	1.40

13.5. Analysis of overall system performance (2019–20)

Table 13.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
28/10/2019	E. coli exceedance	✓	✓
17/01/2020	Mercury exceedance	✓	✓

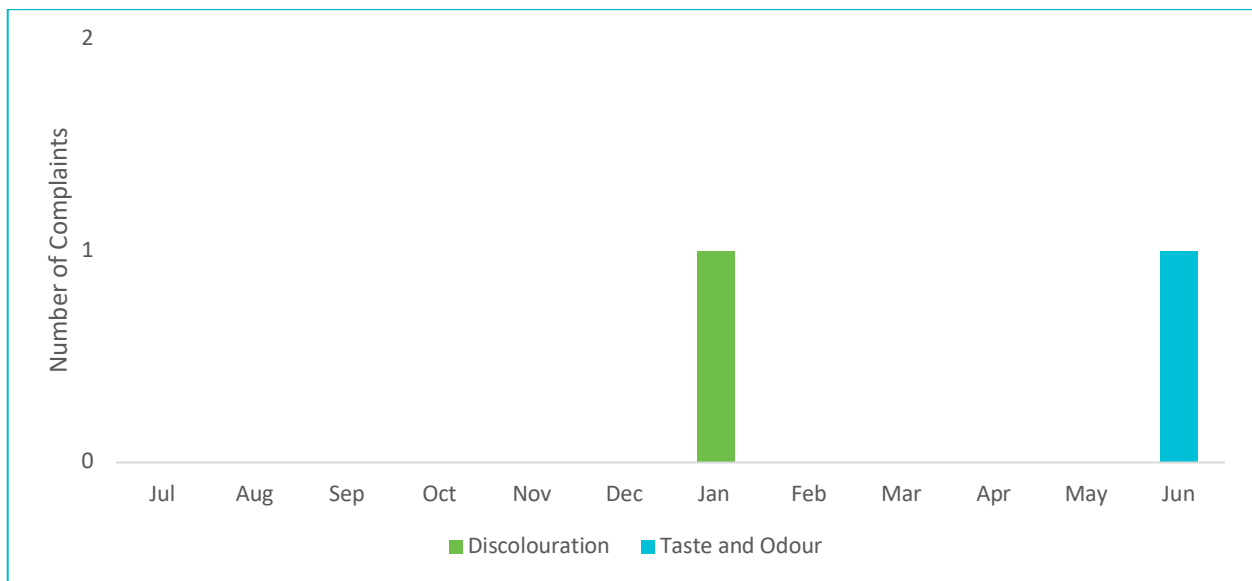


Figure 13.5-b Water quality customer complaints by month and type

14. Deloraine drinking water system

14.1. System summary (2019–20)

Deloraine drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	1,334
Population serviced	2,731
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	8	0
<div>■ Compliant ■ Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	3	Discolouration, other (stained washing)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Fluoride Upgrade	Fluoride Upgrade	Complete	2019/2020	\$50,000
System Optimisation	Instrument Upgrade	In Progress	TBC	\$245,000

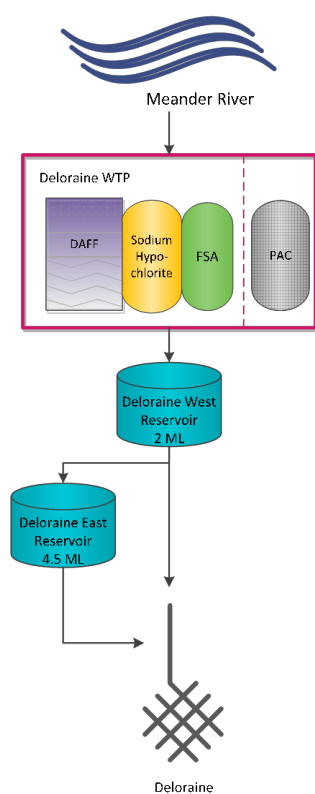


Figure 14.1-a Deloraine system schematic

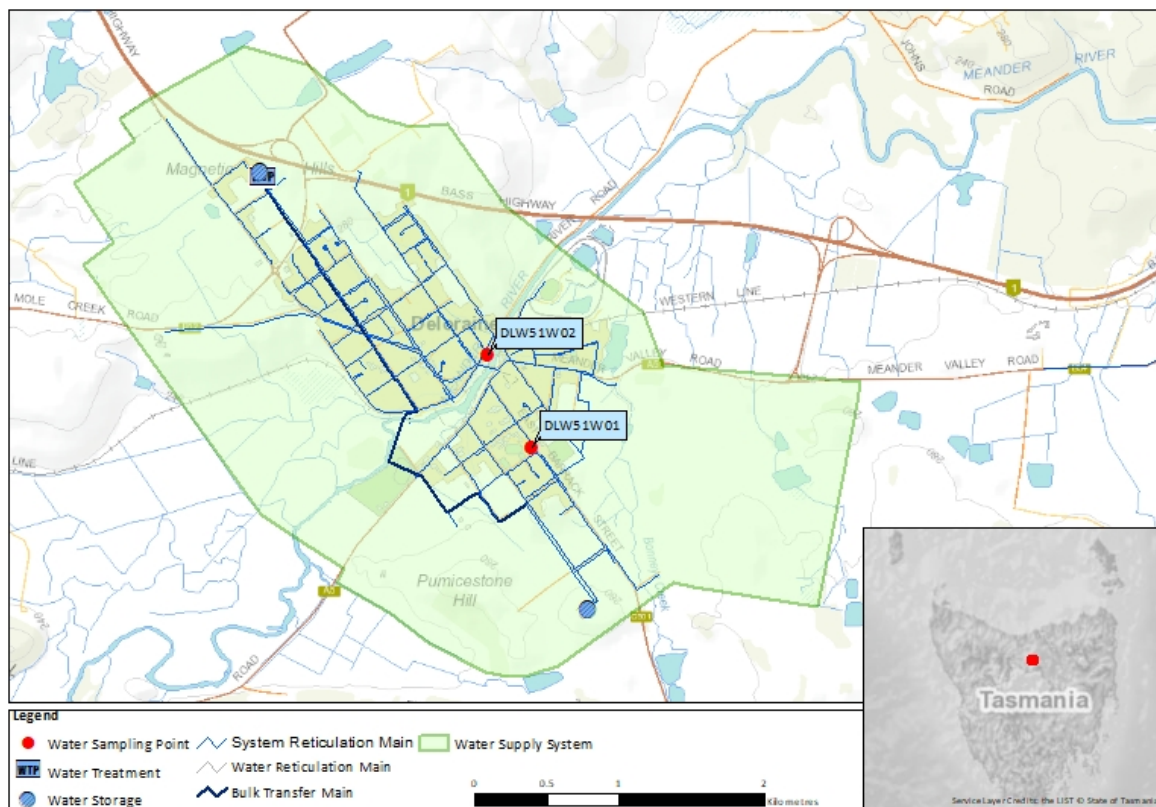


Figure 14.1-b Map of Deloraine monitoring system

14.2. Summary of annual reticulation compliance (2019–20)

Table 14.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Deloraine/Deloraine, Barrack St	DLW51W01	W	Q	Q	2M	Q	n/a
Deloraine/Deloraine, Train Park	DLW51W02	W	Q	Q	2M	Q	n/a
Number Planned Samples		106	8	8	48	8	n/a
Number Samples Tested		106	8	8	48	8	n/a

14.3. Summary of current and historic performance (2015–20)

Table 14.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

14.4. Analysis of current health performance (2019–20)

Table 14.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 14.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.7
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 14.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	8	0	100	0.0072	0.0050	0.0104
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	<0.0001	<0.0001	0.0001
Copper	2	mg/L	8	0	100	0.0035	0.0017	0.0056
Lead	0.01	mg/L	8	0	100	0.0003	<0.0001	0.0007
Manganese	0.5	mg/L	8	0	100	0.0021	0.0008	0.0034
Mercury	0.001	mg/L	8	0	100	0.00017	<0.00003	0.00043
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0002	<0.0001	0.0004
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

Table 14.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	6	2	14
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	8	1	20
Total trihalomethanes	250	µg/L	8	0	100	19	6	37

Table 14.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.74	0.17	1.03
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.30	6.78	7.86
Turbidity	NTU	1	0.16	0.10	0.60

14.5. Analysis of overall system performance (2019–20)

Table 14.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DOH notification required	DOH notification complete
July 2019 – November 2019	Low fluoride levels detected	✓	✓

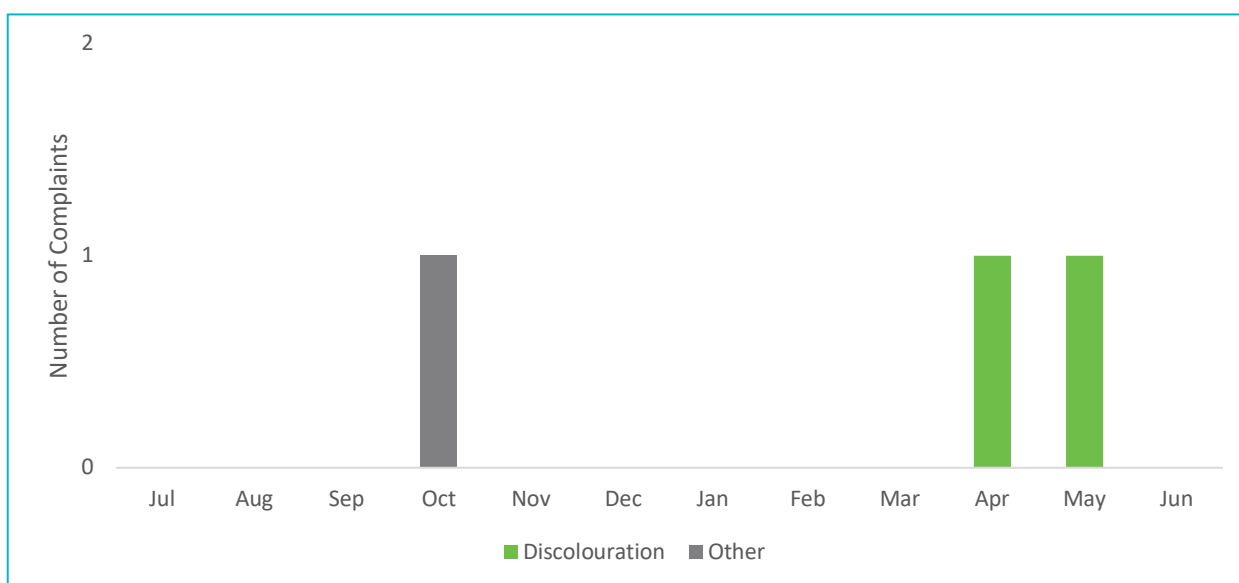


Figure 14.5-b Water quality customer complaints by month and type

15. Distillery Creek drinking water system

15.1. System summary (2019–20)

Distillery Creek drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	13,617
Population serviced	27,018
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	528	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DOH	0	
Customer complaints	20	Discolouration, taste and odour, cloudy, other (illness, stained washing)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal Program	Instrument Upgrade	In Progress	TBC	\$140,000

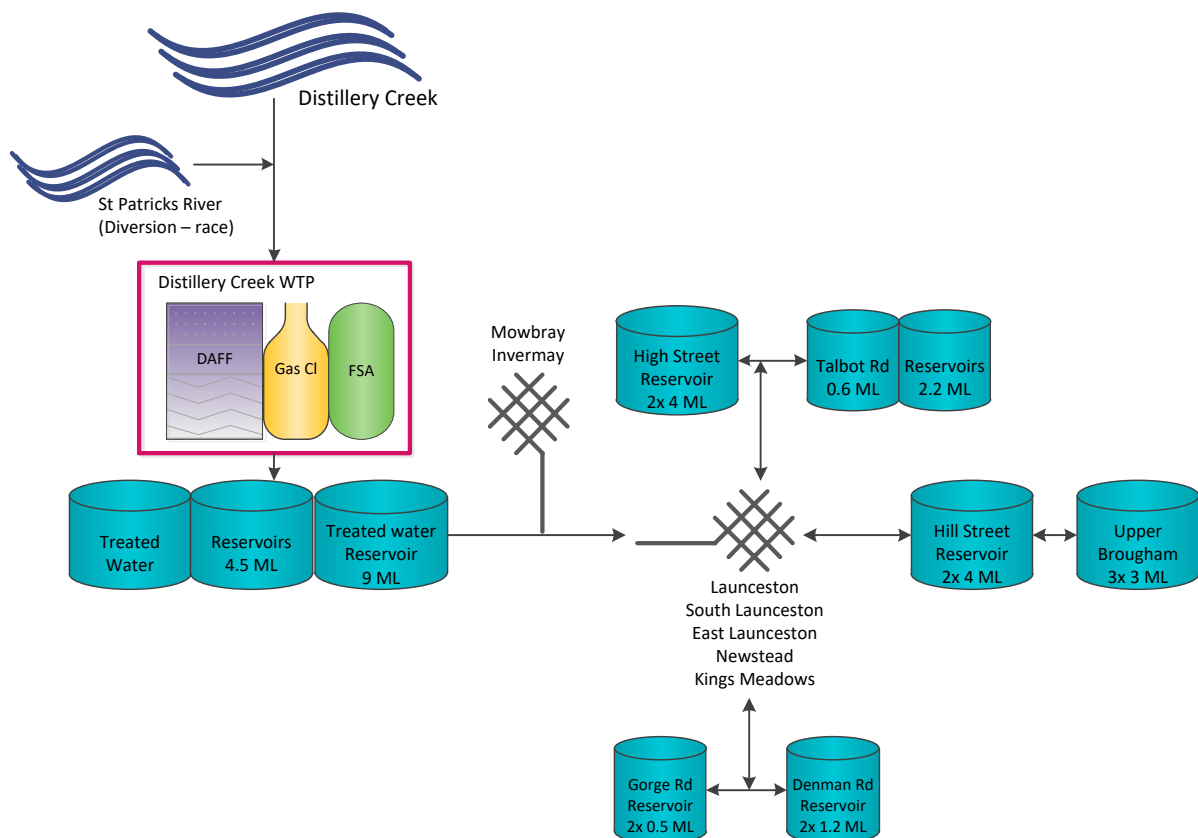


Figure 15.1-a Distillery Creek system schematic

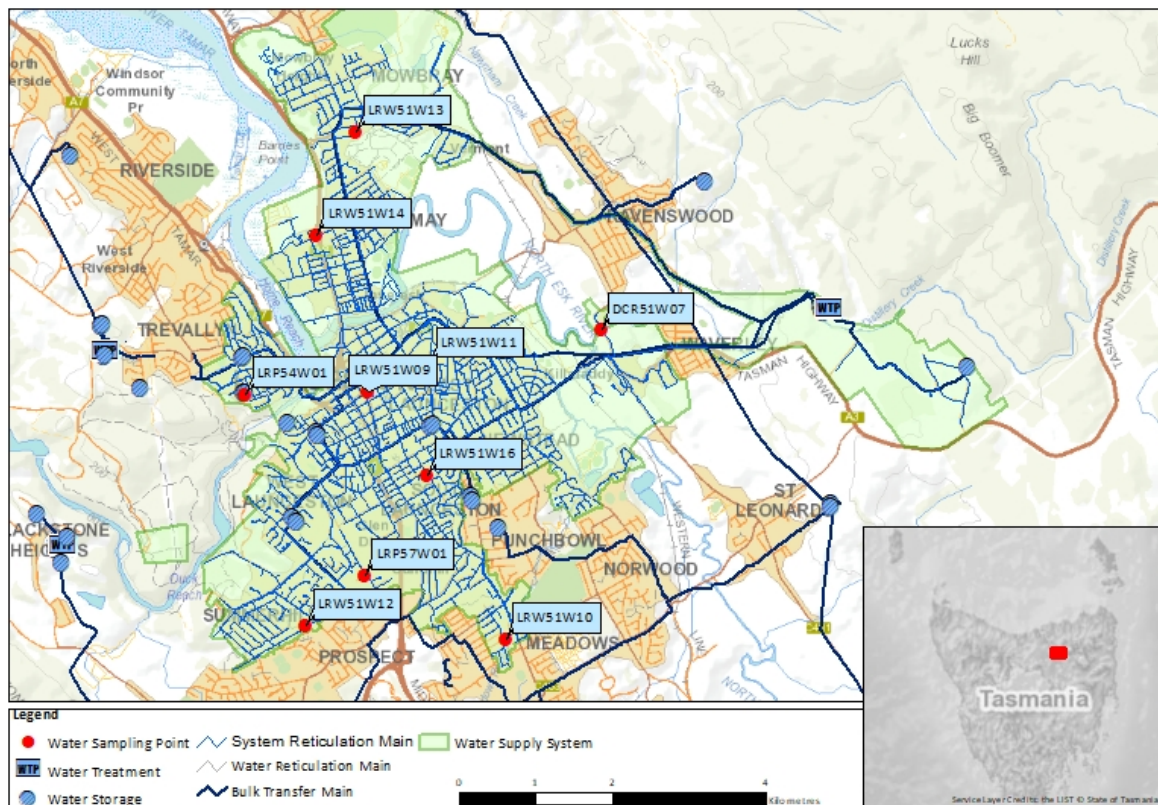


Figure 15.1-b Map of Distillery Creek monitoring system

15.2. Summary of annual reticulation compliance (2019–20)

Table 15.2.a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Denman Rd PS	LRP54W01	W	n/a	n/a	n/a	n/a	n/a
Kings Meadows, 9/1.11 Blaydon St	LRW51W10	W	n/a	n/a	n/a	n/a	n/a
East Launceston, Crn High & Adelaide St	LRW51W11	W	n/a	n/a	n/a	n/a	n/a
Invermay, Mayne St	LRW51W14	W	n/a	n/a	n/a	n/a	n/a
Launceston, York Street Public Toilets	LRW51W09	W	n/a	n/a	n/a	n/a	n/a
Mowbray, 7 Derby St	LRW51W13	W	n/a	n/a	2M	n/a	n/a
South Launceston, Mulgrave St Park	LRW51W16	W	Q	Q	2M	Q	n/a
Summerhill, 194 Peel St	LRW51W12	W	n/a	n/a	n/a	n/a	n/a
West Launceston, Granville St	LRP57W01	W	n/a	n/a	n/a	n/a	n/a
Drivers Run Booster	DCR51W07	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		528	4	4	48	4	n/a
Number Samples Tested		528	4	4	48	4	n/a

15.3. Summary of current and historic performance (2015–20)

Table 15.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

15.4. Analysis of current health performance (2019–20)

Table 15.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 15.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 15.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0121	0.0112	0.0128
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Copper	2	mg/L	4	0	100	0.0105	0.0047	0.0159
Lead	0.01	mg/L	4	0	100	0.0002	0.0001	0.0003
Manganese	0.5	mg/L	4	0	100	0.0020	0.0013	0.0026
Mercury	0.001	mg/L	4	0	100	0.00010	<0.00003	0.00020
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0003	0.0002	0.0006
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 15.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	9	4	13
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	11	3	20
Total trihalomethanes	250	µg/L	4	0	100	31	15	45

Table 15.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.51	0	1.03
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.01	6.42	7.51
Turbidity	NTU	1	0.36	0.10	1.00

15.5. Analysis of overall system performance (2019–20)

Table 15.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

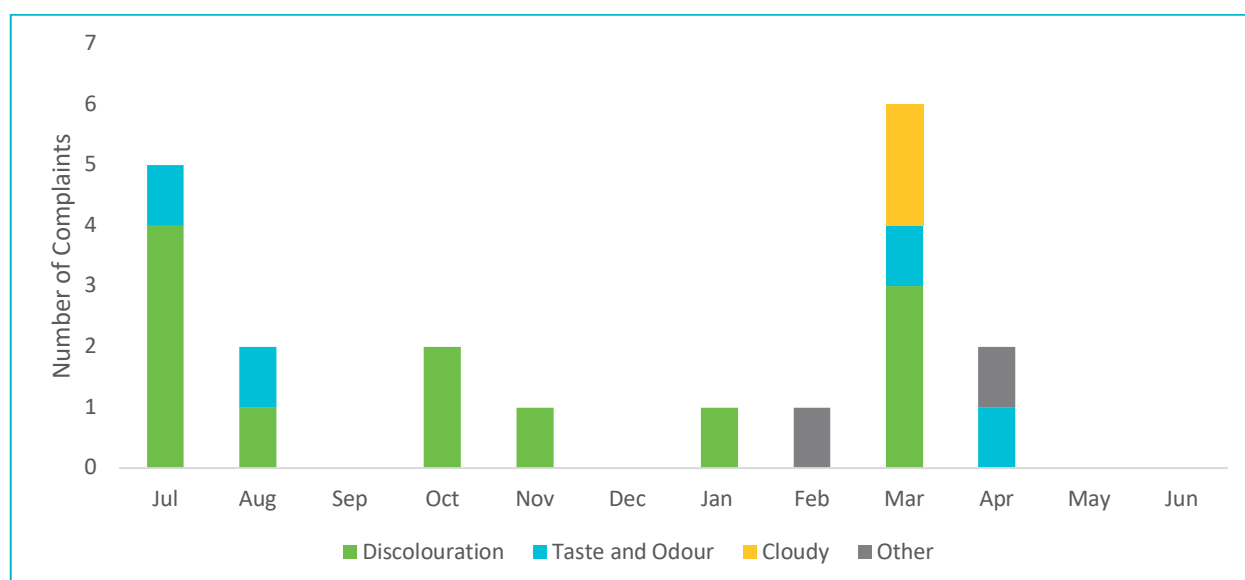


Figure 15.5-b Water quality customer complaints by month and type

16. Dover drinking water system

16.1. System summary (2019–20)

Dover drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	744
Population serviced	1,225
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	52	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DOH	0	
Customer complaints	1	Taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal Program	Media Replacement	In Progress	TBC	\$40,000
System Optimisation	Filter to Waste	In Progress	TBC	\$76,000

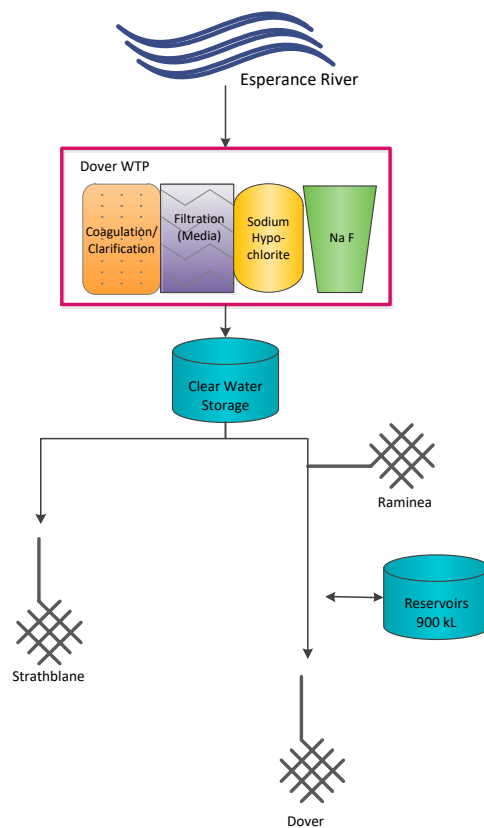


Figure 16.1-a Dover system schematic

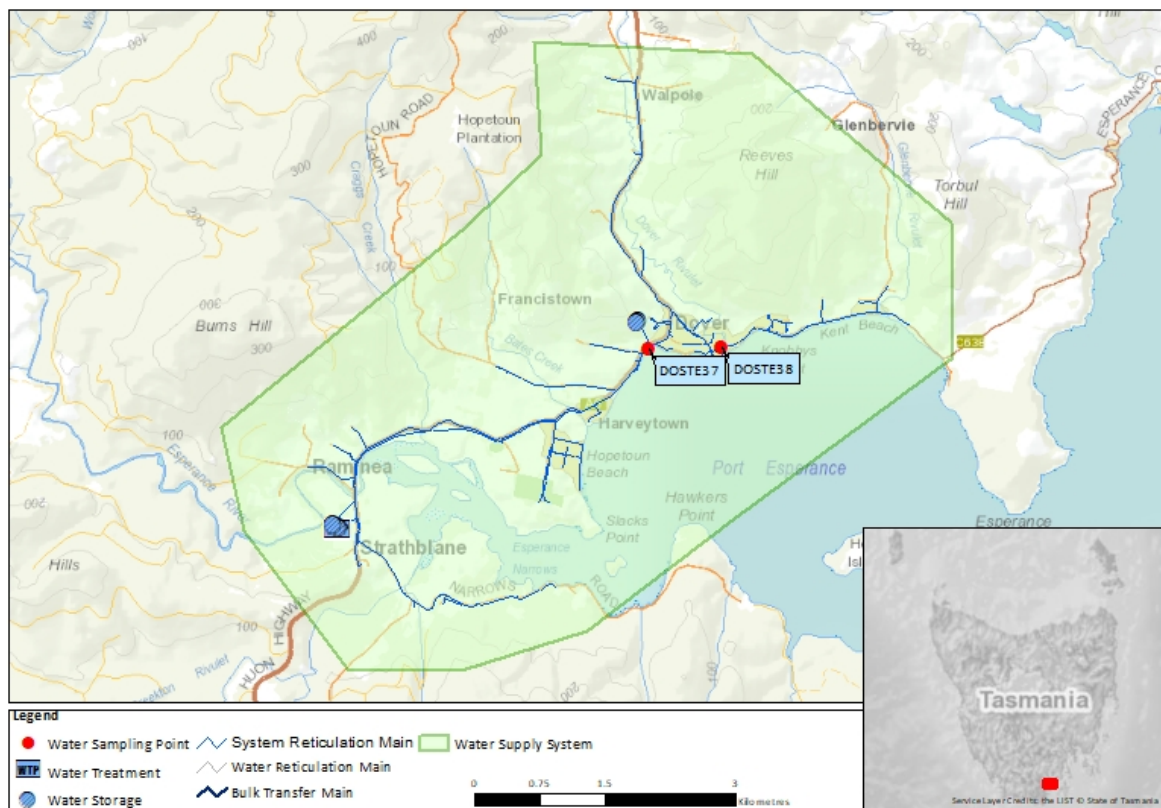


Figure 16.1-b Map of Dover monitoring system

16.2. Summary of annual reticulation compliance (2019–20)

Table 16.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Dover/Sample Tap	DOSTE37	W	Q	Q	2M	Q	n/a
Dover/No.4 P/S Kent Beach Rd	DOSTE38	n/a	n/a	n/a	2M	n/a	n/a
Number Planned Samples		52	4	4	48	4	n/a
Number Samples Tested		52	4	4	48	4	n/a

16.3. Summary of current and historic performance (2015–20)

Table 16.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

16.4. Analysis of current health performance (2019–20)

Table 16.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 16.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 16.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0065	0.0053	0.0077
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0002	<0.0001	0.0003
Copper	2	mg/L	4	0	100	0.0218	0.0103	0.0467
Lead	0.01	mg/L	4	0	100	0.0002	<0.0001	0.0004
Manganese	0.5	mg/L	4	0	100	0.0010	0.0002	0.0017
Mercury	0.001	mg/L	4	0	100	<0.00003	<0.00003	<0.00003
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0003	0.0002	0.0004
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 16.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	12	3	20
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	25	13	42
Total trihalomethanes	250	µg/L	4	0	100	55	43	83

Table 16.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.65	0.07	1.04
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.43	6.92	8.02
Turbidity	NTU	1	0.25	0.10	0.60

16.5. Analysis of overall system performance (2019–20)

Table 16.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DOH notification required	DOH notification complete
No system issues or public health warnings issued			

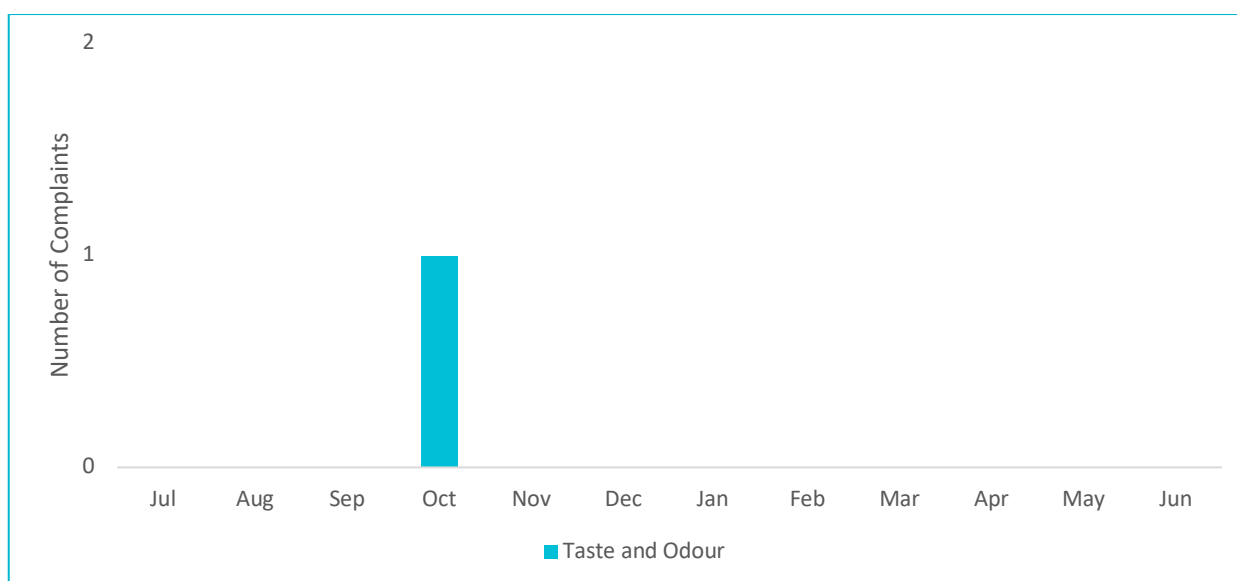


Figure 16.5-b Water quality customer complaints by month and type

17. Dowlings Creek drinking water system

17.1. System summary (2019–20)

Dowlings Creek drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	102
Population serviced	214
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	98.2%	☑	98.0%	54	1
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	1	<i>E. coli</i> exceedance
Public health warnings issued	0	
Notifications made to DoH	1	<i>E. coli</i> exceedance
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Regional Towns Water Supply Program	UV Disinfection Including GAC Installation	Not Started	TBC	TBC
System Optimisation	Instrument Upgrade	Complete	2019/2020	\$29,000

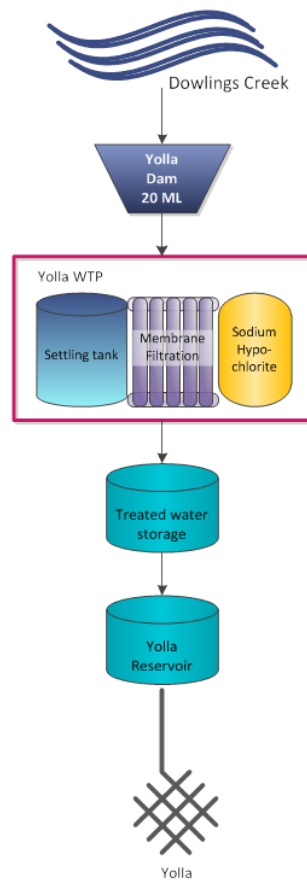


Figure 17.1-a Dowlings Creek system schematic

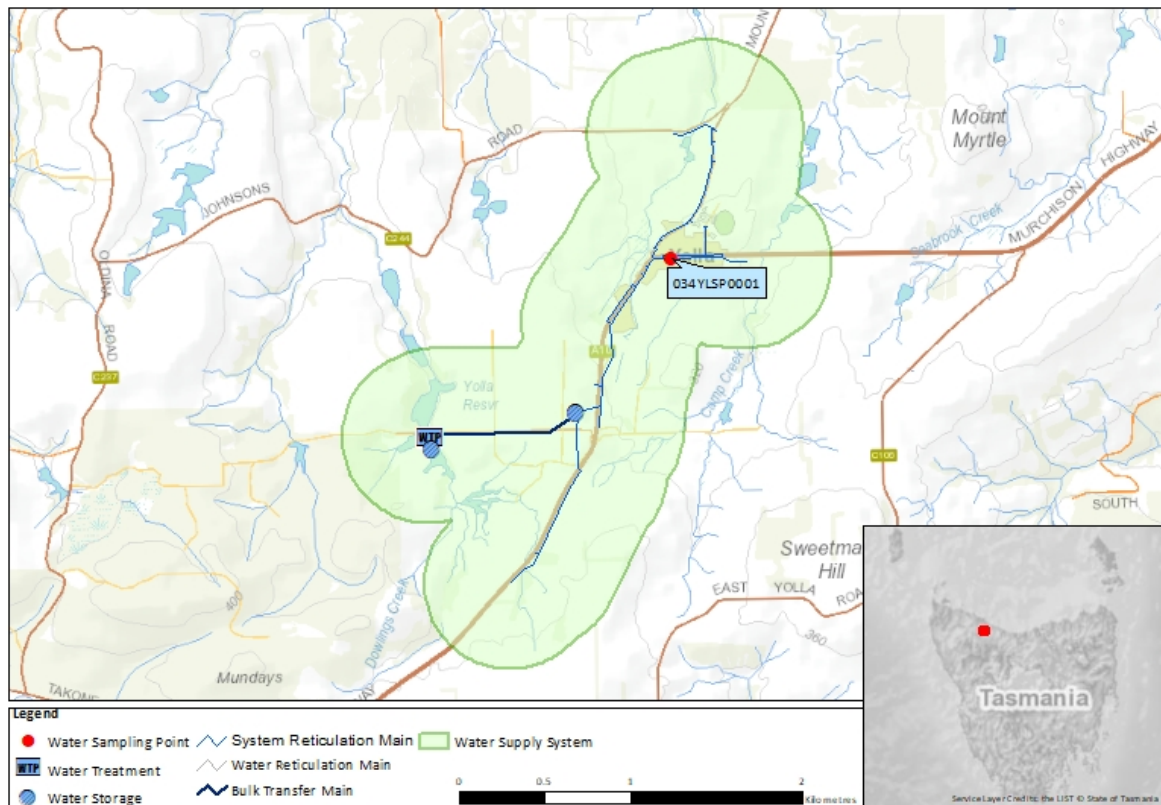


Figure 17.1-b Map of Dowlings Creek monitoring system

17.2. Summary of annual reticulation compliance (2019–20)

Table 17.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Yolla/School Sample Point	034YLSP0001	W	Q	Q	n/a	Q	n/a
Number Planned Samples		53	4	4	n/a	4	n/a
Number Samples Tested		53	4	4	n/a	4	n/a

17.3. Summary of current and historic performance (2015–20)

Table 17.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	99.3%	100.0%	100.0%	100.0%	98.2%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	99.3%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

17.4. Analysis of current health performance (2019–20)

Table 17.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
<i>E. coli</i>	2/12/2019	<i>E.coli</i> of 2 MPN/100mL at operational site.	✓

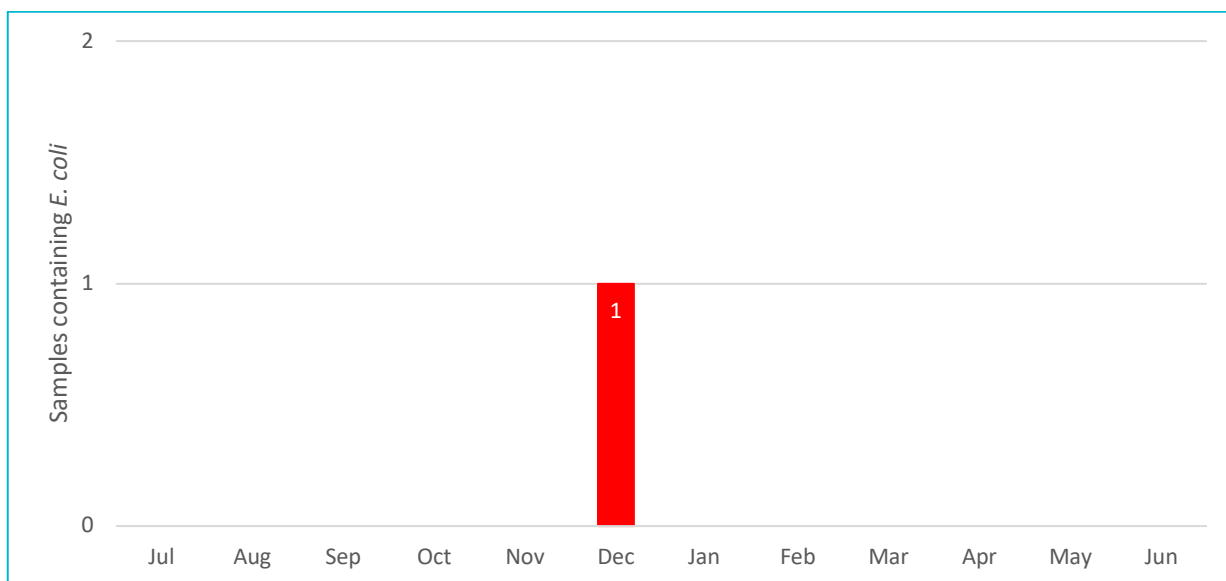


Figure 17.4-b Microbiological non-compliances by month

Table 17.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0039	0.0032	0.0047
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0001	<0.0001	0.0002
Copper	2	mg/L	4	0	100	0.0084	0.0065	0.0103
Lead	0.01	mg/L	4	0	100	0.0007	0.0006	0.0008
Manganese	0.5	mg/L	4	0	100	0.0209	0.0119	0.0410
Mercury	0.001	mg/L	4	0	100	0.00004	<0.00003	0.00008
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0005	0.0003	0.0007
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 17.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	37	24	45
Monochloroacetic acid	150	µg/L	4	0	100	4	<3	6
Trichloroacetic acid	100	µg/L	4	0	100	49	28	70
Total trihalomethanes	250	µg/L	4	0	100	94	69	116

Table 17.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.54	0.06	1.32
Colour True	HU	15	3.75	2	6
pH	Units	6.5 – 8.5	7.19	6.51	7.70
Turbidity	NTU	1	0.21	0.10	0.50

17.5. Analysis of overall system performance (2019–20)

Table 17.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
2/12/2019	<i>E. coli</i> exceedance	✓	✓

18. Ellendale drinking water system

18.1. System summary (2019–20)

Ellendale drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	76
Population serviced	137
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	12	0
<input checked="" type="checkbox"/> Compliant <input type="checkbox"/> Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DOH	5	DBP exceedances in sampling program (under rounding limit)
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

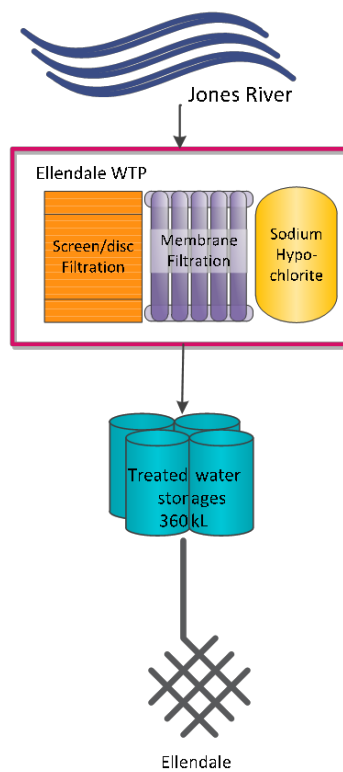


Figure 18.1-a Ellendale system schematic

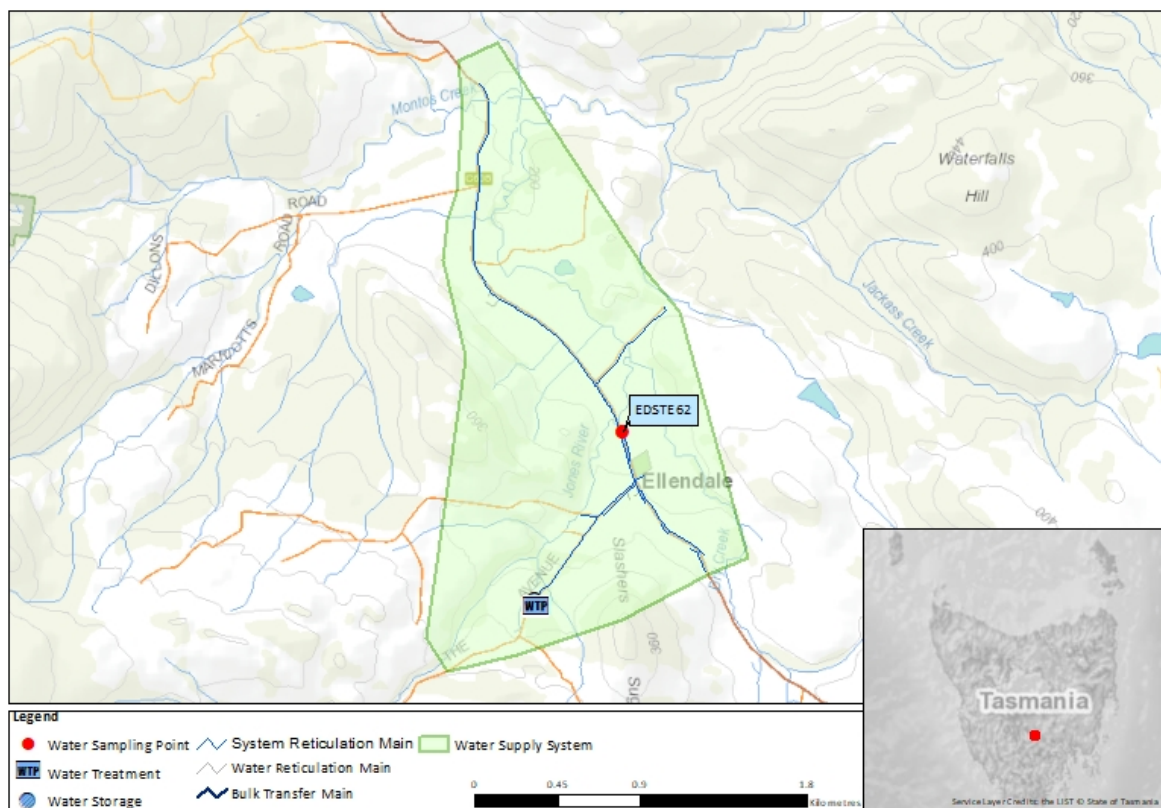


Figure 18.1-b Map of Ellendale monitoring system

18.2. Summary of annual reticulation compliance (2019–20)

Table 18.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Ellendale/Sample Tap	EDSTE62	W	Q	M	n/a	Q	n/a
Number Planned Samples		53	4	12	n/a	4	n/a
Number Samples Tested		53	4	12	n/a	4	n/a

18.3. Summary of current and historic performance (2015–20)

Table 18.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	95.0%	95.8%	97.9%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

18.4. Analysis of current health performance (2019–20)

Table 18.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 18.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0039	0.0029	0.0054
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0004	0.0003	0.0005
Copper	2	mg/L	4	0	100	0.0033	0.0014	0.0054
Lead	0.01	mg/L	4	0	100	0.0003	<0.0001	0.0006
Manganese	0.5	mg/L	4	0	100	0.0006	0.0004	0.0008
Mercury	0.001	mg/L	4	0	100	0.00006	<0.00003	0.00013
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0001	0.0001	0.0002
Selenium	0.01	mg/L	4	0	100	0.0001	<0.0001	0.0003

Table 18.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	12	0	100	38	14	60
Monochloroacetic acid	150	µg/L	12	0	100	3	<3	4
Trichloroacetic acid	100	µg/L	12	0	100	78	14	104 ⁵
Total trihalomethanes	250	µg/L	12	0	100	103	80	146

Table 18.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.70	0.38	1.04
Colour True	HU	15	1.75	1	2
pH	Units	6.5 – 8.5	7.60	7	7.96
Turbidity	NTU	1	0.21	0.10	0.60

⁵ Maximum result, when rounded, does not exceed limit.

18.5. Analysis of overall system performance (2019–20)

Table 18.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
12/09/2019	Trichloroacetic acid exceedance of 101 µg/L. Does not exceed rounding limit.	✓	✓
08/04/2020	Trichloroacetic acid exceedance of 104 µg/L. Does not exceed rounding limit.	✓	✓
30/04/2020	Trichloroacetic acid exceedance of 105 µg/L in investigation sample. Does not exceed rounding limit.	✓	✓
07/05/2020	Trichloroacetic acid exceedance of 103 µg/L. Does not exceed rounding limit.	✓	✓
29/06/2020	Trichloroacetic acid exceedance of 117 µg/L in investigation sample. Does not exceed rounding limit.	✓	✓

19. Fentonbury/Westerway drinking water system

19.1. System summary (2019–20)

Fentonbury/Westerway drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	132
Population serviced	258
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	8	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	1	DBP exceedance in sampling program (under rounding limit)
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

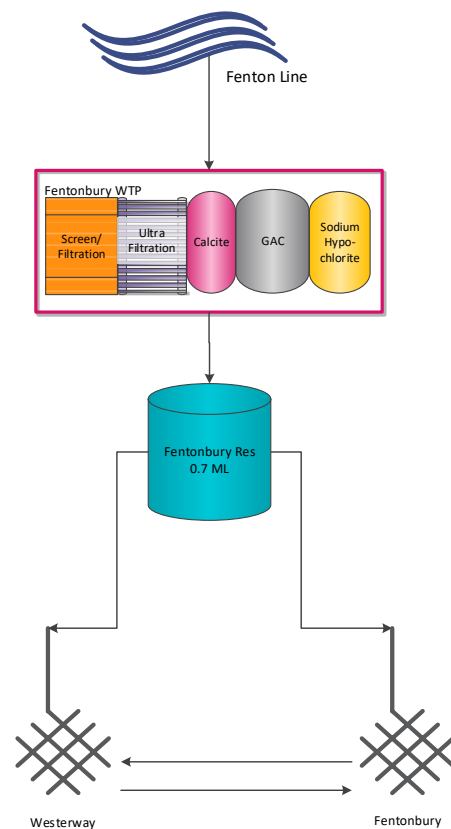


Figure 19.1-a Fentonbury/Westerway system schematic

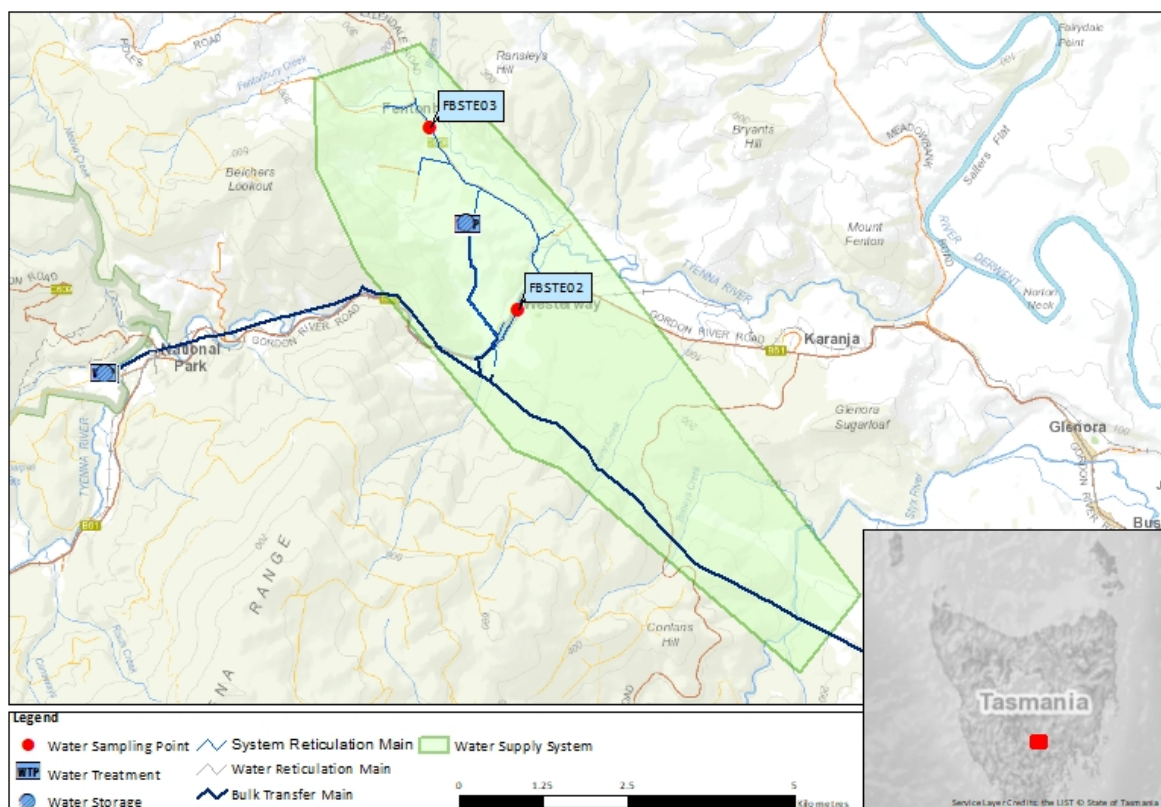


Figure 19.1-b Map of Fentonbury/Westerway monitoring system

19.2. Summary of annual reticulation compliance (2019–20)

Table 19.2-a Sampling program

Planned compliance sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Fentonbury/1654 Gordon River Road	FBSTE02	W	Q	Q	2M	Q	n/a
Fentonbury/304 Ellendale Rd	FBSTE03	W	Q	Q	2M	Q	n/a
Number Planned Samples		106	8	8	48	8	n/a
Number Samples Tested		106	8	8	48	8	n/a

19.3. Summary of current and historic performance (2015–20)

Table 19.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	n/a	n/a	n/a	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	n/a	n/a	n/a	100.0%	100.0%
Disinfection by products	n/a	n/a	n/a	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

19.4. Analysis of current health performance (2019–20)

Table 19.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 19.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	8	0	100	0.0019	0.0012	0.0026
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	0.0001	<0.0001	0.0002
Copper	2	mg/L	8	0	100	0.0035	0.0013	0.0085
Lead	0.01	mg/L	8	0	100	0.0003	0.0001	0.0008
Manganese	0.5	mg/L	8	0	100	0.0012	0.0004	0.0031
Mercury	0.001	mg/L	8	0	100	0.00004	<0.00003	0.00006
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	<0.0001	<0.0001	0.0001
Selenium	0.01	mg/L	8	0	100	0.0001	<0.0001	0.0003

Table 19.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100.0%	32	17	78
Monochloroacetic acid	150	µg/L	8	0	100.0%	<3	<3	4
Trichloroacetic acid	100	µg/L	8	0	100.0%	46	20	132 ⁶
Total trihalomethanes	250	µg/L	8	0	100.0%	105	75	163

Table 19.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.74	0.02	1.17
Colour True	HU	15	3.22	1	6
pH	Units	6.5 – 8.5	7.83	6.60	8.87
Turbidity	NTU	1	0.30	0.10	0.70

⁶ Maximum result, when rounded, does not exceed limit.

19.5. Analysis of overall system performance (2019–20)

Table 19.5-a Summary of system issues/public health warnings with notification details

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
25/07/2019	Trichloroacetic acid exceedance of 132 µg/L. Does not exceed rounding limit.	✓	✓

20. Fingal drinking water system

20.1. System summary (2019–20)

Fingal drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	399
Population serviced	711
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	106	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
<div> ■ Compliant ■ Non-compliant </div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Supernatant Reuse & Fire Protection	Complete	2019/2020	\$25,000

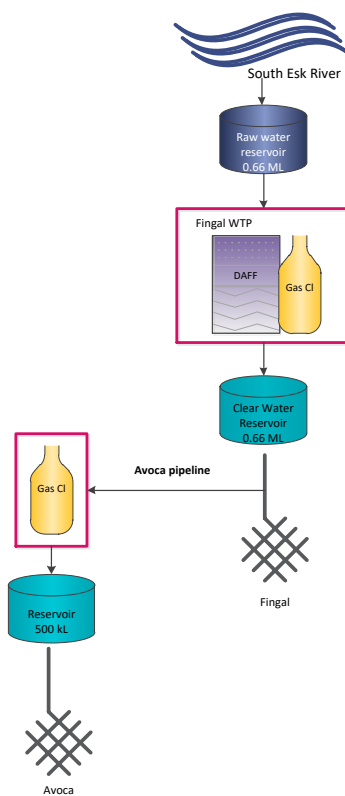


Figure 20.1-a Fingal system schematic

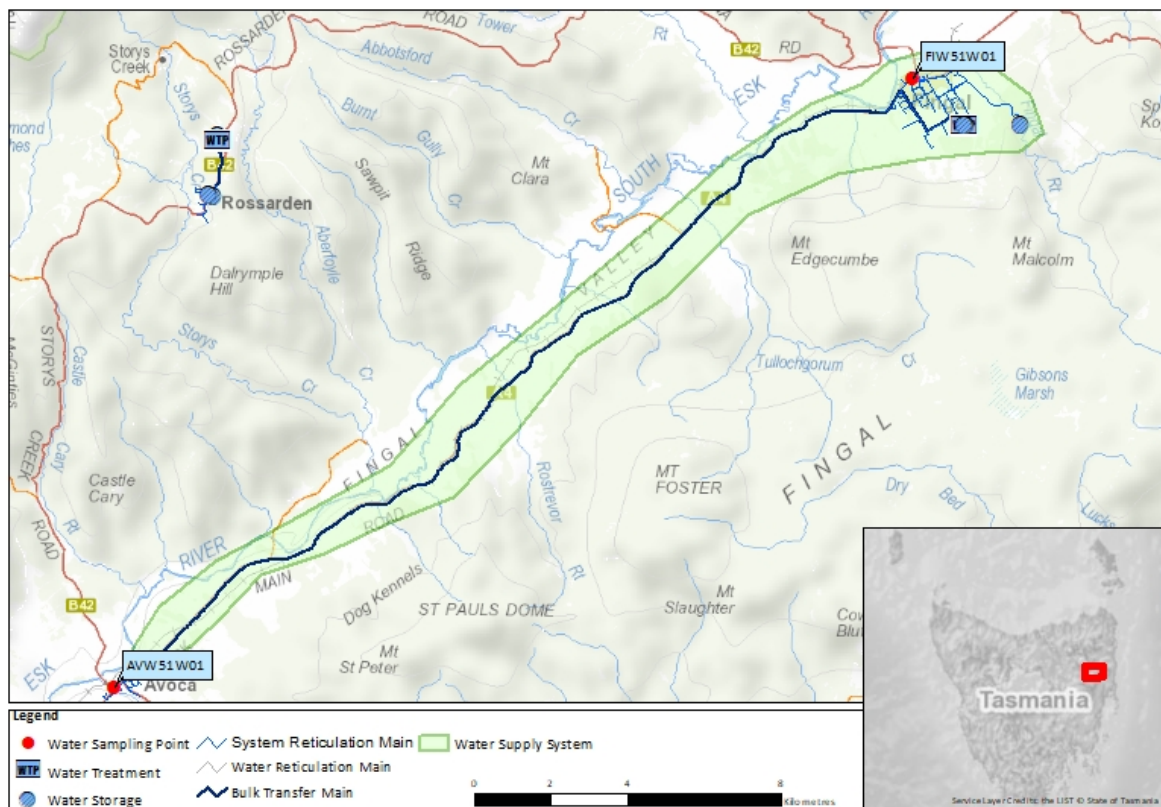


Figure 20.1-b Map of Fingal monitoring system

20.2. Summary of annual reticulation compliance (2019–20)

Table 20.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Avoca/crn Falmouth & Arthur St	AVW51W01	W	Q	Q	n/a	Q	n/a
Fingal/5-7 Gleadow St	FIW51W09	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		106	4	4	n/a	4	n/a
Number Samples Tested		106	4	4	n/a	4	n/a

20.3. Summary of current and historic performance (2015–20)

Table 20.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

20.4. Analysis of current health performance (2019–20)

Table 20.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 20.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	0.0004
Barium	2	mg/L	4	0	100	0.0072	0.0057	0.0095
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Copper	2	mg/L	4	0	100	0.0030	0.0022	0.0038
Lead	0.01	mg/L	4	0	100	0.0002	0.0001	0.0003
Manganese	0.5	mg/L	4	0	100	0.0009	0.0002	0.0018
Mercury	0.001	mg/L	4	0	100	0.00006	<0.00003	0.00009
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Nickel	0.02	mg/L	4	0	100	0.0002	0.0001	0.0002
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 20.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	16	11	25
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	17	12	26
Total trihalomethanes	250	µg/L	4	0	100	44	30	63

Table 20.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.80	0.22	1.84
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.15	6.65	7.60
Turbidity	NTU	1	0.28	0.10	0.60

20.5. Analysis of overall system performance (2019–20)

Table 20.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

21. Forth River drinking water system

21.1. System summary (2019–20)

Forth River drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	18,851
Population serviced	37,666
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	99.8%	☑	98.0%	430	1
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	16	0
DBPs	100.0%	☑	100.0%	12	0
<div>■ Compliant ■ Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	1	<i>E. coli</i> exceedance
Public health warnings issued	0	
Notifications made to DoH	1	<i>E. coli</i> exceedance
Customer complaints	22	Discolouration, taste and odour, other (illness)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$70,000
WTP Upgrade	Forth WTP Upgrade	Planning	TBC	TBC

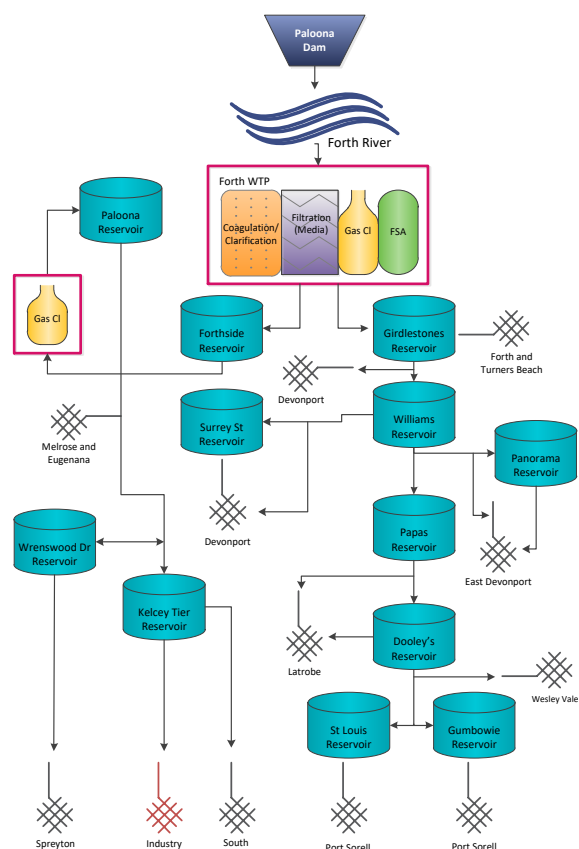


Figure 21.1-a Forth River system schematic

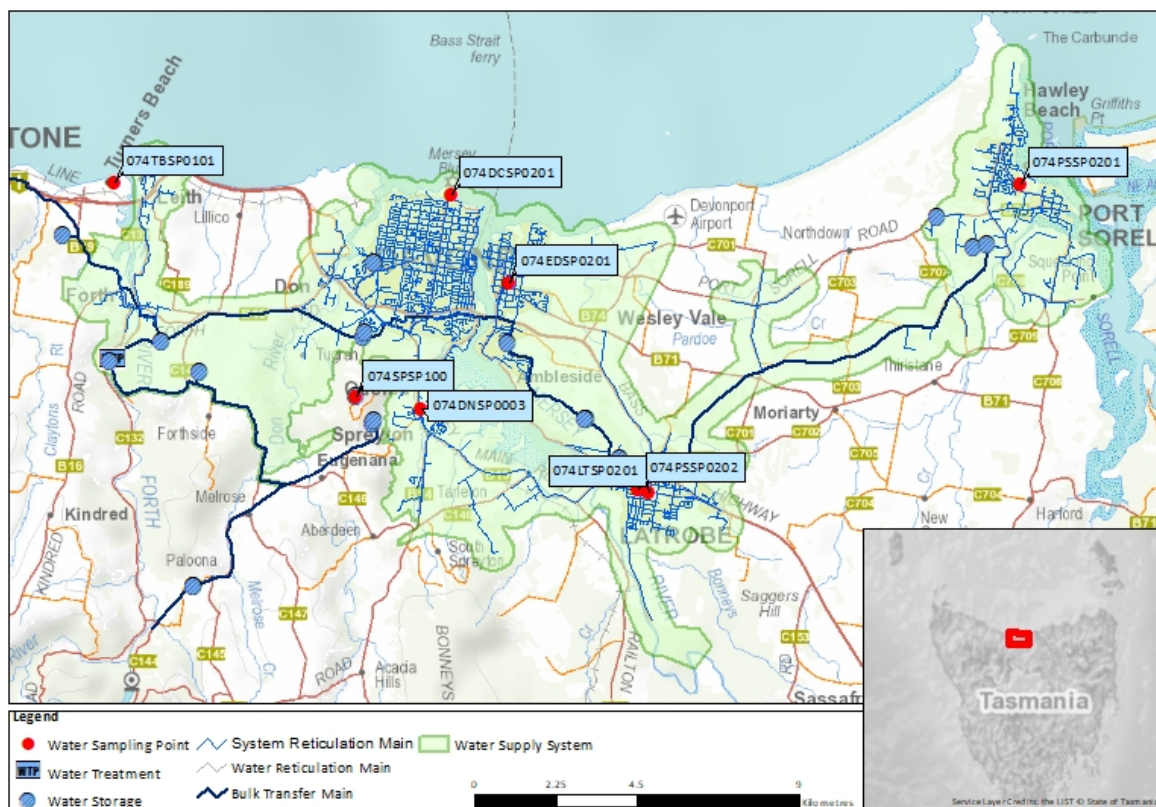


Figure 21.1-b Map of Forth River monitoring system

21.2. Summary of annual reticulation compliance (2019–20)

Table 21.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Forth/Spreyton Memorial Hall	074DNSP0003 ⁷	W	n/a	n/a	n/a	n/a	n/a
Woodrising Avenue – SPS Spreyton	FORST01	W	n/a	n/a	n/a	n/a	n/a
Forth/Mersey Bluff Surf Club Sample Point	074DCSP0201 ⁸	W	Q	Q	n/a	Q	n/a
24 Allport St – West Leith	FORST02 ⁹	W	n/a	n/a	n/a	Q	n/a
Gilbert Street SPS Latrobe	FORST03	W	n/a	n/a	2M	n/a	n/a
Opposite 151 Gunn Street	FORST04	W	Q	Q	n/a	Q	n/a
Forth/Wright St Sample Point	074EDSP0201 ¹⁰	W	Q	n/a	n/a	n/a	n/a
Opposite 12 Brook Street	FORST05	W	Q	n/a	n/a	n/a	n/a
Forth/Latrobe Fire Station	074PSSP0202 ¹¹	W	n/a	n/a	2M	n/a	n/a
Forth/Port Sorell Surf Club Sample Point	074PSSP0201 ¹²	W	Q	Q	2M	Q	n/a
Hawley Esplanade SPS Hawley Beach	FORST06	W	Q	Q	2M	Q	n/a
Gawler/Turners Beach Esplanade	074TBSP0101	W	n/a	n/a	n/a	n/a	n/a
Forth/Wrenswood Drv Res Sample Point	074SPSP100 ¹³	W	Q	Q	n/a	Q	n/a
180 Wrenswood Drive	FORST07	W	Q	Q	n/a	Q	n/a
Paloona Road (Near PRV)	FORST08 ⁴	W	n/a	n/a	n/a	n/a	n/a
5 Browns Road – Port Sorell	FORST09 ⁴	W	n/a	n/a	n/a	n/a	n/a
16 Rubicon Rise	FORST10 ⁴	W	n/a	n/a	n/a	n/a	n/a
24 McCall Terrace – Stony Rise	FORST11 ⁴	W	n/a	n/a	n/a	n/a	n/a
22 Tatiana Close	FORST12 ⁴	W	n/a	n/a	n/a	n/a	n/a
Kelcey Tier Road WPS Inlet	FORST13 ⁴	W	n/a	n/a	n/a	n/a	n/a
26 North Caroline Street	FORST14 ⁴	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		429	16	12	48	12	n/a
Number Samples Tested		429	16	12	48	12	n/a

⁷ Replaced by FORST01 1st May 2020

⁸ Replaced by FORST04 1st May 2020

⁹ From 1st May 2020

¹⁰ Replaced by FORST05 1st May 2020

¹¹ Replaced by FORST03 1st May 2020

¹² Replaced by FORST06 1st May 2020

¹³ Replaced by FORST07 1st May 2020

21.3. Summary of current and historic performance (2015–20)

Table 21.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	99.7%	100.0%	99.8%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div><div></div> Compliant <div></div> Non-compliant</div>					

21.4. Analysis of current health performance (2019–20)

Table 21.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
<i>E. coli</i>	29/4/2020	<i>E.coli</i> of 1 MPN/100mL at operational site.	✓

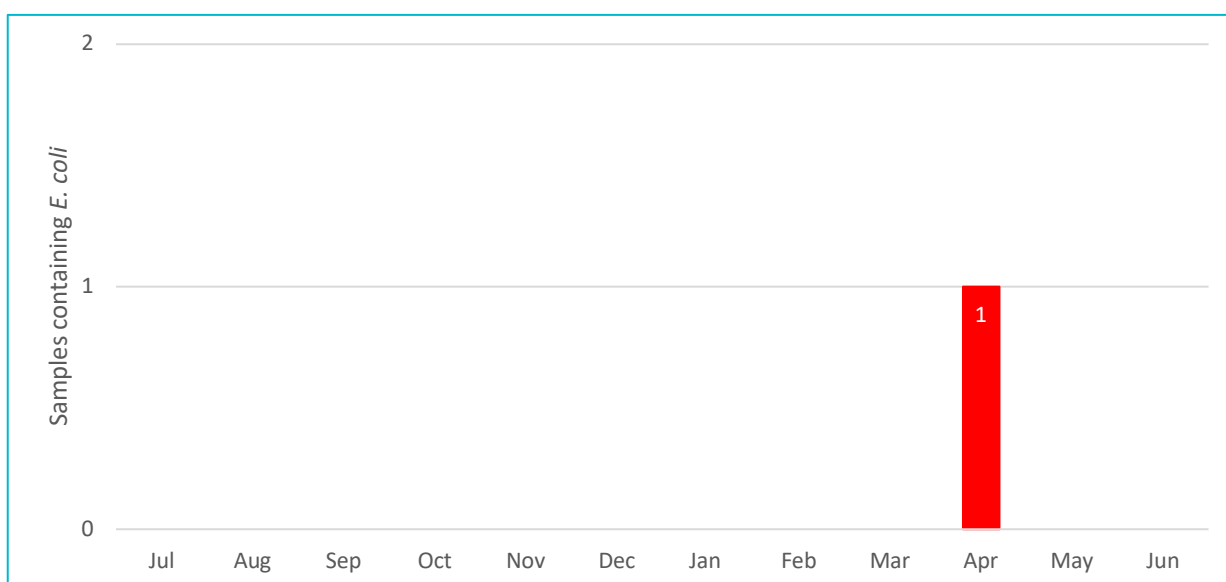


Figure 21.4-b Microbiological non-compliances by month

Table 21.4-c Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.7
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 21.4-d Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	16	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	16	0	100	0.0005	<0.0003	<0.0003
Barium	2	mg/L	16	0	100	0.0091	0.0065	0.0118
Cadmium	0.002	mg/L	16	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	16	0	100	0.0002	<0.0001	0.0006
Copper	2	mg/L	16	0	100	0.0098	<0.0001	0.0362
Lead	0.01	mg/L	16	0	100	0.0002	<0.0001	0.0009
Manganese	0.5	mg/L	16	0	100	0.0024	0.0009	0.0045
Mercury	0.001	mg/L	16	0	100	0.00005	<0.00003	0.00011
Molybdenum	0.05	mg/L	16	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	16	0	100	0.0001	<0.0001	0.0003
Selenium	0.01	mg/L	16	0	100	<0.0001	<0.0001	0.0002

Table 21.4-e Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	12	0	100	11	1	22
Monochloroacetic acid	150	µg/L	12	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	12	0	100	20	11	30
Total trihalomethanes	250	µg/L	12	0	100	60	41	77

Table 21.4-f General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.57	0	1.50
Colour True	HU	15	<1	<1	2
pH	Units	6.5 – 8.5	7.35	6.31	9.67
Turbidity	NTU	1	0.32	0.10	7.20

21.5. Analysis of overall system performance (2019–20)

Table 21.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
29/4/2020	<i>E. coli</i> exceedance	✓	✓
July 2019 – October 2019 April 2020 – June 2020	Low fluoride levels detected	✓	✓

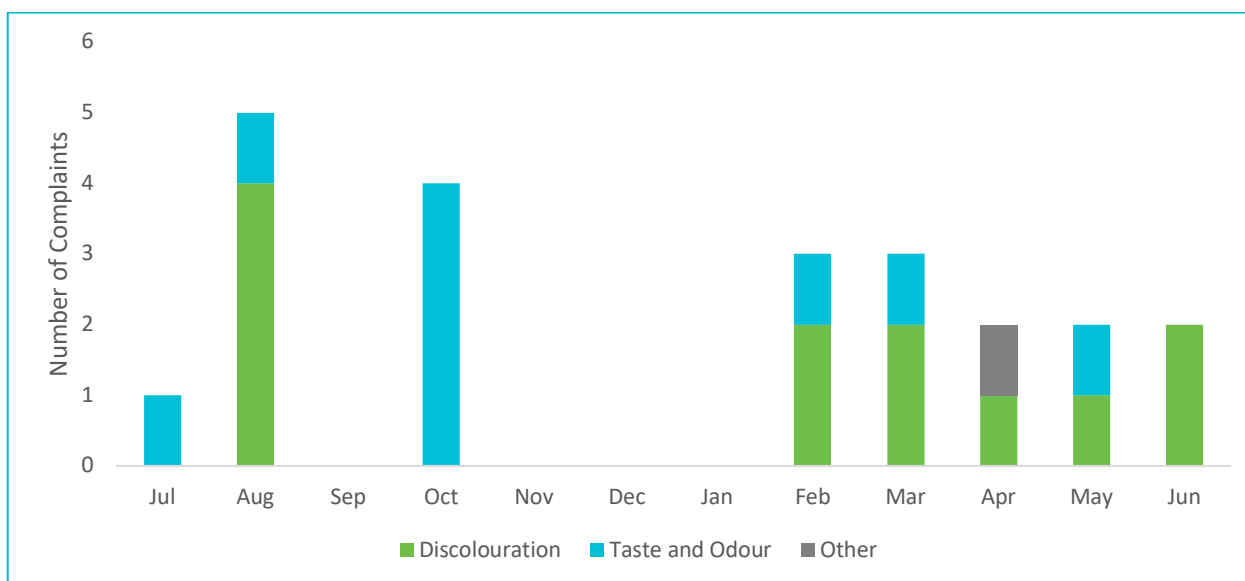


Figure 21.5-b Water quality customer complaints by month and type

22. Gawler River drinking water system

22.1. System summary (2019–20)

Gawler River drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	6,030
Population serviced	12,271
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	159	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	4	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	7	Discolouration, taste and odour, cloudy, other (stained washing, chlorine)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal Program	Clarifier Reline	Not Started	2021/2022	\$120,000

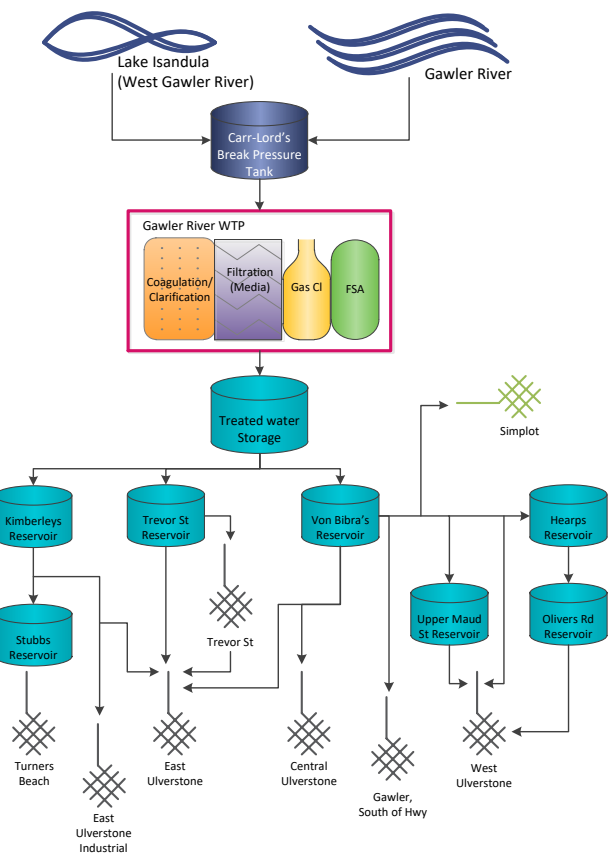


Figure 22.1-a Gawler River system schematic

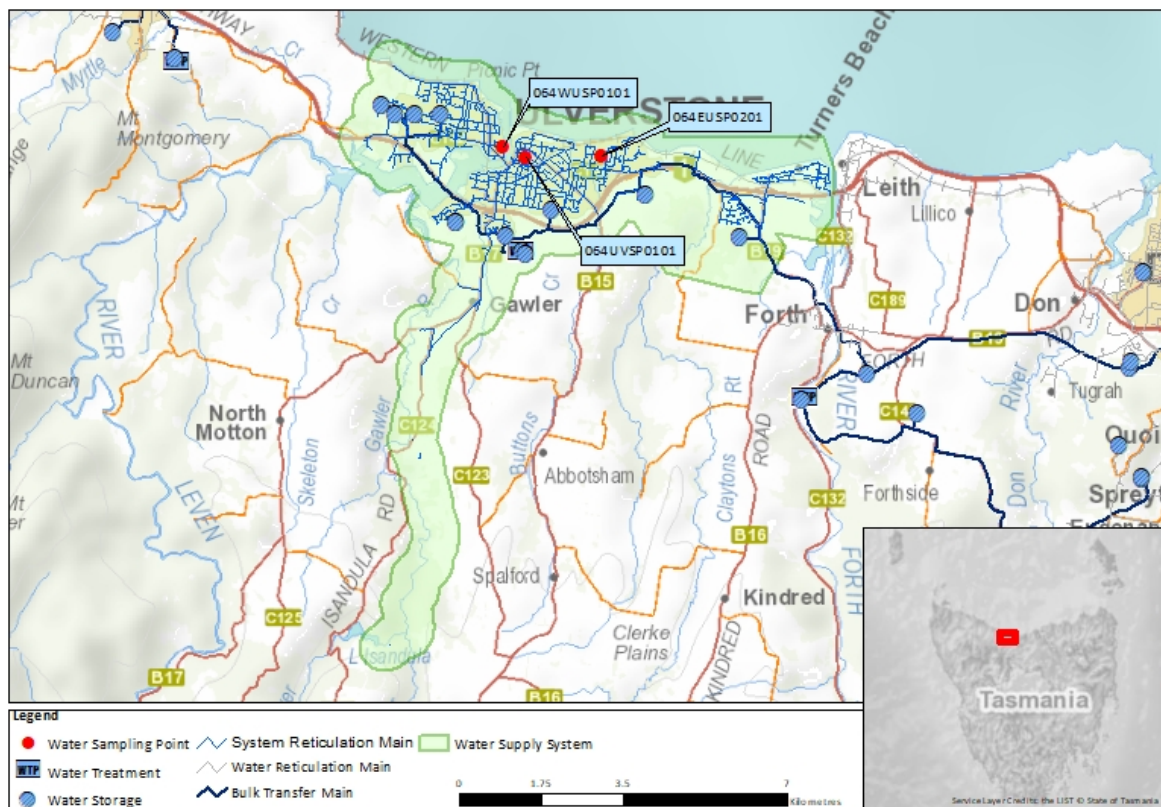


Figure 22.1-b Map of Gawler River monitoring system

22.2. Summary of annual reticulation compliance (2019–20)

Table 22.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Gawler/Ulverstone Swimming Pool	064EUSP0201	W	Q	Q	2M	Q	n/a
Gawler/Ulverstone Council Chambers Sample Tap	064UVSP0101	W	n/a	n/a	n/a	n/a	n/a
Gawler/Flora St Wst Ulverstone Sample Point	064WUSP0101	W	Q	n/a	2M	Q	n/a
Number Planned Samples		159	8	4	48	8	n/a
Number Samples Tested		159	8	4	48	8	n/a

22.3. Summary of current and historic performance (2015–20)

Table 22.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	99.8%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

22.4. Analysis of current health performance (2019–20)

Table 22.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 22.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 22.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	0.0003
Barium	2	mg/L	8	0	100	0.0121	0.0062	0.0172
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	0.0002	<0.0001	0.0002
Copper	2	mg/L	8	0	100	0.0091	0.0018	0.0253
Lead	0.01	mg/L	8	0	100	0.0009	<0.0001	0.0031
Manganese	0.5	mg/L	8	0	100	0.0039	0.0015	0.0100
Mercury	0.001	mg/L	8	0	100	0.00004	<0.00003	0.00006
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0016	<0.0001	0.0093
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

Table 22.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	11	3	17
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	18	8	24
Total trihalomethanes	250	µg/L	4	0	100	60	55	66

Table 22.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.51	0	1.36
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.11	6.49	8.40
Turbidity	NTU	1	0.48	0.10	15

22.5. Analysis of overall system performance (2019–20)

Table 22.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

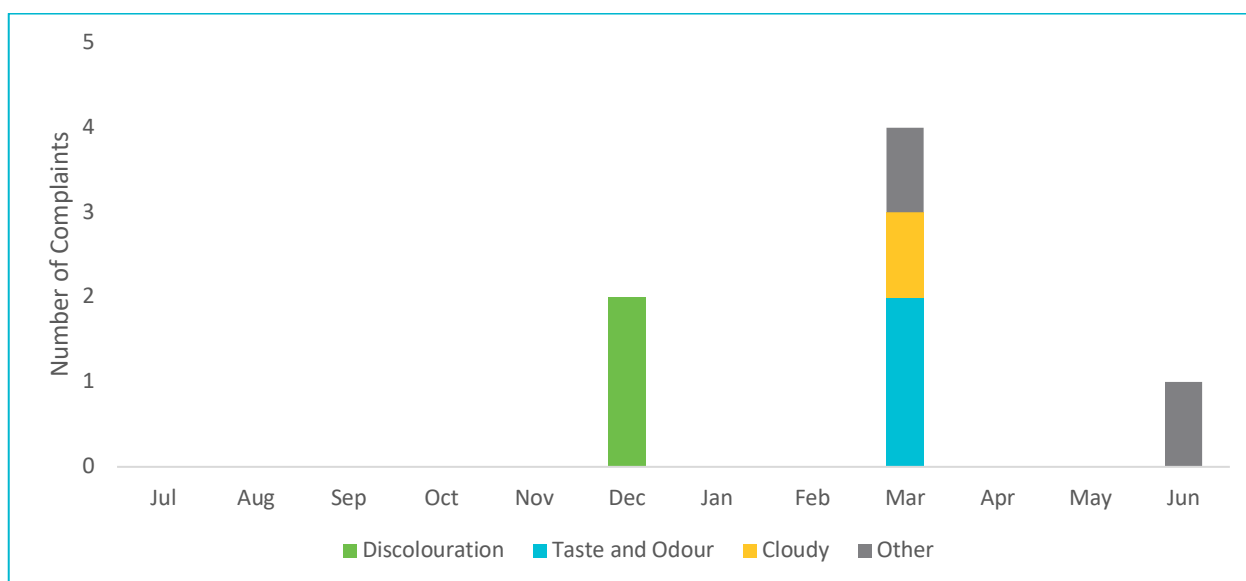


Figure 22.5-b Water quality customer complaints by month and type

23. Gladstone drinking water system

23.1. System summary (2019–20)

Gladstone drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	83
Population serviced	119
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	2	Discolouration, PHA notice

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

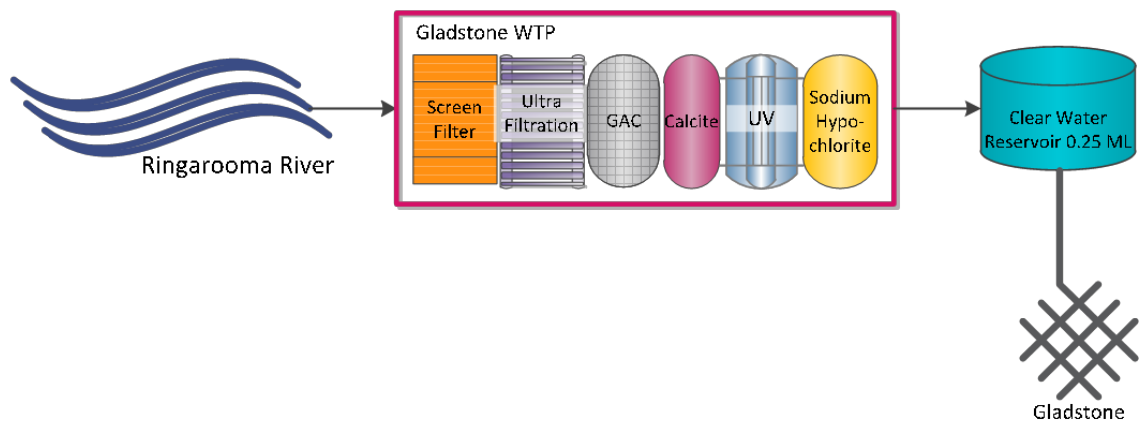


Figure 23.1-a Gladstone system schematic

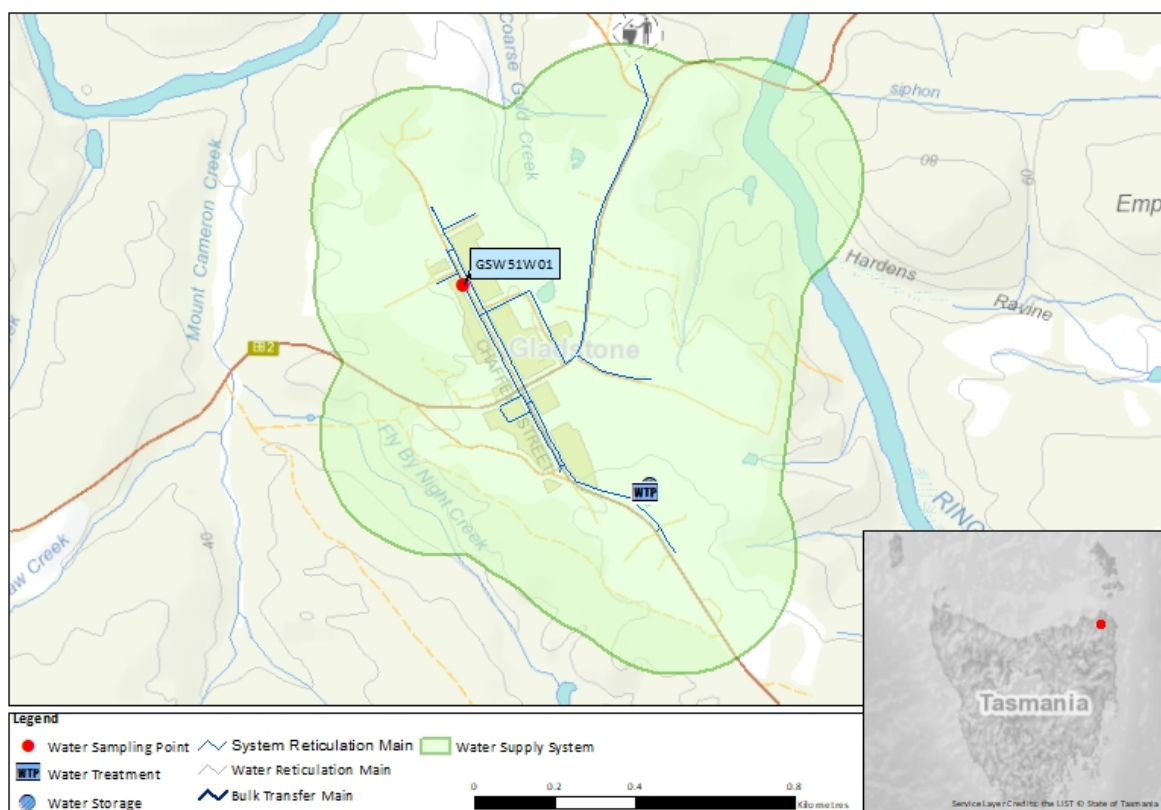


Figure 23.1-b Map of Gladstone monitoring system

23.2. Summary of annual reticulation compliance (2019–20)

Table 23.2-a Sampling program

Planned compliance sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Gladstone/Fire Station	GSW51W01	W	Q	Q	n/a	Q	n/a
Number Planned Samples		53	4	4	n/a	4	n/a
Number Samples Tested		53	4	4	n/a	4	n/a

23.3. Summary of current and historic performance (2015–20)

Table 23.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	33.3%	16.7%	50.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	n/a	n/a	n/a	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

23.4. Analysis of current health performance (2019–20)

Table 23.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 23.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0096	0.0035	0.0262
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Copper	2	mg/L	4	0	100	0.0063	0.0052	0.0085
Lead	0.01	mg/L	4	0	100	0.0005	0.0002	0.0012
Manganese	0.5	mg/L	4	0	100	0.0028	0.0018	0.0041
Mercury	0.001	mg/L	4	0	100	0.00011	0.00003	0.00016
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0003	0.0003	0.0003
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 23.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	16	6	27
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	22	5	40
Total trihalomethanes	250	µg/L	4	0	100	59	52	75

Table 23.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.73	0.41	1.07
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.09	6.61	7.70
Turbidity	NTU	1	0.29	0.10	0.60

23.5. Analysis of overall system performance (2019–20)

Table 23.5-a Summary of system issues/public health warnings with notification details

Summary of system issues			
Date	Description	DOH notification required	DOH notification complete
No system issues or public health warnings issued			

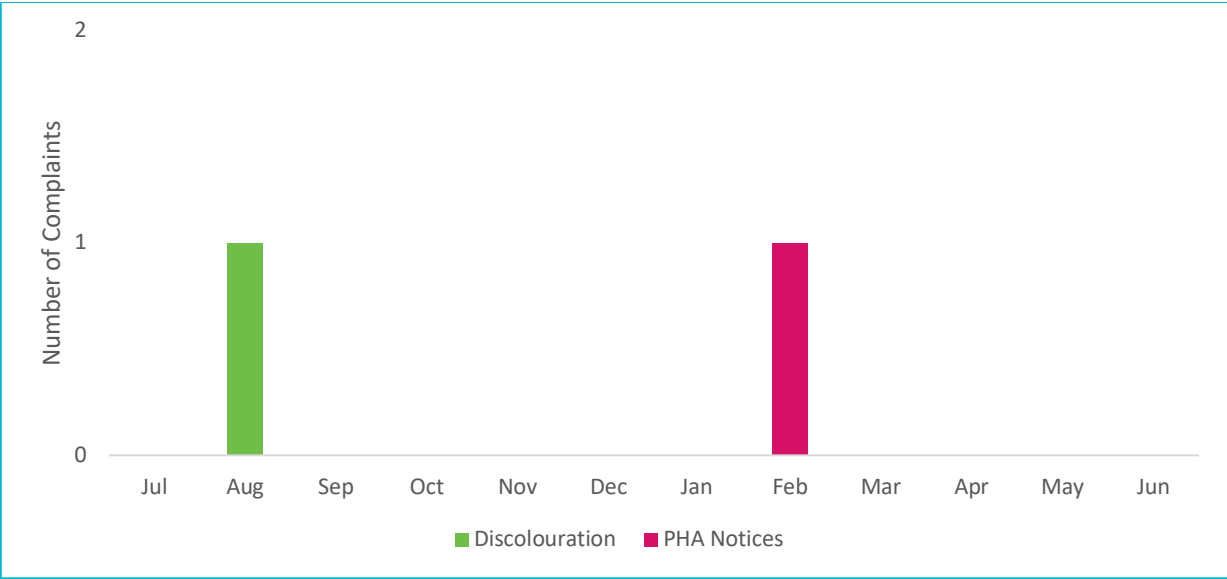


Figure 23.5-b Water quality customer complaints by month and type

24. Greater Hobart drinking water system

24.1. System summary (2019–20)

Greater Hobart drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	93,956
Population serviced	201,274
Fluoride	Lake Fenton: Sodium fluoride All others: Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	5826	1
Fluoride	100.0%	☑	100.0%	144	0
Metals	100.0%	☑	100.0%	56	0
DBPs	100.0%	☑	100.0%	56	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	1	<i>E. coli</i> exceedance
Public health warnings issued	0	
Notifications made to DoH	1	<i>E. coli</i> exceedance
Customer complaints	167	Discolouration, taste and odour, cloudy, PHA notices, other (chlorine, illness)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Bryn Estyn Upgrade	Bryn Estyn Upgrade	In progress	2022/2023	\$230,000,000

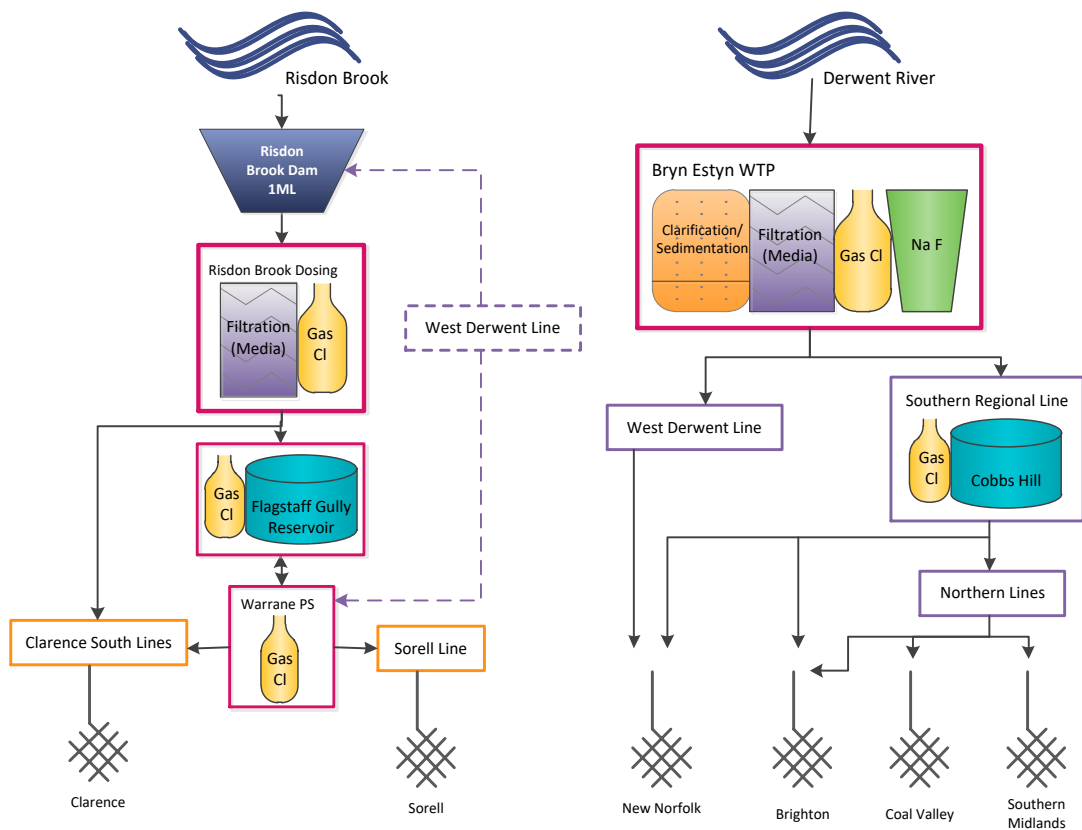
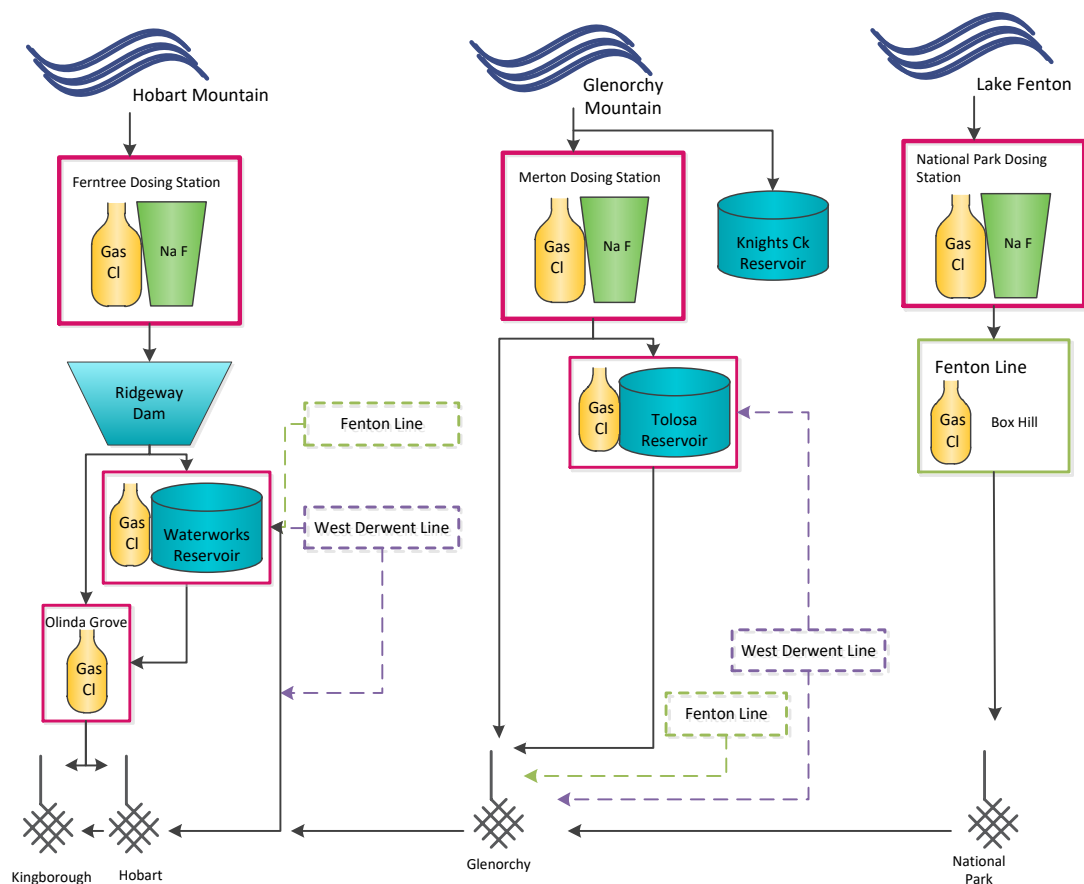


Figure 24.1-a Greater Hobart system schematic

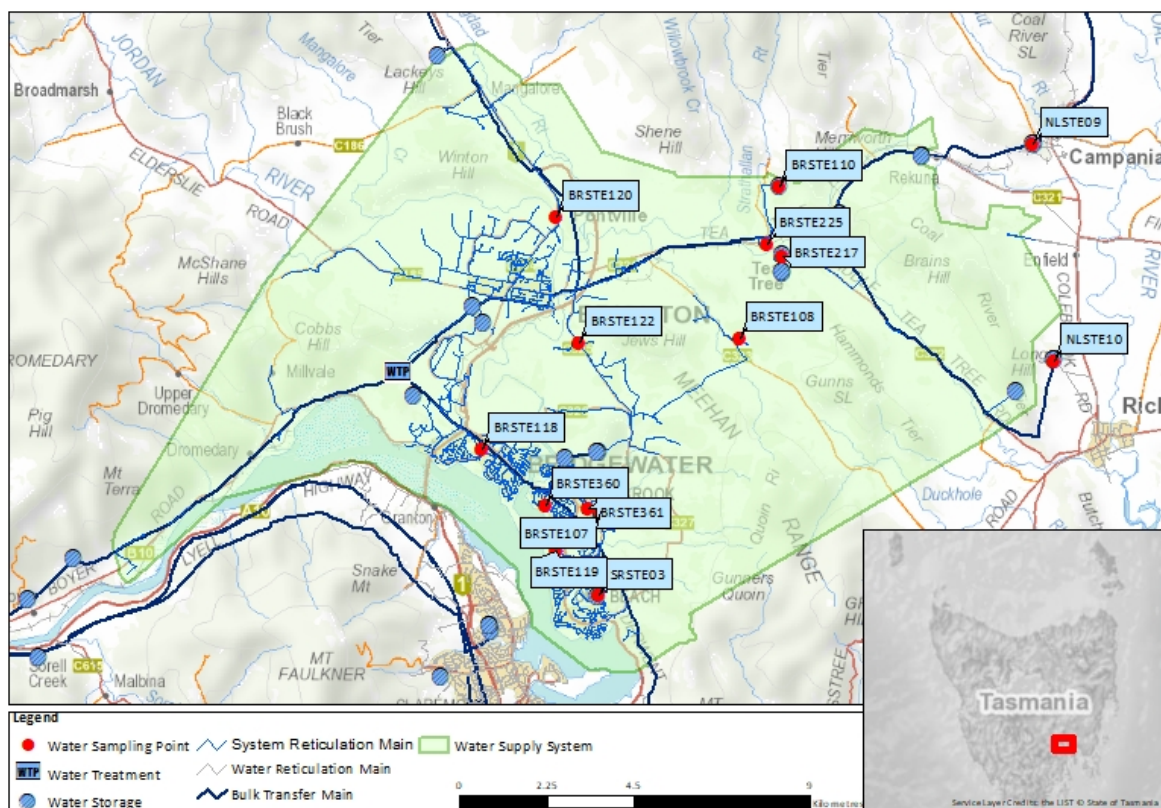


Figure 24.1-b Map of Greater Hobart – Brighton monitoring system

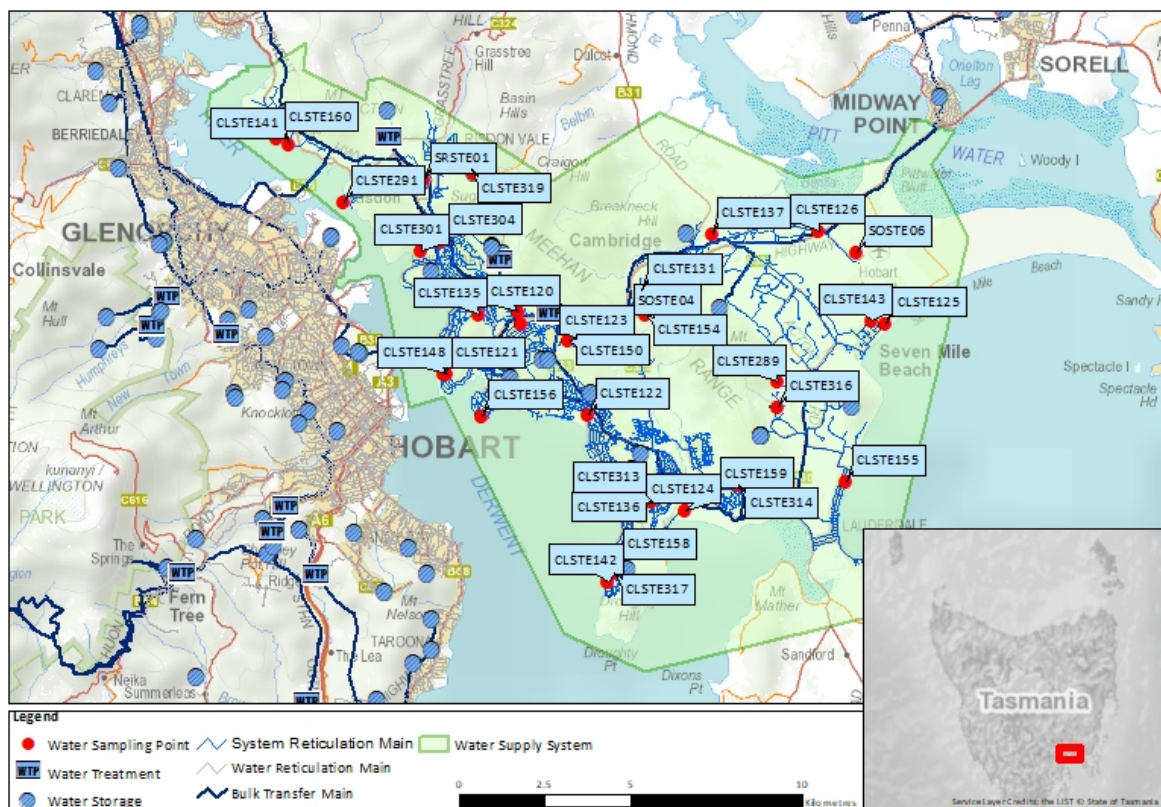


Figure 24.1-c Map of Greater Hobart – Clarence monitoring system

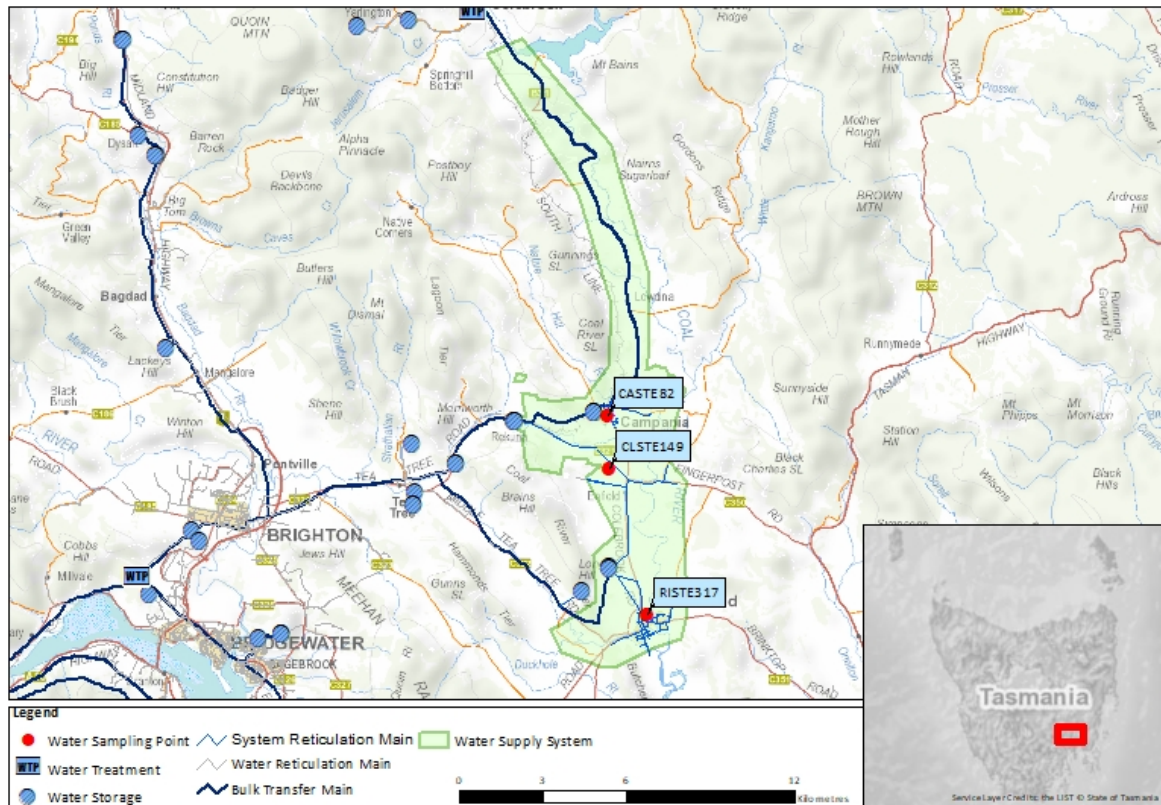


Figure 24.1-d Map of Greater Hobart – Coal Valley monitoring system

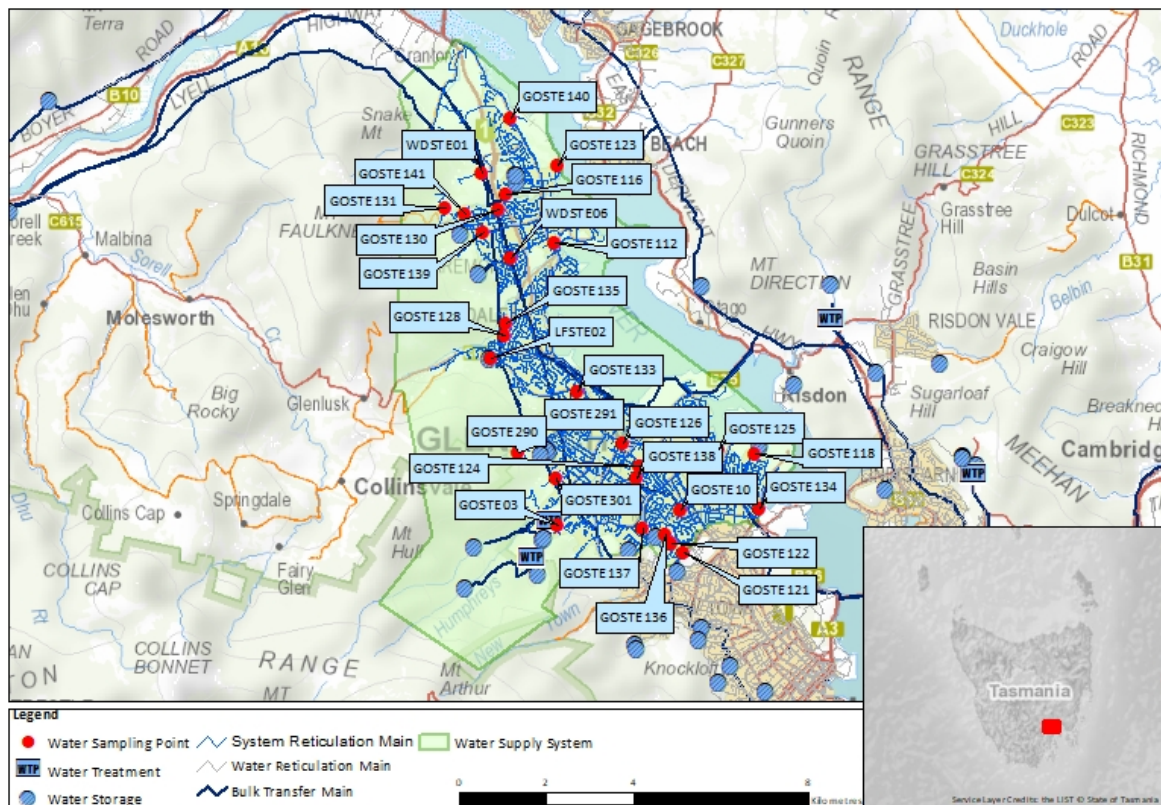


Figure 24.1-e Map of Greater Hobart – Glenorchy monitoring system

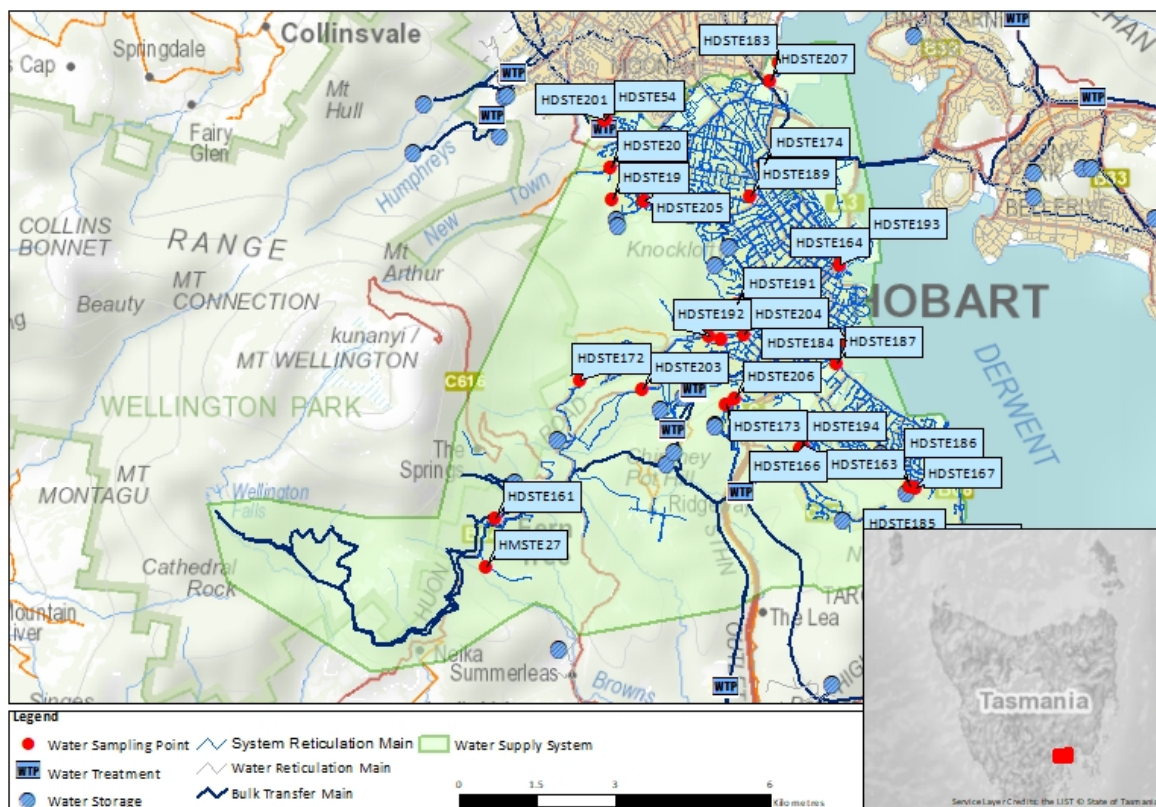


Figure 24.1-f Map of Greater Hobart – Hobart monitoring system

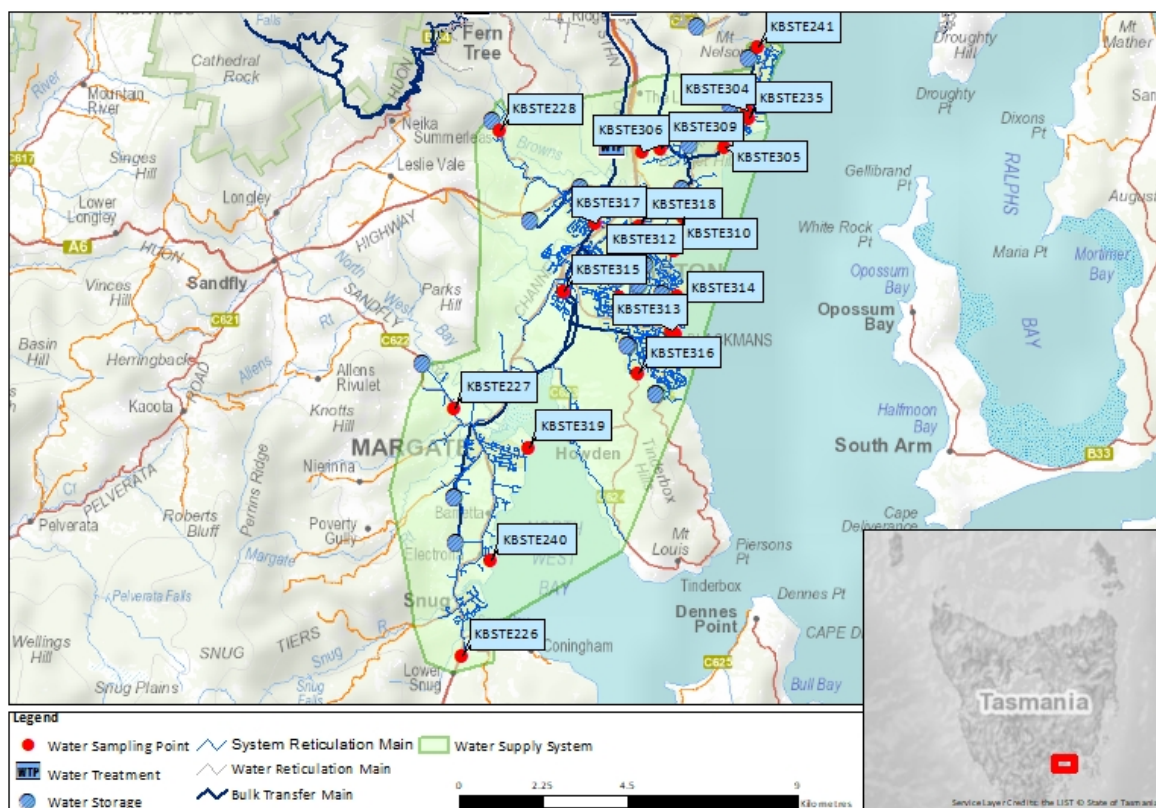


Figure 24.1-g Map of Greater Hobart – Kingborough monitoring system

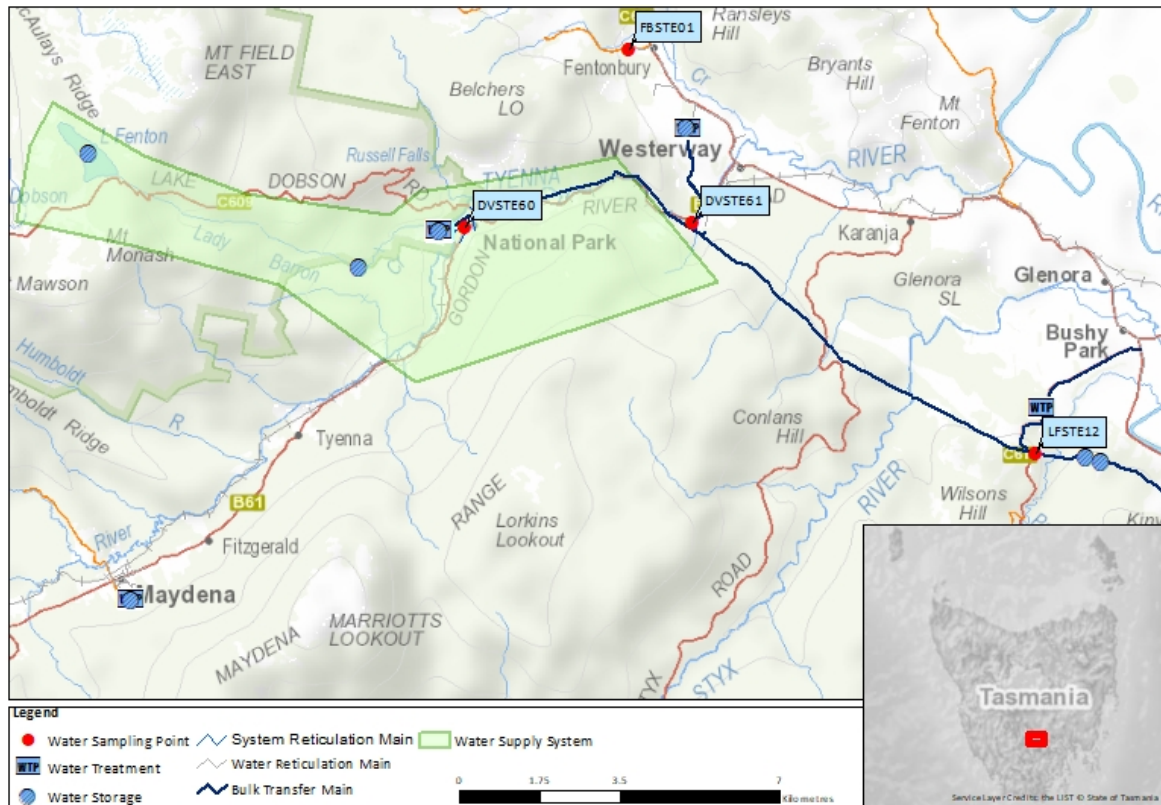


Figure 24.1-h Map of Greater Hobart – National Park monitoring system

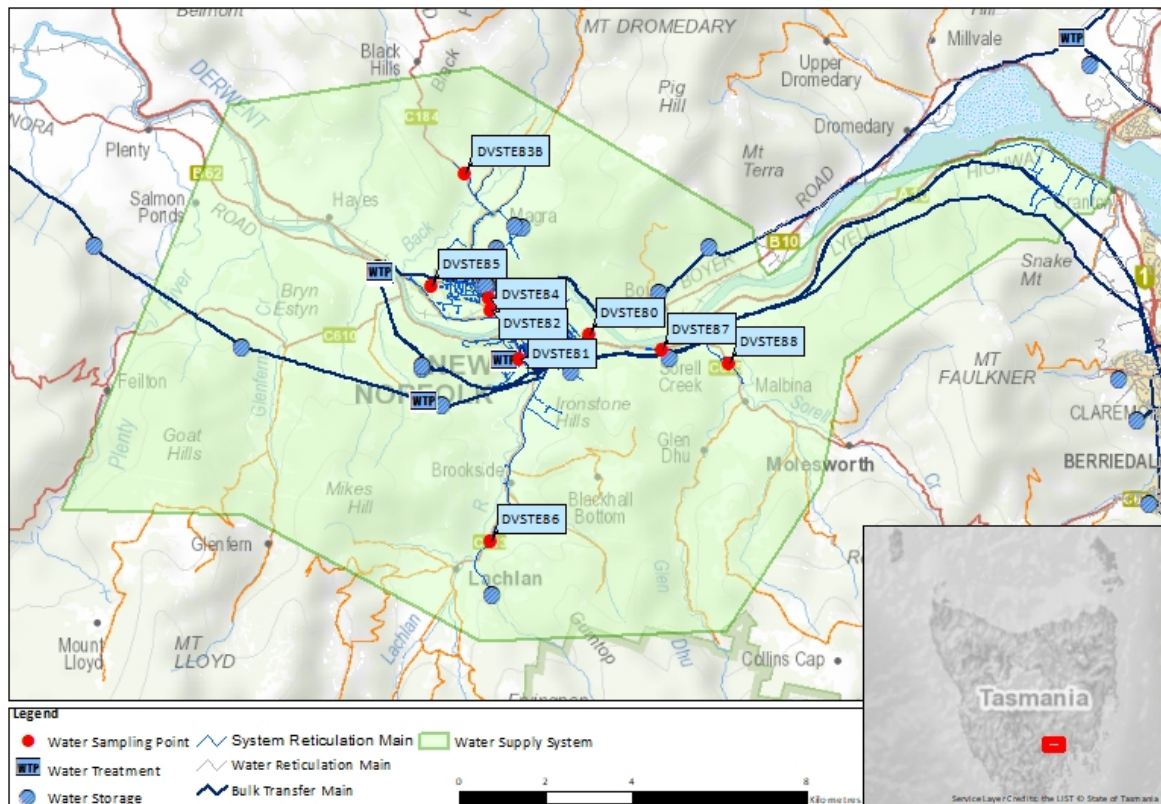


Figure 24.1-i Map of Greater Hobart – New Norfolk monitoring system

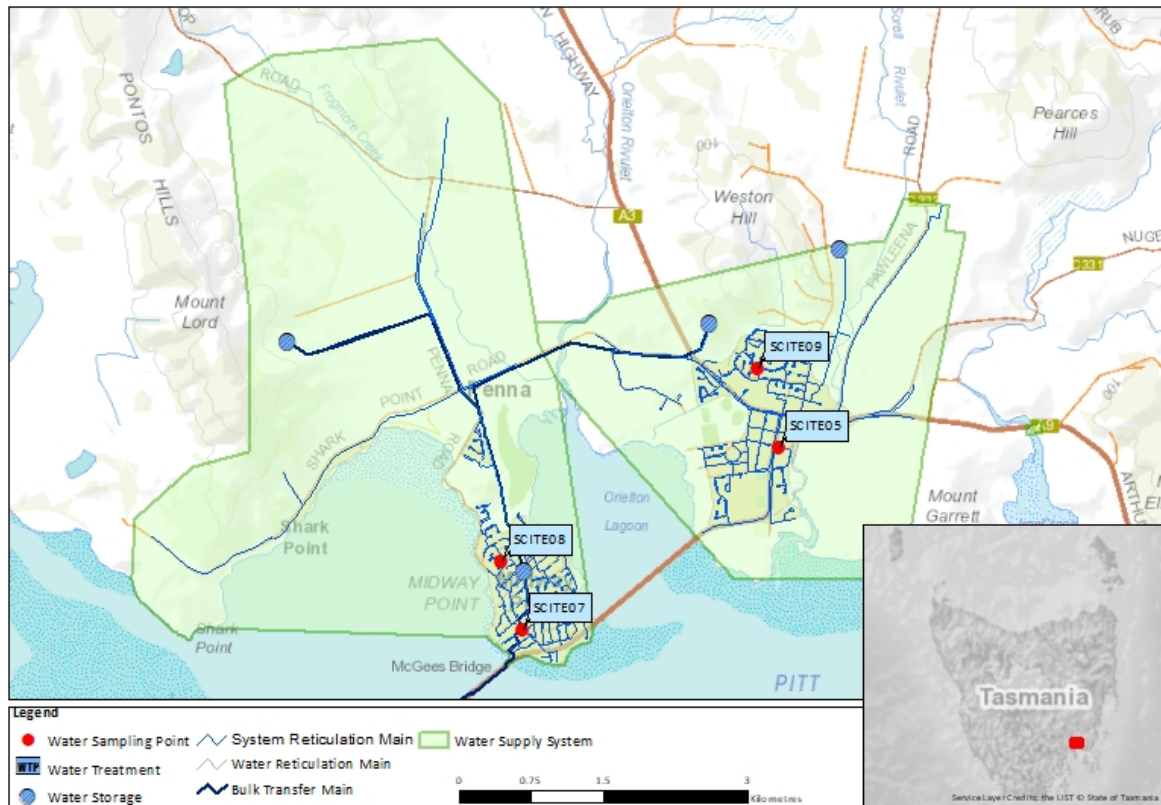


Figure 24.1-j Map of Greater Hobart – Sorell monitoring system

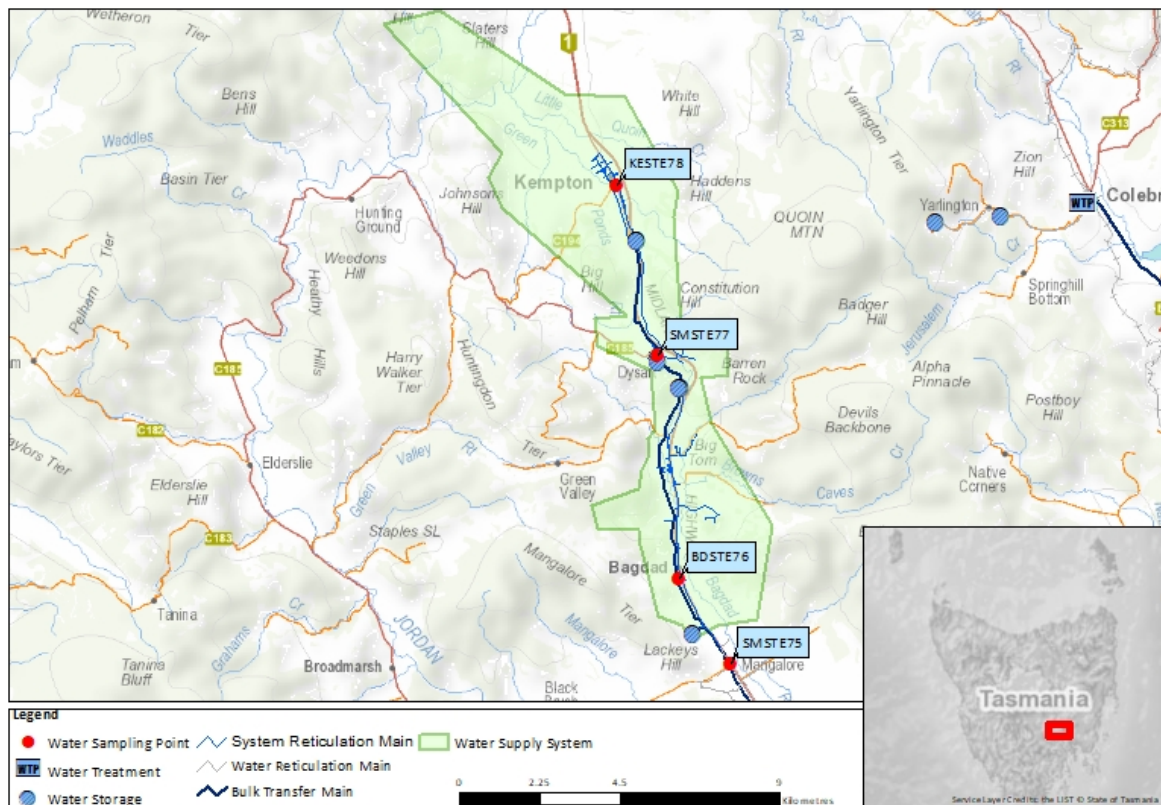


Figure 24.1-k Map of Greater Hobart – Southern Midlands monitoring system

24.2. Summary of annual reticulation compliance (2019–20)

Table 24.2-a Sampling program – Brighton

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Vineyard Dr Tanks	BRSTE217	W	n/a	n/a	n/a	n/a	n/a
Campania Res	NLSTE09	W	n/a	n/a	n/a	n/a	n/a
Richmond Res	NLSTE10	W	n/a	n/a	n/a	n/a	n/a
Old Beach Res Sample Tap	SRSTE03	W	n/a	n/a	n/a	n/a	n/a
Bridgewater/Dental Clinic Opp Bus Stop 57	BRSTE118	W	n/a	n/a	n/a	n/a	n/a
Compton Downs, St Anne's/NEW Street Entrance	BRSTE119	W	n/a	n/a	n/a	n/a	n/a
Gagebrook/9 Barrob St, Gagebrook	BRSTE361	W	n/a	n/a	n/a	n/a	n/a
Brighton/Crn Briggs Rd and Redside Dr	BRSTE122	W	n/a	n/a	n/a	n/a	n/a
Tea Tree/Merrieworth Rd (NEW)	BRSTE225	W	n/a	n/a	n/a	n/a	n/a
Pontville Public Building	BRSTE120	W	Q	Q	2M	Q	n/a
Bridgewater/Herdmans Cove	BRSTE360	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		583	4	4	24	4	n/a
Number Samples Tested		583	4	4	24	4	n/a

Table 24.2-b Sampling program – Clarence

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Lindisfarne, Regis Aged Care Centre, Acorn Dr	CLSTE120	W	n/a	n/a	n/a	n/a	n/a
73 Droughty Point Rd	CLSTE124	W	n/a	n/a	n/a	n/a	n/a
Cambridge, 273 Kennedy Drive	CLSTE126	W	n/a	n/a	n/a	n/a	n/a
Mt Rumney/68 Centauri Dr	CLSTE131	W	n/a	n/a	n/a	n/a	n/a
Otago,/77 Otago Bay Rd	CLSTE160	W	n/a	n/a	n/a	n/a	n/a
Tranmere, Norla St P/S	CLSTE158	W	Q	Q	n/a	Q	n/a
Seven Mile Beach - 76 Surf Road	CLSTE125	W	n/a	n/a	n/a	n/a	n/a
Rosny Esplanade Park Opp. No 2	CLSTE121	W	n/a	n/a	n/a	n/a	n/a
Mornington , 116 Mornington Rd	CLSTE123	W	n/a	n/a	n/a	n/a	n/a

Mount Rumney (private water supply) /Sample Tap	CLSTE154	M	n/a	n/a	n/a	n/a	n/a
Lauderdale, crn Balook St & Hadlow St/Sample Tap	CLSTE155	W	Q	Q	n/a	Q	n/a
Howrah PRV Pit Cnr Howrah Rd and Clarence St	CLSTE122	W	n/a	n/a	n/a	n/a	n/a
Acton Park, 222 Acton Drive/PRV Shed Sample Tap	CLSTE289	W	n/a	n/a	n/a	n/a	n/a
Risdon, 26 Saundersons Rd/Sample tap	CLSTE291	W	n/a	n/a	n/a	n/a	n/a
9 Geilston Creek Rd	CLSTE304	W	n/a	n/a	n/a	n/a	n/a
Warrane Sports Centre crn Dampier & Blight St	CLSTE303	W	n/a	n/a	n/a	n/a	n/a
10 Spinnaker	CLSTE317 ¹⁴	W	n/a	n/a	n/a	n/a	n/a
984 Oceana Drive	CLSTE320	W	n/a	n/a	n/a	n/a	n/a
598 Oceana Drive	CLSTE313 ¹⁵	W	n/a	n/a	n/a	n/a	n/a
718 Oceana Drive	CLSTE321	W	n/a	n/a	n/a	n/a	n/a
11 Ralph Terrace	CLSTE159	W	n/a	n/a	n/a	n/a	n/a
Matipo St Risdon Vale PS	CLSTE315	W	n/a	n/a	n/a	n/a	n/a
Matipo Street/Matipo Rd Pump Station Top Side	CLSTE319	W	n/a	n/a	n/a	n/a	n/a
118 Tara Drive	CLSTE316	W	n/a	n/a	n/a	n/a	n/a
Tunnel Hill RES	SOSTE04	W	n/a	n/a	n/a	n/a	n/a
Risdon Vale RES	SRSTE01	W	n/a	n/a	n/a	n/a	n/a
Acton Park, 111 Cahill Pl	CLSTE157	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples	1284	8	8	0	8	n/a	
Number Samples Tested	1284	8	8	0	8	n/a	

Table 24.2-c Sampling program – Coal Valley

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Richmond, 12 Victoria St/Fire Station Sample Tap	RISTE317 ¹⁶	W	Q	Q	n/a	Q	n/a
Richmond/31 Torrens St	RISTE320	W	Q	Q	n/a	Q	n/a
Campania/Tennis Court	CASTE82	W	Q	Q	n/a	Q	n/a
Colebrook/14 Richmond Street (650073)	COSTE81	W	Q	Q	n/a	Q	n/a
Colebrook/509 Yarlington Rd	COSTE82	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples	212	12	12	12	0	12	n/a
Number Samples Tested	212	12	12	12	0	12	n/a

¹⁴ Replaced by CLSTE320 5th August 2019

¹⁵ Replaced by CLSTE321 5th August 2019

¹⁶ Replaced by RISTE320 16th September 2019

Table 24.2-d Sampling program – Glenorchy

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Glenorchy, 22 Jackson Rd	GOSTE301	W	n/a	n/a	n/a	n/a	n/a
Glenorchy High Level Sample Tap	GOSTE03	W	n/a	n/a	2M	n/a	n/a
St Thereses/Sample Tap	GOSTE10	W	n/a	n/a	n/a	n/a	n/a
Claremont, 12 Chatterton Crt/Sample Tap	GOSTE116 ¹⁷	W	n/a	n/a	n/a	n/a	n/a
Claremont/16 Mahoney Drive	GOSTE144	W	n/a	n/a	n/a	n/a	n/a
Claremont, 5 Box Hill Road	GOSTE112	W	n/a	n/a	n/a	n/a	n/a
Rosetta/7 Marys Hope Road	GOSTE133	W	n/a	n/a	n/a	n/a	n/a
Moonah, 125 Springfield Ave	GOSTE137	W	Q	Q	2M	Q	n/a
Moonah, 50m Pas 98 Amy St	GOSTE136	W	n/a	n/a	n/a	n/a	n/a
Cnr Main and Hestercombe Road	GOSTE140	W	n/a	n/a	n/a	n/a	n/a
Derwent Park, 49 Milton Crescent	GOSTE138	W	n/a	n/a	n/a	n/a	n/a
Lutana/Risdon Rd SPS	GOSTE134	W	n/a	n/a	n/a	n/a	n/a
Chigwell, Boondar St Opp 40 Arunta St	GOSTE135	W	n/a	n/a	n/a	n/a	n/a
Claremont/22 Harbord Rd	GOSTE141	W	Q	Q	n/a	Q	n/a
Claremont - 3 Russell Road	GOSTE139	W	n/a	n/a	n/a	n/a	n/a
Montrose/118 Montrose Rd	GOSTE291	W	n/a	n/a	n/a	n/a	n/a
Chigwell, Res	LFSTE02	W	n/a	n/a	n/a	n/a	n/a
Box Hill/Fenton Res/Glebe Street	LFSTE15	W	n/a	n/a	n/a	n/a	n/a
Hilton Rd	WDSTE01 ¹⁸	W	n/a	n/a	n/a	n/a	n/a
Pump Station – Fenton Lline	LFSTE30	W	n/a	n/a	n/a	n/a	n/a
Claremont/Box Hill Road	WDSTE06	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		1006	8	8	48	8	n/a
Number Samples Tested		1006	8	8	48	8	n/a

¹⁷ Replaced by GOSTE144 5th August 2019

¹⁸ Replaced by LFSTE30 8th June 2020

Table 24.2-e Sampling program – Hobart

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
South Hobart/Opp 132 Forest Rd	HDSTE191	W	n/a	n/a	n/a	n/a	n/a
Lenah Valley/9 Susan Parade	HDSTE208	W	n/a	n/a	n/a	n/a	n/a
South Hobart/90A Cascade Rd	HDSTE192	W	n/a	n/a	2M	n/a	n/a
Lenah Valley/PRV Pit, Cnr Girrabong/Mowbray Crt	HDSTE54	W	n/a	n/a	n/a	n/a	n/a
Fern Tree/1 Menuggana Road	HMSTE27	W	n/a	n/a	2M	n/a	n/a
Sandy Bay, 8 Lindeith Crt/Sample tap	HDSTE163	W	n/a	n/a	n/a	n/a	n/a
Hobart/10 Evans St	HDSTE193	W	n/a	n/a	n/a	n/a	n/a
Mt Nelson/22 Lachlan Dr	HDSTE194	W	n/a	n/a	n/a	n/a	n/a
328 Churchill Ave	HDSTE186	W	n/a	n/a	n/a	n/a	n/a
Derwent Sailing Club - Marieville Esp	HDSTE187	W	n/a	n/a	n/a	n/a	n/a
Taroona/26 Channel Hwy	KBSTE336	W	Q	Q	n/a	Q	n/a
HCC Mountain Park Depo - 518 Huon Rd	HDSTE203	W	n/a	n/a	n/a	n/a	n/a
84 Woodcutters Rd	HDSTE206	W	n/a	n/a	n/a	n/a	n/a
2 Lyndhurst Ave	HDSTE189	W	n/a	n/a	n/a	n/a	n/a
Queens Walk Flats	HDSTE207	W	n/a	n/a	n/a	n/a	n/a
263 Lenah Valley Road	HDSTE25	W	n/a	n/a	n/a	n/a	n/a
287 Lenah Valley Rd	HDSTE20 ¹⁹	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		847	4	4	48	8	n/a
Number Samples Tested		847	4	4	48	8	n/a

Table 24.2-f Sampling program – Kingborough

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Blackmans Bay/23 Wells Parade	KBSTE313	W	n/a	n/a	n/a	n/a	n/a

¹⁹ Replaced by HDSTE25 20th April 2020

Kingston High Level/181 Redwood Rd	KBSTE311	W	n/a	n/a	n/a	n/a	n/a
Kingston Gateway Shopping Centre, Channel Hwy	KBSTE318	W	n/a	n/a	n/a	n/a	n/a
St Lukes Church 2 Coolamon Rd	KBSTE304	W	n/a	n/a	n/a	n/a	n/a
128 Albion Heights Drive	KBSTE309	W	n/a	n/a	n/a	n/a	n/a
Kingston Beach/Osborne Esplanade	KBSTE310	W	Q	Q	n/a	Q	n/a
Snug/2361 Channel Highway	KBSTE226	W	n/a	n/a	n/a	n/a	n/a
Margate, Sandfly Rd, Margate Cemetry/Sample tap	KBSTE227	W	n/a	n/a	n/a	n/a	n/a
Kingborough, Scotts Rd/Sample tap	KBSTE228	W	n/a	n/a	n/a	n/a	n/a
Electrona/Waterfront – 35 Staff Rd	KBSTE240	W	n/a	n/a	n/a	n/a	n/a
Taroon – 27 Oakleigh Ave	KBSTE241	W	n/a	n/a	n/a	n/a	n/a
Blackmans Bay/23 Powell Rd	KBSTE314	W	n/a	n/a	n/a	n/a	n/a
Taroona/Bachelor Way	KBSTE235	W	Q	Q	n/a	Q	n/a
Bonnet Hill/4 Tyndall Road	KBSTE312	W	n/a	n/a	n/a	n/a	n/a
Bayton Street - Patriach Drive PRV Pit	KBSTE315	W	n/a	n/a	n/a	n/a	n/a
Ash Drive - 69 Brightwater Road	KBSTE316	W	n/a	n/a	n/a	n/a	n/a
Mt Pleasant - 51 Summerleas Road	KBSTE317	W	n/a	n/a	n/a	n/a	n/a
Margate Offtake/Margate Esp off Beach Rd	KBSTE319	W	n/a	n/a	n/a	n/a	n/a
Blackmans Bay, 41 Estuary Driver	KBSTE307	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples	988	8	8	0	8	n/a	
Number Samples Tested	988	8	8	0	8	n/a	

Table 24.2-g Sampling program – National Park

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Uxbridge Rd Airstrip	LFSTE12	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples	53	0	0	0	0	0	n/a
Number Samples Tested	53	0	0	0	0	0	n/a

Table 24.2-h Sampling program – New Norfolk

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
New Norfolk/29 Alfred St	DVSTE90	W	Q	Q	n/a	Q	n/a
New Norfolk/Hobart Rd & Glebe Rd - 50m Past Intersection	DVSTE94	W	n/a	n/a	n/a	n/a	n/a
New Norfolk Rowing Club - 44 Rocks Rd	DVSTE92	W	n/a	n/a	n/a	n/a	n/a
51 Daniels Rd, Magra	DVSTE95	W	n/a	n/a	n/a	n/a	n/a
crn Goldsmith & Bastian St Lawitta	DVSTE85	W	n/a	n/a	n/a	n/a	n/a
Off Take on Glebe Rd	DVSTE89	W	n/a	n/a	n/a	n/a	n/a
New Norfolk/Dead End of Tribolet Rd	DVSTE93	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		364	4	4	0	4	n/a
Number Samples Tested		364	4	4	0	4	n/a

Table 24.2-i Sampling program – Sorell

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Sorell/10 Sommerville St	SCITE05	W	Q	Q	n/a	Q	n/a
Sorell/Horizon Drive	SCITE09	W	n/a	n/a	n/a	n/a	n/a
Midway Point/24 Penna Road	SCITE07	W	n/a	n/a	n/a	n/a	n/a
Midway Point/24 Honolulu St	SCITE08	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		212	4	4	0	4	n/a
Number Samples Tested		212	4	4	0	4	n/a

Table 24.2-j Sampling program – Southern Midlands

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Bagdad, Caltex Fuel stop shop/Sample Post	BDSTE76	W	Q	Q	2M	Q	n/a
Kempton, Caravan Parking Bay/Sample Post on Street	KESTE78	W	n/a	n/a	n/a	n/a	n/a
Mangalore/Park Sample Post	SMSTE75	W	n/a	n/a	n/a	n/a	n/a
Dysart/Crn Ely & Church Lane	SMSTE77	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		208	4	4	24	4	n/a
Number Samples Tested		208	4	4	24	4	n/a

24.3. Summary of current and historic performance (2015–20)

Table 24.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	99.9%	99.9%	99.9%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	99.9%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

24.4. Analysis of current health performance (2019–20)

Table 24.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
<i>E. coli</i>	21/04/2020	<i>E. coli</i> of 1.0 MPN/100 mL at operational site.	✓

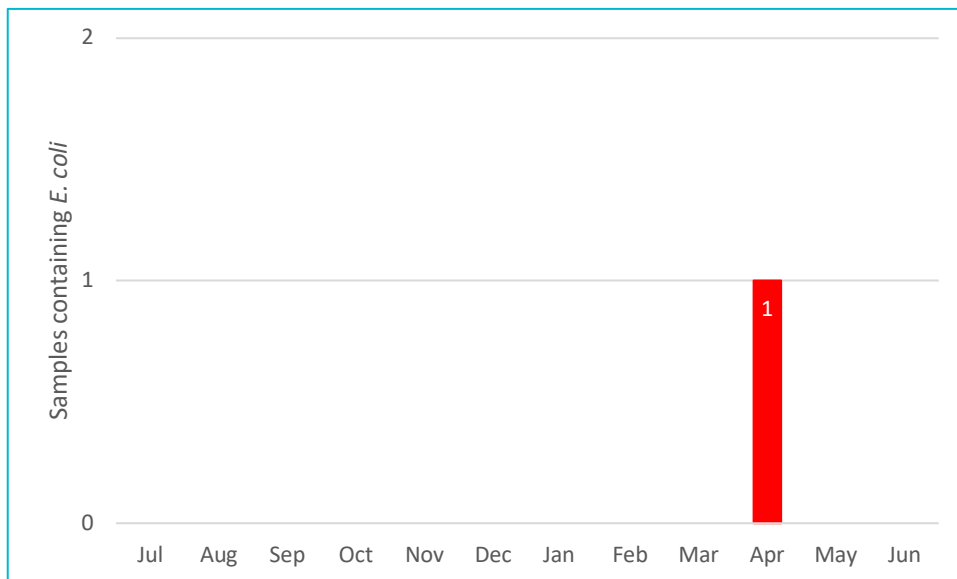


Figure 24.4-b Microbiological non-compliances by month

Table 24.4-c Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> <div></div> Compliant <div></div> Non-compliant </div>	

Table 24.4-d Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	56	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	56	0	100	<0.0003	<0.0003	0.0003
Barium	2	mg/L	56	0	100	0.0065	0.0011	0.0125
Cadmium	0.002	mg/L	56	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	56	0	100	0.0001	<0.0001	0.0004

Copper	2	mg/L	56	0	100	0.0074	0.0002	0.0282
Lead	0.01	mg/L	56	0	100	0.0004	<0.0001	0.0015
Manganese	0.5	mg/L	56	0	100	0.0017	0.0003	0.0065
Mercury	0.001	mg/L	56	0	100	0.00005	<0.00003	0.00019
Molybdenum	0.05	mg/L	56	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	56	0	100	0.0003	<0.0001	0.0048
Selenium	0.01	mg/L	56	0	100	<0.0001	<0.0001	0.0002

Table 24.4-e Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	56	0	100	8	2	31
Monochloroacetic acid	150	µg/L	56	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	56	0	100	20	7	65
Total trihalomethanes	250	µg/L	56	0	100	40	13	80

Table 24.4-f General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.60	0	2.04
Colour True	HU	15	<1	<1	3
pH	Units	6.5 – 8.5	7.43	5.73	10.07
Turbidity	NTU	1	0.47	0.10	22.80

24.5. Analysis of overall system performance (2019–20)

Table 24.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
21/04/2020	<i>E. coli</i> detected in an operational site.	✓	✓

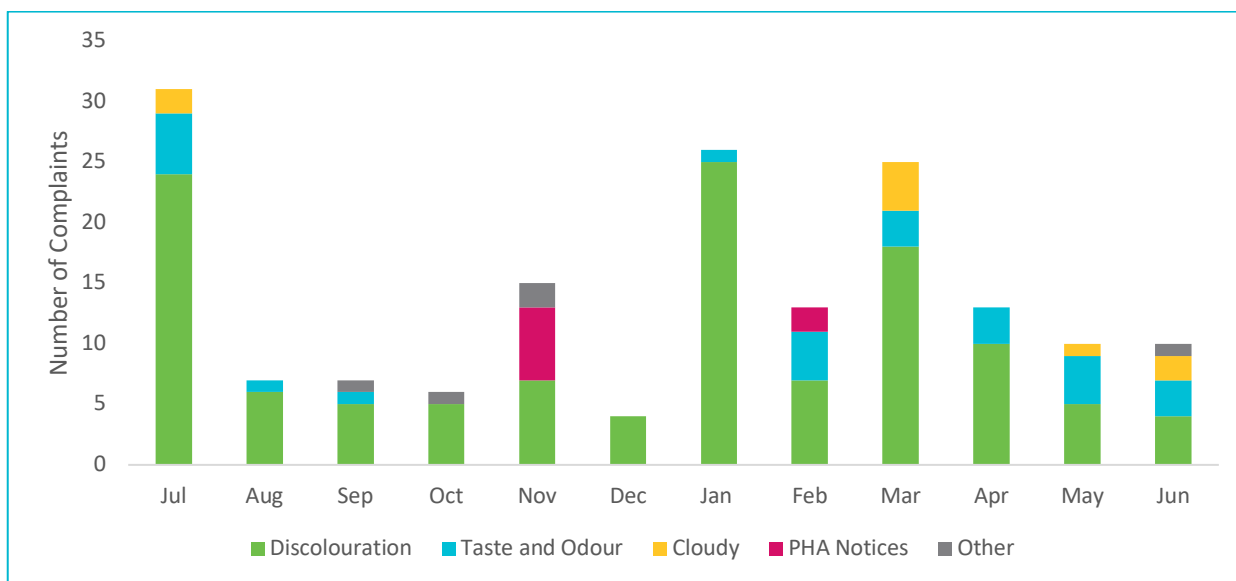


Figure 24.5-b Water quality customer complaints by month and type

25. Herrick drinking water system

25.1. System summary (2019–20)

Herrick drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	27
Population serviced	60
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div> ■ Compliant ■ Non-compliant </div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	6	DBP exceedances in sampling program (under rounding limit)
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

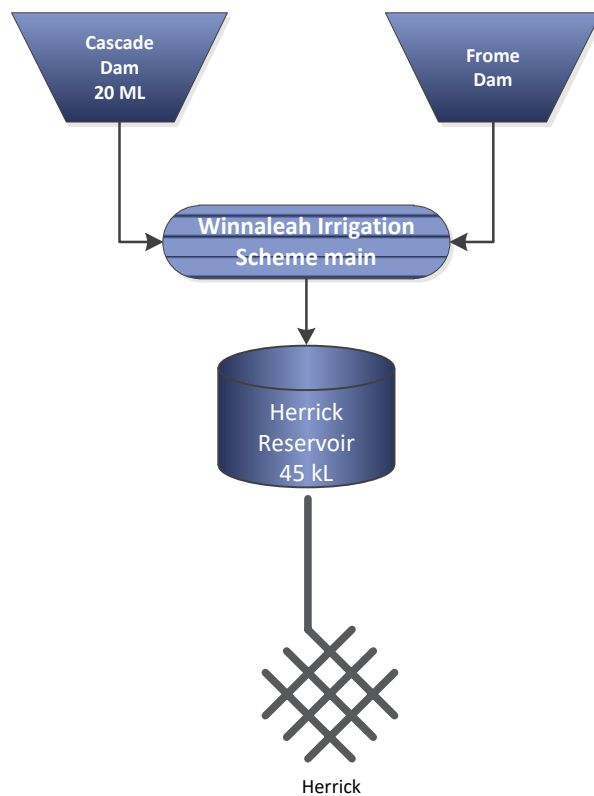


Figure 25.1-a Herrick system schematic

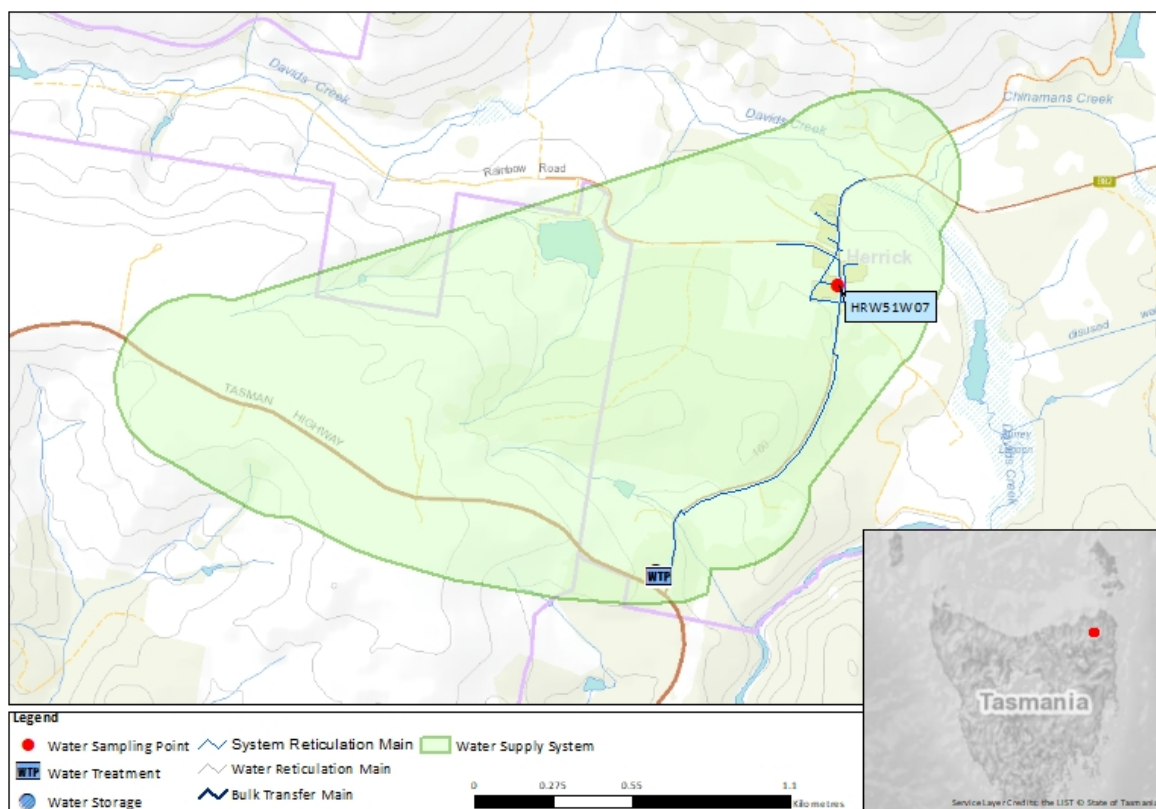


Figure 25.1-b Map of Herrick monitoring system

25.2. Summary of annual reticulation compliance (2019–20)

Table 25.2-a Sampling program

Planned compliance sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Herrick/11 Gladstone Road	HRW51W07	W	Q	Q	n/a	Q	n/a
Number Planned Samples		53	4	4	n/a	4	n/a
Number Samples Tested		53	4	4	n/a	4	n/a

25.3. Summary of current and historic performance (2015–20)

Table 25.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	66.7%	58.3%	66.7%	98.1%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	n/a	n/a	n/a	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

25.4. Analysis of current health performance (2019–20)

Table 25.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 25.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0391	0.0167	0.0618
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Copper	2	mg/L	4	0	100	0.0057	0.0024	0.0132
Lead	0.01	mg/L	4	0	100	0.0005	0.0003	0.0009
Manganese	0.5	mg/L	4	0	100	0.0025	0.0017	0.0035
Mercury	0.001	mg/L	4	0	100	0.00009	0.00004	0.00015
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0007	0.0003	0.0016
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 25.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	56	43	63
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	4
Trichloroacetic acid	100	µg/L	4	0	100	96	66	113 ²⁰
Total trihalomethanes	250	µg/L	4	0	100	109	100	120

Table 25.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.67	0.23	1.32
Colour True	HU	15	1	<1	2
pH	Units	6.5 – 8.5	7.18	6.54	8.00
Turbidity	NTU	1	0.33	0.20	0.60

²⁰ Maximum result, when rounded, does not exceed limit.

25.5. Analysis of overall system performance (2019–20)

Table 25.5-a Summary of system issues/public health warnings with notification details

Summary of system issues			
Date	Description	DHHS notification required	DHHS notification complete
30/08/2019	Trichloroacetic acid exceedance of 113 µg/L. Does not exceed rounding limit.	✓	✓
03/09/2019	Trichloroacetic acid exceedance of 101 µg/L in investigation sample. Does not exceed rounding limit.	✓	✓
08/10/2019	Trichloroacetic acid exceedance of 101 µg/L in investigation sample. Does not exceed rounding limit.	✓	✓
12/11/2019	Trichloroacetic acid exceedance of 105 µg/L in investigation sample. Does not exceed rounding limit.	✓	✓
14/11/2019	Trichloroacetic acid exceedance of 103 µg/L. Does not exceed rounding limit.	✓	✓
21/04/2020	Trichloroacetic acid exceedance of 112 µg/L in investigation sample. Does not exceed rounding limit.	✓	✓

26. Huon Valley drinking water system

26.1. System summary (2019–20)

Huon Valley drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	4,275
Population serviced	8,605
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	468	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	12	0
DBPs	100.0%	☑	100.0%	28	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	2	Taste and odour, cloudy

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal Program	Filter Media	In Progress	2020/2021	\$50,000
System Optimisation	Static Flow Mixer	In Progress	2020/2021	\$50,000
Regional Towns Water Supply Project	UV Disinfection	Planning	TBC	TBC

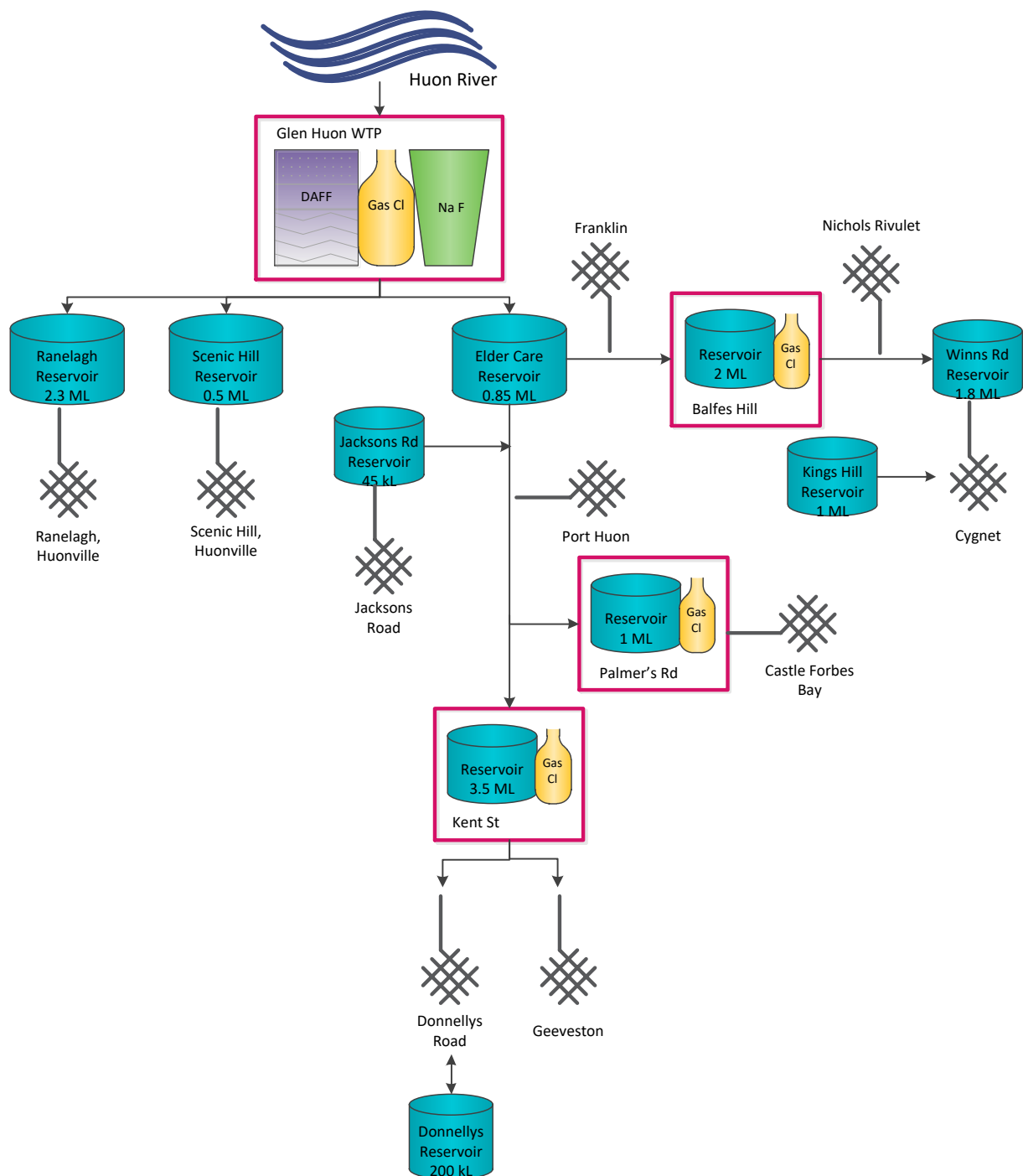


Figure 26.1-a Huon Valley system schematic

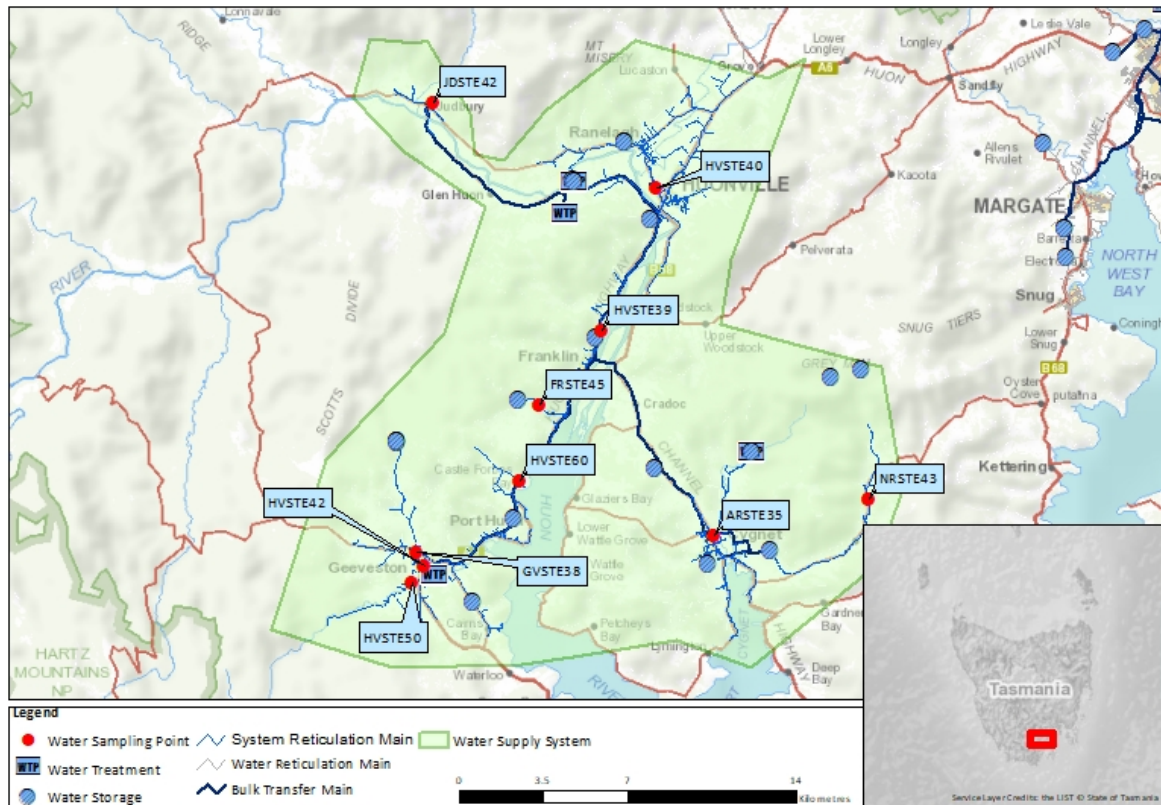


Figure 26.1-b Map of Huon Valley monitoring system

26.2. Summary of annual reticulation compliance (2019–20)

Table 26.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Cygnets/Football Ground, Bridge Sample Tap	ARSTE35	W	n/a	Q	n/a	n/a	n/a
South Franklin, Jacksons Rd/Sample Tap	FRSTE45	W	n/a	Q	n/a	n/a	n/a
Franklin Retic/Opposite No. 1 PS, Sample Tap	HVSTE39	W	n/a	Q	n/a	n/a	n/a
Huonville Retic/Football Club Entrance, Wilmot Rd, Sample Tap	HVSTE40	W	Q	Q	2M	Q	n/a
Geeveston/Intersection Bridge, School Rd, Main Rd	HVSTE42	W	Q	Q	2M	Q	n/a
Geeveston/Fourfoot Rd 1st Bridge	GVSTE38	W	n/a	n/a	n/a	n/a	n/a
4046 Huon Hwy, Castle Forbes Bay	HVSTE60	W	n/a	n/a	n/a	n/a	n/a
Nicholls Rivulet, Sample Tap	NRSTE43	W	n/a	Q	n/a	n/a	n/a
Judbury/19 George Street	JDSTE42	W	Q	Q	n/a	Q	n/a
Number Planned Samples		468	12	28	48	12	n/a
Number Samples Tested		468	12	28	48	12	n/a

26.3. Summary of current and historic performance (2015–20)

Table 26.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	99.7%	99.7%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

26.4. Analysis of current health performance (2019–20)

Table 26.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 26.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 26.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	12	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	12	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	12	0	100	0.0076	0.0047	0.0129
Cadmium	0.002	mg/L	12	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	12	0	100	<0.0001	<0.0001	0.0002
Copper	2	mg/L	12	0	100	0.0050	0.0021	0.0080
Lead	0.01	mg/L	12	0	100	0.0002	<0.0001	0.0004
Manganese	0.5	mg/L	12	0	100	0.0007	0.0002	0.0016
Mercury	0.001	mg/L	12	0	100	0.00003	<0.00003	0.00008
Molybdenum	0.05	mg/L	12	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	12	0	100	0.0002	0.0001	0.0003
Selenium	0.01	mg/L	12	0	100	<0.0001	<0.0001	<0.0001

Table 26.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	24	0	100	10	2	39
Monochloroacetic acid	150	µg/L	24	0	100	<3	<3	5
Trichloroacetic acid	100	µg/L	24	0	100	21	9	63
Total trihalomethanes	250	µg/L	24	0	100	42	30	69

Table 26.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.65	0.04	1.45
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.63	6.32	8.75
Turbidity	NTU	1	0.26	0	0.80

26.5. Analysis of overall system performance (2019–20)

Table 26.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
1/8/19	BWA Lifted	✓	✓

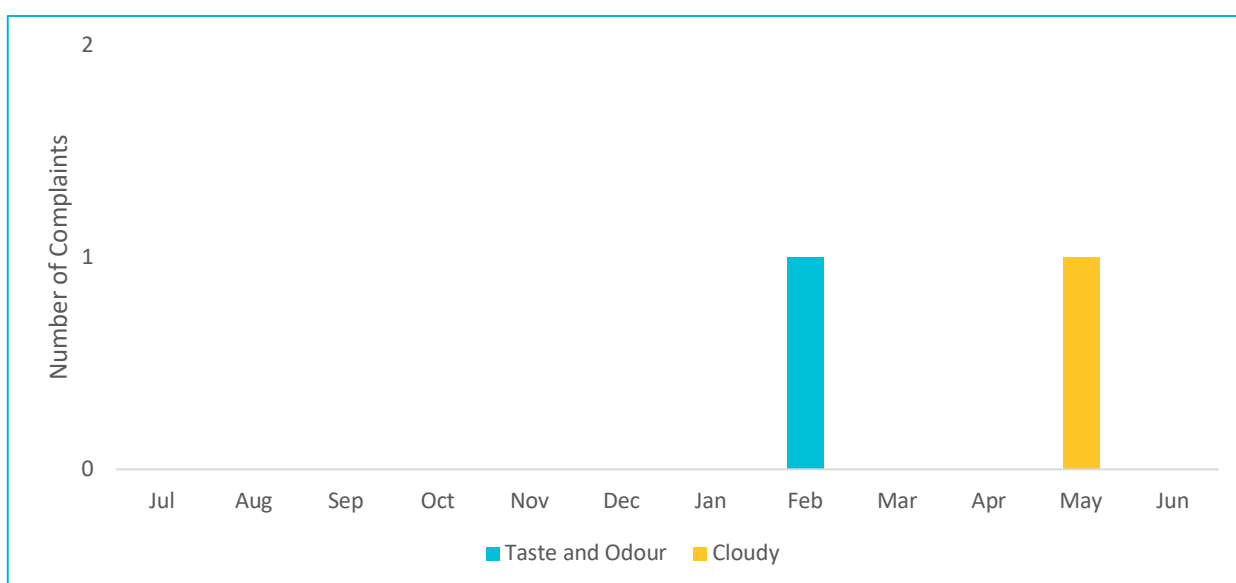


Figure 26.5-b Water quality customer complaints by month and type

27. King Island drinking water system

27.1. System summary (2019–20)

King Island drinking water system	
System status (as at 30 June 2018)	Potable
Total number of connections	599
Population serviced	1,041
Fluoride	NaF

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	181	0
Fluoride	100.0%	☑	100.0%	32	0
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	8	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	1	Other (chlorine)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
King Island Water Infrastructure Project	WTP and Associated Infrastructure	Complete	2019/2020	\$13,800,000

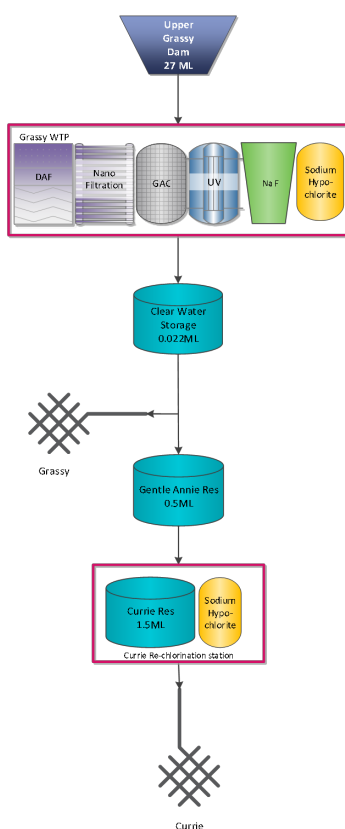


Figure 27.1-a King Island system schematic



Figure 27.1-b Map of King Island monitoring system

27.2. Summary of annual reticulation compliance (2019–20)

Table 27.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Hospital Tank Site 2	254CUSP0003 ²¹	W	n/a	n/a	n/a	n/a	n/a
Currie Hospital PRV	241GRSP0020 ²²	W	n/a	n/a	n/a	n/a	n/a
Depot Site 3	254CUSP0004	W	Q	Q	2M	Q	n/a
Sassafrass St Site 2	241GRSP0003 ²³	W	n/a	n/a	n/a	n/a	n/a
Ti Tree Drive Site 3	241GRSP0004	W	Q	Q	2M	Q	n/a
Number Planned Samples		181	8	8	32 ²⁴	8	n/a
Number Samples Tested		181	8	8	32	8	n/a

27.3. Summary of current and historic performance (2015–20)

Table 27.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

²¹ Removed 11th December 2019

²² New from 11th December 2019

²³ Changed to operational from 11th December 2019

²⁴ Testing from 11th December 2019

27.4. Analysis of current health performance (2019–20)

Table 27.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 27.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.6
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 27.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	0.0005	<0.0003	0.0010
Barium	2	mg/L	8	0	100	0.0061	0.0030	0.0125
Cadmium	0.002	mg/L	8	0	100	0.0002	<0.0001	0.0016
Chromium	0.05	mg/L	8	0	100	0.0001	<0.0001	0.0003
Copper	2	mg/L	8	0	100	0.0041	<0.0001	0.0099
Lead	0.01	mg/L	8	0	100	0.0002	<0.0001	0.0003
Manganese	0.5	mg/L	8	0	100	0.0026	<0.0001	0.0074
Mercury	0.001	mg/L	8	0	100	0.00007	<0.00003	0.00019
Molybdenum	0.05	mg/L	8	0	100	0.0053	0.0004	0.0121
Nickel	0.02	mg/L	8	0	100	0.0008	0.0002	0.0021
Selenium	0.01	mg/L	8	0	100	0.0003	<0.0001	0.0011

Table 27.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	7	<1	28
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	4
Trichloroacetic acid	100	µg/L	8	0	100	6	<1	20
Total trihalomethanes	250	µg/L	8	0	100	97	55	152

Table 27.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.35	0.03	0.79
Colour True	HU	15	2	<1	7
pH	Units	6.5 – 8.5	7.19	6.16	7.58
Turbidity	NTU	1	0.22	0.10	2.60

27.5. Analysis of overall system performance (2019–20)

Table 27.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

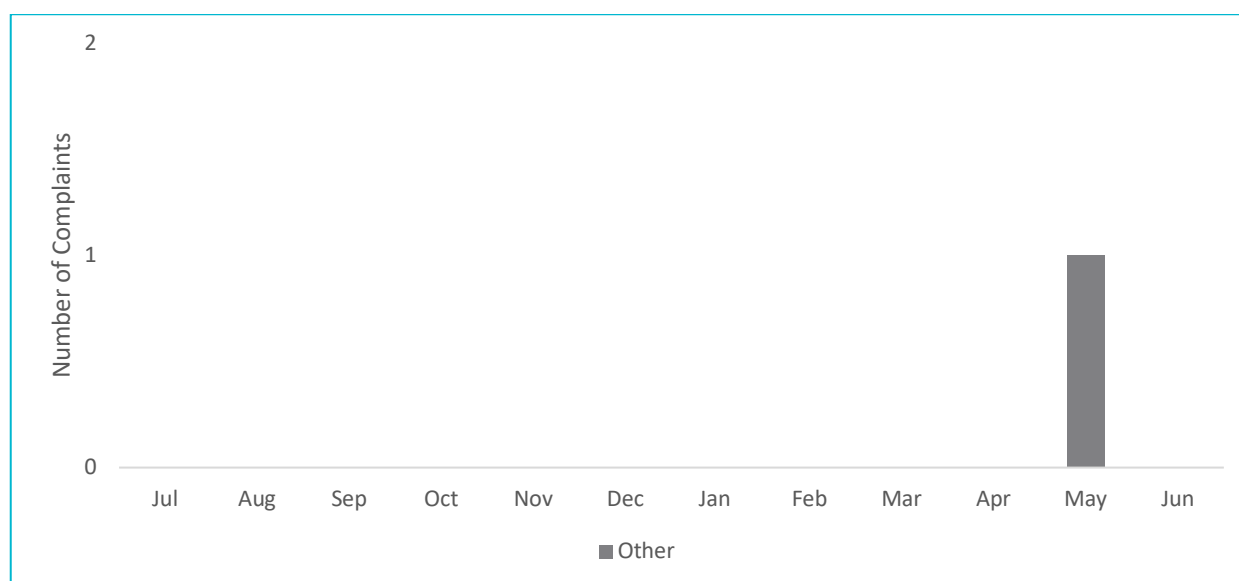







Figure 27.5-b Water quality customer complaints by month and type

28. Lady Barron drinking water system

Lady Barron drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	111
Population serviced	156
Fluoride	n/a

28.1. System summary (2019–20)

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%		98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%		100.0%	4	0
DBPs	100.0%		100.0%	4	0
 Compliant  Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	1	Taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	PAC Dosing & Rechlorination Vinegar Hill	In Progress	2020/2021	\$286,000
WTP Renewal Program	Rising Main & Sludge System	In Progress	2020/2021	\$166,000

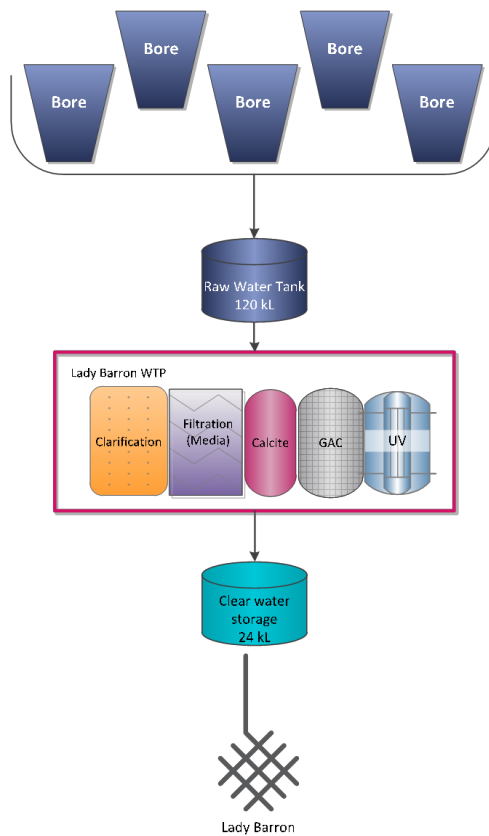


Figure 28.1-a Lady Barron system schematic

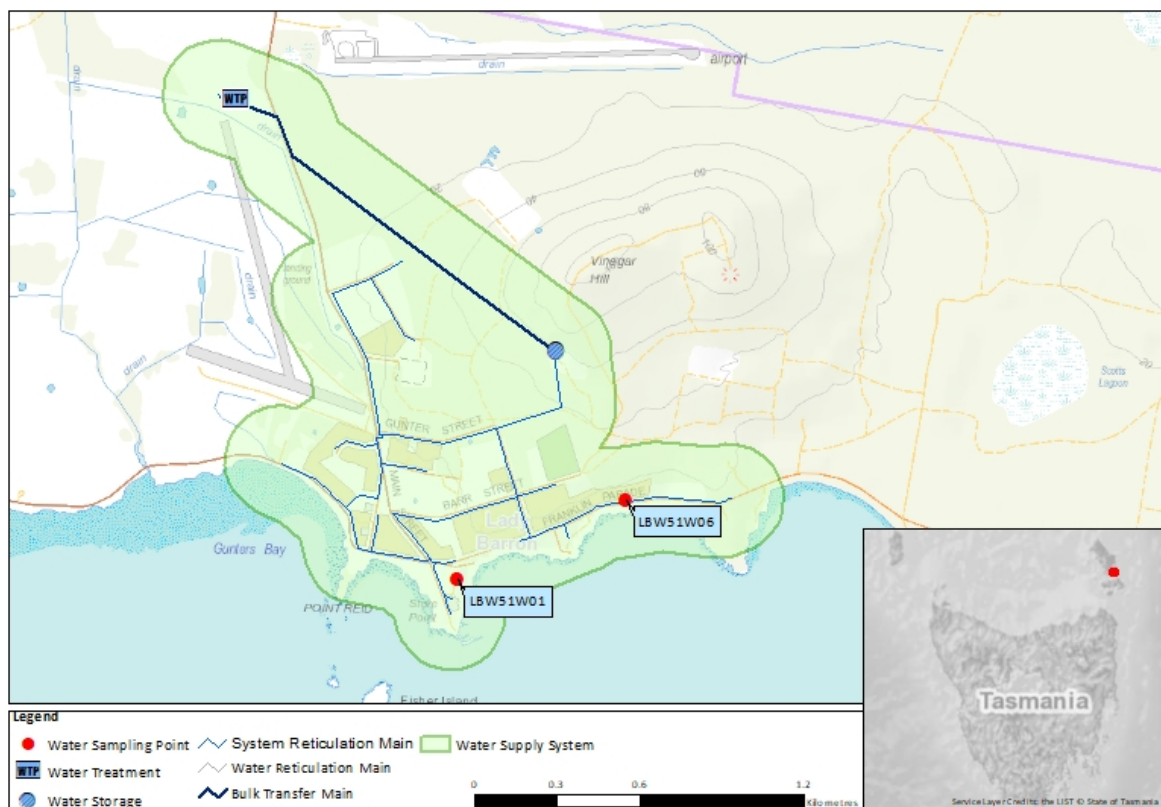


Figure 28.1-b Map of Lady Barron monitoring system

28.2. Summary of annual reticulation compliance (2019–20)

Table 28.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Lady Baron/Police Station	LBW51W01	W	Q	Q	n/a	Q	n/a
Number Planned Samples		53	4	4	n/a	4	n/a
Number Samples Tested		53	4	4	n/a	4	n/a

28.3. Summary of current and historic performance (2015–20)

Table 28.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	91.7%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	n/a	n/a	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

28.4. Analysis of current health performance (2019–20)

Table 28.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 28.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	0.0003	<0.0003	0.0006
Barium	2	mg/L	4	0	100	0.0352	0.0327	0.0403
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Copper	2	mg/L	4	0	100	0.0047	0.0015	0.0082
Lead	0.01	mg/L	4	0	100	0.0008	0.0004	0.0017
Manganese	0.5	mg/L	4	0	100	0.0008	0.0003	0.0017
Mercury	0.001	mg/L	4	0	100	0.00008	0.00005	0.00012
Molybdenum	0.05	mg/L	4	0	100	0.0002	<0.0001	0.0005
Nickel	0.02	mg/L	4	0	100	0.0004	0.0002	0.0005
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 28.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	2	1	3
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	<1	<1	1
Total trihalomethanes	250	µg/L	4	0	100	134	110	150

Table 28.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.85	0.20	1.33
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.45	7.13	8.60
Turbidity	NTU	1	0.37	0.10	1.10

28.5. Analysis of overall system performance (2019–20)

Table 28.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

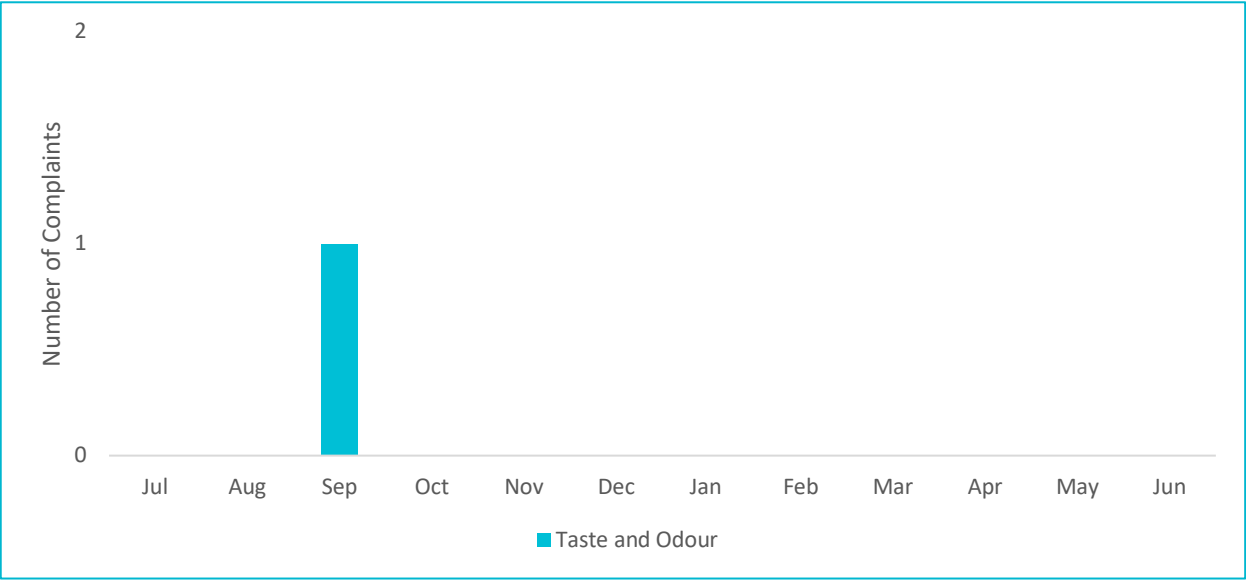


Figure 28.5-b Water quality customer complaints by month and type

29. Lake Barrington drinking water system

29.1. System summary (2019–20)

Lake Barrington drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	1,218
Population serviced	2,466
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	104	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	8	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	1	Taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$110,000

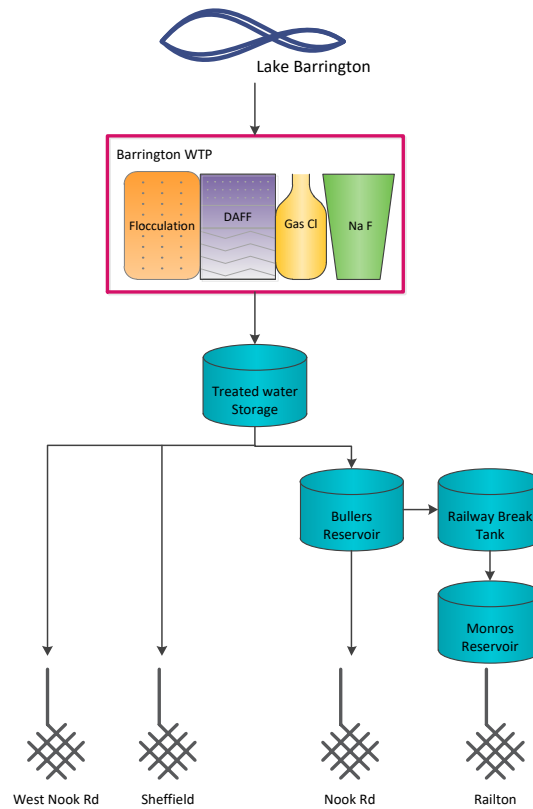


Figure 29.1-a Lake Barrington system schematic

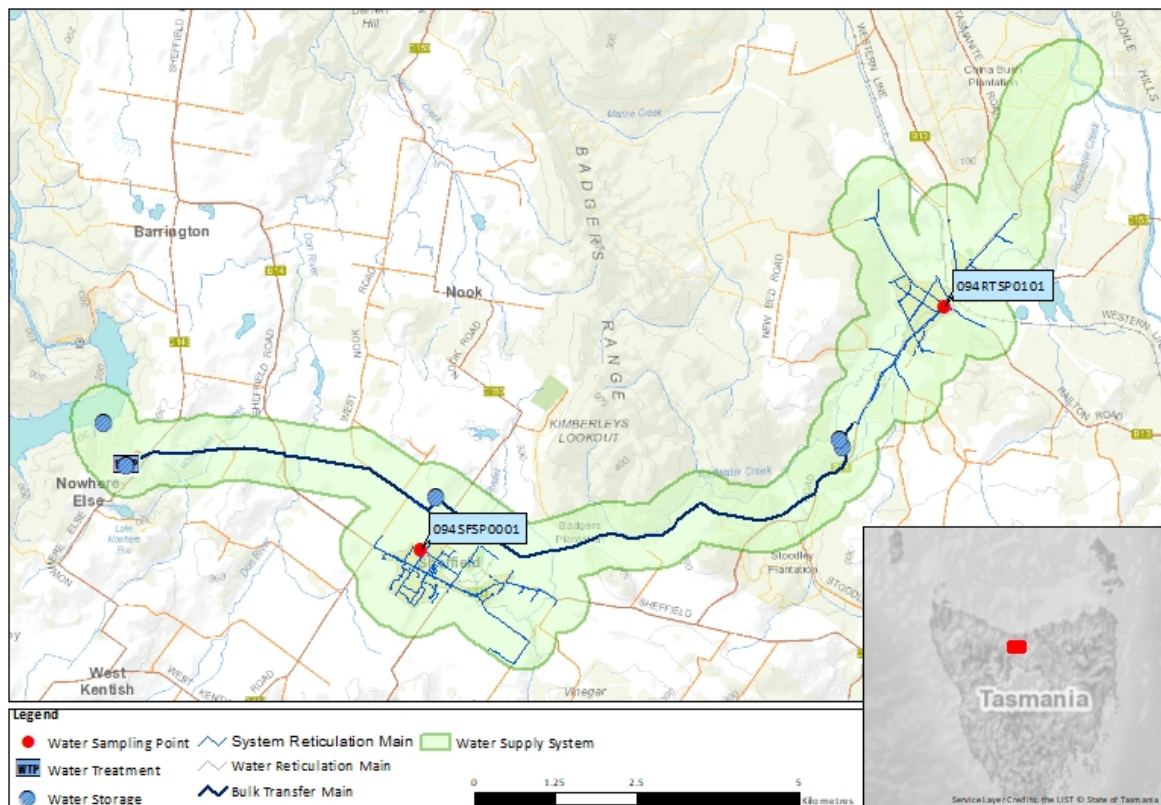


Figure 29.1-b Map of Lake Barrington monitoring system

29.2. Summary of annual reticulation compliance (2019–20)

Table 29.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Barrington/Railton Park Sample Tap	094RTSP0101	W	Q	Q	2M	Q	n/a
Barrington/Sheffield Council Office Sample Tap	094SFSP0001	W	Q	Q	2M	Q	n/a
Number Planned Samples		104	8	8	48	8	n/a
Number Samples Tested		104	8	8	48	8	n/a

29.3. Summary of current and historic performance (2015–20)

Table 29.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	99.9%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> <div></div> Compliant <div></div> Non-compliant </div>					

29.4. Analysis of current health performance (2019–20)

Table 29.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 29.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 29.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	8	0	100	0.0076	0.0068	0.0087
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	0.0002	<0.0001	0.0003
Copper	2	mg/L	8	0	100	0.0015	0.0003	0.0028
Lead	0.01	mg/L	8	0	100	0.0001	<0.0001	0.0002
Manganese	0.5	mg/L	8	0	100	0.0011	0.0003	0.0019
Mercury	0.001	mg/L	8	0	100	0.00004	<0.00003	0.00007
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0001	<0.0001	0.0002
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

Table 29.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	10	2	29
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	25	13	41
Total trihalomethanes	250	µg/L	8	0	100	37	22	47

Table 29.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.70	0.14	1.27
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.35	6.70	8.81
Turbidity	NTU	1	0.18	0.10	0.40

29.5. Analysis of overall system performance (2019–20)

Table 29.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

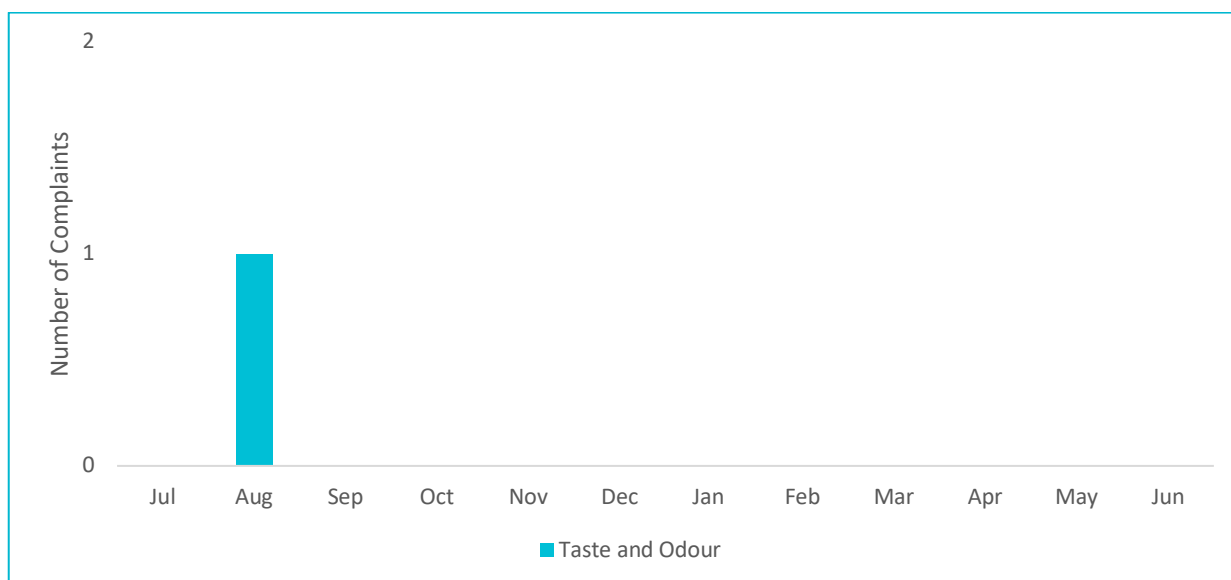


Figure 29.5-b Water quality customer complaints by month and type

30. Leven River drinking water system

30.1. System summary (2019–20)

Leven River drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	2,231
Population serviced	4,580
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	8	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	8	Discolouration, taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Upgrade	Leven WTP Upgrade	In Progress	2020/2021	TBC
Fluoride Upgrade	Replacement of FSA Tank	In Progress	2020/2021	\$200,000

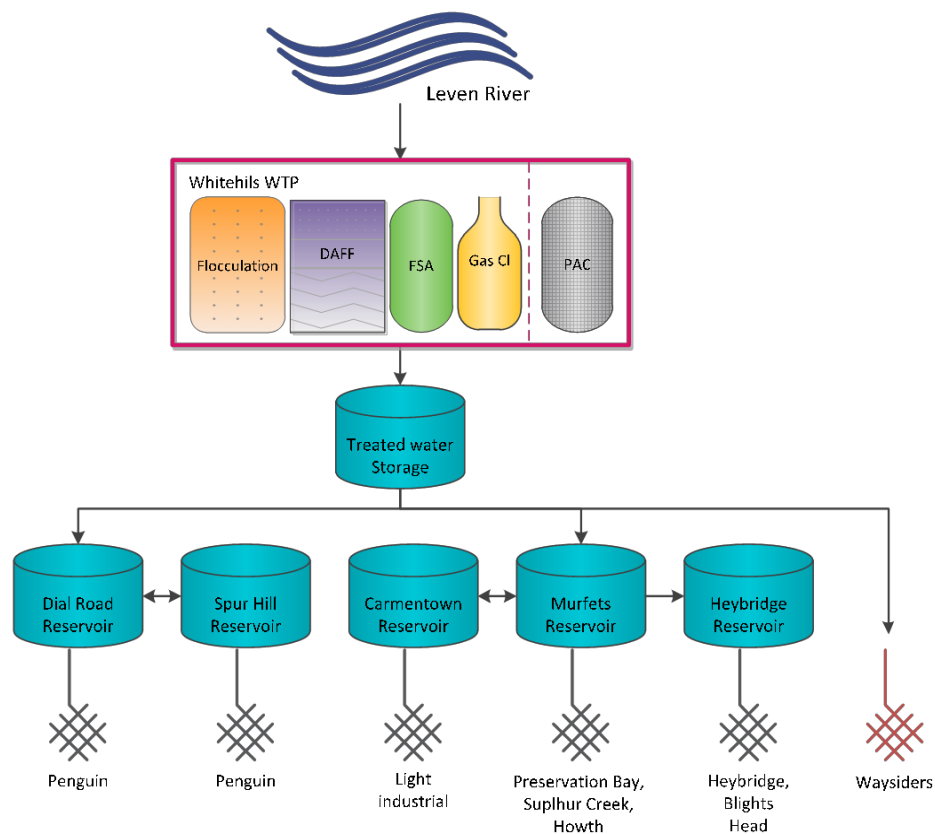


Figure 30.1-a Leven River system schematic

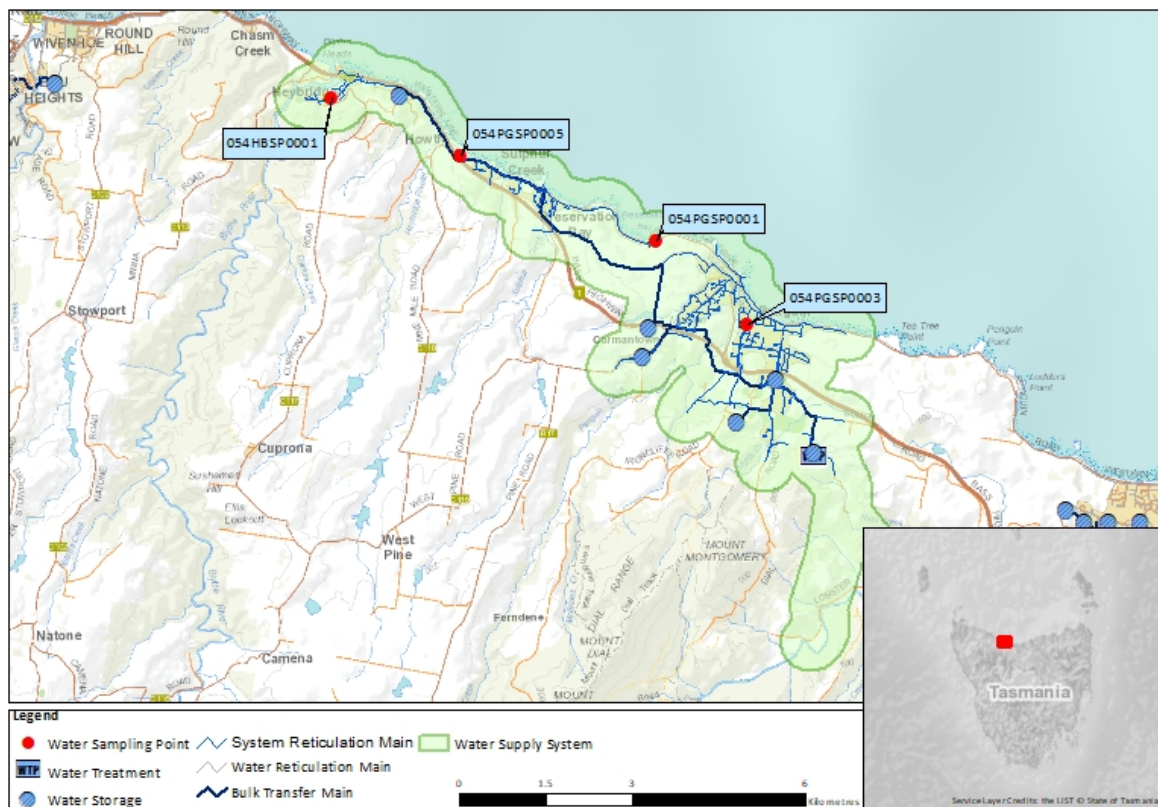


Figure 30.1-b Map of Leven River monitoring system

30.2. Summary of annual reticulation compliance (2019–20)

Table 30.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Whitehills/Penguin - 315 Preservation Drive	054PGSP0005	W	Q	Q	2M	Q	n/a
Whitehills/Patrick St Clinic Sample Point	054PGSP0003	W	Q	Q	2M	Q	n/a
Number Planned Samples		106	8	8	48	8	n/a
Number Samples Tested		106	8	8	48	8	n/a

30.3. Summary of current and historic performance (2015–20)

Table 30.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	99.6%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	99.5%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

30.4. Analysis of current health performance (2019–20)

Table 30.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 30.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L –1.1 mg/L)	0.5
90% of F results are equal to or less than 1.1 mg/L	100%
<div> <div></div> Compliant <div></div> Non-compliant </div>	

Table 30.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	8	0	100	0.0207	0.0159	0.0243
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	0.0002	0.0001	0.0004
Copper	2	mg/L	8	0	100	0.0094	0.0049	0.0139
Lead	0.01	mg/L	8	0	100	0.0005	0.0003	0.0012
Manganese	0.5	mg/L	8	0	100	0.0023	0.0006	0.0066
Mercury	0.001	mg/L	8	0	100	0.00006	<0.00003	0.00021
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0003	0.0002	0.0005
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

Table 30.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	10	3	24
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	14	3	30
Total trihalomethanes	250	µg/L	8	0	100	33	18	54

Table 30.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	1.12	0.08	2.04
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.02	6.49	8.05
Turbidity	NTU	1	0.42	0.10	2.40

30.5. Analysis of overall system performance (2019–20)

Table 30.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
July 2019 – August 2019 November 2019 February 2020 – June 2020	Low fluoride levels detected	✓	✓

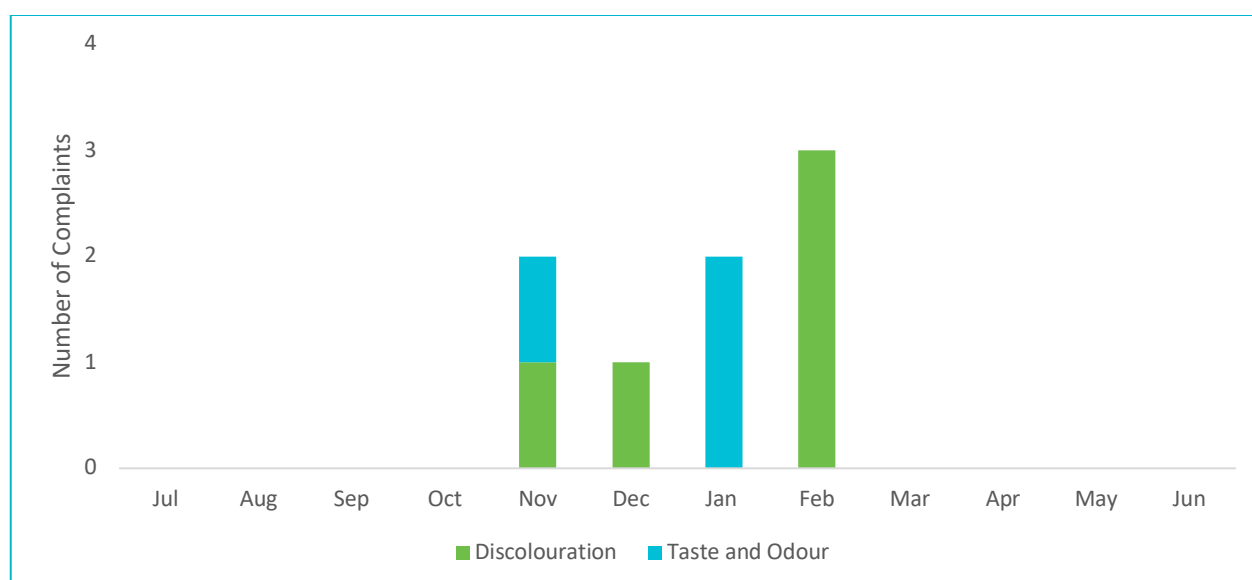


Figure 30.5-b Water quality customer complaints by month and type

31. Longford drinking water system

31.1. System summary (2019–20)

Longford drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	4,537
Population serviced	9,565
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	210	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	8	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	15	Discolouration, taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$140,000
Fluoride Upgrade	Replacement of FSA Tank	In Progress	2020/2021	TBD

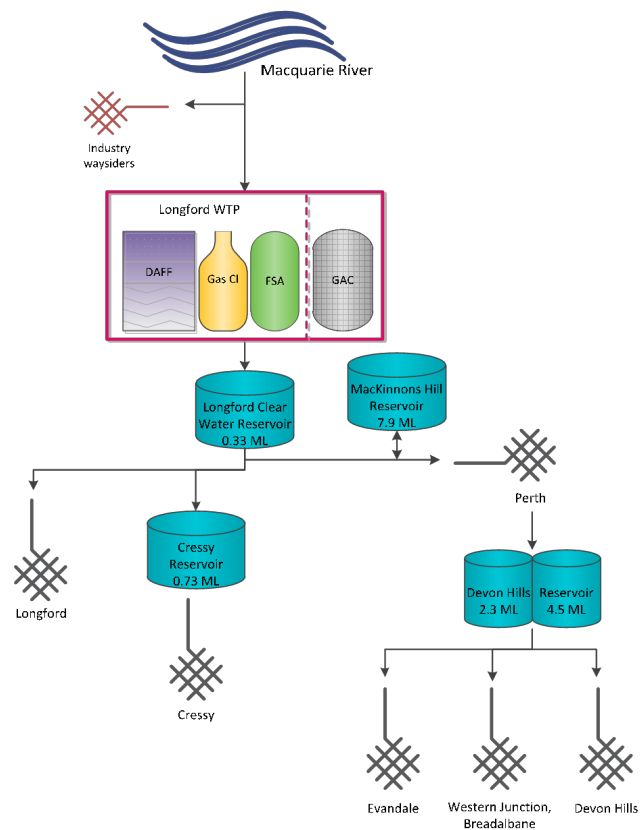


Figure 31.1-a Longford system schematic

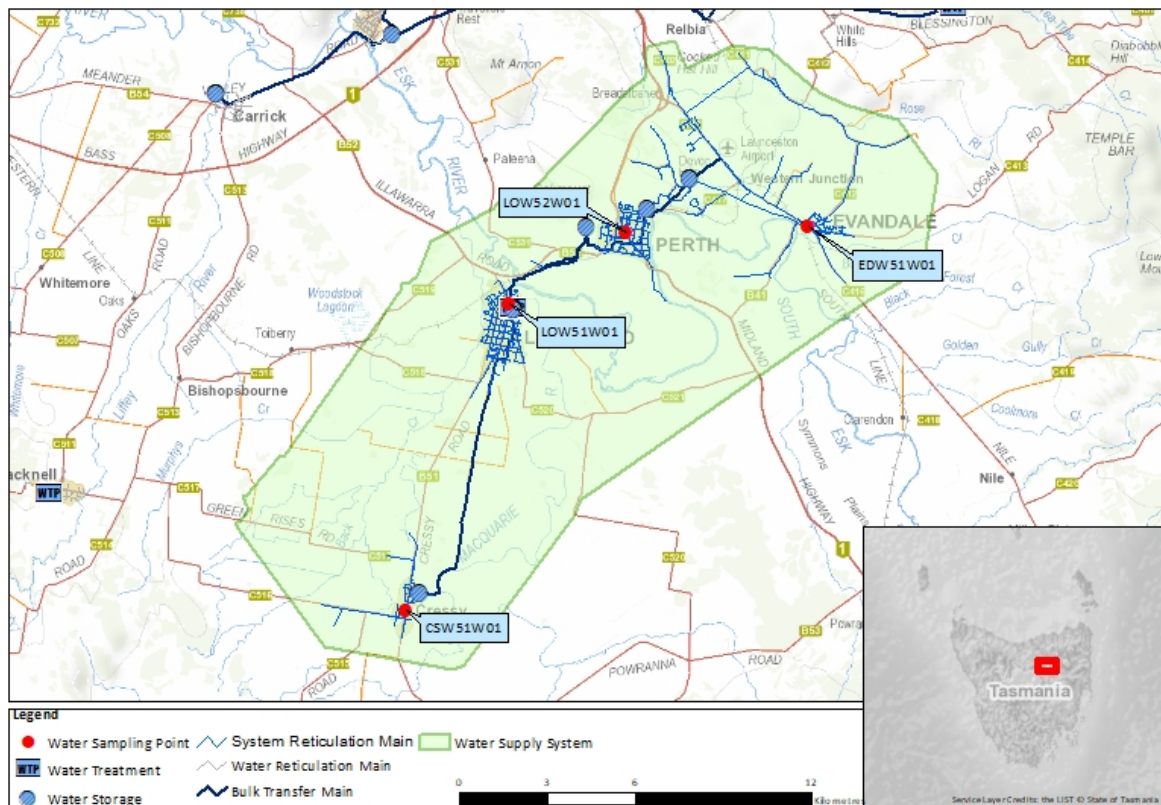


Figure 31.1-b Map of Longford monitoring system

31.2. Summary of annual reticulation compliance (2019–20)

Table 31.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Longford/Cressy Public Toilets	CSW51W01	W	Q	Q	2M	Q	n/a
Longford/Evandale History Centre, High St	EDW51W01	W	Q	Q	n/a	Q	n/a
Longford/Lyttleton St Toilets	LOW51W01	W	n/a	n/a	n/a	n/a	n/a
Longford/Perth, Little Mulgrave St	LOW52W01	W	n/a	n/a	2M	n/a	n/a
Number Planned Samples		210	8	8	48	8	n/a
Number Samples Tested		210	8	8	48	8	n/a

31.3. Summary of current and historic performance (2015–20)

Table 31.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	99.5%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

31.4. Analysis of current health performance (2019–20)

Table 31.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 31.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.7
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 31.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	8	0	100	0.0092	0.0066	0.0122
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	0.0001	<0.0001	0.0002
Copper	2	mg/L	8	0	100	0.0082	0.0034	0.0142
Lead	0.01	mg/L	8	0	100	0.0002	0.0001	0.0004
Manganese	0.5	mg/L	8	0	100	0.0057	0.0025	0.0147
Mercury	0.001	mg/L	8	0	100	0.00009	<0.00003	0.00017
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0001	<0.0001	0.0002
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	0.0003

Table 31.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	7	5	13
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	8	5	19
Total trihalomethanes	250	µg/L	8	0	100	24	13	46

Table 31.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.67	0.13	1.20
Colour True	HU	15	<1	<1	2
pH	Units	6.5 – 8.5	7.01	6.54	7.62
Turbidity	NTU	1	0.31	0.10	0.90

31.5. Analysis of overall system performance (2019–20)

Table 31.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
January 2020 – April 2020	Low fluoride levels detected	✓	✓

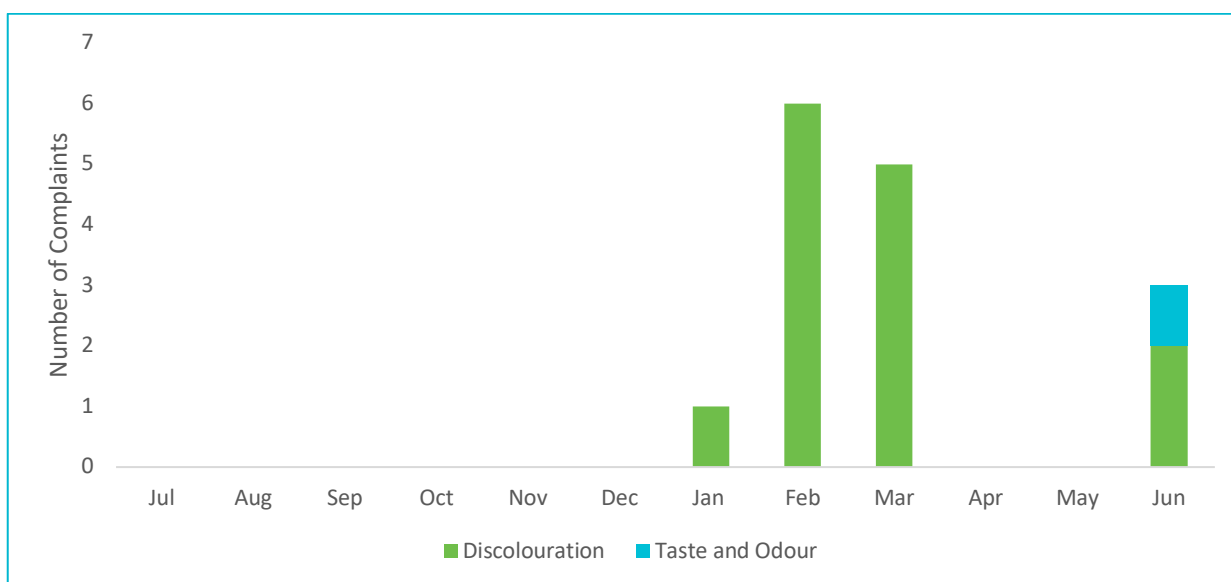


Figure 31.5-b Water quality customer complaints by month and type

32. Manuka River drinking water system

32.1. System summary (2019–20)

Manuka River drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	559
Population serviced	764
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	8	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	1	Other (stained washing)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$67,000
WTP Renewal Program	Inlet Upgrade	Not Started	2020/2021	\$450,000

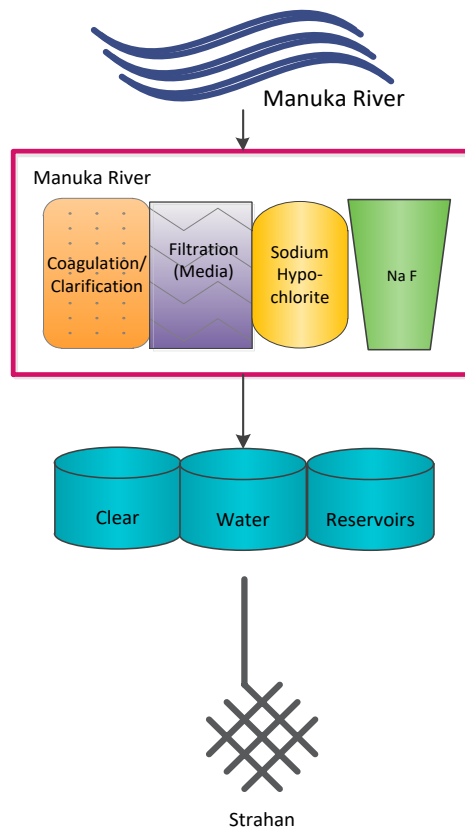


Figure 32.1-a Manuka River system schematic

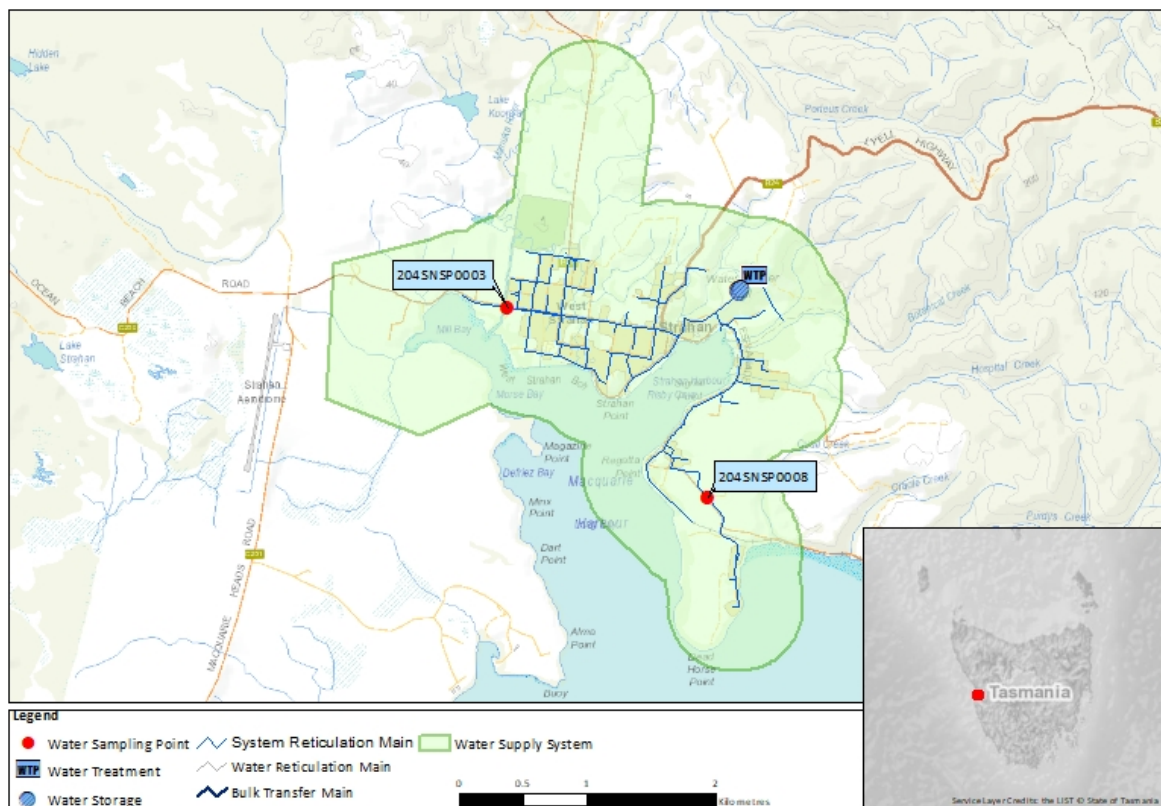


Figure 32.1-b Map of Manuka River monitoring system

32.2. Summary of annual reticulation compliance (2019–20)

Table 32.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Strahan/Harvey St Sample Point	204SNSP0003	W	Q	Q	2M	Q	n/a
Strahan/Lot 1 Lowana Rd (WWTP Entrance)	204SNSP0008	W	Q	Q	2M	n/a	n/a
Number Planned Samples		104	8	8	48	4	n/a
Number Samples Tested		104	8	8	48	4	n/a

32.3. Summary of current and historic performance (2015–20)

Table 32.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	99.3%	99.6%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

32.4. Analysis of current health performance (2019–20)

Table 32.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 32.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 32.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	8	0	100	0.0065	0.0055	0.0074
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	<0.0001	<0.0001	0.0001
Copper	2	mg/L	8	0	100	0.0089	0.0039	0.0251
Lead	0.01	mg/L	8	0	100	0.0004	0.0001	0.0006
Manganese	0.5	mg/L	8	0	100	0.0044	0.0014	0.0213
Mercury	0.001	mg/L	8	0	100	0.00004	<0.00003	0.00007
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0012	0.0010	0.0014
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

Table 32.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	15	4	37
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	28	8	62
Total trihalomethanes	250	µg/L	8	0	100	68	55	104

Table 32.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.54	0.20	0.90
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.32	6.82	7.80
Turbidity	NTU	1	0.19	0.10	2.40

32.5. Analysis of overall system performance (2019–20)

Table 32.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

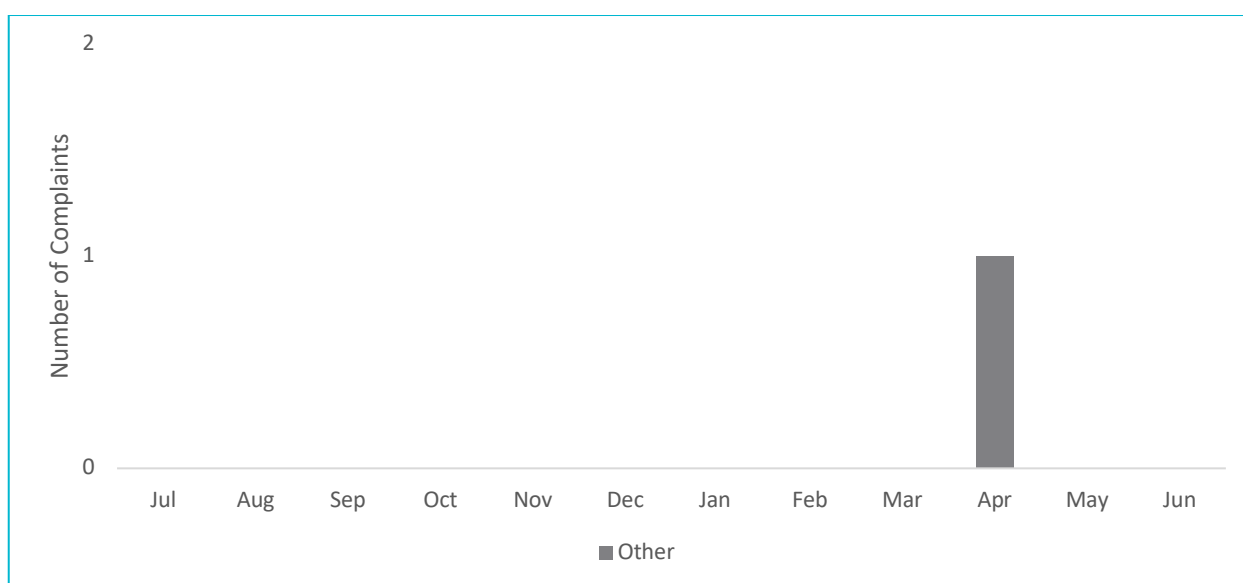







Figure 32.5-b Water quality customer complaints by month and type

33. Mathinna drinking water system

33.1. System summary (2019–20)

Mathinna drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	81
Population serviced	132
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%		98.0%	52	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%		100.0%	4	0
DBPs	100.0%		100.0%	4	0
 Compliant  Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

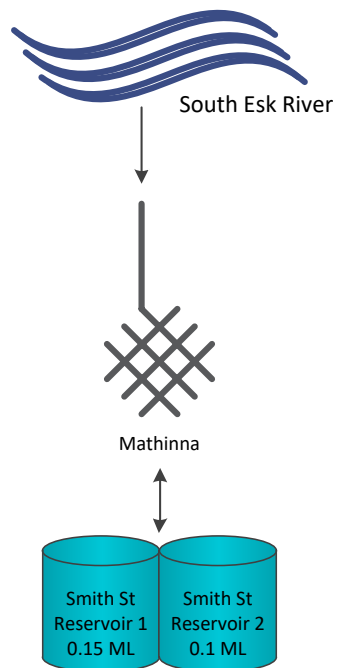


Figure 33.1-a Mathinna system schematic

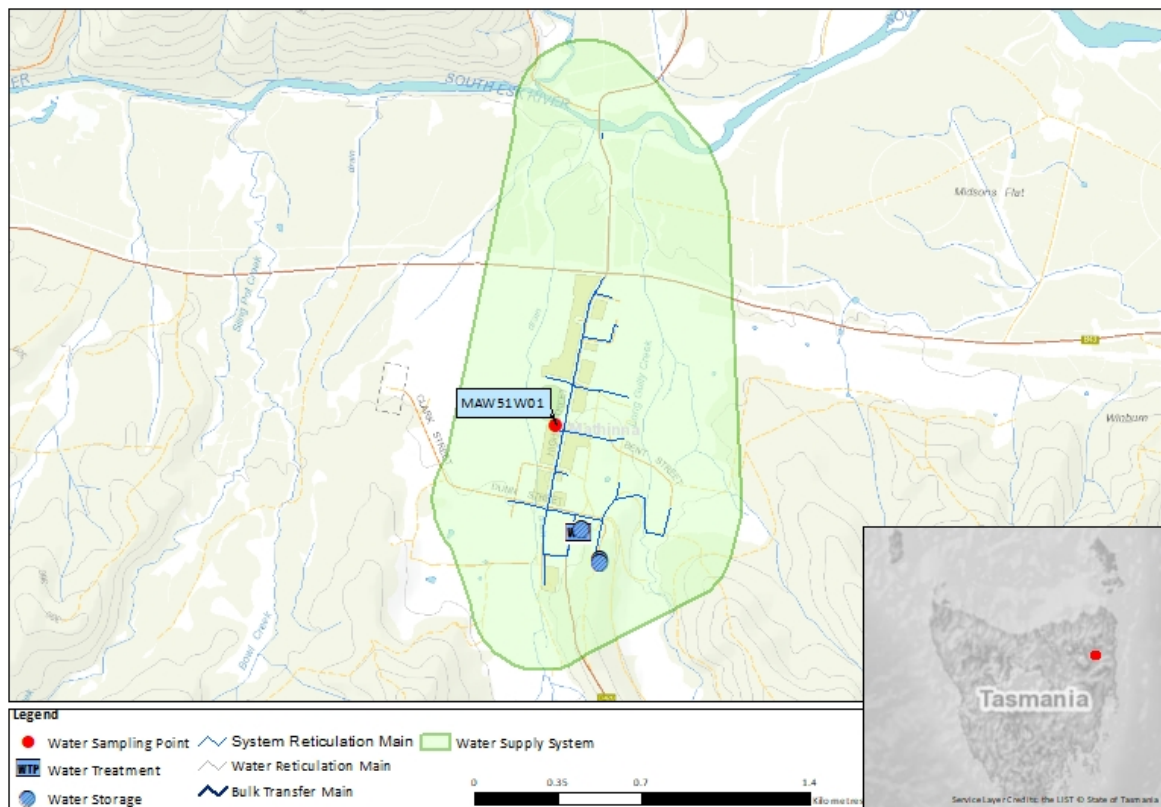


Figure 33.1-b Map of Mathinna monitoring system

33.2. Summary of annual reticulation compliance (2019–20)

Table 33.2-a Sampling program

Planned compliance sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Mathinna/Rec Ground Recreation Ground	MAW51W01	W	Q	Q	n/a	Q	n/a
Number Planned Samples		52	4	4	n/a	4	n/a
Number Samples Tested		52	4	4	n/a	4	n/a

33.3. Summary of current and historic performance (2015–20)

Table 33.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	33.0%	16.7%	66.7%	98.1%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	n/a	n/a	n/a	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

33.4. Analysis of current health performance (2019–20)

Table 33.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 33.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0150	0.0045	0.0207
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Copper	2	mg/L	4	0	100	0.0063	0.0036	0.0097
Lead	0.01	mg/L	4	0	100	0.0002	0.0001	0.0002
Manganese	0.5	mg/L	4	0	100	0.0014	0.0010	0.0018
Mercury	0.001	mg/L	4	0	100	0.00009	0.00005	0.00017
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0002	0.0001	0.0003
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 33.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	34	15	43
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	56	18	79
Total trihalomethanes	250	µg/L	4	0	100	64	40	75

Table 33.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.76	0.47	1.12
Colour True	HU	15	<1	<1	2
pH	Units	6.5 – 8.5	7.07	6.60	7.70
Turbidity	NTU	1	0.32	0.10	0.60

33.5. Analysis of overall system performance (2019–20)

Table 33.5-a Summary of system issues/public health warnings with notification details

Summary of system issues			
Date	Description	DHHS notification required	DHHS notification complete
No system issues or public health alerts issued			

34. Maydena drinking water system

34.1. System summary (2019–20)

Maydena drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	140
Population serviced	217
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
<div> ■ Compliant ■ Non-compliant </div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

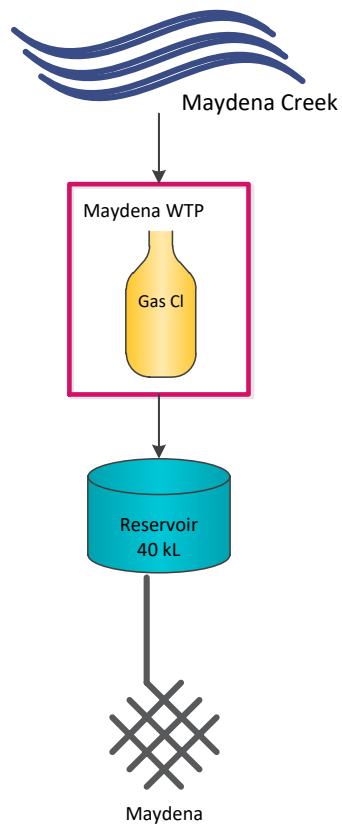


Figure 34.1-a Maydena system schematic

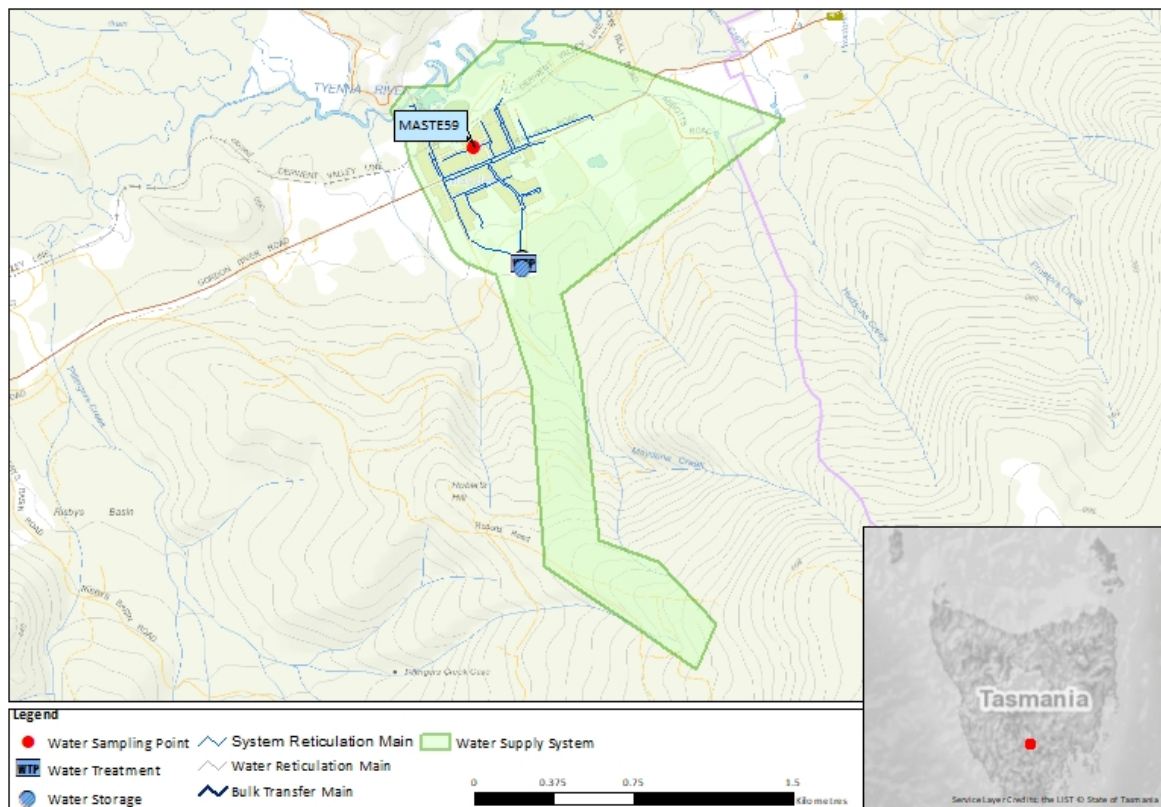


Figure 34.1-b Map of Maydena monitoring system



34.2. Summary of annual reticulation compliance (2019–20)

Table 34.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Maydena/12 Mayne St	MASTE59	W	Q	Q	n/a	Q	n/a
Number Planned Samples		53	4	4	n/a	4	n/a
Number Samples Tested		53	4	4	n/a	4	n/a

34.3. Summary of current and historic performance (2015–20)

Table 34.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	98.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
 Compliant  Non-compliant					

34.4. Analysis of current health performance (2019–20)

Table 34.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 34.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0025	0.0020	0.0030
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0009	0.0006	0.0012
Copper	2	mg/L	4	0	100	0.0020	0.0008	0.0025
Lead	0.01	mg/L	4	0	100	0.0002	0.0001	0.0003
Manganese	0.5	mg/L	4	0	100	0.0005	0.0004	0.0006
Mercury	0.001	mg/L	4	0	100	0.00003	0.00003	0.00004
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 34.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	24	7	45
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	3
Trichloroacetic acid	100	µg/L	4	0	100	37	12	77
Total trihalomethanes	250	µg/L	4	0	100	52	27	82

Table 34.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.77	0.40	1.50
Colour True	HU	15	1.38	<1	2
pH	Units	6.5 – 8.5	7.54	7.10	8.04
Turbidity	NTU	1	0.25	0.10	0.70

34.5. Analysis of overall system performance (2019–20)

Table 34.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

35. Mole Creek drinking water system

35.1. System summary (2019–20)

Mole Creek drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	199
Population serviced	385
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	52	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
<div> ■ Compliant ■ Non-compliant </div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal Program	GAC Replacement	In Progress	2020/2021	\$120,000

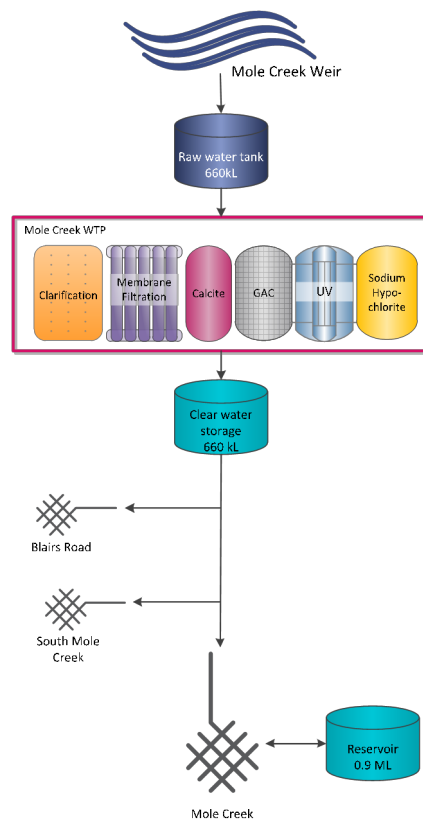


Figure 35.1-a Mole Creek system schematic

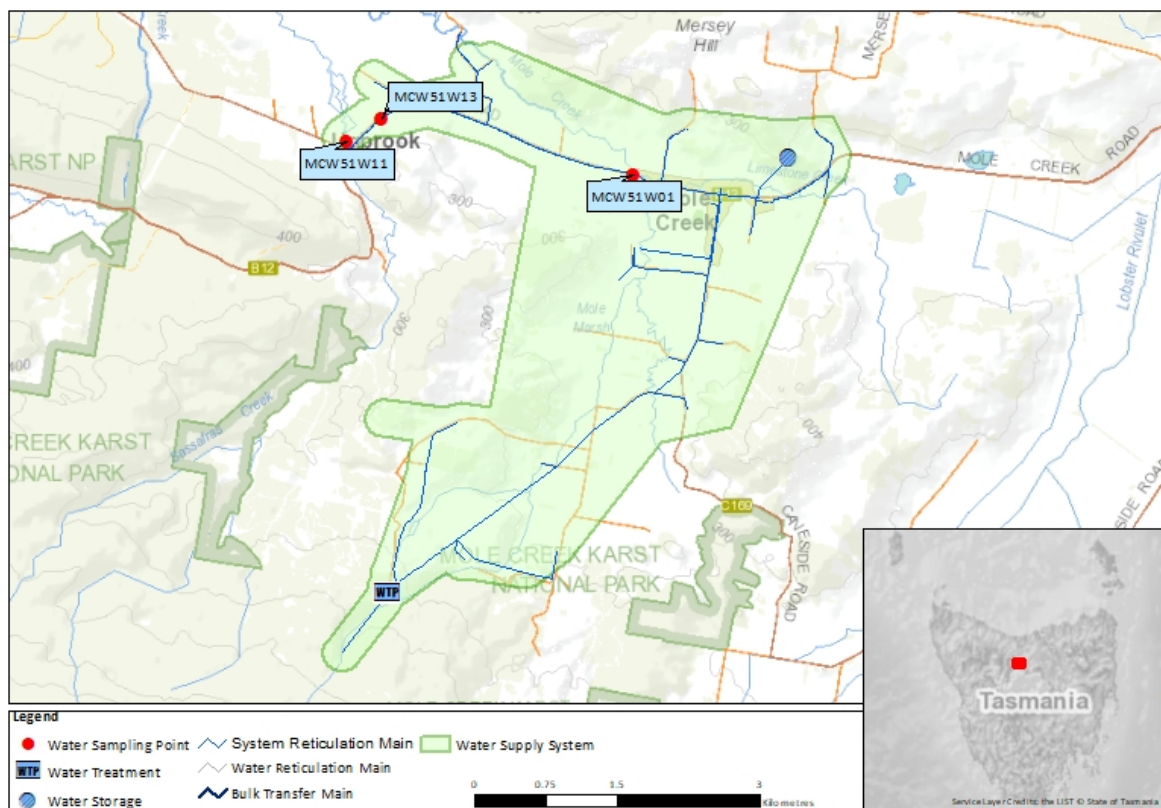


Figure 35.1-b Map of Mole Creek monitoring system

35.2. Summary of annual reticulation compliance (2019–20)

Table 35.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Mole Creek/Pioneer Drive (650094)	MCW51W01	W	Q	Q	n/a	Q	n/a
Number Planned Samples		52	4	4	n/a	8	n/a
Number Samples Tested		52	4	4	n/a	8	n/a

35.3. Summary of current and historic performance (2015–20)

Table 35.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	17.4%	50.0%	99.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	n/a	n/a	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

35.4. Analysis of current health performance (2019–20)

Table 35.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 35.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0031	0.0026	0.0038
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0002	0.0001	0.0003
Copper	2	mg/L	4	0	100	0.0008	0.0004	0.0012
Lead	0.01	mg/L	4	0	100	0.0001	<0.0001	0.0005
Manganese	0.5	mg/L	4	0	100	0.0010	0.0003	0.0020
Mercury	0.001	mg/L	4	0	100	0.00008	<0.00003	0.00014
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 35.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	9	<1	31
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	5
Trichloroacetic acid	100	µg/L	4	0	100	6	<1	20
Total trihalomethanes	250	µg/L	4	0	100	19	5	54

Table 35.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.73	0.15	0.94
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.36	6.91	8.13
Turbidity	NTU	1	0.33	0.10	6.00

35.5. Analysis of overall system performance (2019–20)

Table 35.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

36. National Park drinking water system

36.1. System summary (2019–20)

National Park drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	29
Population serviced	39
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

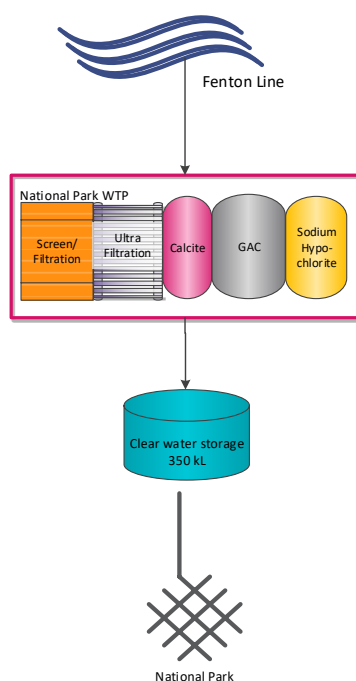


Figure 36.1-a National Park system schematic

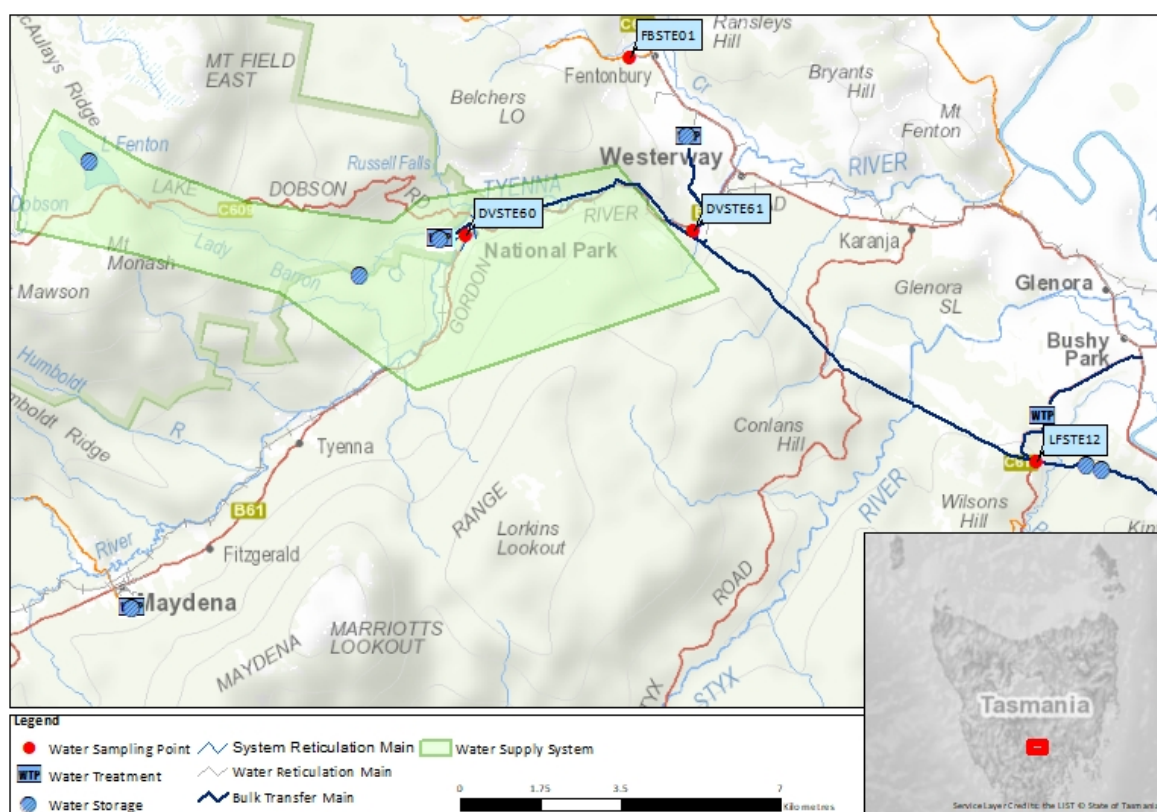


Figure 36.1-b Map of National Park monitoring system

36.2. Summary of annual reticulation compliance (2019–20)

Table 36.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
National Park/crn Weir Rd and Gordon River Rd	DVSTE60	W	Q	Q	n/a	Q	n/a
Number Planned Samples		53	4	4	n/a	4	n/a
Number Samples Tested		53	4	4	n/a	4	n/a

36.3. Summary of current and historic performance (2015–20)

Table 36.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	n/a	n/a	n/a	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	n/a	n/a	n/a	100.0%	100.0%
Disinfection by products	n/a	n/a	n/a	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

36.4. Analysis of current health performance (2019–20)

Table 36.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 36.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0025	0.0016	0.0044
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0002	0.0001	0.0002
Copper	2	mg/L	4	0	100	0.0034	0.0023	0.0047
Lead	0.01	mg/L	4	0	100	0.0006	0.0004	0.0007
Manganese	0.5	mg/L	4	0	100	0.0008	0.0004	0.0015
Mercury	0.001	mg/L	4	0	100	0.00003	<0.00003	0.00006
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	<0.0001	<0.0001	0.0002
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 36.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	29	19	39
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	46	22	71
Total trihalomethanes	250	µg/L	4	0	100	47	35	60

Table 36.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.77	0.27	1.15
Colour True	HU	15	n/a	n/a	n/a
pH	Units	6.5 – 8.5	6.99	6.36	7.58
Turbidity	NTU	1	0.81	0.30	2.90

36.5. Analysis of overall system performance (2019–20)

Table 36.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health alerts issued			

37. North Esk drinking water system

37.1. System summary (2019–20)

North Esk drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	14,738
Population serviced	31,207
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	678	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div>Compliant Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	8	Discolouration, taste and odour, other (illness)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Fluoride Upgrade	Tank Replacement	In Progress	2020/2021	\$80,000
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$50,000
WTP Upgrade	Clarifier Upgrade	Not Started	2020/2021	\$400,000

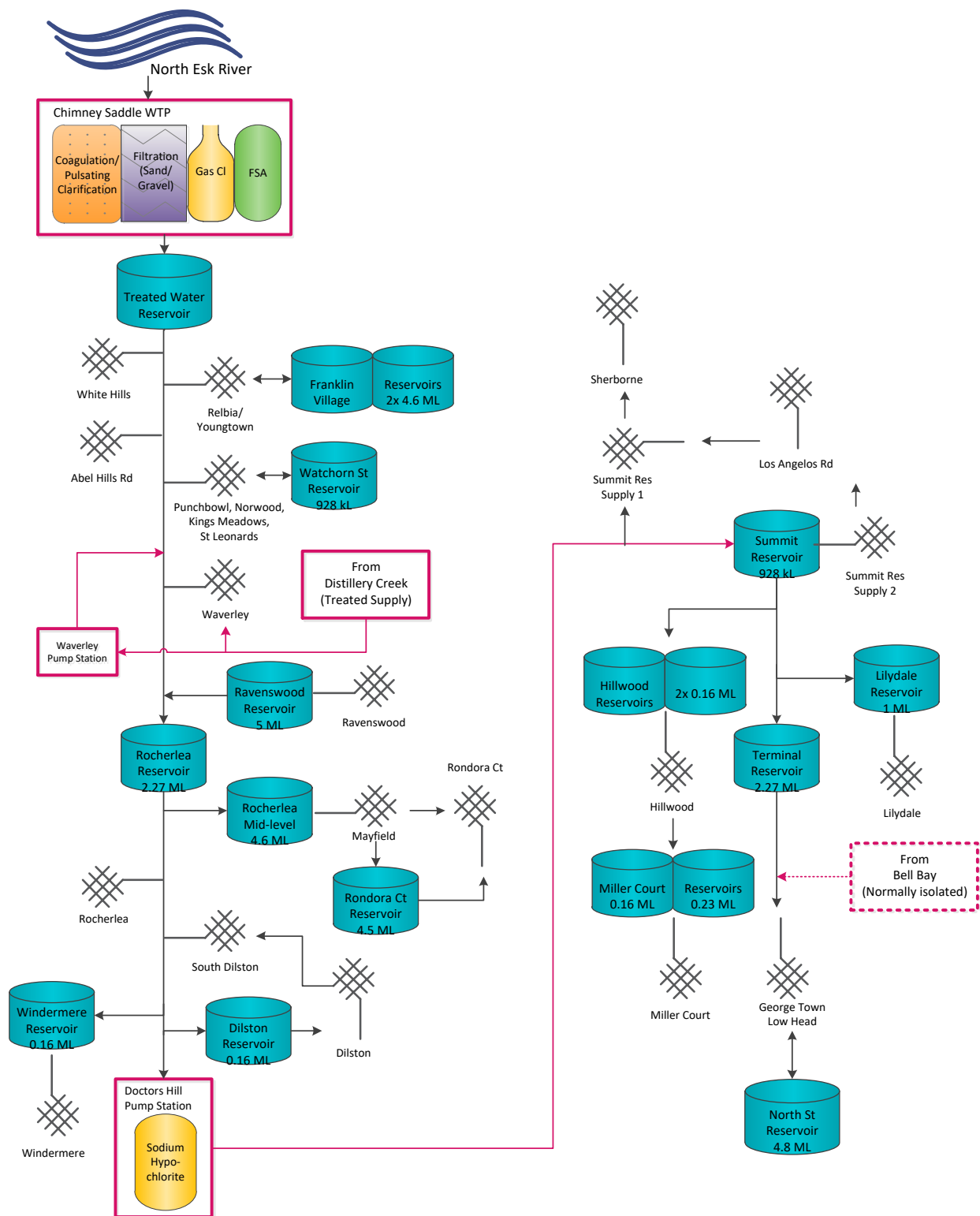
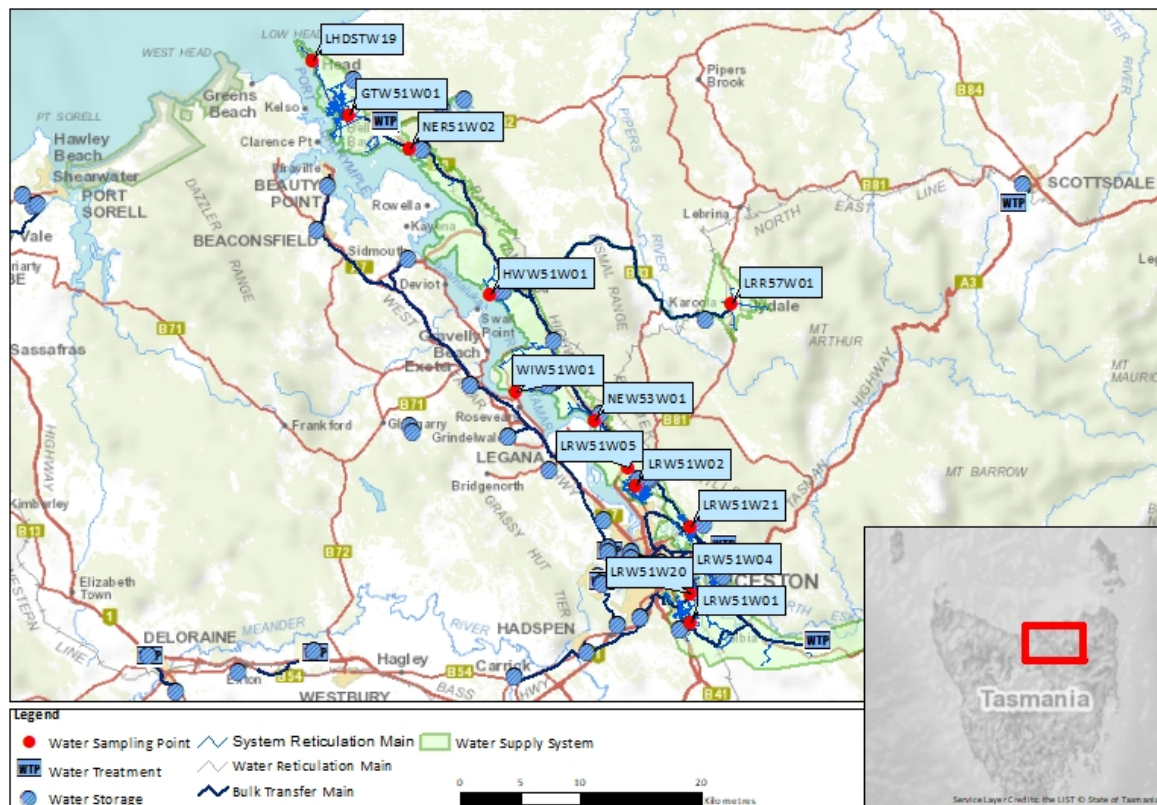


Figure 37.1-a North Esk system schematic



37.2. Summary of annual reticulation compliance (2019–20)

Table 37.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Youngtown, Poplar Parade	LRW51W01	W	n/a	n/a	2M	n/a	n/a
Norwood, Charlton Park	LRW51W20	W	n/a	n/a	n/a	n/a	n/a
Norwood, Leith St	LRW51W04	W	n/a	n/a	n/a	n/a	n/a
Ravenswood, Primary School	LRW51W21	W	n/a	n/a	n/a	n/a	n/a
Newnham, Franmaree St	LRW51W02	W	n/a	n/a	n/a	n/a	n/a
Rocherlea, TasWater Depot	LRW51W05	W	n/a	n/a	n/a	n/a	n/a
Dilston Hall	NEW53W01	W	n/a	n/a	n/a	n/a	n/a
Windermere, Church	WIW51W01	W	n/a	n/a	n/a	n/a	n/a
Hillwood, Jetty	HWW51W01	W	n/a	n/a	n/a	n/a	n/a
Lilydale, 1972 Lilydale Rd (Public Toilets)	LRR57W01	W	n/a	n/a	n/a	n/a	n/a
George Town, Information Centre	GTW51W01	W	Q	Q	2M	Q	n/a
Low Head Park Toilet	LHDSTW19	W	n/a	n/a	n/a	n/a	n/a
Bell Bay Interconnector	NER51W02	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		678	4	4	48	4	n/a
Number Samples Tested		678	4	4	48	4	n/a

37.3. Summary of current and historic performance (2015–20)

Table 37.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	99.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

37.4. Analysis of current health performance (2019–20)

Table 37.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 37.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.7
90% of F results are equal to or less than 1.1 mg/L	100%
<div> <div></div> Compliant <div></div> Non-compliant </div>	

Table 37.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0092	0.0072	0.0106
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0001	0.0001	0.0002
Copper	2	mg/L	4	0	100	0.0211	0.0021	0.0763
Lead	0.01	mg/L	4	0	100	0.0004	<0.0001	0.0013
Manganese	0.5	mg/L	4	0	100	0.0013	0.0005	0.0031
Mercury	0.001	mg/L	4	0	100	0.00005	<0.00003	0.00007
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0002	<0.0001	0.0004
Selenium	0.01	mg/L	4	0	100	0.0001	<0.0001	0.0002

Table 37.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	4	2	8
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	11	4	15
Total trihalomethanes	250	µg/L	4	0	100	28	15	33

Table 37.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.49	0	1.19
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	6.99	6.00	7.83
Turbidity	NTU	1	0.34	0.10	5.60

37.5. Analysis of overall system performance (2019–20)

Table 37.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
August 2019 – September 2019	Low fluoride levels detected	✓	✓

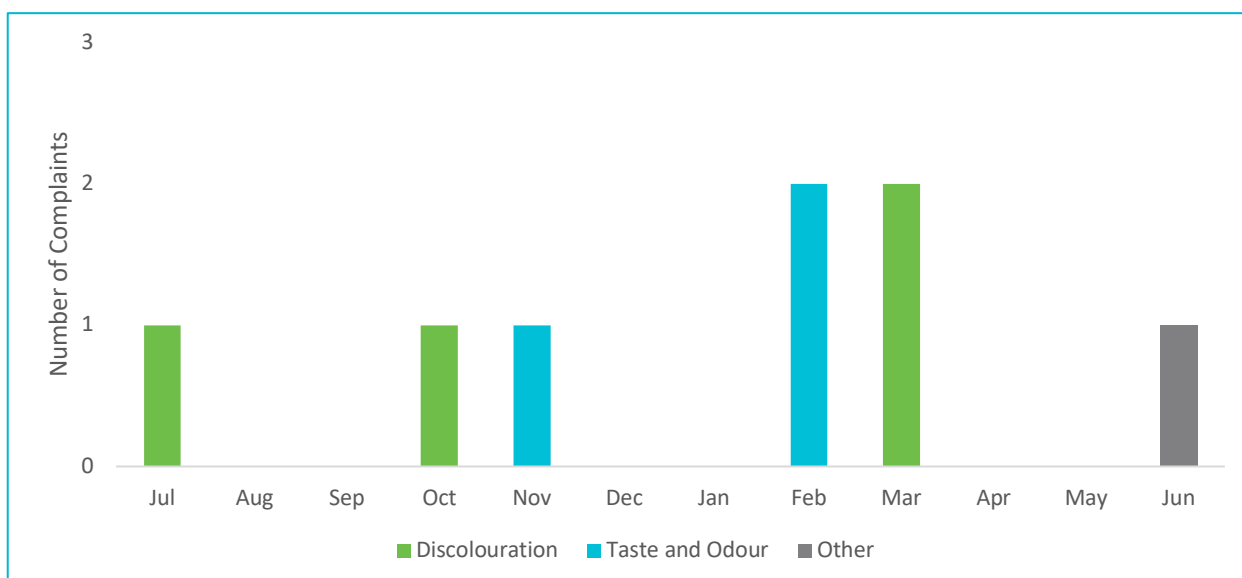


Figure 37.5-b Water quality customer complaints by month and type

38. Oatlands drinking water system

38.1. System summary (2019–20)

Oatlands drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	489
Population serviced	867
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	52	0
Fluoride	100.0%	<input checked="" type="checkbox"/>	100.0%	48	0
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal Program	PAC Dosing Upgrade	Not Started	2022/2023	\$175,000

38.2. Summary of annual reticulation compliance (2019–20)

Table 38.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Oatlands/Wellington St, Sample Post	OASTE79	W	Q	Q	2M	Q	n/a
Oatlands/Lake SPS	OASTE85	n/a	n/a	n/a	2M	n/a	n/a
Number Planned Samples		52	4	4	48	4	n/a
Number Samples Tested		52	4	4	48	4	n/a

38.3. Summary of current and historic performance (2015–20)

Table 38.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div><div></div> Compliant <div></div> Non-compliant</div>					

38.4. Analysis of current health performance (2019–20)

Table 38.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 38.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.2 mg/L)	1.0
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 38.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0054	0.0043	0.0068
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Copper	2	mg/L	4	0	100	0.0032	0.0027	0.0040
Lead	0.01	mg/L	4	0	100	0.0002	0.0001	0.0002
Manganese	0.5	mg/L	4	0	100	0.0017	0.0004	0.0036
Mercury	0.001	mg/L	4	0	100	0.00005	<0.00003	0.00007
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0002	0.0002	0.0002
Selenium	0.01	mg/L	4	0	100	0.0001	<0.0001	0.0003

Table 38.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	13	10	16
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	5
Trichloroacetic acid	100	µg/L	4	0	100	24	18	31
Total trihalomethanes	250	µg/L	4	0	100	56	40	69

Table 38.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.46	0.11	0.84
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.05	6.53	7.78
Turbidity	NTU	1	0.35	0.10	0.80

38.5. Analysis of overall system performance (2019–20)

Table 38.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

39. Orford drinking water system

39.1. System summary (2019–20)

Orford drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	1,177
Population serviced	851
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	124	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	3	Discolouration, cloudy

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Fluoride Upgrade	Fluoride Upgrade	TBC	TBC	\$190,000
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$65,000

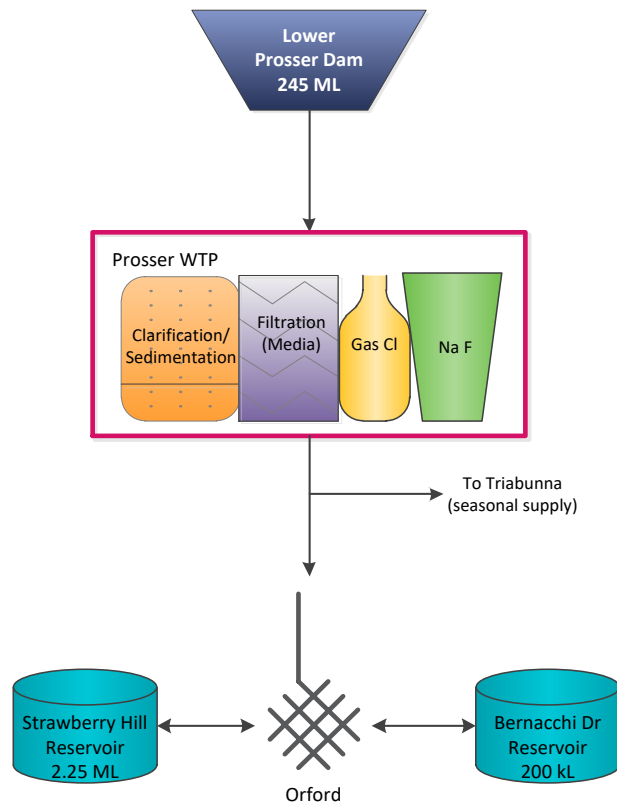


Figure 39.1-a Orford system schematic

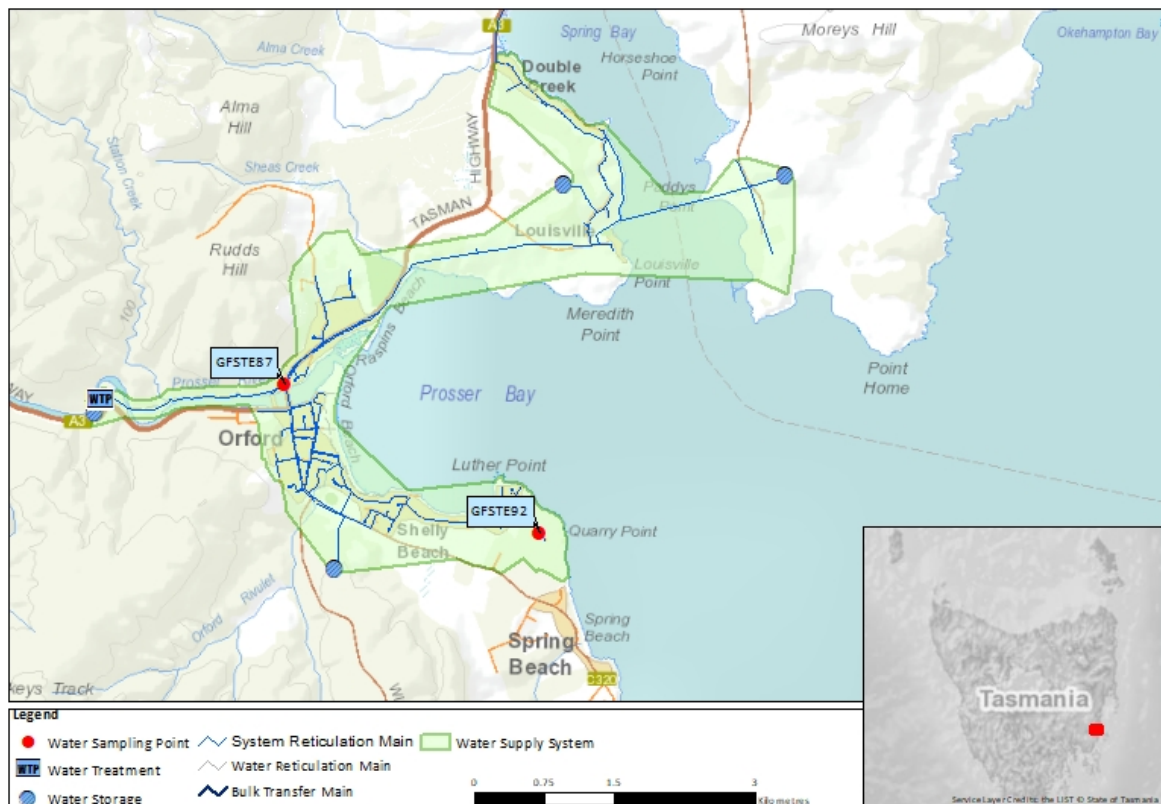


Figure 39.1-b Map of Orford monitoring system

39.2. Summary of annual reticulation compliance (2019–20)

Table 39.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Orford/Manning Drive	GFSTE92 ²⁵	n/a	n/a	n/a	2M	n/a	n/a
Orford/Old Convict Rd Sample Tap	GFSTE87 ²⁶	W	Q	Q	2M	Q	n/a
Orford/71 Barton Ave	GFSTE95	W	n/a	n/a	2M	n/a	n/a
Orford/53 East Shelley Rd	GFSTE96	W	Q	Q	2M	Q	n/a
Number Planned Samples		124	4	4	48	4	n/a
Number Samples Tested		124	4	4	48	4	n/a

39.3. Summary of current and historic performance (2015–20)

Table 39.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

39.4. Analysis of current health performance (2019–20)

Table 39.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

²⁵ Replaced on 1st November 2019

²⁶ Changed to operational on 1st November 2019

Table 39.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 39.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0140	0.0130	0.0145
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0137	0.0076	0.0210
Lead	0.01	mg/L	4	0	100	0.0016	0.0007	0.0032
Manganese	0.5	mg/L	4	0	100	0.0013	0.0001	0.0023
Mercury	0.001	mg/L	4	0	100	<0.00003	<0.00003	<0.00003
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0004	0.0004	0.0005
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 39.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	10	<1	17
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	16	3	23
Total trihalomethanes	250	µg/L	4	0	100	101	67	126

Table 39.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.18	0	1.72
Colour True	HU	15	2	1	3
pH	Units	6.5 – 8.5	7.15	6.51	7.66
Turbidity	NTU	1	0.22	0.10	0.70

39.5. Analysis of overall system performance (2019–20)

Table 39.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

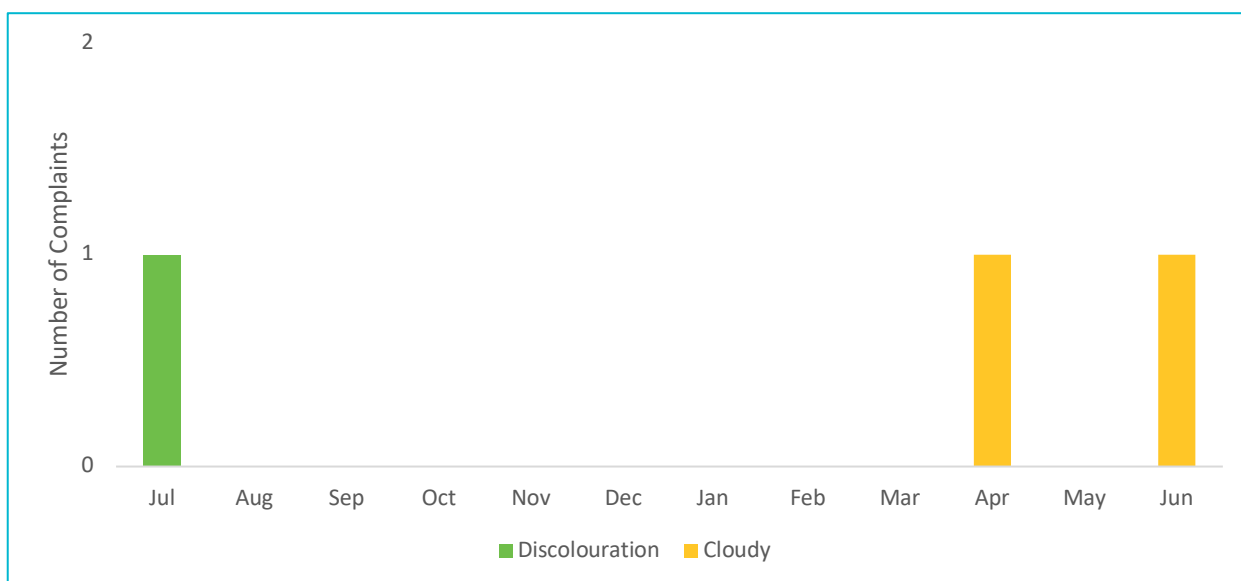


Figure 39.5-b Water quality customer complaints by month and type

40. Ouse and Hamilton drinking water system

40.1. System summary (2019–20)

Ouse and Hamilton drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	280
Population serviced	441
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	8	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$122,000

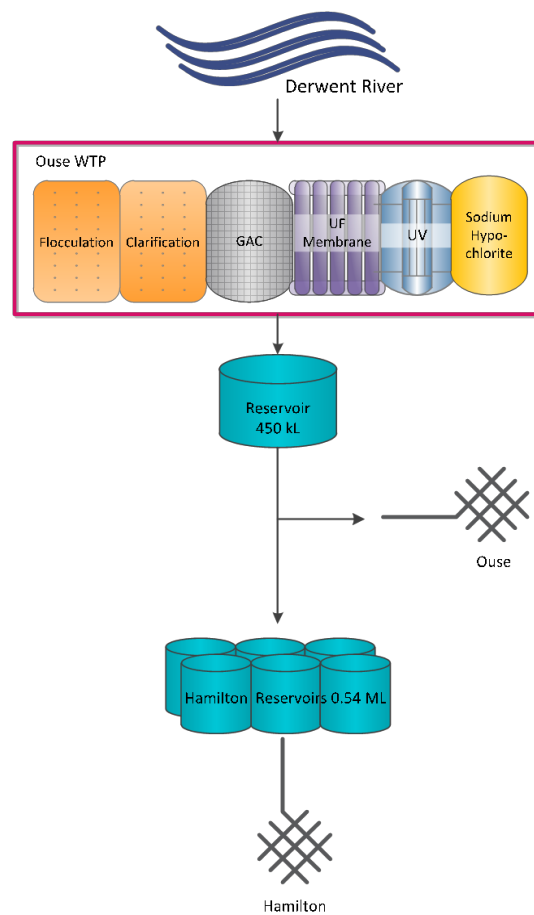


Figure 40.1-a Ouse and Hamilton system schematic

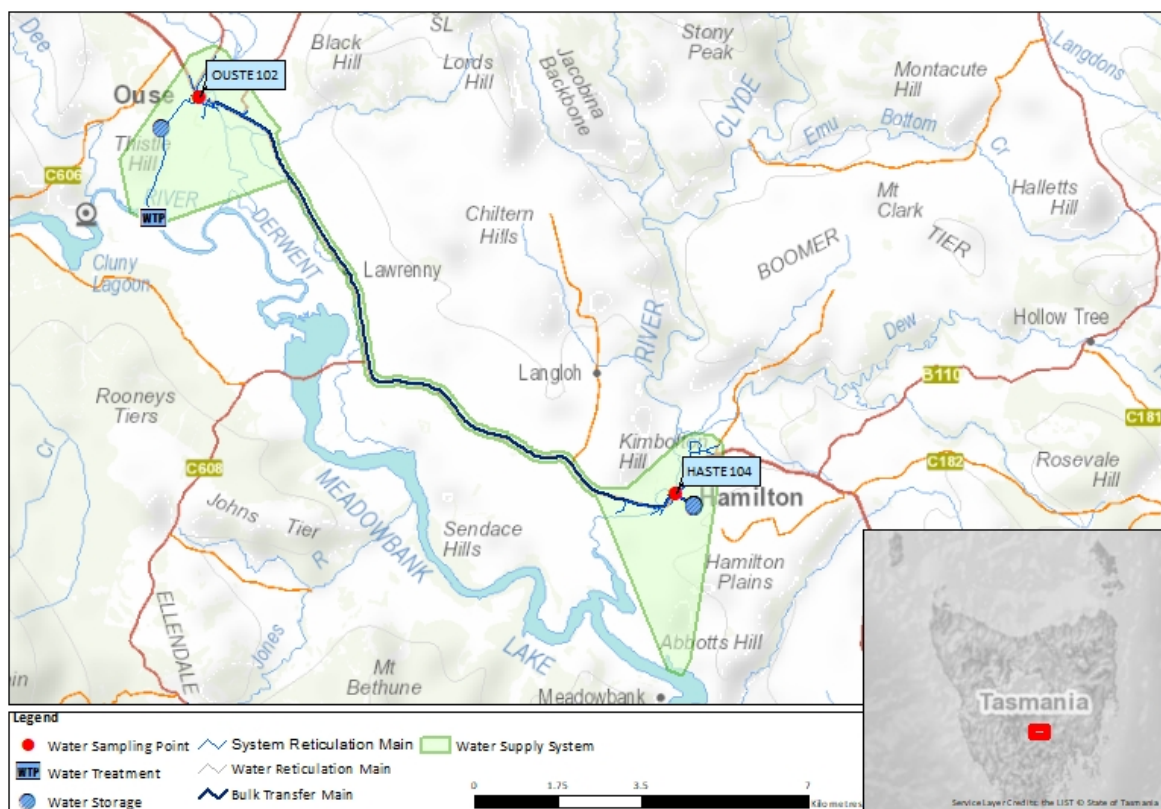


Figure 40.1-b Map of Ouse and Hamilton monitoring system



40.2. Summary of annual reticulation compliance (2019–20)

Table 40.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Ouse/Public Toilets, Sample Tap	OUSTE102	W	Q	Q	n/a	Q	n/a
Hamilton/Park, Sample Tap	HASTE104	W	Q	Q	n/a	Q	n/a
Number Planned Samples		106	8	8	n/a	8	n/a
Number Samples Tested		106	8	8	n/a	8	n/a

40.3. Summary of current and historic performance (2015–20)

Table 40.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
 Compliant  Non-compliant					

40.4. Analysis of current health performance (2019–20)

Table 40.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 40.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	8	0	100	0.0022	0.0018	0.0025
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	8	0	100	0.0060	0.0031	0.0098
Lead	0.01	mg/L	8	0	100	0.0002	<0.0001	0.0005
Manganese	0.5	mg/L	8	0	100	0.0006	0.0003	0.0017
Mercury	0.001	mg/L	8	0	100	0.00004	<0.00003	0.00008
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0001	<0.0001	0.0002
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

Table 40.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	7	4	13
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	10	4	20
Total trihalomethanes	250	µg/L	8	0	100	21	13	34

Table 40.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.64	0.20	0.94
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	6.97	6.48	7.63
Turbidity	NTU	1	0.12	0	0.50

40.5. Analysis of overall system performance (2019–20)

Table 40.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

41. Pet River drinking water system

41.1. System summary (2019–20)

Pet River drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	9,007
Population serviced	17,695
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	265	0
Fluoride	100.0%	<input checked="" type="checkbox"/>	100.0%	48	0
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	8	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	8	0
<input checked="" type="checkbox"/> Compliant <input type="checkbox"/> Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	23	Discolouration, taste and odour, other (stained washing)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal Program	Media Replacement & Lime System Upgrade	Complete	2019/2020	\$150,000
Fluoride Upgrade	Replacement of FSA Tank	In Progress	TBD	\$400,000
System Optimisation	Instrument Upgrade	In Progress	TBD	\$85,000

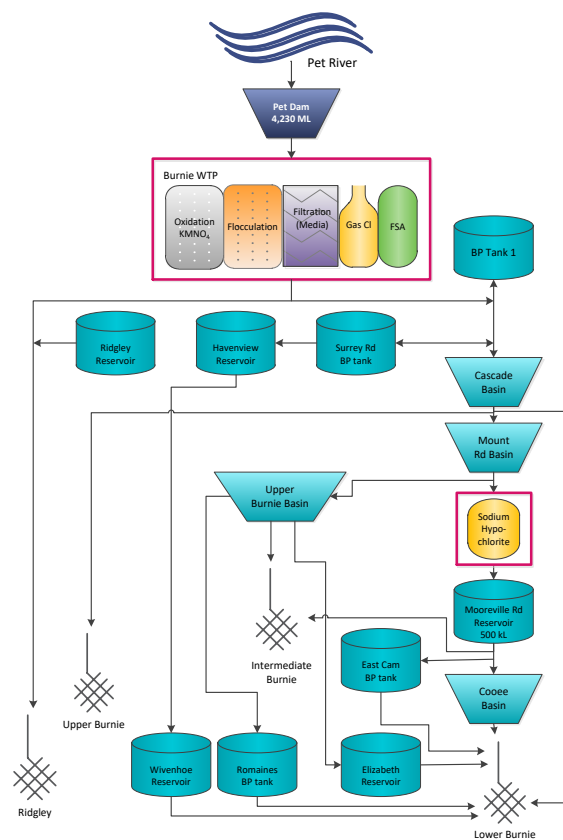


Figure 41.1-a Pet River system schematic

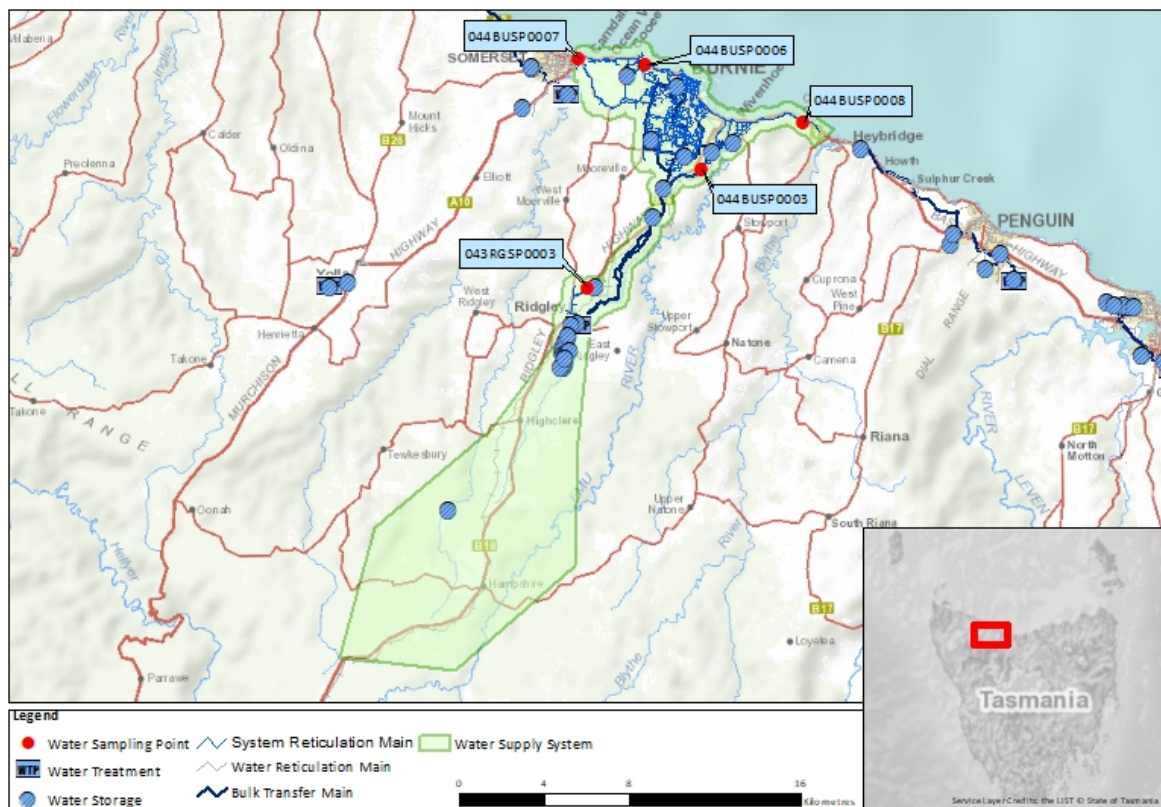


Figure 41.1-b Map of Pet River monitoring system

41.2. Summary of annual reticulation compliance (2019–20)

Table 41.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Burnie/Ridgley Mount Road	043RGSP0003	W	n/a	n/a	2M	n/a	n/a
Burnie/Lactos Sample Point	044BUSP0003	W	n/a	n/a	n/a	n/a	n/a
Burnie/Cadburys Sample Point	044BUSP0006	W	n/a	n/a	n/a	n/a	n/a
Burnie/Scarfe St Sample Point	044BUSP0007 ²⁷	W	Q	Q	2M	Q	n/a
Burnie/39 Scarfe St	BURNST01	W	Q	Q	2M	Q	n/a
Burnie/Chasm Cr Sample Point	044BUSP0008	W	Q	Q	n/a	Q	n/a
Number Planned Samples		265	8	8	48	8	n/a
Number Samples Tested		265	8	8	48	8	n/a

41.3. Summary of current and historic performance (2015–20)

Table 41.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	99.8%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

41.4. Analysis of current health performance (2019–20)

Table 41.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

²⁷ Replaced by BURNST01 on 1st May 2020

Table 41.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.2 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 41.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	0.0003
Barium	2	mg/L	8	0	100	0.0064	0.0054	0.0079
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	0.0002	0.0001	0.0003
Copper	2	mg/L	8	0	100	0.0114	<0.0001	0.0599
Lead	0.01	mg/L	8	0	100	0.0002	<0.0001	0.0003
Manganese	0.5	mg/L	8	0	100	0.0040	0.0007	0.0068
Mercury	0.001	mg/L	8	0	100	0.00014	<0.00003	0.00064
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	0.0001
Nickel	0.02	mg/L	8	0	100	0.0001	<0.0001	0.0002
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

Table 41.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	5	2	8
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	4	3	6
Total trihalomethanes	250	µg/L	8	0	100	60	55	71

Table 41.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.54	0	2.20
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.64	6.1	9.53
Turbidity	NTU	1	0.32	0.10	12.20

41.5. Analysis of overall system performance (2019–20)

Table 41.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

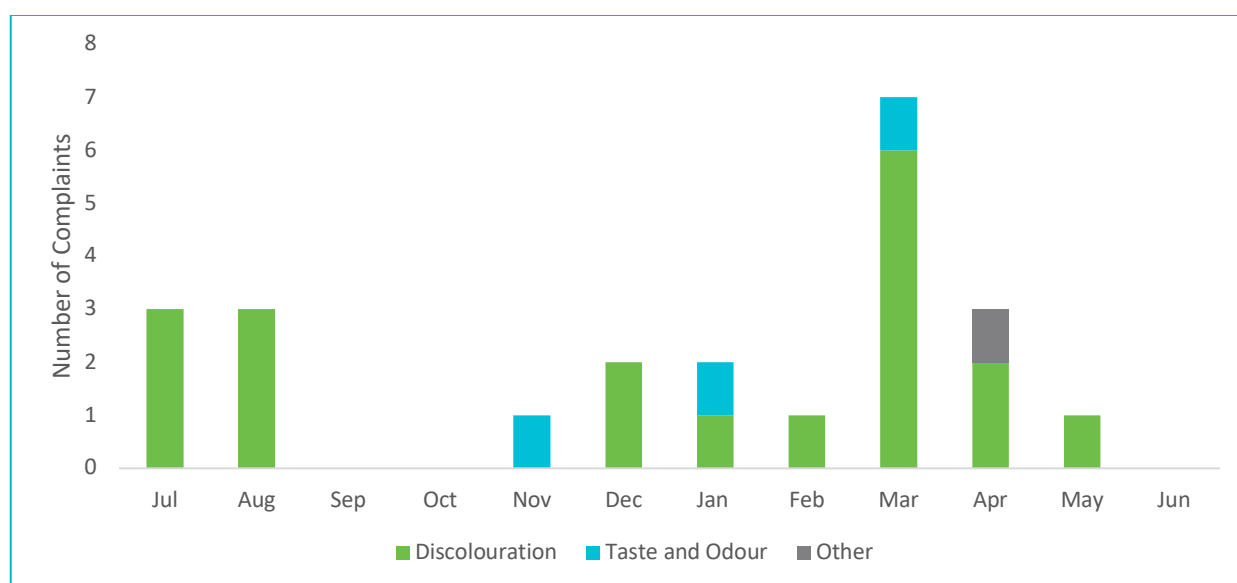


Figure 41.5-b Water quality customer complaints by month and type

42. Queenstown (Conglomerate Creek) drinking water system

42.1. System summary (2019–20)

Queenstown drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	1,384
Population serviced	2,081
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	159	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	4	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	7	Discolouration, other (stained washing)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

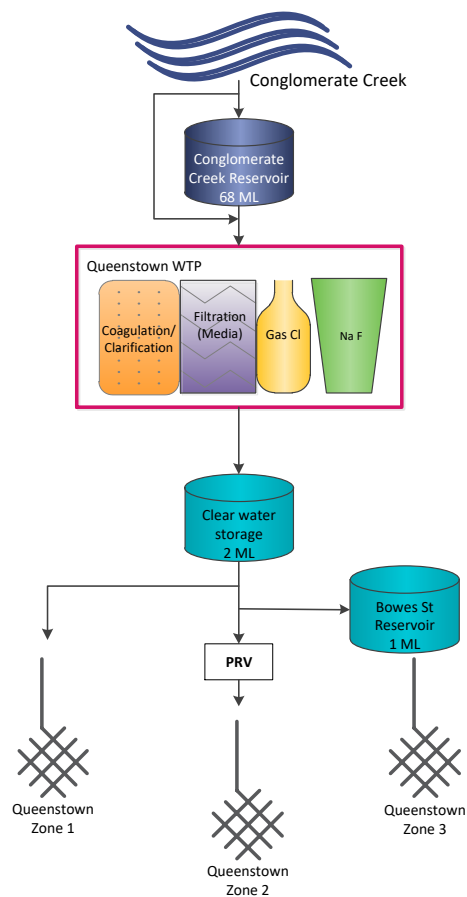


Figure 42.1-a Queenstown system schematic

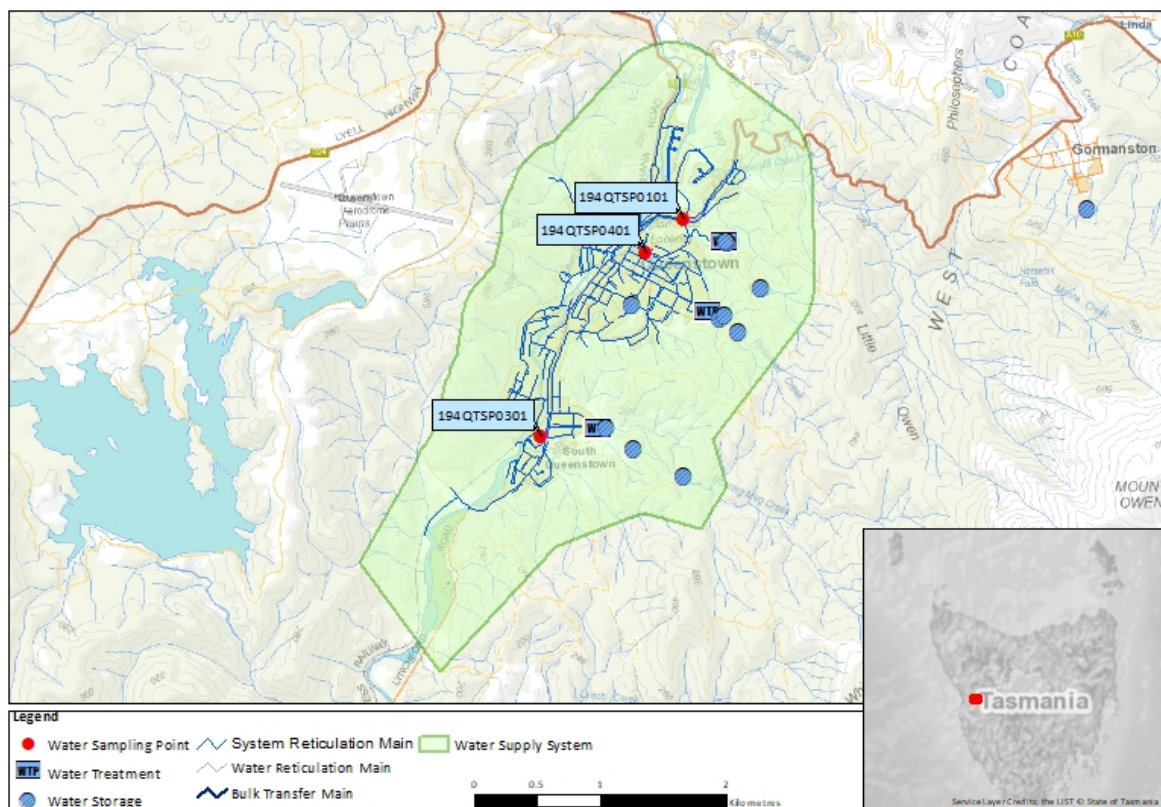


Figure 42.1-b Map of Queenstown monitoring system

42.2. Summary of annual reticulation compliance (2019–20)

Table 42.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Queenstown/Batchelor St Sample Point	194QTSP0101	W	Q	n/a	2M	n/a	n/a
Queenstown/Murray St Sample Point	194QTSP0301	W	Q	Q	2M	Q	n/a
Queenstown/Sticht St Sample Point	194QTSP0401	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		159	8	4	48	4	n/a
Number Samples Tested		159	8	4	48	4	n/a

42.3. Summary of current and historic performance (2015–20)

Table 42.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

42.4. Analysis of current health performance (2019–20)

Table 42.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 42.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 42.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	0.0004	<0.0003	0.0005
Barium	2	mg/L	8	0	100	0.0177	0.0167	0.0199
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	8	0	100	0.0108	0.0075	0.0149
Lead	0.01	mg/L	8	0	100	0.0004	0.0001	0.0006
Manganese	0.5	mg/L	8	0	100	0.0219	0.0061	0.0478
Mercury	0.001	mg/L	8	0	100	0.00004	<0.00003	0.00006
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0004	0.0002	0.0005
Selenium	0.01	mg/L	8	0	100	0.0001	<0.0001	0.0002

Table 42.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	32	21	48
Monochloroacetic acid	150	µg/L	4	0	100	3	<3	4
Trichloroacetic acid	100	µg/L	4	0	100	31	12	68
Total trihalomethanes	250	µg/L	4	0	100	72	46	107

Table 42.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.73	0.26	1.10
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.47	6.77	8.24
Turbidity	NTU	1	0.31	0.10	1.10

42.5. Analysis of overall system performance (2019–20)

Table 42.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

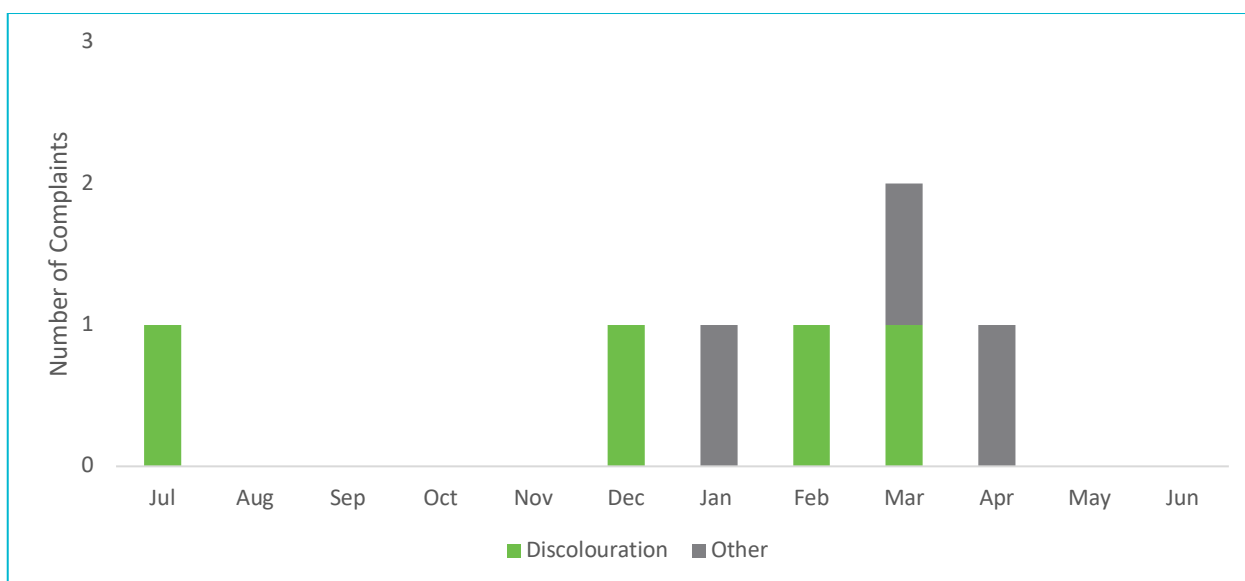


Figure 42.5-b Water quality customer complaints by month and type

43. Ringarooma System drinking water system

43.1. System summary (2019–20)

Ringarooma System drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	616
Population serviced	1,024
Fluoride	Sodium Fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	263	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	20	0
DBPs	100.0%	☑	100.0%	20	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	1	Lead exceedance in an operational site
Public health warnings issued	0	
Notifications made to DoH	1	Lead exceedance in an operational site
Customer complaints	1	Discolouration

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal	Membrane Replacement	In Progress	TBD	\$42,000
WTP Upgrade	Branxholm Reservoir	In Progress	2020/2021	\$922,000

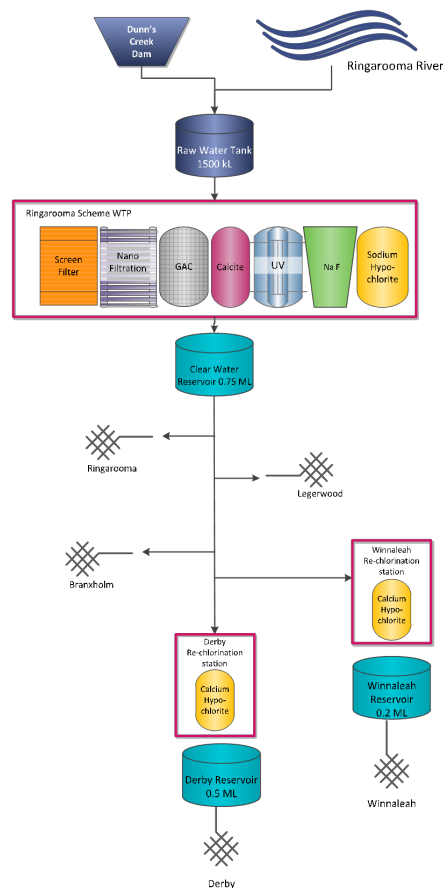


Figure 43.1-a Ringarooma System schematic

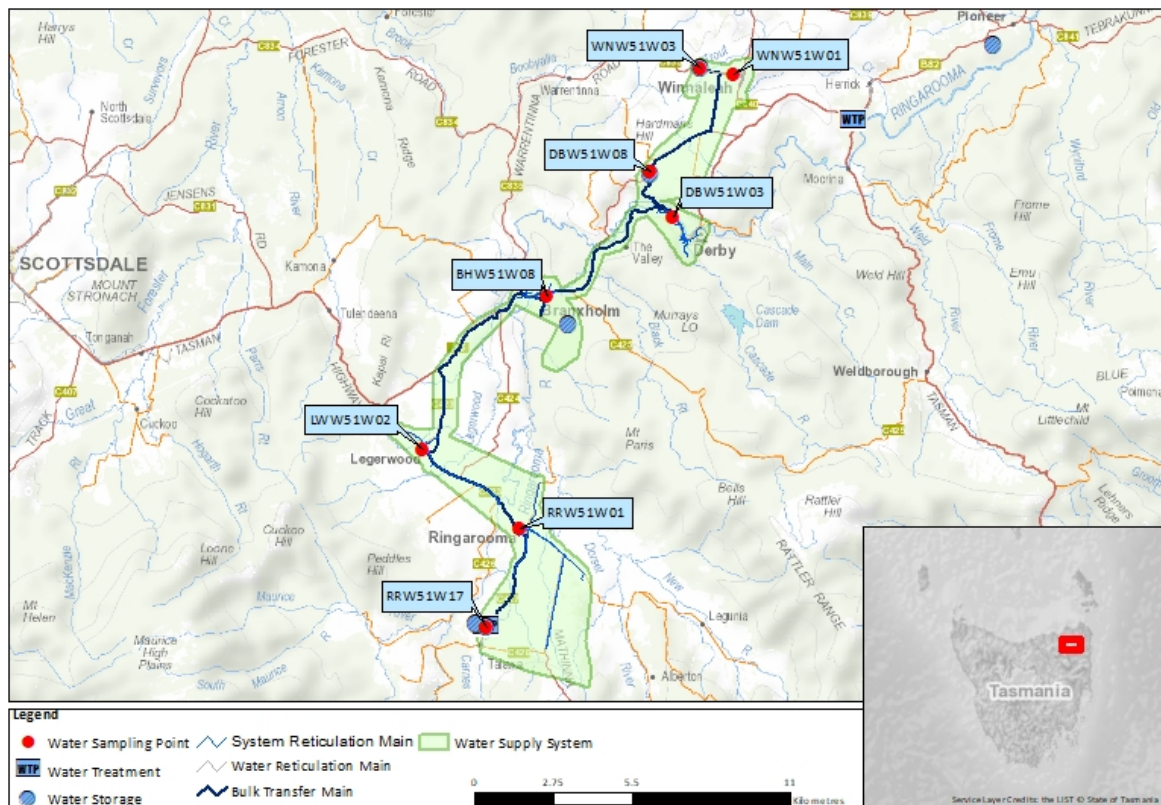


Figure 43.1-b Map of Ringarooma System monitoring system

43.2. Summary of annual reticulation compliance (2019–20)

Table 43.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Ringarooma/Opposite Police Station	RRW51W01	W	Q	Q	n/a	Q	n/a
Legerwood/Carvings	LWW51W02	W	Q	Q	n/a	Q	n/a
Branxholm/17 Albert Street	BHW51W08	W	Q	Q	n/a	Q	n/a
Derby/Opp Netball Court	DBW51W03	W	Q	Q	2M	Q	n/a
Winnaleah/School	WNW51W01	W	Q	Q	2M	Q	n/a
Number Planned Samples		263	20	20	48	20	n/a
Number Samples Tested		263	20	20	48	20	n/a

43.3. Summary of current and historic performance (2015–20)

Table 43.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	0.0%	50.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	n/a	n/a	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

43.4. Analysis of current health performance (2019–20)

Table 43.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
Lead	8/4/2020	Lead of 0.0236 mg/L in a sample at an operational site	✓

Table 43.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.8
Mean dose (mg/L)	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 43.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	20	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	20	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	20	0	100	0.0112	0.0039	0.0380
Cadmium	0.002	mg/L	20	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	20	0	100	0.0001	<0.0001	0.0005
Copper	2	mg/L	20	0	100	0.0143	0.0050	0.0368
Lead	0.01	mg/L	20	0	100	0.0010	0.0002	0.0031
Manganese	0.5	mg/L	20	0	100	0.0004	<0.0001	0.0017
Mercury	0.001	mg/L	20	0	100	0.00011	<0.00003	0.00034
Molybdenum	0.05	mg/L	20	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	20	0	100	0.0002	<0.0001	0.0005
Selenium	0.01	mg/L	20	0	100	<0.0001	<0.0001	<0.0001

Table 43.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	52	0	100	25	7	54
Monochloroacetic acid	150	µg/L	52	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	52	0	100	45	14	99
Total trihalomethanes	250	µg/L	52	0	100	52	23	75

Table 43.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.73	0.10	1.44
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	6.94	6.27	7.80
Turbidity	NTU	1	0.27	0.10	0.90

43.5. Analysis of overall system performance (2019–20)

Table 43.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
8/4/2020	Lead exceedance	✓	✓

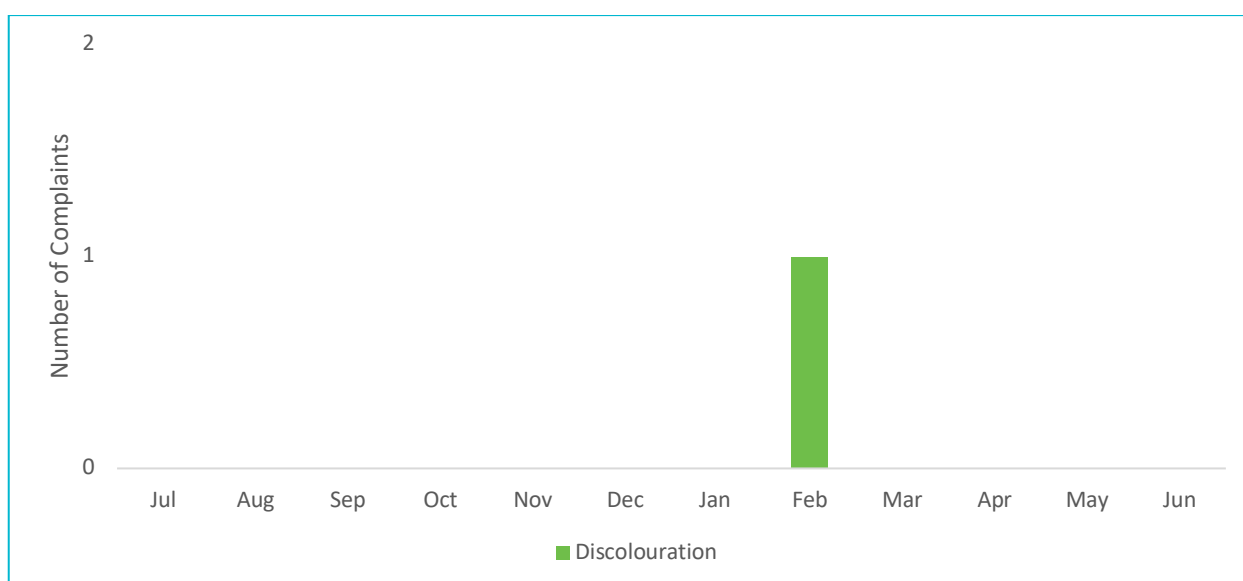


Figure 43.5-b Water quality customer complaints by month and type

44. Rocky Creek drinking water system

44.1. System summary (2019–20)

Rocky Creek drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	555
Population serviced	1,269
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	104	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div> ■ Compliant ■ Non-compliant </div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	4	Discolouration, taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

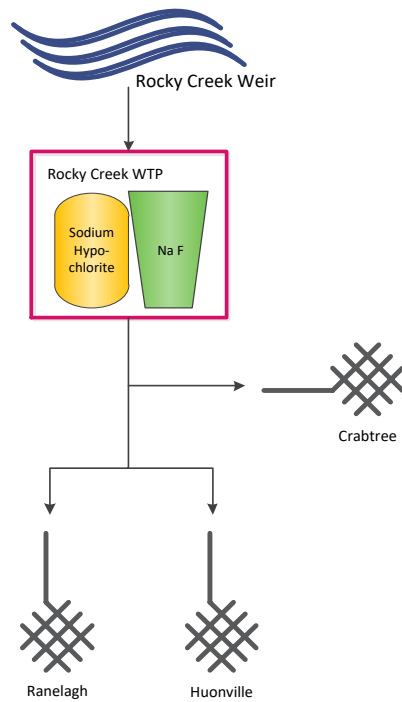


Figure 44.1-a Rocky Creek system schematic

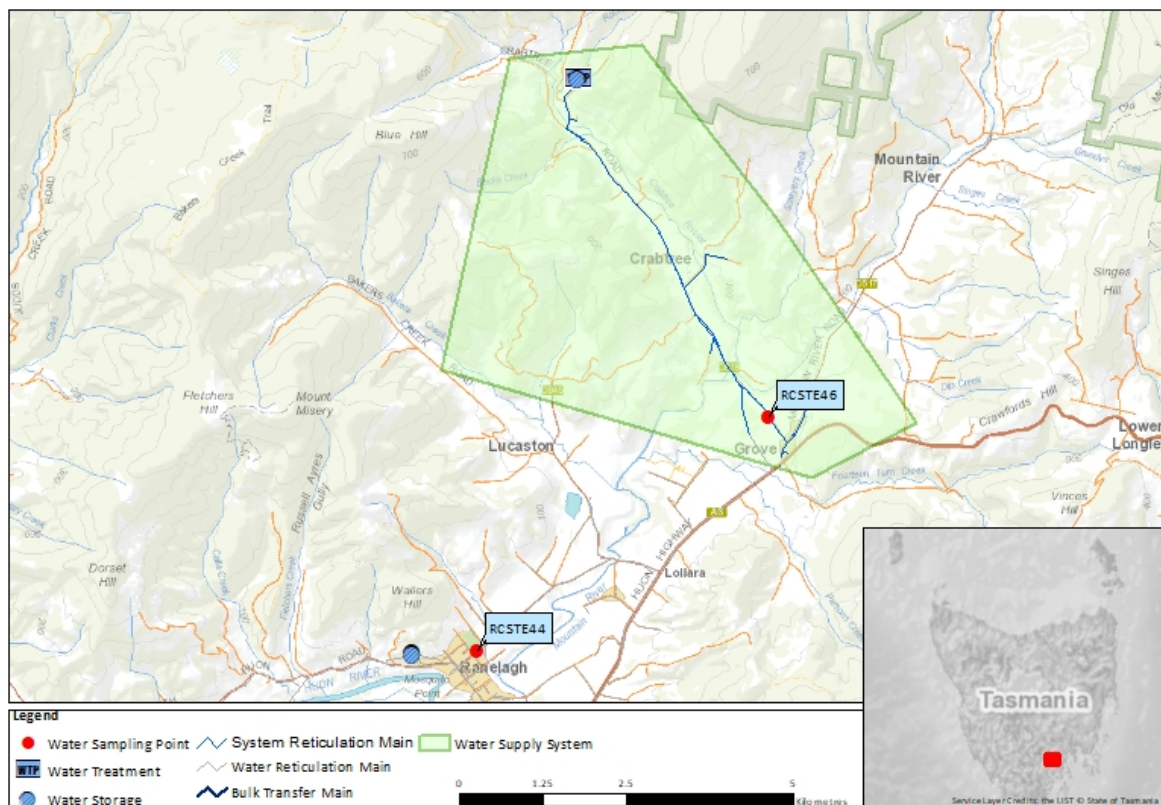


Figure 44.1-b Map of Rocky Creek monitoring system



44.2. Summary of annual reticulation compliance (2019–20)

Table 44.2-a Sampling program

Planned compliance sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Ranelagh Showgrounds/Sample Tap	RCSTE44	W	Q	Q	2M	Q	n/a
Ranelagh/Grove Fire Station	RCSTE46	W	n/a	n/a	2M	n/a	n/a
Number Planned Samples		104	4	4	48	4	n/a
Number Samples Tested		104	4	4	48	4	n/a

44.3. Summary of current and historic performance (2015–20)

Table 44.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	98.1%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
 Compliant  Non-compliant					

44.4. Analysis of current health performance (2019–20)

Table 44.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 44.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 44.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0023	0.0017	0.0028
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0002	0.0001	0.0003
Copper	2	mg/L	4	0	100	0.0050	0.0039	0.0077
Lead	0.01	mg/L	4	0	100	0.0003	0.0002	0.0005
Manganese	0.5	mg/L	4	0	100	0.0004	0.0001	0.0007
Mercury	0.001	mg/L	4	0	100	0.00004	<0.00003	0.00006
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 44.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	20	4	46
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	37	14	82
Total trihalomethanes	250	µg/L	4	0	100	50	26	88

Table 44.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.63	0.03	1.32
Colour True	HU	15	<1	<1	2
pH	Units	6.5 – 8.5	7.48	6.48	8.47
Turbidity	NTU	1	0.27	0.10	0.70

44.5. Analysis of overall system performance (2019–20)

Table 44.5-a Summary of system issues/public health warnings with notification details

Summary of system issues			
Date	Description	DHHS notification required	DHHS notification complete
No system issues or public health alerts issued			

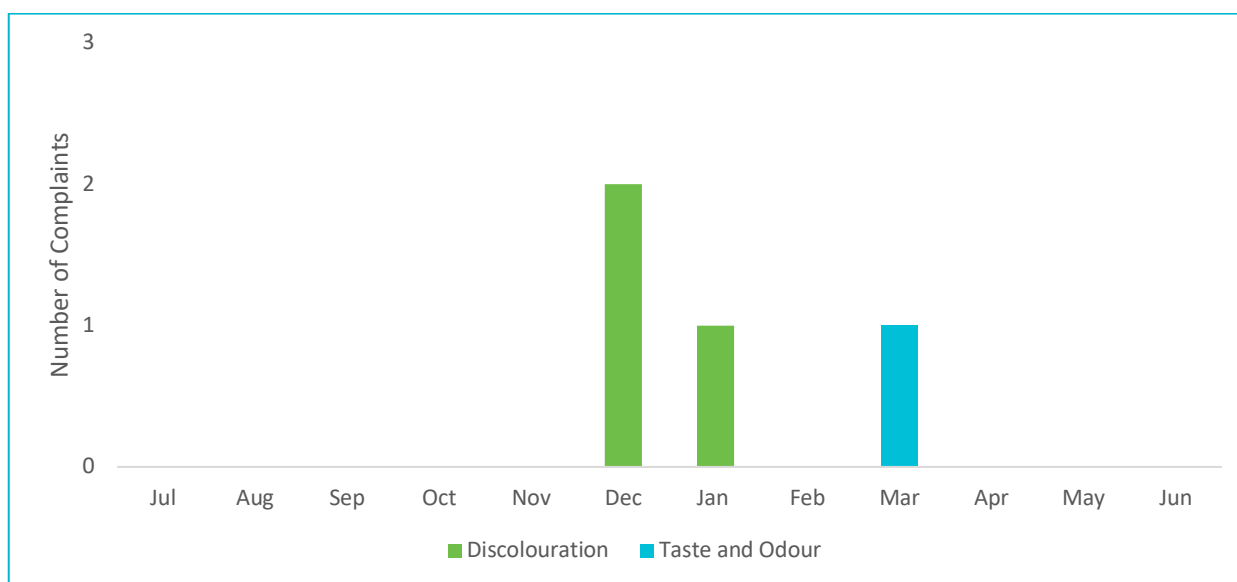


Figure 44.5-b Water quality customer complaints by month and type

45. Rosebery drinking water system

45.1. System summary (2019–20)

Rosebery drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	673
Population serviced	799
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	38	0
DBPs	100.0%	☑	100.0%	8	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	1	Discolouration

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

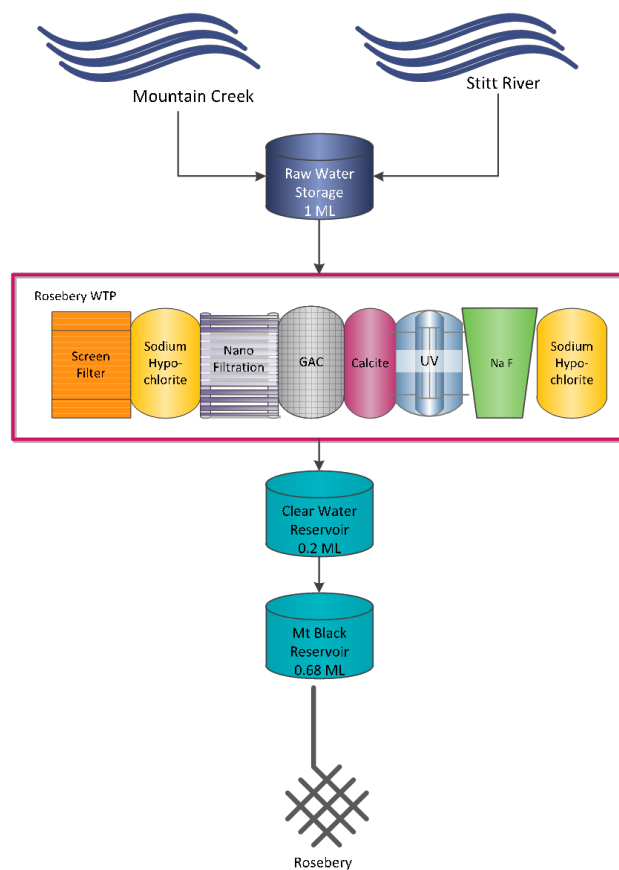


Figure 45.1-a Rosebery system schematic

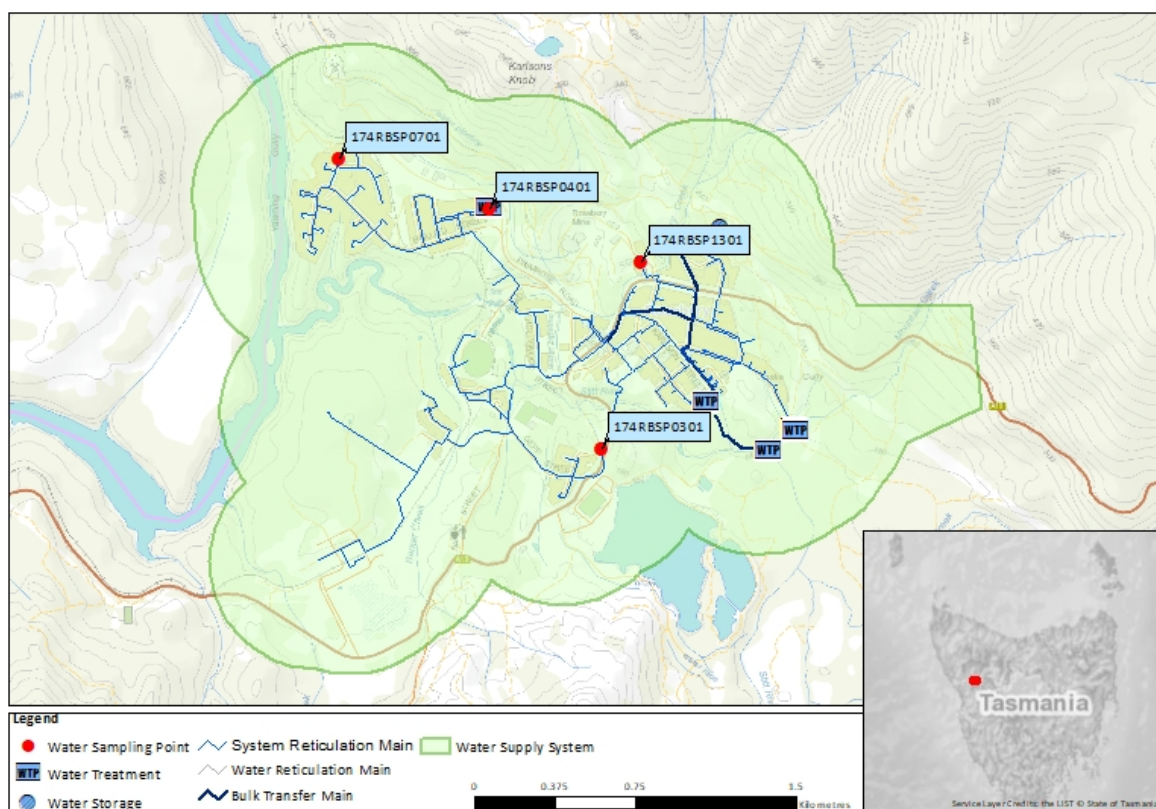


Figure 45.1-b Map of Rosebery monitoring system

45.2. Summary of annual reticulation compliance (2019–20)

Table 45.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Rosebery/Murchison Highway Tap Behind Public Toilets	174RBSP0301	W	Q ²⁸	Q	2M	Q	n/a
Rosebery/Blackwood St Sample Point	174RBSP0701	W	Q ²⁹	Q	2M	Q	n/a
Number Planned Samples		106	38	8	48	8	n/a
Number Samples Tested		106	38	8	48	8	n/a

45.3. Summary of current and historic performance (2015–20)

Table 45.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	99.1%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	99.9%	99.9%	99.9% ²⁸	100.0% ³⁰	100.0%
Disinfection by products	97.1%	100.0%	100.0%	100.0%	100.0%

■ Compliant
 ■ Non-compliant

45.4. Analysis of current health performance (2019–20)

Table 45.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

²⁸ Moved from weekly to quarterly from 20th October 2019

²⁹ New WTP to improve ADWG compliance

³⁰ Two failed tests

Table 45.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2018-19
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	1.0
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 45.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	38	0	100	<0.0005	<0.0005	0.0008
Arsenic	0.01	mg/L	38	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	38	0	100	0.0039	0.0025	0.0073
Cadmium	0.002	mg/L	38	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	38	0	100	0.0001	<0.0001	0.0001
Copper	2	mg/L	38	0	100	0.0119	<0.0001	0.0344
Lead	0.01	mg/L	38	0	100	0.0003	<0.0001	0.0010
Manganese	0.5	mg/L	38	0	100	0.0006	<0.0001	0.0032
Mercury	0.001	mg/L	38	0	99.5	0.00005	<0.00003	0.00015
Molybdenum	0.05	mg/L	38	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	38	0	100	0.0001	<0.0001	0.0004
Selenium	0.01	mg/L	38	0	100	0.0001	<0.0001	0.0009

Table 45.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	7	2	17
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	8	1	23
Total trihalomethanes	250	µg/L	8	0	100	25	13	46

Table 45.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.94	0.61	1.31
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.16	6.65	7.80
Turbidity	NTU	1	0.17	0.10	0.40

45.5. Analysis of overall system performance (2019–20)

Table 45.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health alerts issued			

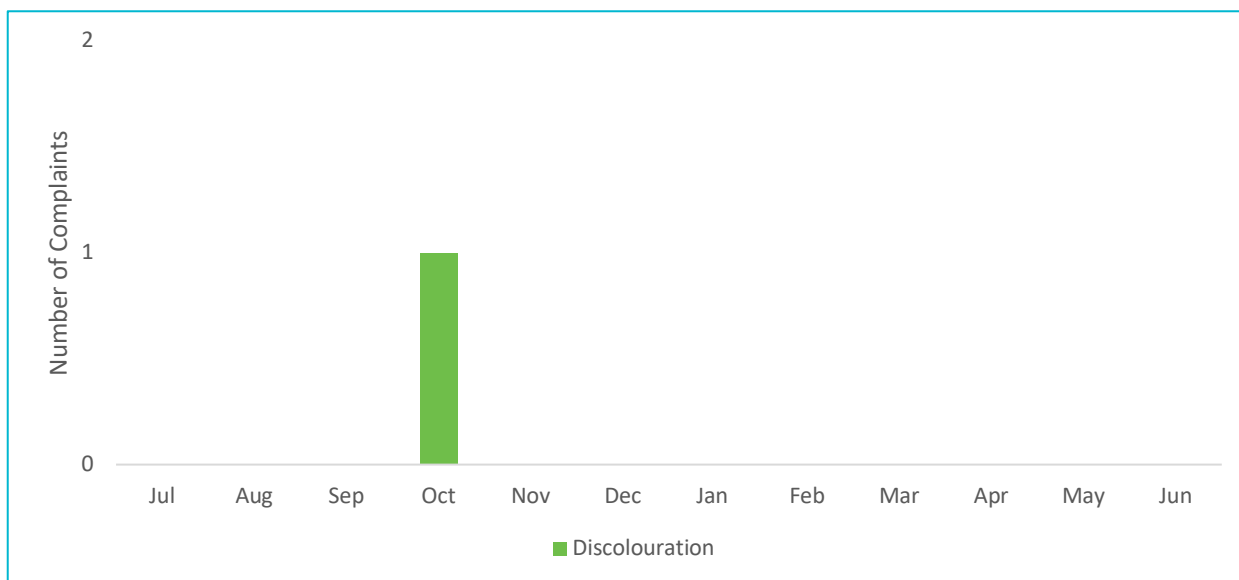


Figure 45.5-b Water quality customer complaints by month and type

46. Rossarden drinking water system

46.1. System summary (2019–20)

Rossarden drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	32
Population serviced	36
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	8	0
DBPs	100.0%	☑	100.0%	8	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

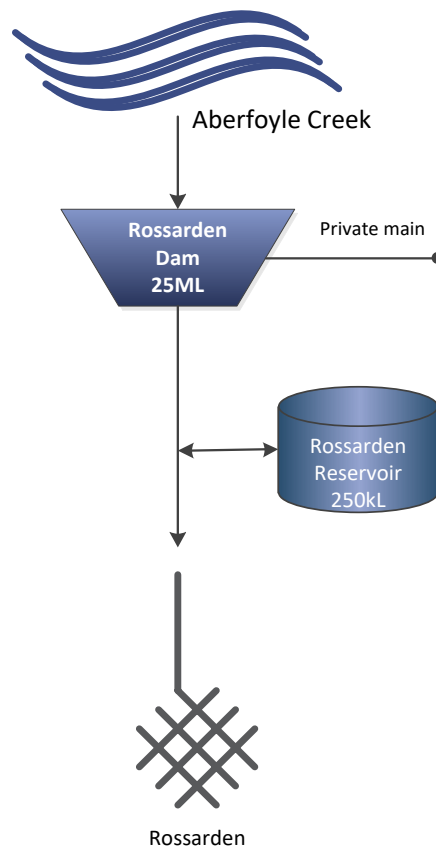


Figure 46.1-a Rossarden system schematic

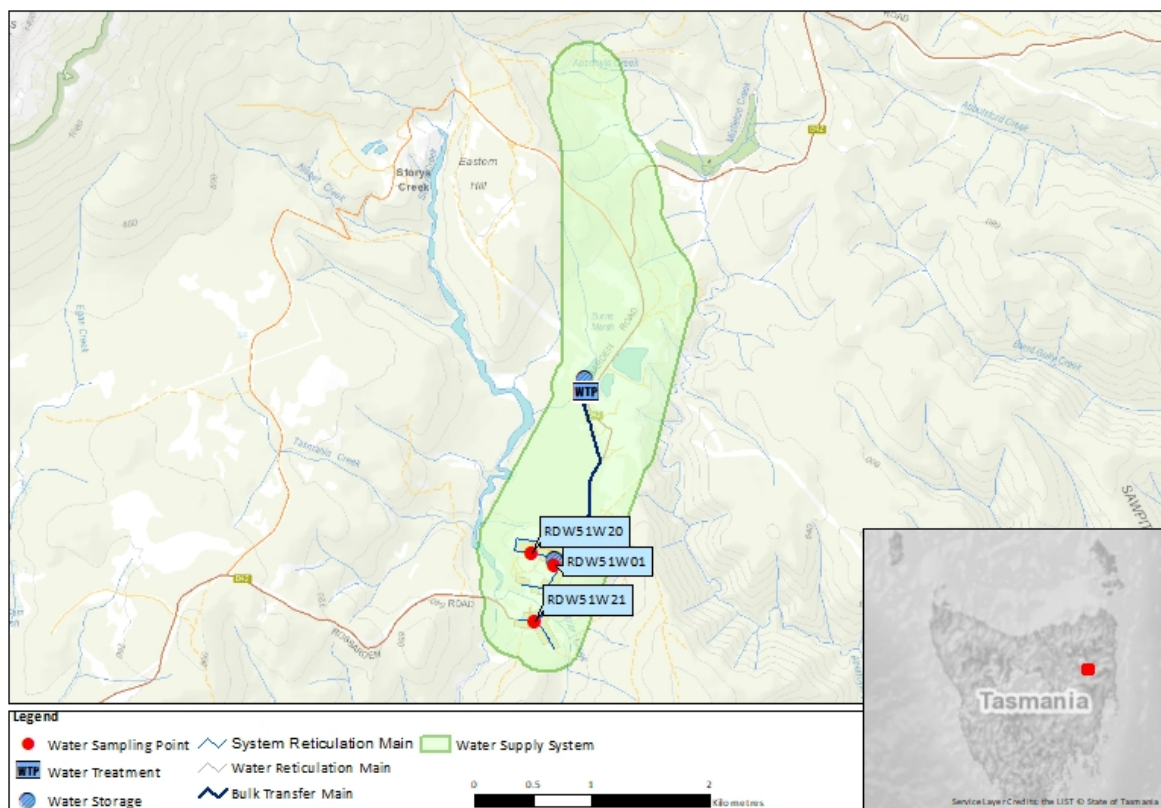


Figure 46.1-b Map of Rossarden monitoring system

46.2. Summary of annual reticulation compliance (2019–20)

Table 46.2-a Sampling program

Planned compliance sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Rossarden/21-23 Schell Street	RDW51W20	W	Q	Q	n/a	Q	n/a
Rossarden/14 Walter Street	RDW51W21	W	Q	Q	n/a	Q	n/a
Number Planned Samples		106	8	8	n/a	8	n/a
Number Samples Tested		106	8	8	n/a	8	n/a

46.3. Summary of current and historic performance (2015–20)

Table 46.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	99.4%	100.0% ³¹	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	n/a	n/a	n/a	100.0%	100.0%
Disinfection by products	n/a	n/a	n/a	100.0%	100.0%

■ Compliant
 ■ Non-compliant

46.4. Analysis of current health performance (2019–20)

Table 46.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

³¹ On boil water removal verification program until 3rd August 2018

Table 46.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	8	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	8	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	8	0	100	0.0021	0.0014	0.0028
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	<0.0001	<0.0001	0.0002
Copper	2	mg/L	8	0	100	0.0067	0.0025	0.0147
Lead	0.01	mg/L	8	0	100	0.0003	<0.0001	0.0008
Manganese	0.5	mg/L	8	0	100	0.0050	0.0020	0.0138
Mercury	0.001	mg/L	8	0	100	0.00005	<0.00003	0.00008
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0002	<0.0001	0.0003
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

Table 46.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	8	0	100	10	6	14
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	16	10	20
Total trihalomethanes	250	µg/L	8	0	100	18	13	24

Table 46.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.77	0.46	1.07
Colour True	HU	15	<1	<1	2
pH	Units	6.5 – 8.5	7.14	6.66	7.80
Turbidity	NTU	1	0.32	0.10	0.90

46.5. Analysis of overall system performance (2019–20)

Table 46.5-a Summary of system issues/public health warnings with notification details

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health alerts issued			

47. Scamander drinking water system

47.1. System summary (2019–20)

Scamander drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	505
Population serviced	655
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	2	Cloudy, other (illness)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$74,000

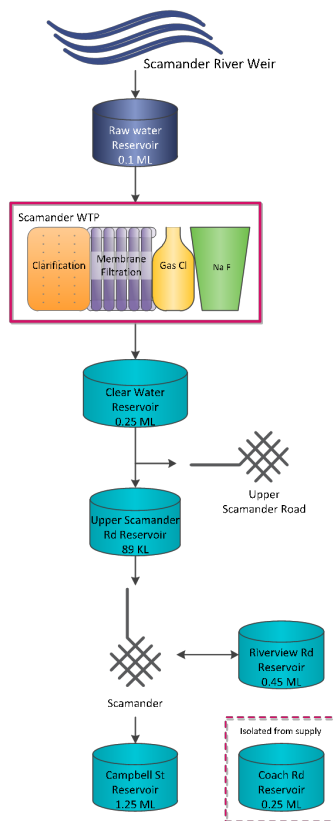


Figure 47.1-a Scamander system schematic

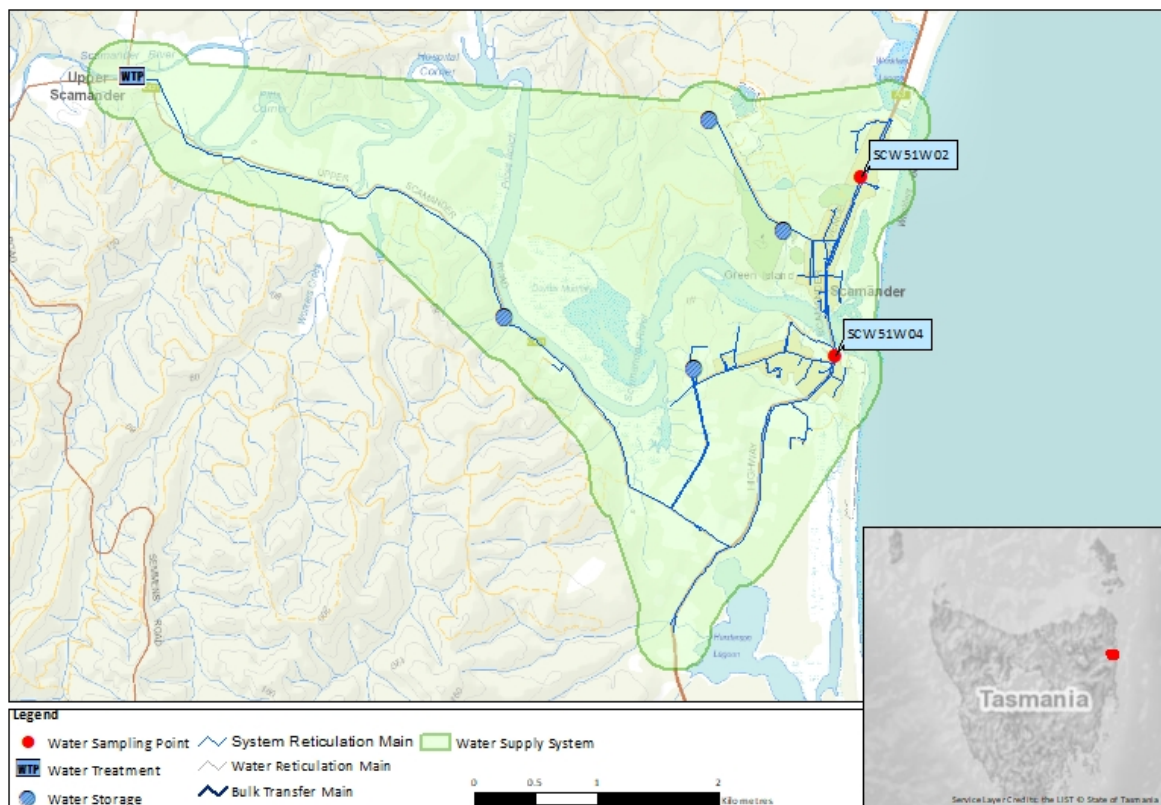


Figure 47.1-b Map of Scamander monitoring system

47.2. Summary of annual reticulation compliance (2019–20)

Table 47.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Scamander/River Mouth Carpark – 166 Scamander Ave	SCW51W04	n/a	n/a	n/a	2M	n/a	n/a
Scamander/56 Scamander Ave	SCW51W02	W	Q	Q	2M	Q	n/a
Number Planned Samples		53	4	4	48	4	n/a
Number Samples Tested		53	4	4	48	4	n/a

47.3. Summary of current and historic performance (2015–20)

Table 47.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

47.4. Analysis of current health performance (2019–20)

Table 47.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 47.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 47.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	0.0004
Barium	2	mg/L	4	0	100	0.0076	0.0065	0.0092
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0002
Copper	2	mg/L	4	0	100	0.0036	0.0030	0.0047
Lead	0.01	mg/L	4	0	100	0.0007	0.0005	0.0009
Manganese	0.5	mg/L	4	0	100	0.0018	0.0003	0.0036
Mercury	0.001	mg/L	4	0	100	0.00008	0.00004	0.00016
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 47.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	7	5	10
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	8	4	13
Total trihalomethanes	250	µg/L	4	0	100	36	32	44

Table 47.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.62	0.12	0.96
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.00	6.56	7.40
Turbidity	NTU	1	0.27	0.10	1.00

47.5. Analysis of overall system performance (2019–20)

Table 47.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

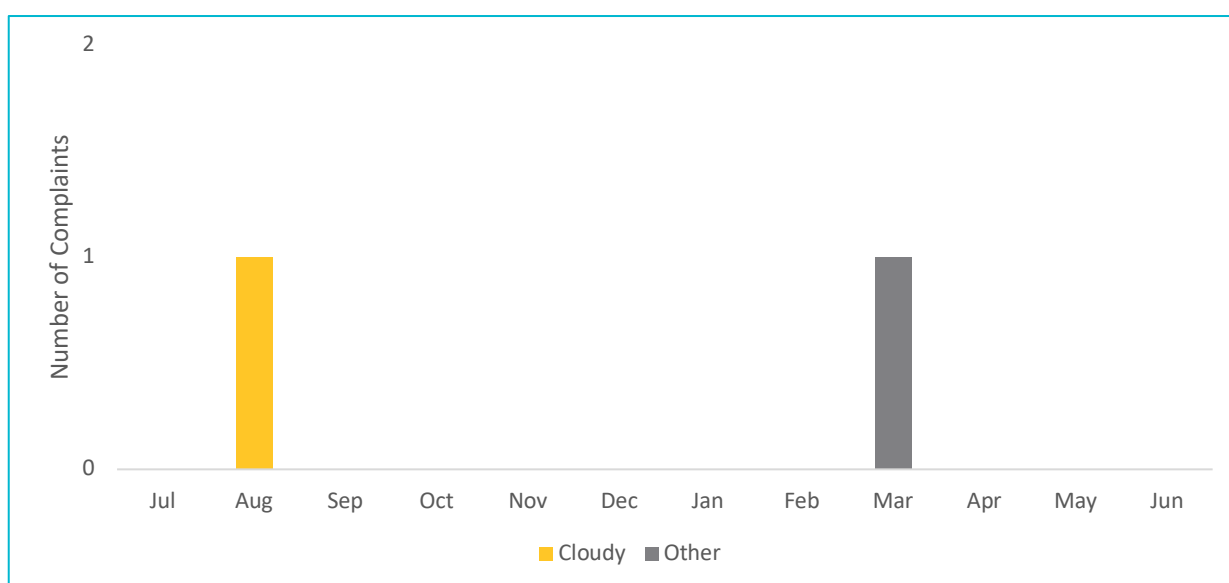


Figure 47.5-b Water quality customer complaints by month and type

48. Scottsdale drinking water system

48.1. System summary (2019–20)

Scottsdale drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	1,314
Population serviced	2,752
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	104	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	9	Discolouration, taste and odour, PHA notice, other (stained washing, illness)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$130,000

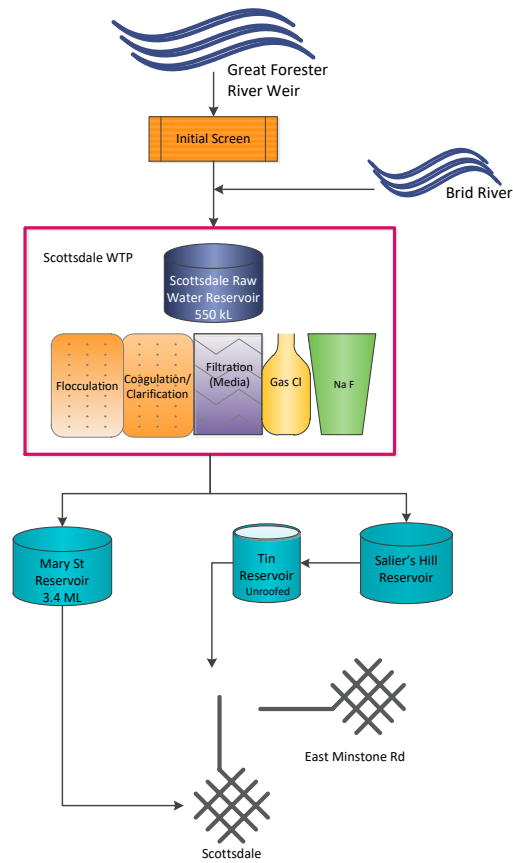


Figure 48.1-a Scottsdale system schematic

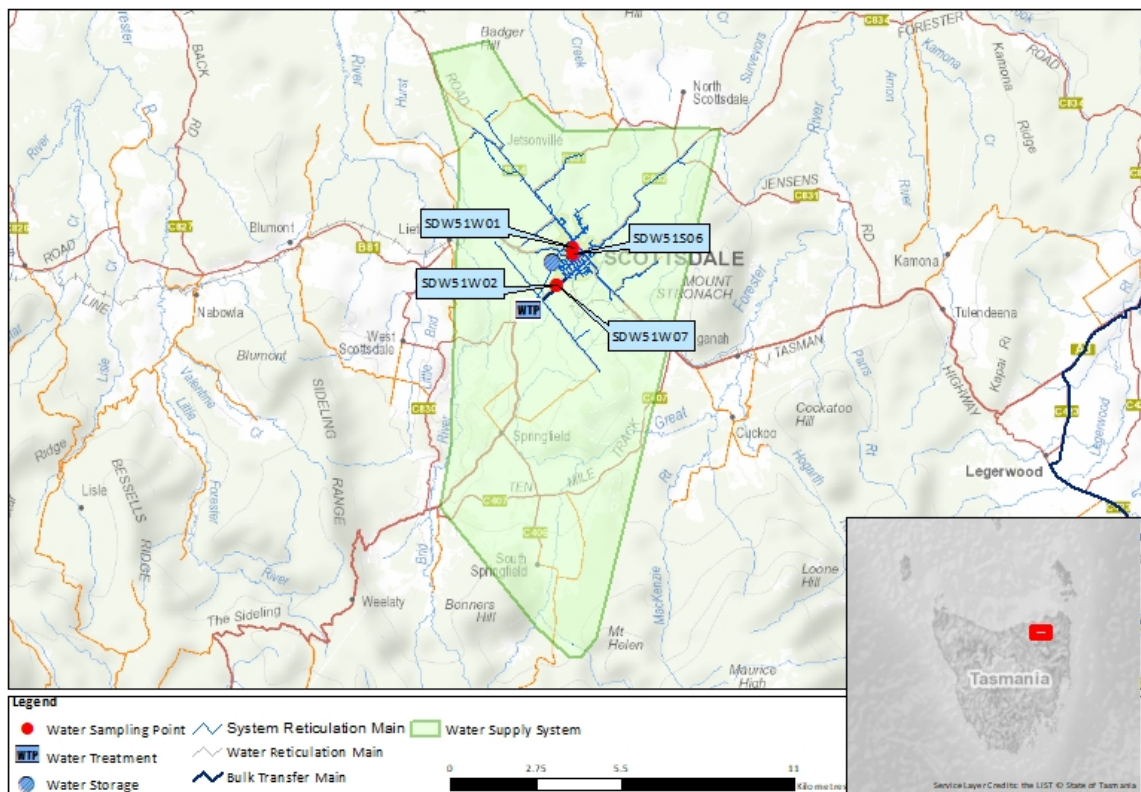


Figure 48.1-b Map of Scottsdale monitoring system

48.2. Summary of annual reticulation compliance (2019–20)

Table 48.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Scottsdale/Opposite Recreation Ground	SDW51S06	W	Q	Q	2M	Q	n/a
Scottsdale/King St Opposite Visitor Info	SDW51S07	W	n/a	n/a	2M	n/a	n/a
Number Planned Samples		104	4	4	48	4	n/a
Number Samples Tested		104	4	4	48	4	n/a

48.3. Summary of current and historic performance (2015–20)

Table 48.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	99.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

48.4. Analysis of current health performance (2019–20)

Table 48.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 48.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 48.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0129	0.0105	0.0144
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0036	0.0028	0.0049
Lead	0.01	mg/L	4	0	100	0.0003	0.0002	0.0003
Manganese	0.5	mg/L	4	0	100	0.0022	0.0019	0.0028
Mercury	0.001	mg/L	4	0	100	0.00009	0.00007	0.00013
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0001	<0.0001	0.0002
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 48.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	6	2	10
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	5	<1	11
Total trihalomethanes	250	µg/L	4	0	100	23	13	34

Table 48.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.90	0.36	1.20
Colour True	HU	15	<1	<1	2
pH	Units	6.5 – 8.5	6.98	6.39	7.56
Turbidity	NTU	1	0.28	0.10	0.90

48.5. Analysis of overall system performance (2019–20)

Table 48.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

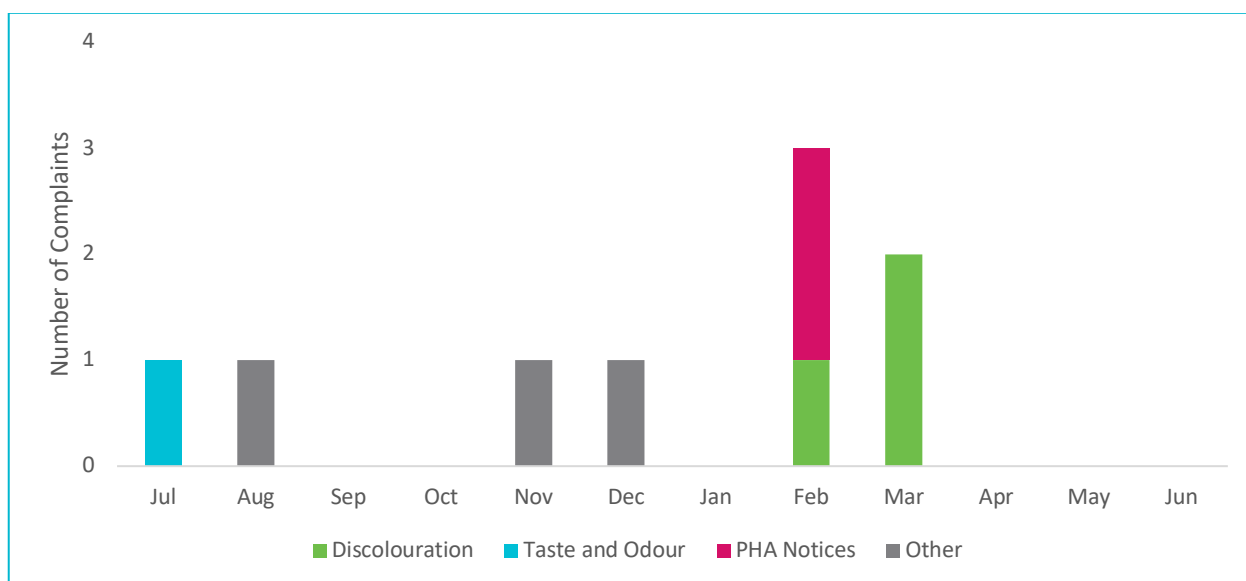


Figure 48.5-b Water quality customer complaints by month and type

49. South Esk drinking water system

49.1. System summary (2019–20)

South Esk drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	5,272
Population serviced	11,402
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	370	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	10	Discolouration, taste and odour, other (chlorine)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$220,000

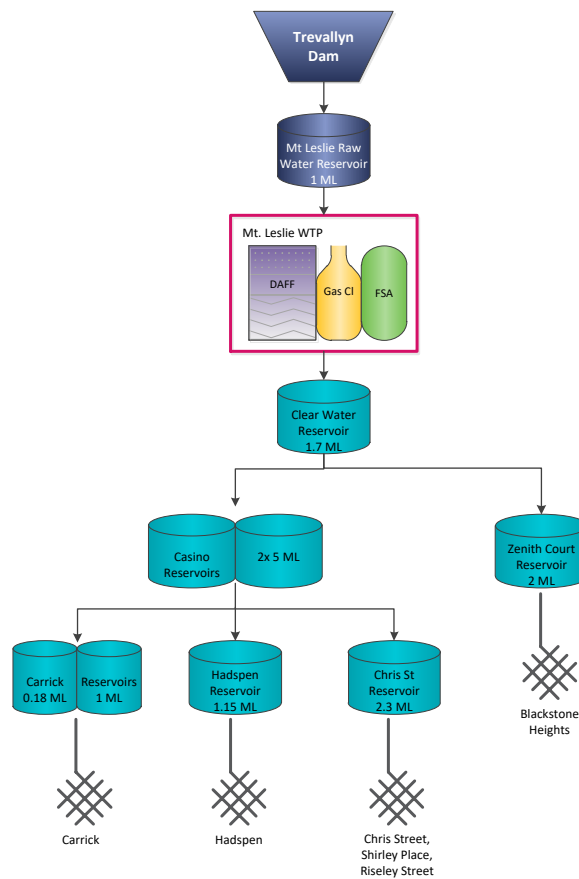


Figure 49.1-a South Esk system schematic

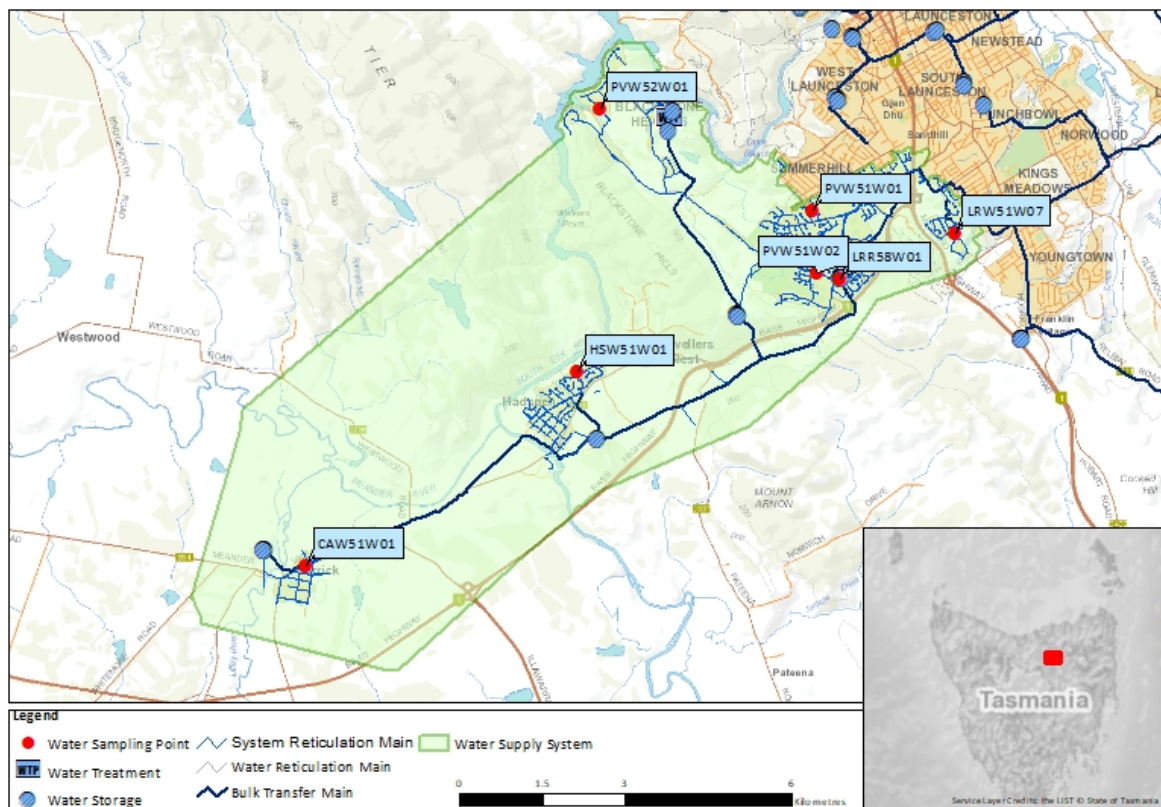


Figure 49.1-b Map of South Esk monitoring system

49.2. Summary of annual reticulation compliance (2019–20)

Table 49.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Blackstone Heights, Longvista Drive	PVW52W01	W	n/a	n/a	n/a	n/a	n/a
Prospect Vale, Country Club	PVW51W02	W	n/a	n/a	n/a	n/a	n/a
Kings Meadows, Connector Park	LRW51W07	W	n/a	n/a	n/a	n/a	n/a
Prospect Vale, Chris St Res	LRR58W01	W	n/a	n/a	n/a	n/a	n/a
Carrick, Public Hall	CAW51W01	W	n/a	n/a	n/a	n/a	n/a
Prospect Vale, Willow Lane	PVW51W01	W	n/a	n/a	2M	n/a	n/a
Hadspen, South Esk Drive	HSW51W01	W	Q	Q	2M	Q	n/a
Number Planned Samples		370	4	4	48	4	n/a
Number Samples Tested		370	4	4	48	4	n/a

49.3. Summary of current and historic performance (2015–20)

Table 49.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

49.4. Analysis of current health performance (2019–20)

Table 49.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 49.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> <div></div> Compliant <div></div> Non-compliant </div>	

Table 49.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0096	0.0079	0.0131
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0001	<0.0001	0.0002
Copper	2	mg/L	4	0	100	0.0065	0.0047	0.0104
Lead	0.01	mg/L	4	0	100	0.0008	<0.0001	0.0010
Manganese	0.5	mg/L	4	0	100	0.0030	0.0011	0.0039
Mercury	0.001	mg/L	4	0	100	0.00009	<0.00003	0.00016
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0004	0.0003	0.0004
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 49.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	8	4	14
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	9	3	17
Total trihalomethanes	250	µg/L	4	0	100	25	17	40

Table 49.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.74	0.07	1.18
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	6.93	6.4	7.48
Turbidity	NTU	1	0.32	0.10	0.90

49.5. Analysis of overall system performance (2019–20)

Table 49.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

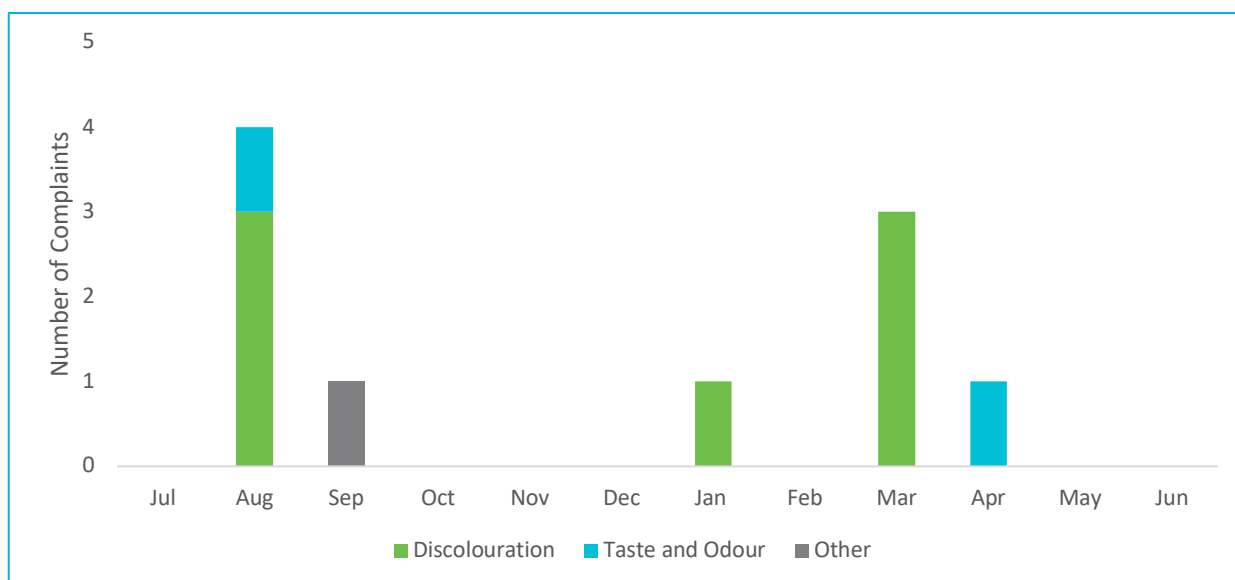


Figure 49.5-b Water quality customer complaints by month and type

50. St Helens drinking water system

50.1. System summary (2019–20)

St Helens drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	1,865
Population serviced	2,361
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$120,000
WTP Renewal Program	Media Refill	Complete	2019/2020	\$15,000

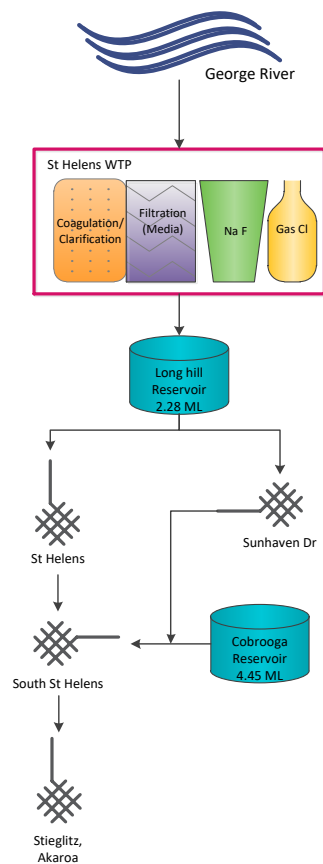


Figure 50.1-a St Helens system schematic

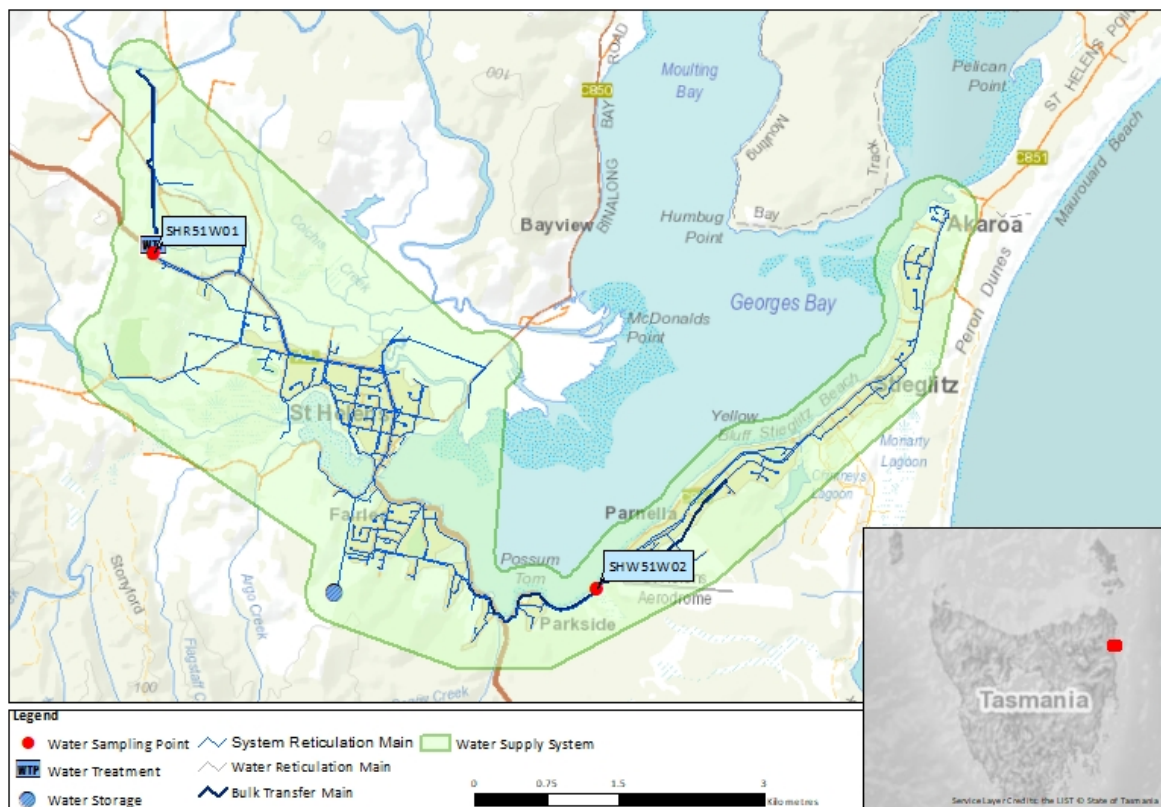


Figure 50.1-b Map of St Helens monitoring system

50.2. Summary of annual reticulation compliance (2019–20)

Table 50.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
St Helens/Longhill Reservoir	SHR51W01	W	n/a	n/a	2M	n/a	n/a
St Helens/228 St Helens Point Rd	SHW51W04	W	Q	Q	2M	Q	n/a
Number Planned Samples		106	4	4	48	4	n/a
Number Samples Tested		106	4	4	48	4	n/a

50.3. Summary of current and historic performance (2015–20)

Table 50.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

50.4. Analysis of current health performance (2019–20)

Table 50.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 50.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 50.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0070	0.0056	0.0077
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0032	0.0021	0.0044
Lead	0.01	mg/L	4	0	100	0.0010	0.0006	0.0016
Manganese	0.5	mg/L	4	0	100	0.0011	0.0006	0.0018
Mercury	0.001	mg/L	4	0	100	0.00010	0.00004	0.00016
Molybdenum	0.05	mg/L	4	0	100	0.0001	<0.0001	0.0003
Nickel	0.02	mg/L	4	0	100	0.0002	0.0001	0.0002
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 50.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	4	1	7
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	22	14	32
Total trihalomethanes	250	µg/L	4	0	100	58	40	79

Table 50.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.8	0	1.43
Colour True	HU	15	<1	<1	10
pH	Units	6.5 – 8.5	7.10	6.63	7.60
Turbidity	NTU	1	0.33	0.10	2.60

50.5. Analysis of overall system performance (2019–20)

Table 50.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

51. St Marys drinking water system

51.1. System summary (2019–20)

St Marys drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	365
Population serviced	602
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	3	Discolouration, taste and odour, other (chlorine)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	Complete	2019/2020	\$22,000

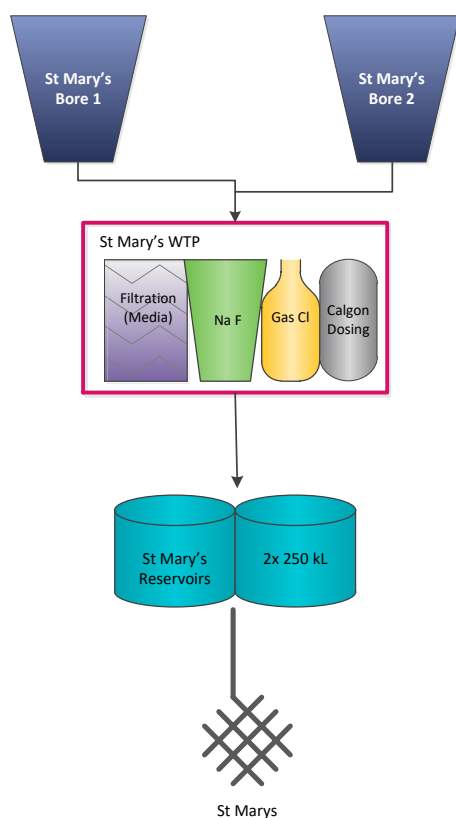


Figure 51.1-a St Marys system schematic

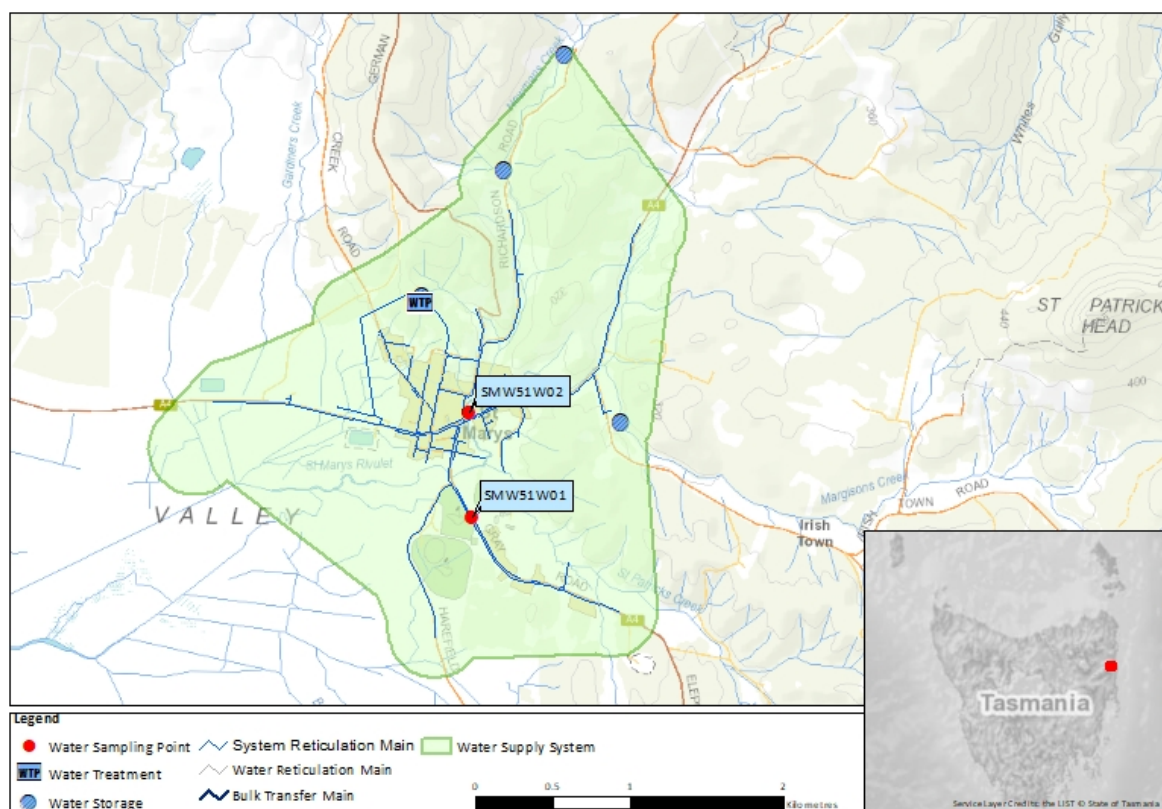


Figure 51.1-b Map of St Marys monitoring system

51.2. Summary of annual reticulation compliance (2019–20)

Table 51.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
St Marys/Park Near Library	SMW51W02	n/a	n/a	n/a	2M	n/a	n/a
St Marys/St. Marys School	SMW51W01	W	Q	Q	2M	Q	n/a
Number Planned Samples		53	4	4	48	4	n/a
Number Samples Tested		53	4	4	48	4	n/a

51.3. Summary of current and historic performance (2015–20)

Table 51.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

51.4. Analysis of current health performance (2019–20)

Table 51.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 51.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 51.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.1512	0.1444	0.1621
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0002
Copper	2	mg/L	4	0	100	0.0260	0.0218	0.0332
Lead	0.01	mg/L	4	0	100	0.0009	0.0007	0.0010
Manganese	0.5	mg/L	4	0	100	0.0053	0.0051	0.0054
Mercury	0.001	mg/L	4	0	100	0.00005	0.00004	0.00006
Molybdenum	0.05	mg/L	4	0	100	0.0002	0.0002	0.0002
Nickel	0.02	mg/L	4	0	100	0.0002	0.0002	0.0002
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 51.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	<1	<1	1
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	<1	<1	1
Total trihalomethanes	250	µg/L	4	0	100	14	13	14

Table 51.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.71	0.17	1.02
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	6.85	6.50	7.60
Turbidity	NTU	1	0.56	0.30	1.20

51.5. Analysis of overall system performance (2019–20)

Table 51.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

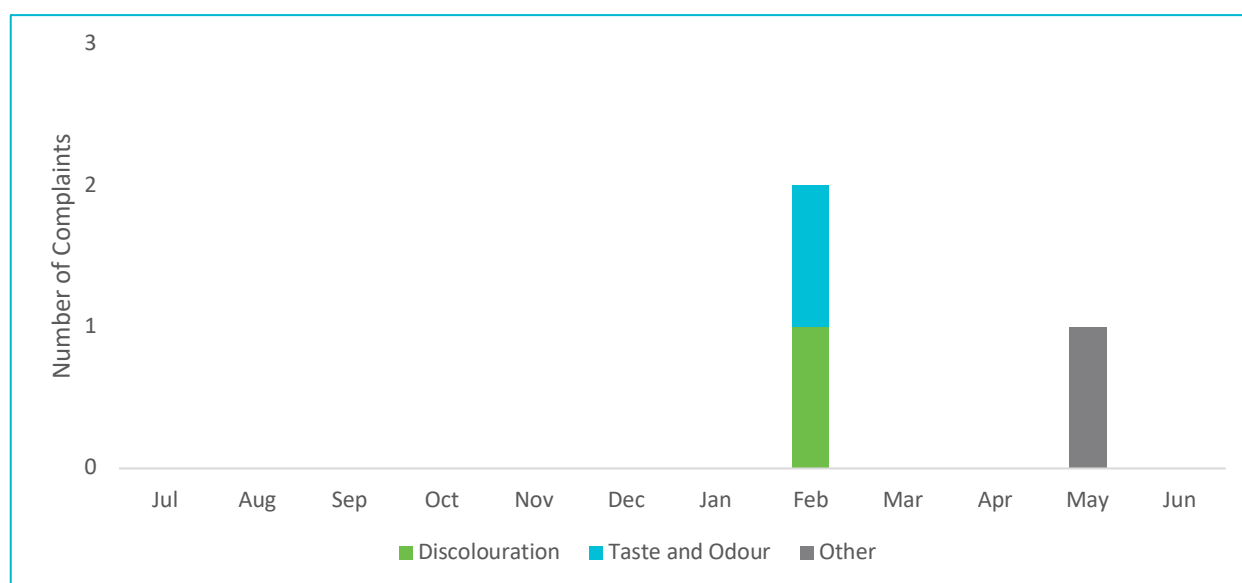


Figure 51.5-b Water quality customer complaints by month and type

52. Swansea drinking water system

52.1. System summary (2019–20)

Swansea drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	891
Population serviced	1,266
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In progress	2020/2021	\$31,000
WTP Renewals	Soda Ash Pump Upgrade	Complete	2019/2020	\$15,000

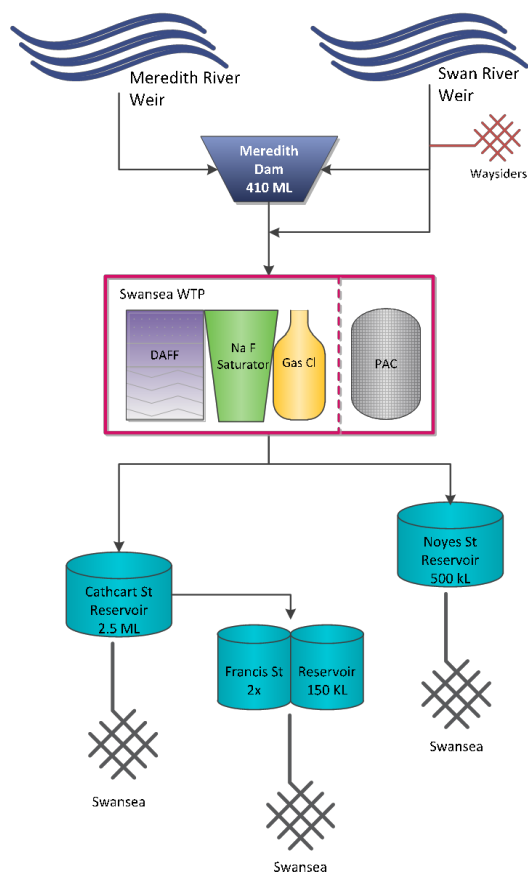


Figure 52.1-a Swansea system schematic

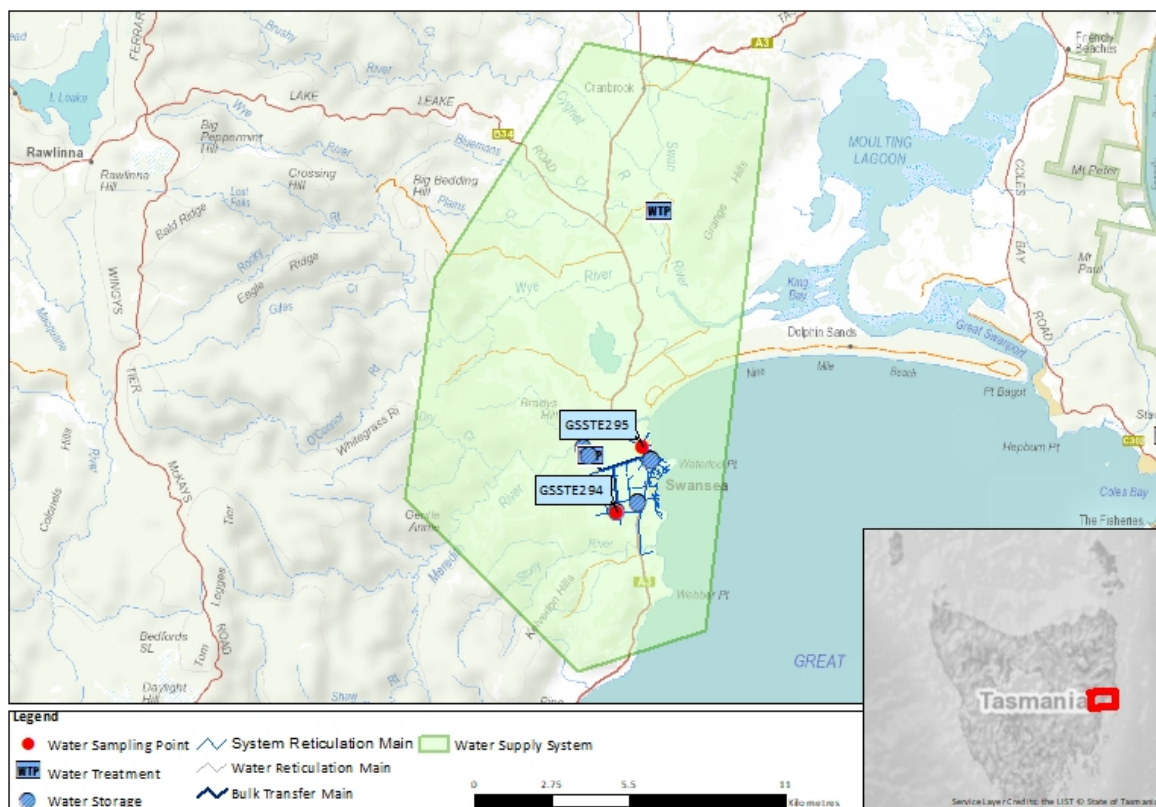


Figure 52.1-b Map of Swansea monitoring system

52.2. Summary of annual reticulation compliance (2019–20)

Table 52.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Swansea/Bark Mill	GSSTE295	W	n/a	n/a	2M	n/a	n/a
Swansea/1 Esplanade	GSSTE299	W	Q	Q	2M	Q	n/a
Number Planned Samples		106	4	4	48	4	n/a
Number Samples Tested		106	4	4	48	8	n/a

52.3. Summary of current and historic performance (2015–20)

Table 52.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

52.4. Analysis of current health performance (2019–20)

Table 52.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 52.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	1.0
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 52.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0037	0.0036	0.0038
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0247	0.0149	0.0318
Lead	0.01	mg/L	4	0	100	0.0022	0.0015	0.0033
Manganese	0.5	mg/L	4	0	100	0.0004	0.0002	0.0007
Mercury	0.001	mg/L	4	0	100	0.00008	<0.00003	0.00017
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Nickel	0.02	mg/L	4	0	100	0.0003	0.0002	0.0004
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	0.0001

Table 52.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	7	4	8
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	7	3	10
Total trihalomethanes	250	µg/L	4	0	100	50	49	52

Table 52.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.64	0.02	1.31
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.08	6.81	7.48
Turbidity	NTU	1	0.18	0.10	0.50

52.5. Analysis of overall system performance (2019–20)

Table 52.5-a Summary of system issues/public health warnings

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

53. Triabunna drinking water system

53.1. System summary (2019–20)

Triabunna drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	543
Population serviced	942
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	2	Discolouration, taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewals	Filter Media Replacement	In Progress	2020/2021	\$80,000
System Optimisation	Filter to Waste Optimisation	Not Started	TBD	\$120,000

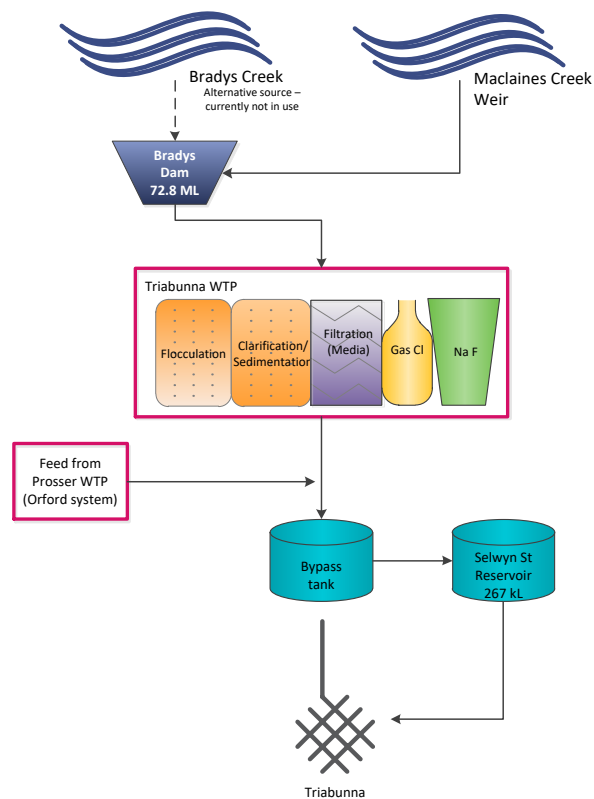


Figure 53.1-a Triabunna system schematic

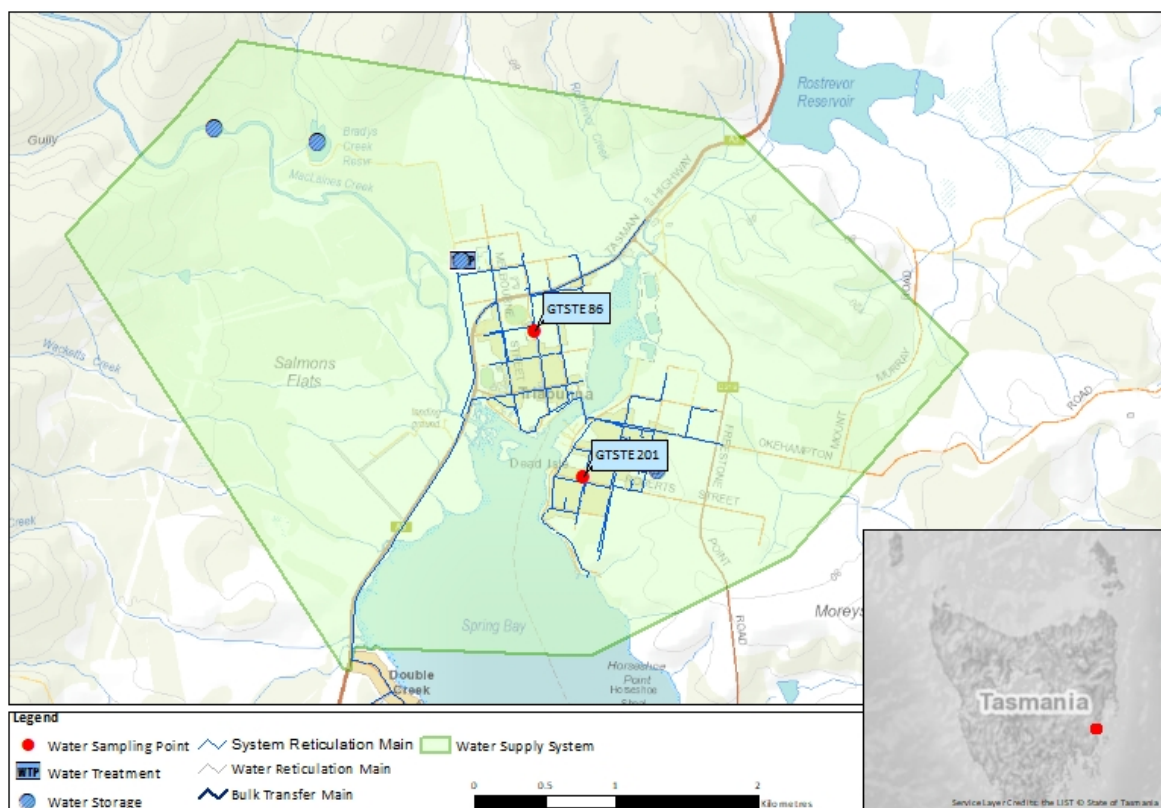


Figure 53.1-b Map of Triabunna monitoring system

53.2. Summary of annual reticulation compliance (2019–20)

Table 53.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Triabunna Ada street	GTSTE201	n/a	n/a	n/a	2M	n/a	n/a
Triabunna/Cemetery, Charles St, Sample Tap	GTSTE86	W	Q	Q	2M	Q	n/a
Number Planned Samples		53	4	4	48	4	n/a
Number Samples Tested		53	4	4	48	4	n/a

53.3. Summary of current and historic performance (2015–20)

Table 53.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

53.4. Analysis of current health performance (2019–20)

Table 53.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 53.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 53.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0120	0.0097	0.0147
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0051	0.0035	0.0080
Lead	0.01	mg/L	4	0	100	0.0006	0.0004	0.0009
Manganese	0.5	mg/L	4	0	100	0.0007	0.0003	0.0015
Mercury	0.001	mg/L	4	0	100	<0.00003	<0.00003	<0.00003
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0003	0.0002	0.0004
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	0.0001

Table 53.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	8	5	9
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	14	4	38
Total trihalomethanes	250	µg/L	4	0	100	85	61	114

Table 53.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.70	0.02	1.55
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.22	6.75	7.55
Turbidity	NTU	1	0.25	0.10	0.90

53.5. Analysis of overall system performance (2019–20)

Table 53.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

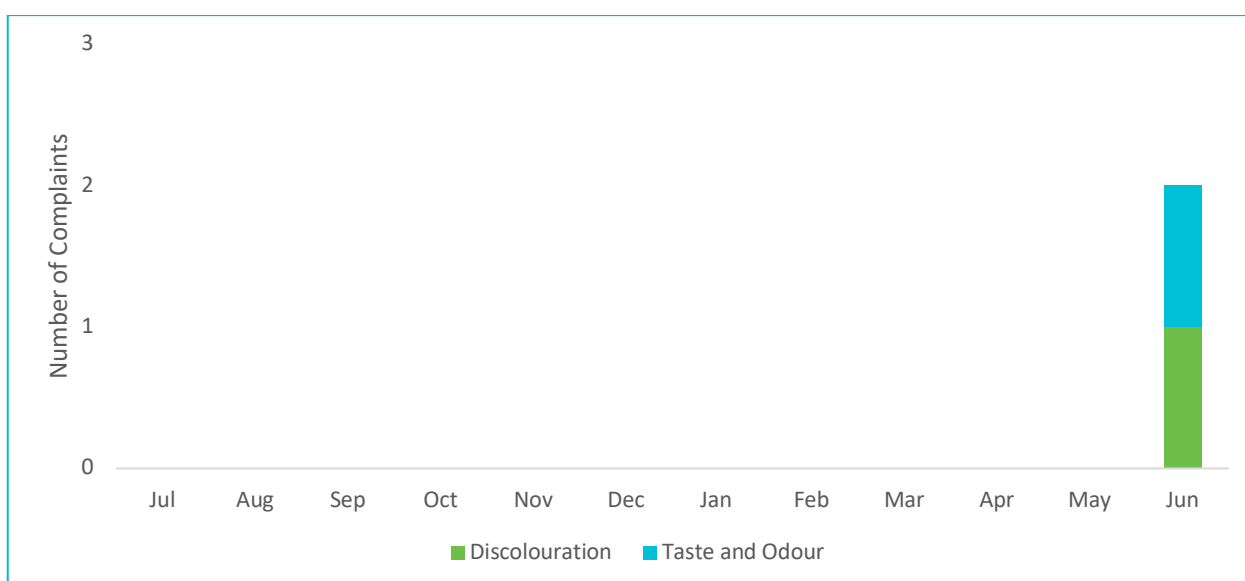


Figure 53.5-b Water quality customer complaints by month and type

54. Tullah drinking water system

54.1. System summary (2019–20)

Tullah drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	196
Population serviced	207
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	12	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$66,000

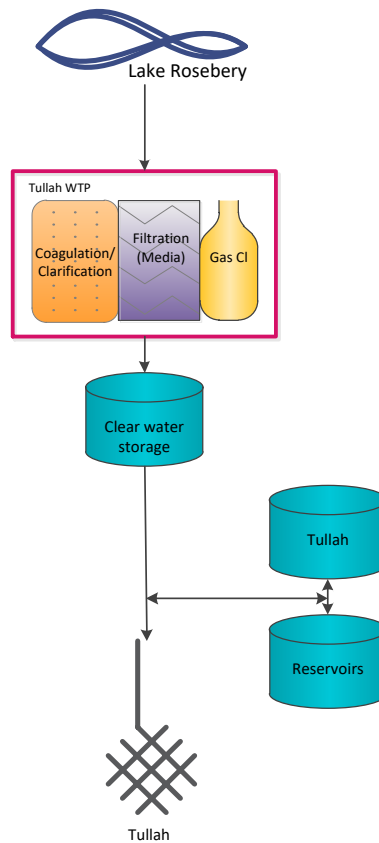


Figure 54.1-a Tullah system schematic

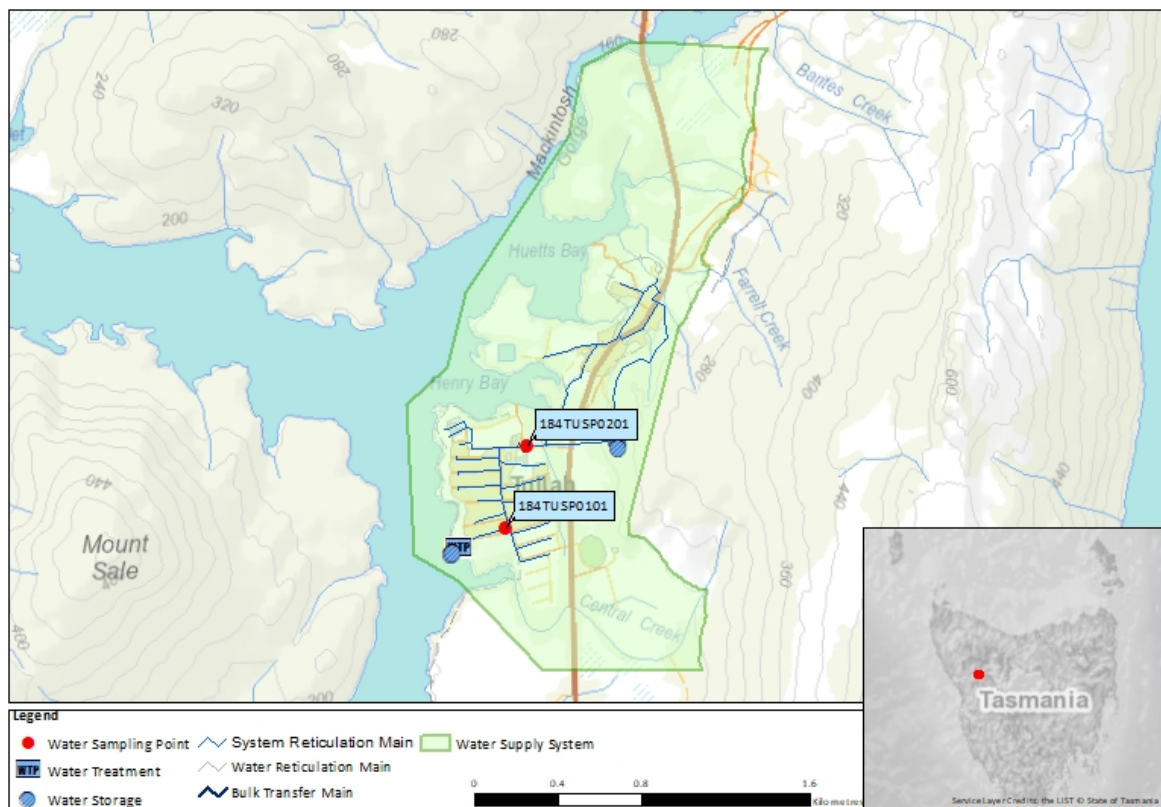


Figure 54.1-b Map of Tullah monitoring system

54.2. Summary of annual reticulation compliance (2019–20)

Table 54.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Tullah/Bluff St Sample Point 1	184TUSP0101	W	Q	n/a	n/a	Q	n/a
Tullah/Farrell Sample Point 2	184TUSP0201	W	n/a	M	n/a	n/a	n/a
Number Planned Samples		106	4	12	n/a	4	n/a
Number Samples Tested		106	4	12	n/a	4	n/a

54.3. Summary of current and historic performance (2015–20)

Table 54.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	96.3%	100.0%	100.0% ³²	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

54.4. Analysis of current health performance (2019–20)

Table 54.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

³² Sampling requirements not met (sample missed in May 2018 for DBPs)

Table 54.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0043	0.0038	0.0048
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0001	<0.0001	0.0003
Copper	2	mg/L	4	0	100	0.0007	<0.0001	0.0010
Lead	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Manganese	0.5	mg/L	4	0	100	0.0054	0.0010	0.0082
Mercury	0.001	mg/L	4	0	100	0.00004	<0.00003	0.00006
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0001	<0.0001	0.0002
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 54.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	12	0	100	18	2	33
Monochloroacetic acid	150	µg/L	12	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	12	0	100	36	20	60
Total trihalomethanes	250	µg/L	12	0	100	81	52	117

Table 54.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.95	0	2.09
Colour True	HU	15	1	<1	2
pH	Units	6.5 – 8.5	7.39	6.53	7.98
Turbidity	NTU	1	0.44	0.20	0.90

54.5. Analysis of overall system performance (2019–20)

Table 54.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

55. Tunbridge drinking water system

55.1. System summary (2019–20)

Tunbridge drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	116
Population serviced	198
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	52	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal Program	GAC Replacement	Not Started	2020/2021	\$12,000

55.2. Summary of annual reticulation compliance (2019–20)

Table 55.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Tunbridge/Tunbridge St Sample Post	TBSTE80	W	Q	Q	n/a	Q	n/a
Number Planned Samples		52	4	4	n/a	4	n/a
Number Samples Tested		52	4	4	n/a	4	n/a

55.3. Summary of current and historic performance (2015–20)

Table 55.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

55.4. Analysis of current health performance (2019–20)

Table 55.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 55.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	0.0003
Barium	2	mg/L	4	0	100	0.0108	0.0074	0.0149
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0067	0.0055	0.0075
Lead	0.01	mg/L	4	0	100	0.0003	0.0002	0.0004
Manganese	0.5	mg/L	4	0	100	0.0009	0.0001	0.0025
Mercury	0.001	mg/L	4	0	100	0.00008	<0.00003	0.00014
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0002	0.0002	0.0003
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	0.0001

Table 55.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	3	1	4
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	<1	<1	2
Total trihalomethanes	250	µg/L	4	0	100	34	30	37

Table 55.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.61	0.39	0.92
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.20	6.35	7.95
Turbidity	NTU	1	0.25	0	0.70

55.5. Analysis of overall system performance (2019–20)

Table 55.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

56. Waratah drinking water system

56.1. System summary (2019–20)

Waratah drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	133
Population serviced	183
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	100.0%	☑	100.0%	24	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	1	Discolouration

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Pressure Decay Test Upgrade	Complete	2019/2020	\$40,000

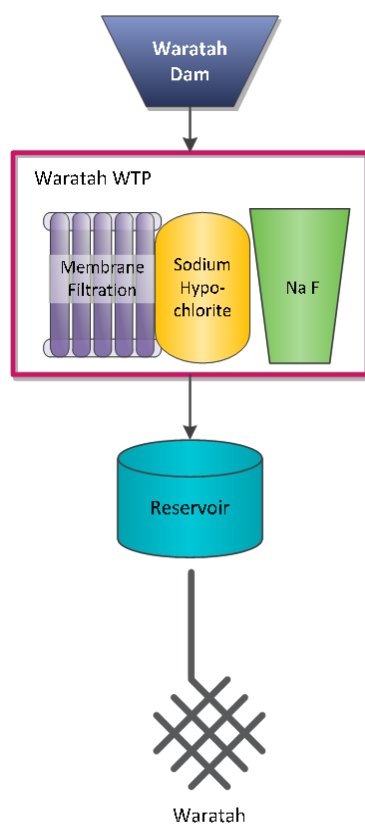


Figure 56.1-a Waratah system schematic

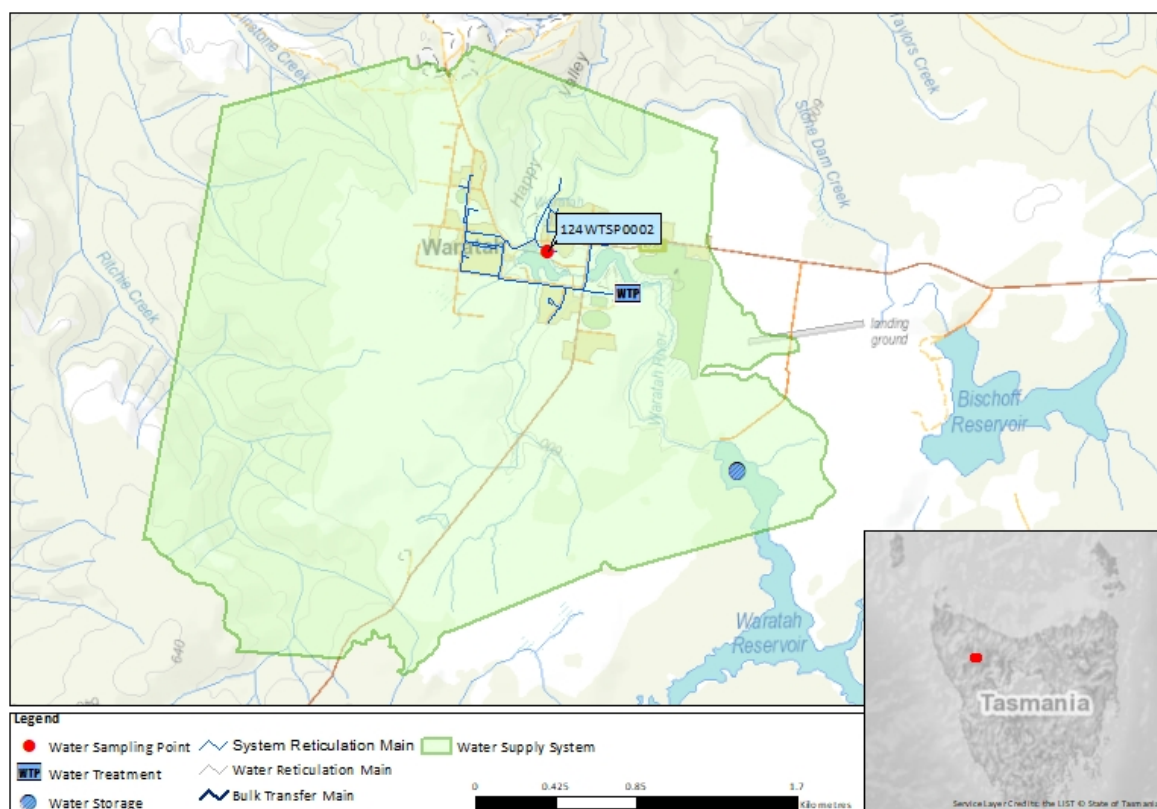


Figure 56.1-b Map of Waratah monitoring system

56.2. Summary of annual reticulation compliance (2019–20)

Table 56.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Waratah/Caravan Park Sample Point	124WTSP0002	W	Q	Q	2M	Q	n/a
Number Planned Samples		53	4	4	24	4	n/a
Number Samples Tested		53	4	4	24	4	n/a

56.3. Summary of current and historic performance (2015–20)

Table 56.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

56.4. Analysis of current health performance (2019–20)

Table 56.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 56.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 56.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	0.0003
Barium	2	mg/L	4	0	100	0.0020	0.0016	0.0022
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0003	0.0002	0.0003
Copper	2	mg/L	4	0	100	0.0286	0.0217	0.0394
Lead	0.01	mg/L	4	0	100	0.0009	0.0008	0.0010
Manganese	0.5	mg/L	4	0	100	0.0068	0.0004	0.0222
Mercury	0.001	mg/L	4	0	100	0.00006	<0.00003	0.00009
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0002	0.0002	0.0003
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 56.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	32	23	41
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	37	28	54
Total trihalomethanes	250	µg/L	4	0	100	58	49	68

Table 56.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.44	0.12	0.79
Colour True	HU	15	1	<1	2
pH	Units	6.5 – 8.5	7.04	6.58	7.64
Turbidity	NTU	1	0.18	0.10	0.40

56.5. Analysis of overall system performance (2019–20)

Table 56.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

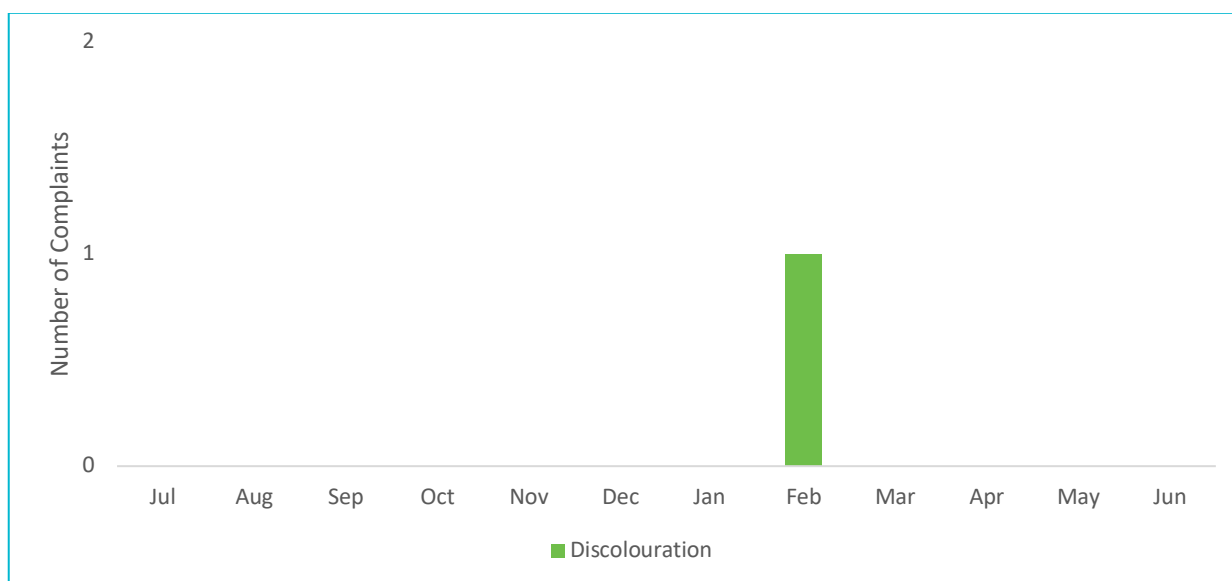


Figure 56.5-b Water quality customer complaints by month and type

57. Wayatinah drinking water system

57.1. System summary (2019–20)

Wayatinah drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	63
Population serviced	39
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
No projected capital investment				

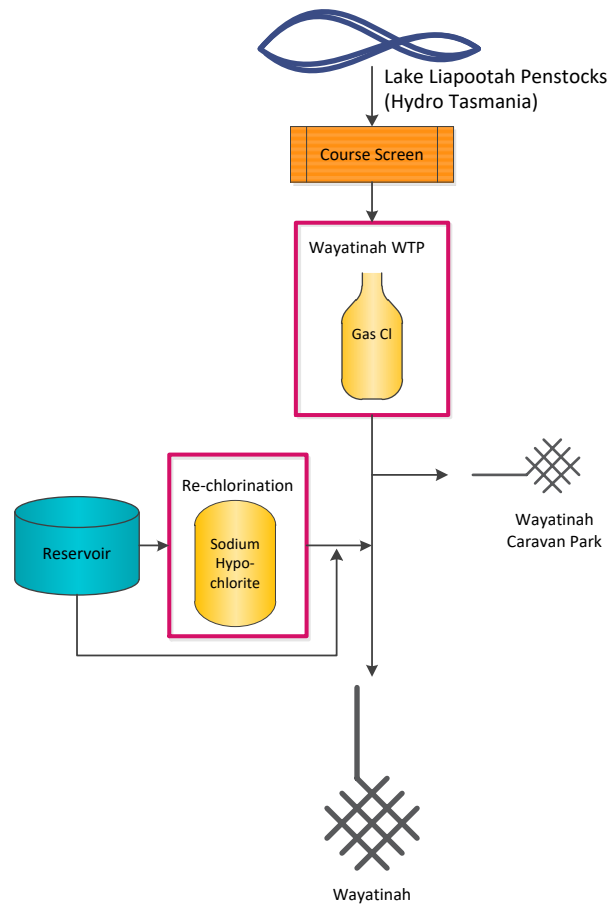


Figure 57.1-a Wayatinah system schematic

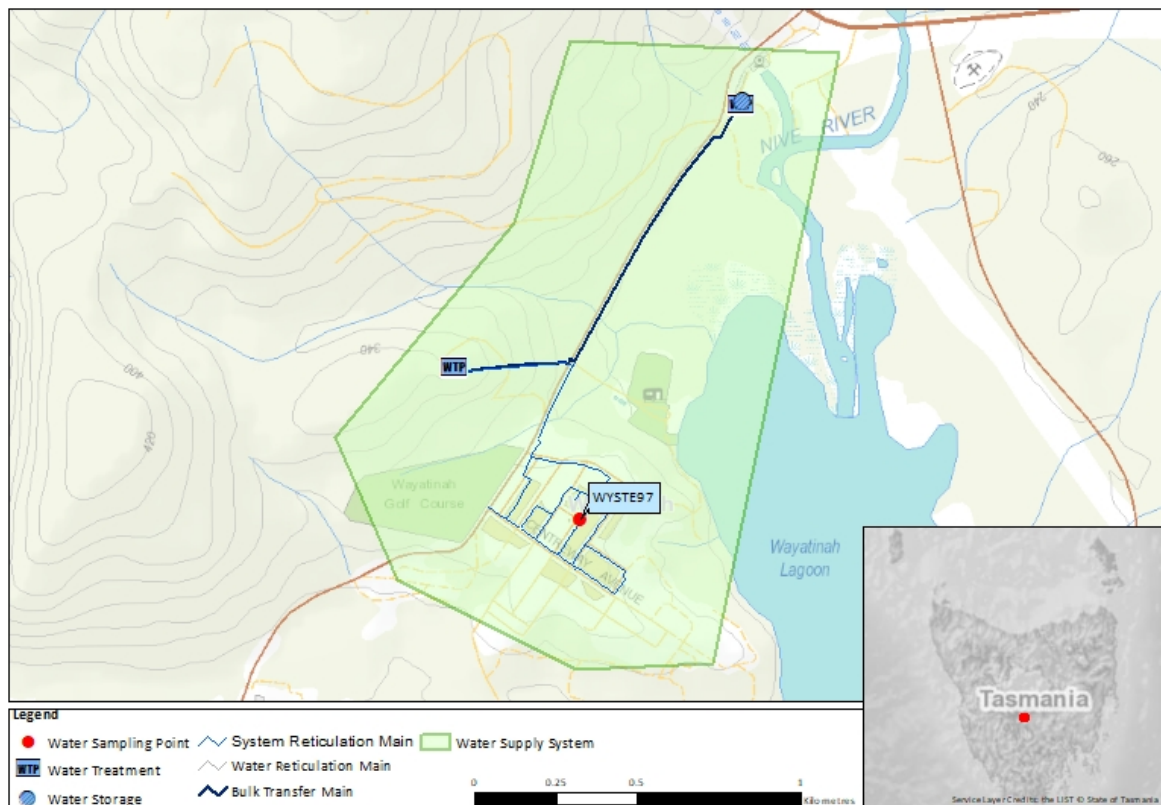


Figure 57.1-b Map of Wayatinah monitoring system

57.2. Summary of annual reticulation compliance (2019–20)

Table 57.2-a Sampling program

Planned compliance sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Wayatinah/Sample Tap	WYSTE99	W	Q	Q	n/a	Q	n/a
Number Planned Samples		53	4	4	n/a	4	n/a
Number Samples Tested		53	4	4	n/a	4	n/a

57.3. Summary of current and historic performance (2015–20)

Table 57.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	98.1%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	86.0%	95.8%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

57.4. Analysis of current health performance (2019–20)

Table 57.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 57.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0017	0.0013	0.0020
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0001	<0.0001	0.0001
Copper	2	mg/L	4	0	100	0.0021	0.0014	0.0027
Lead	0.01	mg/L	4	0	100	0.0003	0.0001	0.0006
Manganese	0.5	mg/L	4	0	100	0.0013	0.0004	0.0019
Mercury	0.001	mg/L	4	0	100	<0.00003	<0.00003	<0.00003
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 57.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	12	0	100	37	2	65
Monochloroacetic acid	150	µg/L	12	0	100	<3	<3	3
Trichloroacetic acid	100	µg/L	12	0	100	71	57	100
Total trihalomethanes	250	µg/L	12	0	100	95	73	124

Table 57.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.39	0.01	0.78
Colour True	HU	15	2.5	2	4
pH	Units	6.5 – 8.5	7.73	6.88	8.01
Turbidity	NTU	1	0.17	0.10	0.30

57.5. Analysis of overall system performance (2019–20)

Table 57.5-a Summary of system issues/public health warnings with notification details

Summary of system issues/public health warnings				
Date	Type	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued				

58. West Tamar drinking water system

58.1. System summary (2019–20)

West Tamar drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	9,591
Population serviced	20,472
Fluoride	Fluorosilicic acid

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	580	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	20	Discolouration, taste and odour, cloudy, other (chlorine)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Fluoride Upgrade	Storage Tank	Not Started	2020/2021	\$130,000
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$275,000
WTP Renewal Program	Lime Dosing System	In Progress	TBD	\$715,000

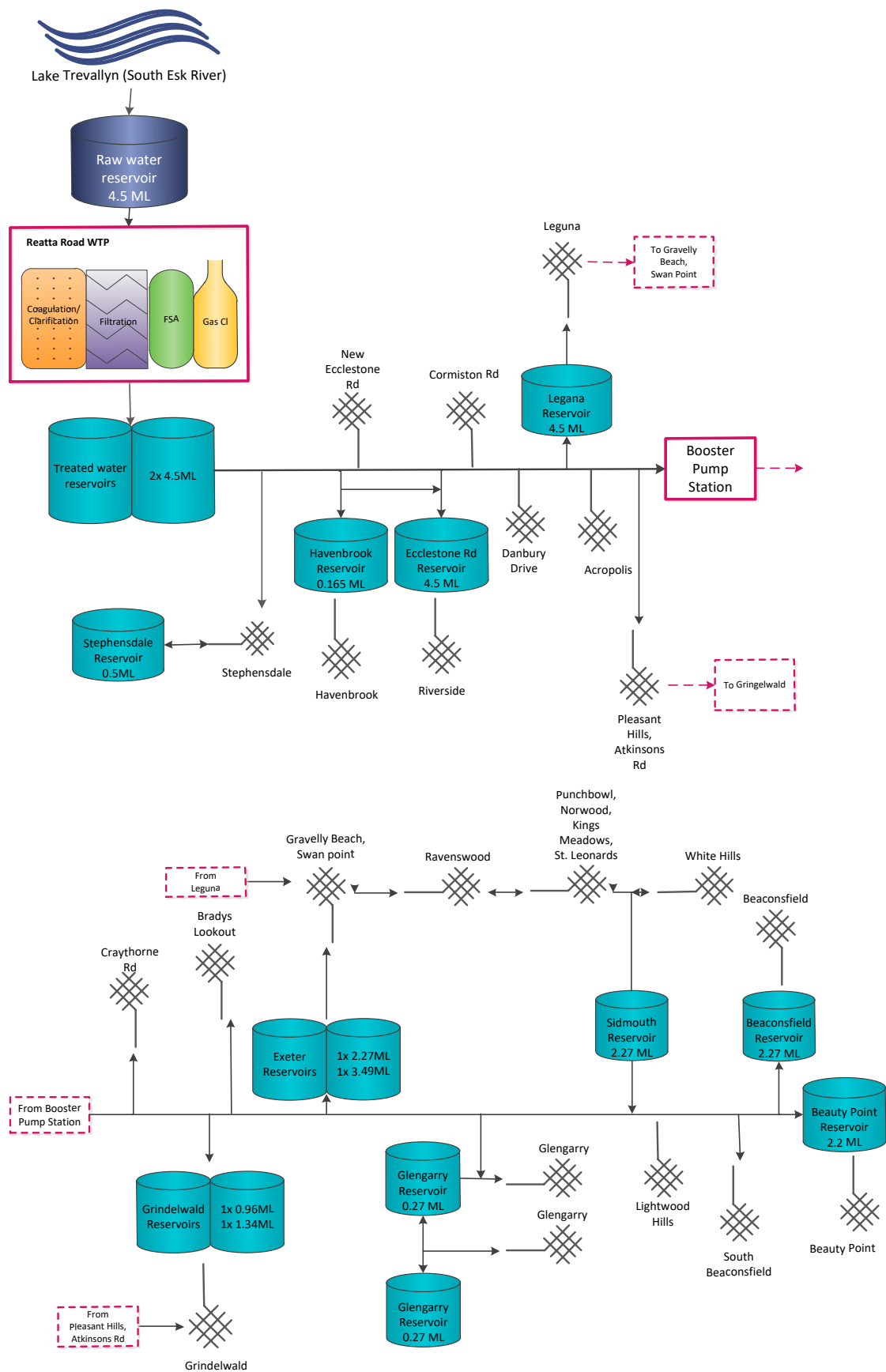


Figure 58.1-a West Tamar system schematic

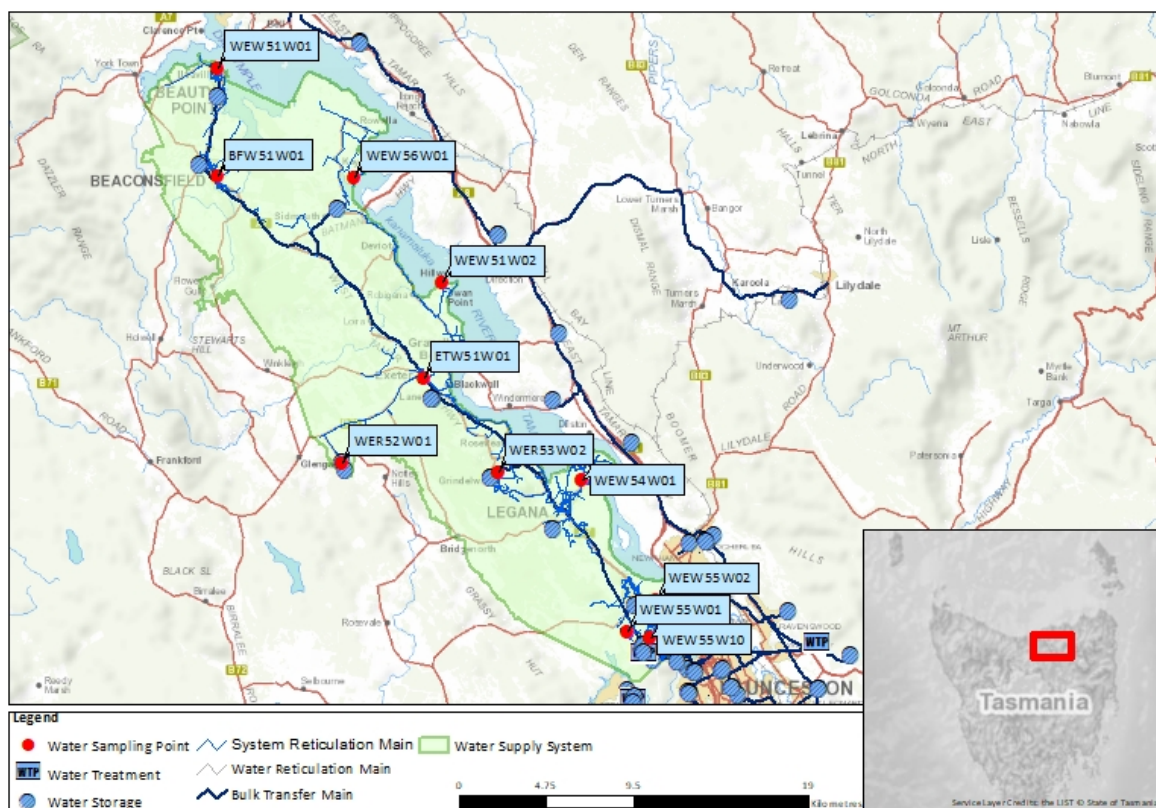


Figure 58.1-b Map of West Tamar monitoring system

58.2. Summary of annual reticulation compliance (2019–20)

Table 58.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Exeter, Biloo St	ETW51W01	W	Q	Q	2M	Q	n/a
Stephensdale, 14 Marlou Crt	WEW55W01	W	n/a	n/a	n/a	n/a	n/a
Riverside, 32 Gray St	WEW55W10	W	n/a	n/a	n/a	n/a	n/a
Riverside, Cleghorn St	WEW55W02	W	n/a	n/a	n/a	n/a	n/a
Legana Freshwater Point Rd	WEW54W01	W	n/a	n/a	n/a	n/a	n/a
Grindelwald Retic Outlet	WER53W02	W	n/a	n/a	n/a	n/a	n/a
205 Paper Beach Road	WEW51W02	W	n/a	n/a	n/a	n/a	n/a
Glengarry Res, Reservoir	WER52W01	W	n/a	n/a	n/a	n/a	n/a
Kayena, Bonnie Beach	WEW56W01	W	n/a	n/a	n/a	n/a	n/a
Beauty Point, Esplanade Toilets	WEW51W01	W	n/a	n/a	n/a	n/a	n/a
Beaconsfield, John St Near Fire Station	BFW51W01	W	n/a	n/a	2M	n/a	n/a
Number Planned Samples		580	4	4	48	4	n/a
Number Samples Tested		580	4	4	48	4	n/a

58.3. Summary of current and historic performance (2015–20)

Table 58.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	99.7%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

58.4. Analysis of current health performance (2019–20)

Table 58.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 58.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.7
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 58.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0083	0.0050	0.0104
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Copper	2	mg/L	4	0	100	0.0007	0.0004	0.0011
Lead	0.01	mg/L	4	0	100	0.0002	<0.0001	0.0002
Manganese	0.5	mg/L	4	0	100	0.0031	0.0022	0.0055
Mercury	0.001	mg/L	4	0	100	0.00015	<0.00003	0.00031
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0003	0.0002	0.0004
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	0.0002

Table 58.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	7	4	14
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	7	3	17
Total trihalomethanes	250	µg/L	4	0	100	30	21	49

Table 58.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.47	0	1.27
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.04	6.17	8.59
Turbidity	NTU	1	0.34	0.10	2.00

58.5. Analysis of overall system performance (2019–20)

Table 58.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
February 2020 – April 2020	Low fluoride levels detected	✓	✓

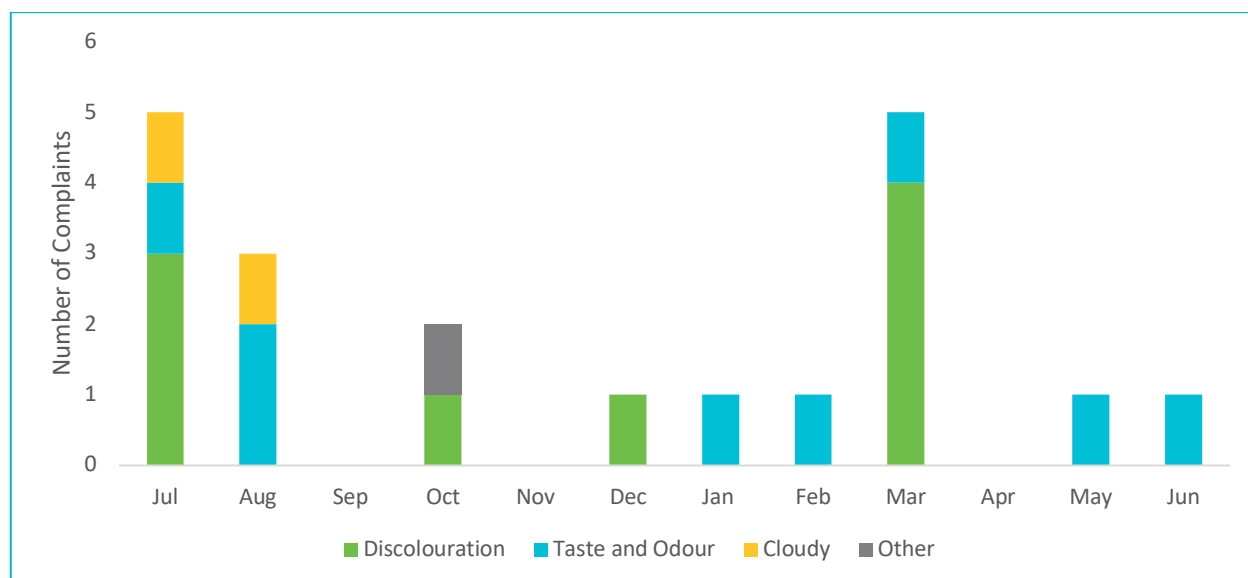


Figure 58.5-b Water quality customer complaints by month and type

59. Westbury drinking water system

59.1. System summary (2019–20)

Westbury drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	1,162
Population serviced	2,319
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	3	Discolouration, taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal Program	Critical Spares	In Progress	TBD	\$85,000
System Optimisation	PAC System	Complete	2019/2020	\$130,000

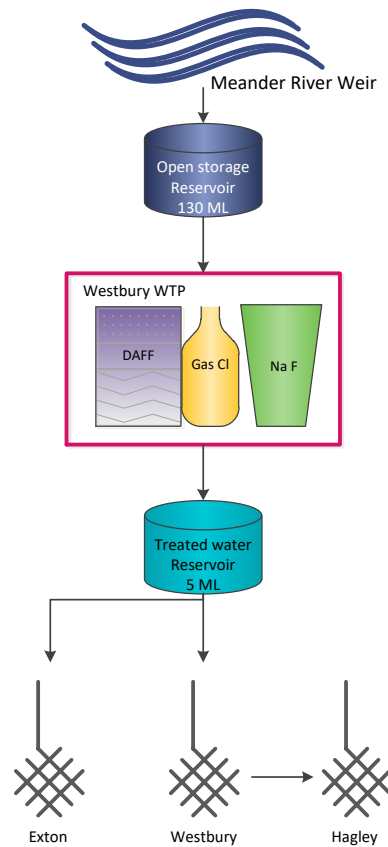


Figure 59.1-a Westbury system schematic

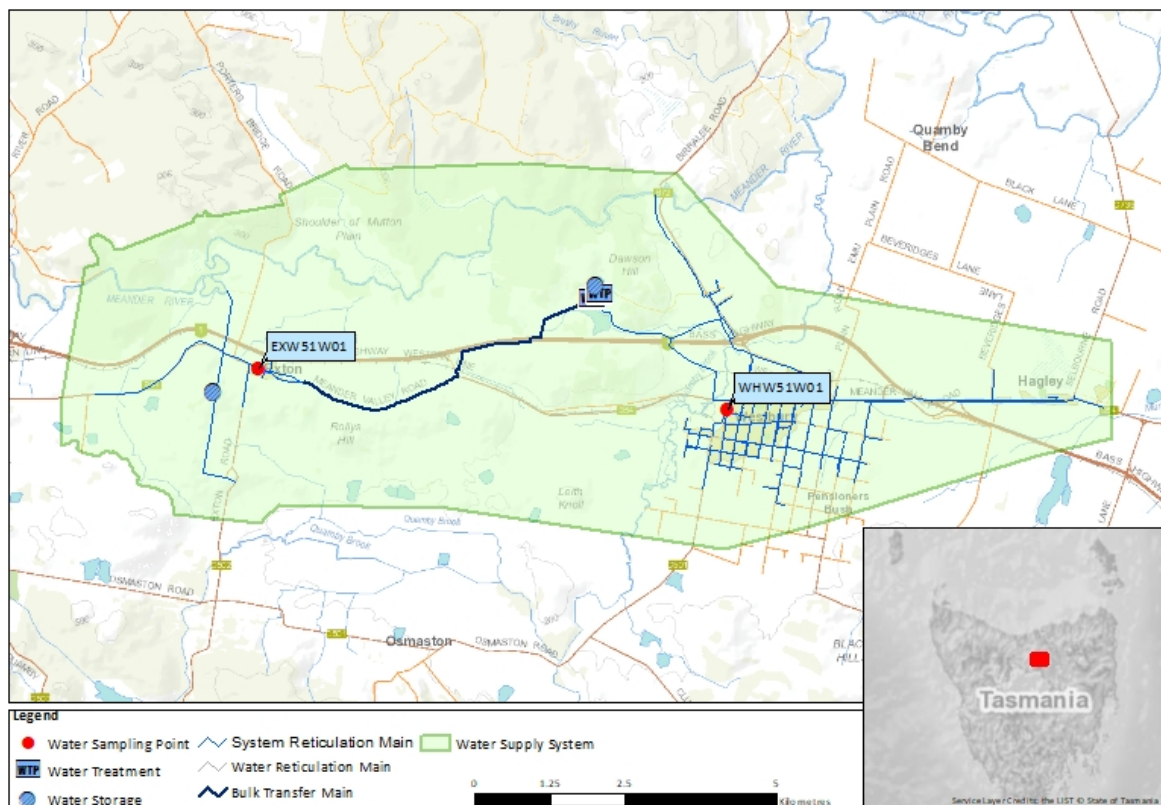


Figure 59.1-b Map of Westbury monitoring system

59.2. Summary of annual reticulation compliance (2019–20)

Table 59.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Westbury/Exton, Main Road	EXW51W01	W	n/a	n/a	2M	n/a	n/a
Westbury/Hagley - Crn Selbourne & Meander Valley Rd	WHW51W04	W	Q	Q	2M	Q	n/a
Number Planned Samples		106	4	4	48	4	n/a
Number Samples Tested		106	4	4	48	4	n/a

59.3. Summary of current and historic performance (2015–20)

Table 59.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	100.0%	100.0%	99.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

59.4. Analysis of current health performance (2019–20)

Table 59.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 59.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 59.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0081	0.0069	0.0096
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0022	0.0009	0.0036
Lead	0.01	mg/L	4	0	100	0.0032	<0.0001	0.0007
Manganese	0.5	mg/L	4	0	100	0.0039	0.0011	0.0092
Mercury	0.001	mg/L	4	0	100	0.00005	0.00004	0.00006
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0002	<0.0001	0.0003
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 59.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	8	6	9
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	9	7	10
Total trihalomethanes	250	µg/L	4	0	100	27	22	33

Table 59.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.77	0.38	1.07
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.07	6.02	8.01
Turbidity	NTU	1	0.30	0.10	0.60

59.5. Analysis of overall system performance (2019–20)

Table 59.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

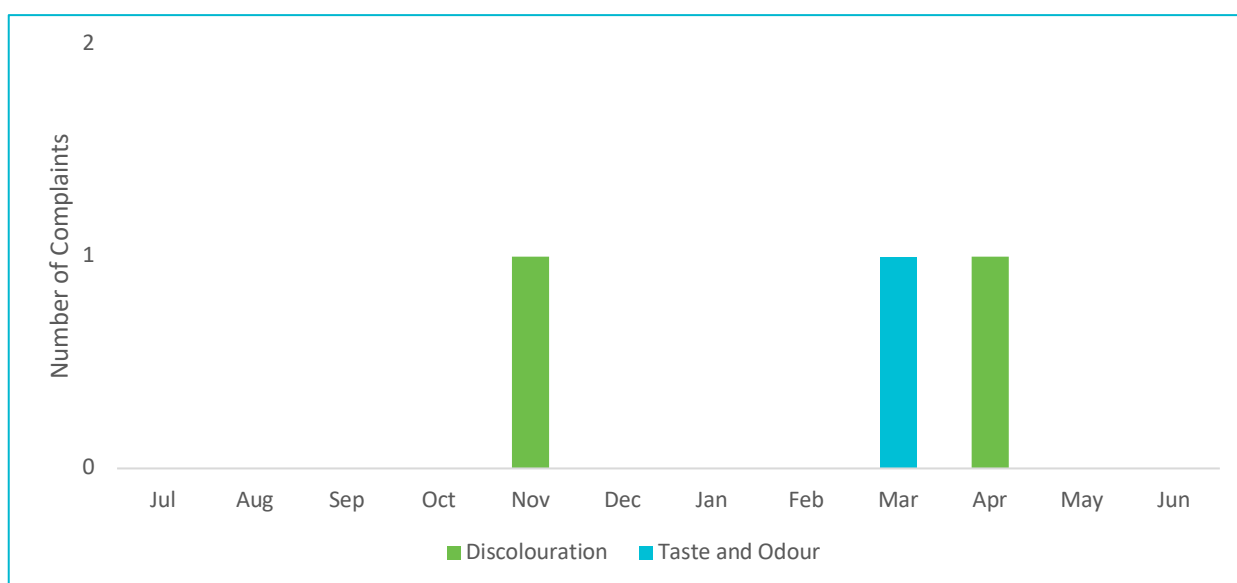


Figure 59.5-b Water quality customer complaints by month and type

60. Whitemark drinking water system

60.1. System summary (2019–20)

Whitemark drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	177
Population serviced	260
Fluoride	n/a

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	53	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
■ Compliant ■ Non-compliant					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	n/a

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Renewal Program	Anti Scalant Dosing	Complete	2019/2020	\$85,000

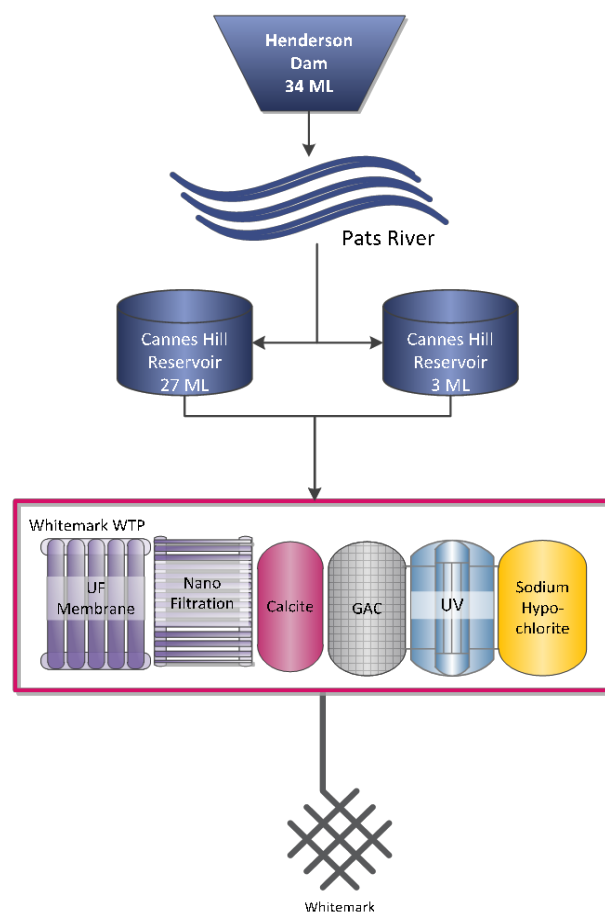


Figure 60.1-a Whitemark system schematic

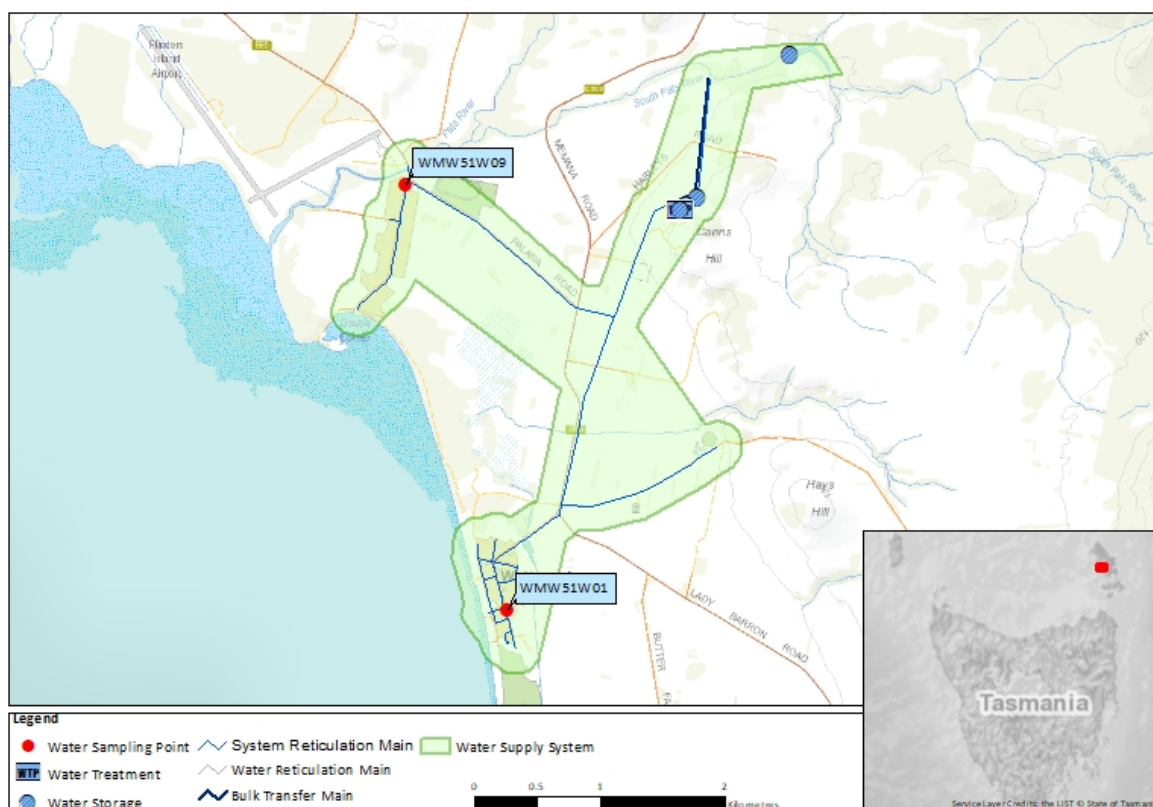


Figure 60.1-b Map of Whitemark monitoring system

60.2. Summary of annual reticulation compliance (2019–20)

Table 60.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Whitemark/Council Depot	WMW51W01	W	Q	Q	n/a	Q	n/a
Number Planned Samples		53	4	4	n/a	4	n/a
Number Samples Tested		53	4	4	n/a	4	n/a

60.3. Summary of current and historic performance (2015–20)

Table 60.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	50.0%	99.1%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	n/a	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

60.4. Analysis of current health performance (2019–20)

Table 60.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

Table 60.4-b Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	4	0	100	0.0014	0.0012	0.0016
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0001	<0.0001	0.0001
Copper	2	mg/L	4	0	100	0.0004	0.0003	0.0005
Lead	0.01	mg/L	4	0	100	0.0001	<0.0001	0.0001
Manganese	0.5	mg/L	4	0	100	0.0005	0.0004	0.0006
Mercury	0.001	mg/L	4	0	100	0.00010	0.00004	0.00019
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 60.4-c Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	<1	<1	<1
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	<1	<1	<1
Total trihalomethanes	250	µg/L	4	0	100	12	9	15

Table 60.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.79	0.10	1.10
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	8.24	7.10	8.90
Turbidity	NTU	1	0.38	0.10	1.30

60.5. Analysis of overall system performance (2019–20)

Table 60.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

61. Zeehan drinking water system

61.1. System summary (2019–20)

Zeehan drinking water system	
System status (as at 30 June 2020)	Potable
Total number of connections	690
Population serviced	998
Fluoride	Sodium fluoride

Performance overview against health targets (2019–20)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	106	0
Fluoride	100.0%	☑	100.0%	48	0
Metals	100.0%	☑	100.0%	4	0
DBPs	100.0%	☑	100.0%	4	0
<div><div></div> Compliant <div></div> Non-compliant</div>					

Overall system performance (2019–20)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	4	Discolouration

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
System Optimisation	Instrument Upgrade	In Progress	2020/2021	\$90,000

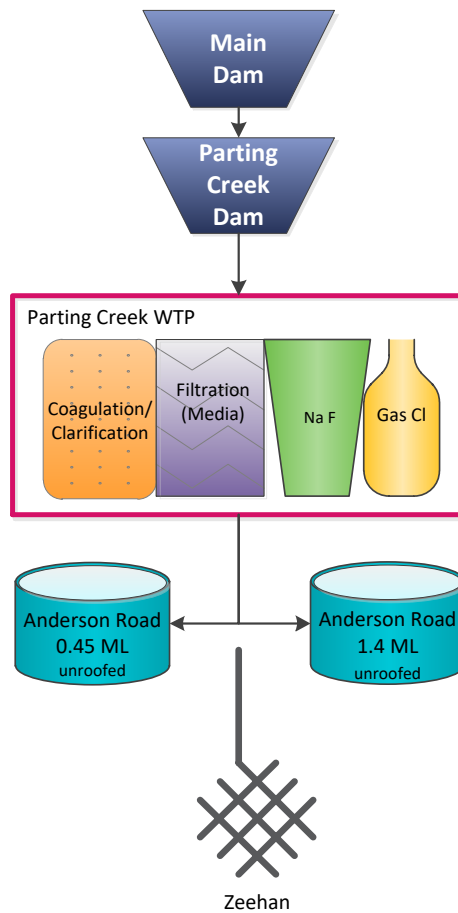


Figure 61.1-a Zeehan system schematic

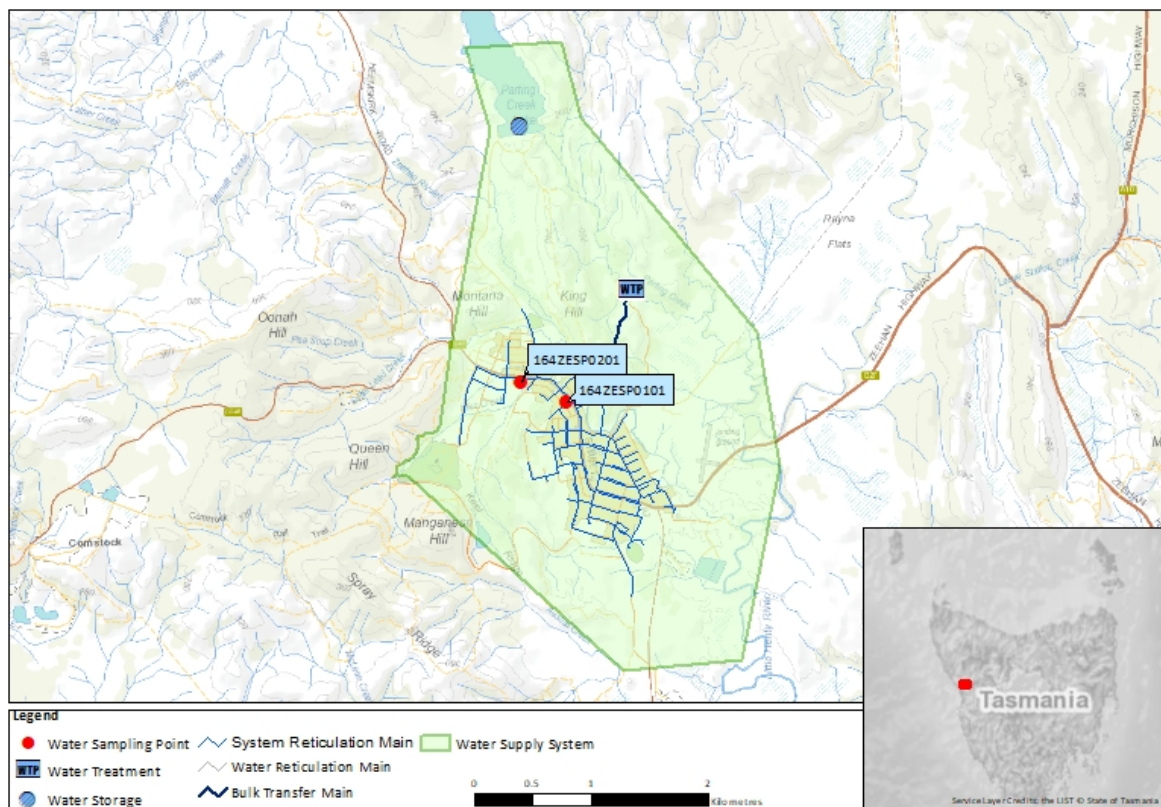


Figure 61.1-b Map of Zeehan monitoring system

61.2. Summary of annual reticulation compliance (2019–20)

Table 61.2-a Sampling program

Planned sampling program (2019–20)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Zeehan/Main Street Sample Point	164ZESP0101	W	n/a	n/a	2M	n/a	n/a
Zeehan/CMW Depot Sample Point	164ZESP0201	W	Q	Q	2M	Q	n/a
Number Planned Samples		106	4	4	48	4	n/a
Number Samples Tested		106	4	4	48	4	n/a

61.3. Summary of current and historic performance (2015–20)

Table 61.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2015–16	2016–17	2017–18	2018–19	2019–20
Microbiological	98.7%	100.0%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	97.9% ³³	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%
<div> ■ Compliant ■ Non-compliant </div>					

61.4. Analysis of current health performance (2019–20)

Table 61.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
No ADWG exceedances			

³³ Retesting of metals showed no further issues

Table 61.4-b Fluoride distribution performance

Distribution fluoride performance	
Indicator	2019–20
F exceeding 1.5 mg/L	0
Average F concentration range (0.8 mg/L – 1.1 mg/L)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%
<div> ■ Compliant ■ Non-compliant </div>	

Table 61.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	4	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	4	0	100	<0.0003	<0.0003	0.0003
Barium	2	mg/L	4	0	100	0.0039	0.0031	0.0043
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0020	0.0013	0.0026
Lead	0.01	mg/L	4	1	75	<0.0001	<0.0001	0.0001
Manganese	0.5	mg/L	4	0	100	0.0110	0.0031	0.0205
Mercury	0.001	mg/L	4	0	100	0.00004	<0.00003	0.00005
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0012	0.0007	0.0015
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 61.4-d Disinfection by product performance

Disinfection by products – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Dichloroacetic acid	100	µg/L	4	0	100	24	3	37
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	3
Trichloroacetic acid	100	µg/L	4	0	100	30	18	45
Total trihalomethanes	250	µg/L	4	0	100	79	57	102

Table 61.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.79	0.12	1.77
Colour True	HU	15	1	<1	2
pH	Units	6.5 – 8.5	7.57	6.68	8.25
Turbidity	NTU	1	0.32	0.10	8.00

61.5. Analysis of overall system performance (2019–20)

Table 61.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
No system issues or public health warnings issued			

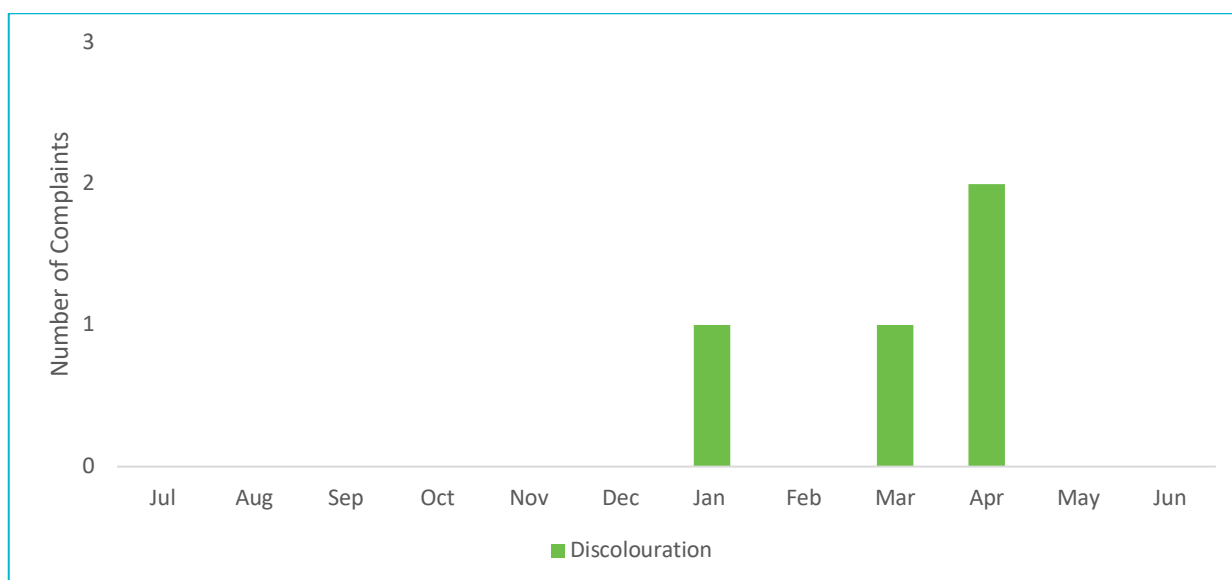


Figure 61.5-b Water quality customer complaints by month and type

