

Annual Drinking Water Quality Report 2018-19

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: 23/09/2019

Document approval and issue notice

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Prepared: (for release)	Donna Hollis (Data Scientist)	Date: 06/09/2019
Endorsed: (for acceptance)	Luc Richard (Leader Water System Performance)	Date: 15/09/2019
Endorsed: (for acceptance)	Frances Smith (Department Manager System Performance & Productivity)	Date: 15/09/2019
Endorsed: (for acceptance)	Ailsa Sypkes (General Manager, Legal and Governance)	Date: 16/09/2019
Approved: (for acceptance)	Michael Brewster (Chief Executive Officer)	Date: 23/09/2019

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Introduction

We are pleased to provide our FY2018-19 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 FY2018-19 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

In FY2018-19 TasWater invested close to \$70.5 million in capital expenditure across a wide range of drinking water projects addressing compliance, growth and renewals. The Regional Towns Water Supply Improvement Program (RTWSIP) was completed, which finalised upgrades to drinking water systems in towns with Public Health Alerts (PHA).

Furthermore, key improvements progressed during the financial year include:

- Commissioning of a new water treatment plant (WTP) and reticulation infrastructure at Rosebery
- Upgrades to the Meredith Dam at Swansea
- Completion of upgrades to Conglomerate Creek Dam in Queenstown
- Improved visibility of WTP critical control points (CCP), which contribute to operational awareness and compliance with the ADWG
- Improved chlorine residual performance in drinking water supply systems.

Drinking water risk reduction

Over the past year we have focused heavily on reducing drinking water risks for our customers. Notable outcomes for the year include:

- The construction of nine water treatment plants and the interconnection of three systems, which led to the removal of all remaining PHAs
- Improved WTP performance through the work of our water system optimisation team
- Improvements to underperforming chlorination systems
- Ongoing improvements in our approach to risk management saw a continuation of the reduction in the number of *E.coli* detections, with two recorded, a reduction from six in the previous year.

Customer impacts

Our focus for this year has been to remove all PHAs and address the key source of customer complaints related to drinking water.

Eleven public health alerts were removed this year through the completion of the RTWSIP.

Two incident-based boil water alerts (TBWAs) were issued during the year (Deloraine and Herrick). Each incident was formally reviewed for the purposes of determining root causes and to facilitate targeted improvements in our 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.

Significant effort has been devoted to address the root cause of drinking water quality complaints. Most complaints relate to discoloured water, or water that has an offensive taste or odour. We have made progress in identifying taste and odour issues more quickly, which has allowed us to implement treatment earlier. While positive gains have been made in reducing complaints there were two major discoloured water events that impacted our customers this year (Burnie and Ulverstone). Work is underway to minimise the risk of these events re-occurring. We are confident that the programs that have been set up will result in significant reductions over the coming years.

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 our customers received microbiologically compliant water.¹ This is the first time this has been the case in Tasmania.

Two systems (Gormanston and Rosebery) experienced issues with metals concentration above ADWG limits in the reticulated water supply. The Gormanston system was removed from the service land layer in 2018 and a service replacement program was finalised, however there remains one customer using the water from the network. As a result of the high metal detection this customer has been advised to not consume the water. The exceedance at Rosebery was detected prior to the new WTP coming online, with all subsequent results being below the ADWG limits.

Coles Bay recorded disinfection-by-products (DBPs) above ADWG health limits. Upgrades to the activated carbon process at the WTP have been completed which addressed the exceedances.

There were no detections of fluoride in laboratory samples above the ADWG limit of 1.5 mg/L. Both the Rocky Creek and Whitehills systems failed to maintain an average dose of fluoride between 0.8-1.1 mg/L. In the case of the Rocky Creek system this was due to control issues related to a new fluoride dosing unit.

Assessment of compliance against the drinking water sampling program (correct sample number and frequency) forms part of our compliance assessment in accordance with the sampling requirements prescribed in the ADWG, TDWQG and our Drinking Water Quality Risk Management Plan (DWQRMP). Two systems (Maydena and Rosebery) were non-compliant against the DBP sampling program.

Looking Forward

Looking ahead, we are planning to invest \$395 million on further improvements to drinking water quality in the three years from FY2019/20 to FY2021/22, through measures such as treatment plant upgrades, system optimisation initiatives and other risk reduction activities. The work is included in our latest Price and Service Plan and funded through revenue and increased borrowings. Projects include:

- King Island Water Infrastructure Upgrade (new WTP at Currie and pipeline to Grassy and associated infrastructure)
- Upgrade to the Bryn Estyn WTP
- Upgrade to Forth WTP
- Upgrade to Leven WTP in Penguin
- Margate water main upgrade
- Coles Bay GAC installation.

¹ This excludes customers outside the service land layer who receive untreated water.

1. Approach to drinking water quality management

Drinking water is our most 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, we adopt the 12-element risk management framework detailed in our DWQRMP, which demonstrates how we comply with the ADWG framework. The DWQRMP identifies risks to drinking water systems and the management practices we adopt 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.

We collect samples and test drinking water supplies 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 5.0.

2. Drinking water supply systems

We source drinking water from 68 catchments located around Tasmania across a range of geographic and climatic zones.

As of the 30 June 2019 we managed 62 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 2019

System	Status	Catchment/ water source	Connections	Population	Treatment Process	Fluoridated supply
Adventure Bay	Potable	Bore	1	1	Disinfection only	No
Bicheno	Potable	Aspley River	999	885	Full treatment	Yes
Bothwell	Potable	Clyde River	314	466	Full treatment	No
Bracknell	Potable	Liffey River	182	426	Full treatment	No
Bridport	Potable	Brid River	1058	1234	Full treatment	Yes
Bronte Park	Potable	Brid River	62	16	Full treatment	No
Bushy Park	Potable	Fenton Line	125	273	Disinfection only	Yes
Cam River	Potable	Cam River	4405	8610	Full treatment	Yes
Campbell Town	Potable	Elizabeth River	789	1187	Full treatment	Yes
Coles Bay	Potable	Saltwater Creek	282	144	Full treatment	No
Conara/Epping	Potable	South Esk	65	154	Full treatment	No
Cornwall	Potable	Fanshaft Spring/ unnamed watercourse	46	47	Full treatment	No
Currie	Potable	Bore	473	706	Full treatment	No
Deep Creek	Potable	Deep Creek	2357	4389	Full treatment	Yes
Deloraine	Potable	Meander River	1301	2529	Full treatment	Yes
Distillery Creek	Potable	Distillery Creek / St Patricks River	14211	26325	Full treatment	Yes
Dover	Potable	Esperance River	715	1011	Full treatment	Yes
Dowlings Creek	Potable	Dowlings Creek	98	205	Full treatment	No
Ellendale	Potable	Jones River	74	118	Full treatment	No
Fentonbury/Westerway	Potable	Lake Fenton	126	264	Full treatment	Yes
Fingal	Potable	South Esk River	401	666	Full treatment	No
Forth River	Potable	Forth River	18679	35551	Full treatment	Yes

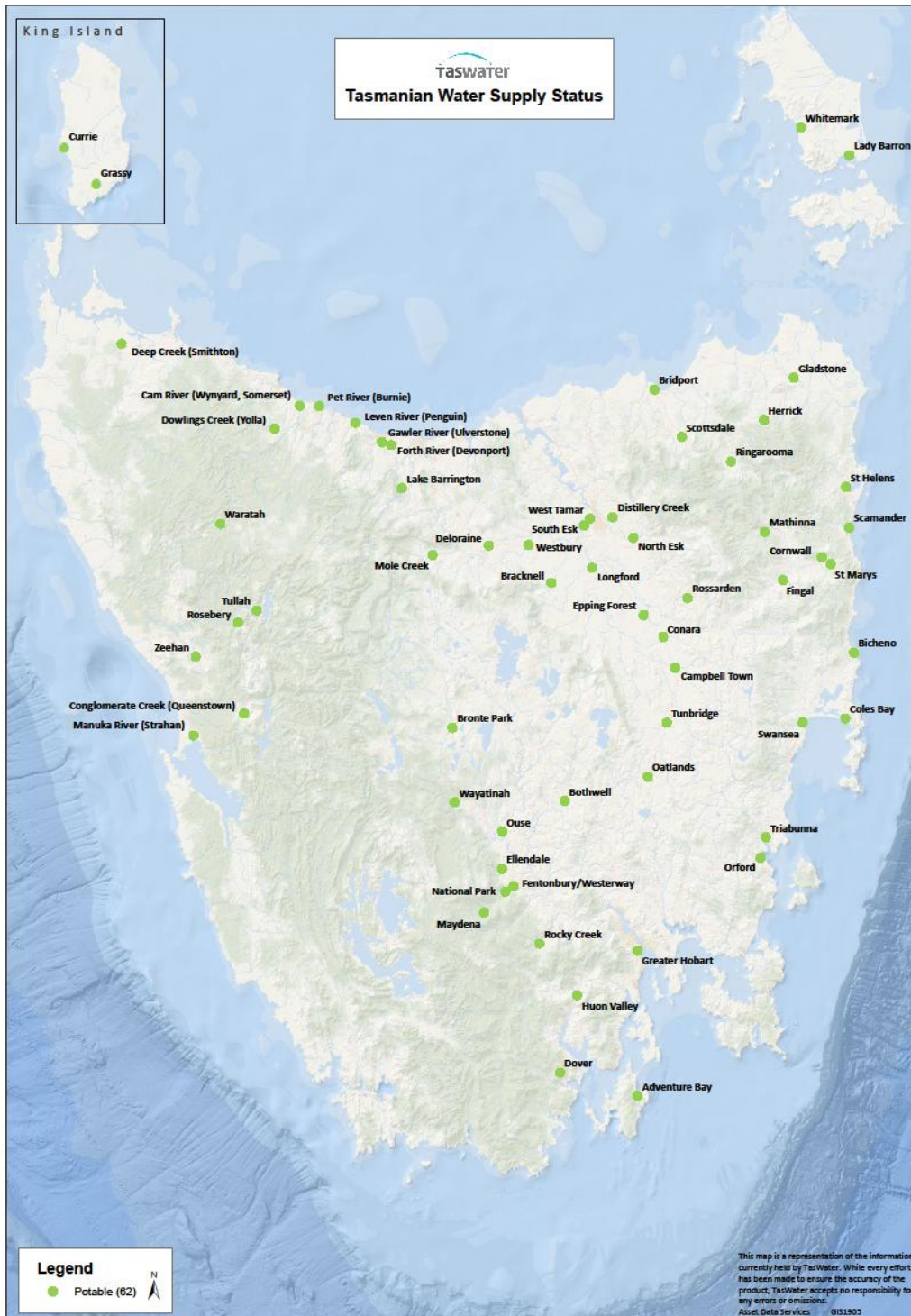
Gawler River	Potable	Gawler River	6089	12337	Full treatment	Yes
Gladstone	Potable	Ringarooma River	81	116	Full treatment	No
Grassy	Potable	Grassy River	132	109	Full treatment	No
Greater Hobart	Potable	Multiple Sources	91990	192957	Full treatment (1)	Yes
					Disinfection only (3)	
Herrick	Potable	Cascade and Frome dams	26	46	Full treatment	No
Huon Valley	Potable	Huon River	4547	9160	Full treatment	Yes
Lady Barron	Potable	Bore	107	93	Full treatment	No
Lake Barrington	Potable	Lake Barrington	1198	2388	Full treatment	Yes
Leven River	Potable	Leven River	2218	4596	Full treatment	Yes
Longford	Potable	Macquarie River	4436	9184	Full treatment	Yes
Manuka River	Potable	Manuka River	572	731	Full treatment	Yes
Mathinna	Potable	South Esk	78	110	Full treatment	No
Maydena	Potable	Unnamed tributary	142	214	Full treatment	No
Mole Creek	Potable	Weir	194	341	Full treatment	No
National Park	Potable	Lake Fenton	33	46	Full treatment	Yes
North Esk	Potable	North Esk	14576	31157	Full treatment	Yes
Oatlands	Potable	Blackman River	509	789	Full treatment	Yes
Orford	Potable	Prosser River	1140	703	Full treatment	Yes
Ouse and Hamilton	Potable	Derwent River	270	390	Full treatment	No
Pet River	Potable	Pet River	9043	17694	Full treatment	Yes
Queenstown	Potable	Conglomerate Creek	1464	1931	Full treatment	Yes
Ringarooma System	Potable	Dunn's Creek Dam/ Ringarooma River	662	964	Full treatment	Yes
Rocky Creek	Potable	Rocky Creek	157	351	Full treatment	Yes
Rosebery	Potable	Mountain Creek / Stitt River	657	692	Full treatment	Yes
Rossarden	Potable	Aberfoyle Creek	55	16	Full treatment	No
Scamander	Potable	Scamander River	508	586	Full treatment	Yes

Scottsdale	Potable	Great Forester River / Brid River	1292	2605	Full treatment	Yes
South Esk	Potable	Lake Trevallyn	5262	11040	Full treatment	Yes
St Helens	Potable	Georges River	1868	2262	Full treatment	Yes
St Marys	Potable	Bore	361	514	Full treatment	Yes
Swansea	Potable	Swan River / Meredith River	880	925	Full treatment	Yes
Triabunna	Potable	Maclaines Creek / Brady's Creek	525	883	Full treatment	Yes
Tullah	Potable	Lake Rosebery	213	150	Full treatment	No
Tunbridge	Potable	Blackman River	103	197	Full treatment	No
Waratah	Potable	Waratah River	146	116	Full treatment	Yes
Wayatinah	Potable	Lake Liapootah	60	32	Full treatment	No
West Tamar	Potable	Lake Trevallyn	9330	19923	Full treatment	Yes
Westbury	Potable	Meander River	1112	2190	Full treatment	Yes
Whitemark	Potable	Pats River	175	187	Full treatment	No
Zeehan	Potable	Parting Creek	597	702	Full treatment	Yes
Total	62		209,571	414,634		

2.3 Location of drinking water supply systems

The location and system status (as of 30 June 2019) of our drinking water systems is shown in Figure 1.

Figure 1: Locations and status of drinking water systems.



2.4 Gormanston service replacement

Following community consultation and agreement from the Tasmanian Economic Regulator (TER) we instigated a service replacement program at Gormanston. All service replacement contracts were finalised in 2018 and Gormanston was removed from the service land layer as of 1 July 2018. However, there remains one customer who receives water from our distribution network. Water quality results for Gormanston have been included in Section B.

2.5 Source water catchments

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

There was a detection of a pesticide (atrazine – 27 ug/L) above the ADWG health limit on 8 August 2018. This was the first detection of atrazine in Lake Trevallyn since sampling for pesticides began in 2015.

An error occurred with the laboratory notification process which resulted in this exceedance not being highlighted, and therefore there was no immediate resample. However, there have been no detections of atrazine in any samples since August 2018.

3. Quality of drinking water for FY2018-19

Routine compliance monitoring of water supply systems was conducted throughout FY2018-19. 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 supply 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 potable 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	BWA lifted	☑	☑	n/a	☑	☑
Bushy Park	Potable		☑	☑	☑	☑	☑
Cam River	Potable		☑	☑	☑	☑	☑
Campbell Town	Potable		☑	☑	☑	☑	☑
Coles Bay	Potable		☑	☑	n/a	☑	☒ ²
Conara	Potable	BWA lifted	☑	☑	n/a	☑	☑
Cornwall	Potable		☑	☑	n/a	☑	☑
Currie	Potable		☑	☑	n/a	☑	☑
Deep Creek	Potable		☑	☑	☑	☑	☑
Deloraine	Potable	TBWA lifted	☑	☑	☑	☑	☑
Distillery Creek	Potable		☑	☑	☑	☑	☑
Dover	Potable		☑	☑	☑	☑	☑
Dowlings Creek	Potable		☑	☑	n/a	☑	☑
Ellendale	Potable		☑	☑	n/a	☑	☑
Fentonbury/Westerway	Potable	BWA lifted	☑	☑	☑	☑	☑
Fingal	Potable		☑	☑	n/a	☑	☑
Forth River	Potable		☑	☑	☑	☑	☑
Gawler River	Potable		☑	☑	☑	☑	☑
Gladstone	Potable		☑	☑	n/a	☑	☑
Grassy	Potable		☑	☑	n/a	☑	☑
Greater Hobart	Potable	BWA lifted (Colebrook)	☑	☑	☑	☑	☑
Herrick	Potable	TBWA lifted	☑	☑	n/a	☑	☑
Huon Valley	Potable	BWA lifted	☑	☑	☑	☑	☑

² Coles Bay had ADWG exceedances in disinfection-by-products and therefore assessed as non-compliant.

Lady Barron	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	n/a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Lake Barrington	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Leven River (Whitehills)	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ³	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Longford	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Manuka River (Strahan)	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mathinna	Potable	BWA lifted	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	n/a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Maydena	Potable		<input checked="" type="checkbox"/> ⁴	<input checked="" type="checkbox"/>	n/a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ⁵
Mole Creek	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	n/a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
National Park	Potable	BWA lifted	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
North Esk	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Oatlands	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Orford	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ouse and Hamilton	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	n/a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pet River	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Queenstown	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ringarooma	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Rocky Creek	Potable	BWA lifted	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ⁶	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Rosebery	Potable		<input checked="" type="checkbox"/> ⁷	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ⁸	<input checked="" type="checkbox"/> ⁹
Rossarden	Potable	PHA lifted	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	n/a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Scamander	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Scottsdale	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
South Esk	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
St Helens	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
St Marys	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Swansea	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Triabunna	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Tullah	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	n/a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Tunbridge	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	n/a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Waratah	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Wayatinah	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	n/a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
West Tamar	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Westbury	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Whitemark	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	n/a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Zeehan	Potable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

³ Leven River (Whitehills) fluoride dosing station was non-compliant against the TDWQG fluoride compliance assessment, refer to Table 3.

⁴ Maydena DBP sampling event missed in quarter 3 of FY19.

⁵ Maydena DBP compliance assessment was deemed 'unknown' due to inadequate samples taken, however all DBP results were below the ADWG limits.

⁶ Rocky Creek fluoride dosing station was non-compliant against the TDWQG fluoride compliance assessment, refer to Table 3.

⁷ Rosebery DBP sampling event missed in quarter 3 of FY19.

⁸ Rosebery was non-compliant for metals due to ADWG exceedances, refer to 6.3.

⁹ Rosebery DBP compliance assessment was deemed 'unknown' due to inadequate samples taken, however all DBP results were below the ADWG limits.

3.2 Microbiological performance

Our FY2018-19 microbiological performance was assessed against two indicators:

- 100.0 per cent (62 of 62) of our systems met microbiological compliance.
- 100.0 per cent of our serviced population achieved microbiological compliance.

Each drinking water system was sampled in accordance with the sampling frequency specified in the compliance sampling program for which the sampling frequency and number of events were met.

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).

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

3.3 Metals performance

Our FY2018-19 metals performance assessment resulted in 61 of 62 systems compliant against the ADWG.

Rosebery was affected by ADWG metals exceedances (manganese and lead). Rosebery had an extensive metals monitoring program, with weekly testing at two compliance sample locations and one operational location. The exceedances at Rosebery was detected prior to the new WTP coming online.

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.

The details of each ADWG metal exceedance are described in Appendix C.

3.4 Disinfection-by-product performance

Our FY2018-19 DBP performance resulted in 61 of 62 systems compliant against the ADWG.

Coles Bay experienced issues with DBP concentrations above the ADWG limits reportable in the compliance sampling program. Implementation of granular activated carbon (GAC) at Coles Bay WTP will assist with high DBP concentrations.

It should be noted that 2 of 62 systems (Maydena and Rosebery) failed to meet the specified sampling program requirements for DBPs with samples missed in Q3 of FY19. Consequently, DBP compliance was assessed as 'unknown' as per TDWQG requirements

Details of each DBP exceedance are described in Appendix D.

3.5 Fluoride performance

At the end of FY2018-19 we managed 38 fluoride dosing stations providing fluoridated water to 38 of 62 systems across Tasmania (refer to Table 1 for which systems are fluoridated).

Our FY2018-19 fluoride performance resulted in 36 of 38 dosing stations compliant against the TDWQG.

As required in the TDWQG, we report on a prescribed fluoride concentration range between, and including, 0.8 milligrams per litre and 1.1 milligrams per litre. Rocky Creek and Leven River (Whitehills) 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
Rocky Creek	Non-compliant (0.7 mg/L)
Leven River (Whitehills)	Non-compliant (0.4 mg/L)

An assessment of the three metrics for fluoride performance is available 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	36	2
90% of all [F] samples within the 0.8-1.1mg/L range	38	0
No sample should exceed 1.5 mg/L (ADWG limit)	38	0

3.6 Temporary BWAs

In the FY2018-19 reporting period two incident-based TBWAs were issued to mitigate risks to the water supply 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
Deloraine	Deloraine supply	07/07/2018 – 12/07/2018	A BWA was issued on 7 July 2018 for the township of Deloraine due to the inability of the water treatment plant (WTP) to treat the highly turbid water that occurred following a significant rainfall event. The WTP was brought back online, the network was flushed, chlorine dosing was carried out and testing for cryptosporidium and giardia was completed. The BWA was lifted on 12 July 2018.
Herrick	Herrick supply	27/12/2018- 02/01/2019	A water sample taken on 27 December 2018 at Herrick Reservoir was positive for <i>E. coli</i> , which resulted in the Department of Health issuing a BWA for the town of Herrick. Samples taken at the reservoir and reticulation sites on 29, 30 and 31 December were clear (i.e. <1.0 MPN/100ml). The BWA was lifted on 2 January 2019.

3.7 Compliance assessment

As previously noted, we must collect samples and test drinking water supply systems in accordance with sampling requirements specified in each drinking water system compliance sample program (refer to 5.2 for further information). The compliance sample program specifies the frequency of sampling required as well as the required number of tests to be performed in a financial year.

Two systems failed to meet sample program requirements for DBPs, whereby sampling was specified quarterly and sampling was missed for one quarter (total 3 out of 4 tests).

Table 6 describes where inadequate sampling against the compliance sample program occurred.

Table 6: Compliance assessment against sampling program

System	Nature of sampling issue	Impact
Maydena	Sampling missed for disinfection-by-products at MASTE59 Maydena/12 Mayne St Sample Point	DBP compliance unknown in Q3 FY19 Overall assessment of DBP compliance 'unknown'
Rosebery	Sampling missed for disinfection-by-products at 174RBSP0701 Rosebery/Blackwood St Sample Point	DBP compliance unknown in Q3 FY19. Overall assessment of DBP compliance 'unknown'

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 affective 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.

We set a minimum operational target of >0.2 mg/L and maximum of 1.0 mg/L; however we aim to have chlorine residual levels reach the customer at a range between 0.3 mg/L to 0.6 mg/L. A review of historic chlorine performance indicated that we were underperforming 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 FY2018-19 reporting period, the average chlorine residual across sampling locations was below the ADWG health guideline level (5 mg/L) however the chlorine residual averages were maintained within the operational range for most systems and all systems were above the critical lower limit of 0.2 mg/L.

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 is commonly caused by turbidity or 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 we do appreciate 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. We encourage customers to contact us so we can assist with identifying the cause. Taste and odour complaints generally emanate from either the source water or distribution network.

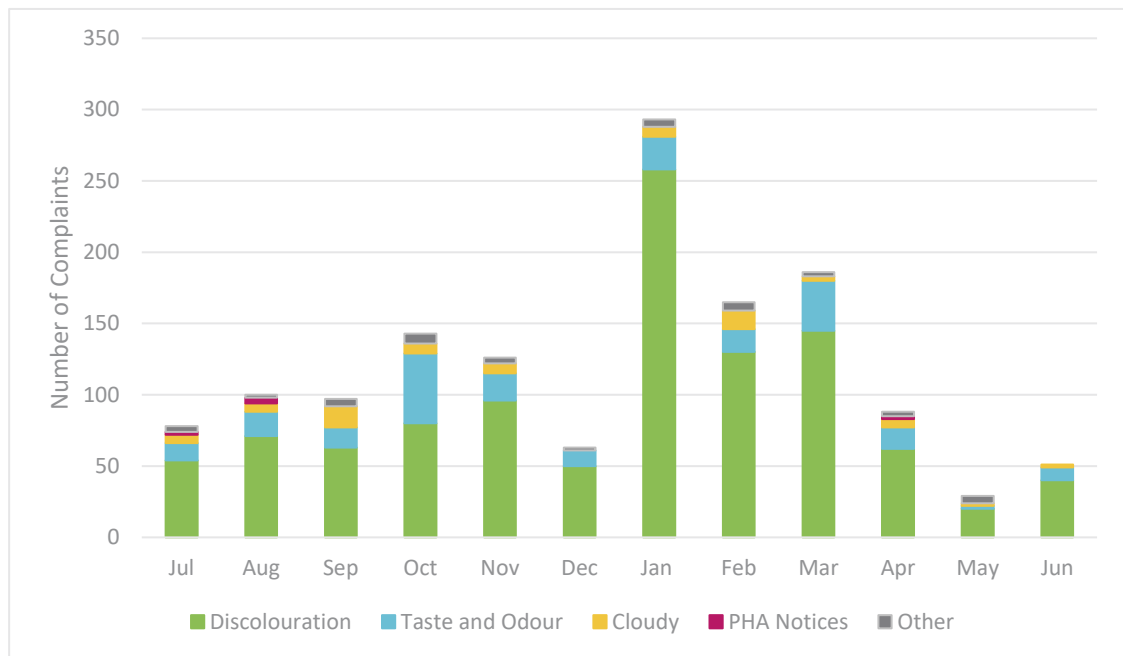
Earthy/musty issues impacting entire towns are typically caused by algae or bacteria metabolites in the source water. At certain periods in their seasonal lifecycle typically in warmer months they can release small amounts of the chemicals 2-Methylisoborneol (MIB) and Geosmin. These compounds may be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

3.10 Customer complaints

Throughout the FY2018-19 reporting period we received a total of 1,419 customer complaints relating to drinking water quality. This figure relates to all complaints received via our call centre or in written form (including Ombudsman enquires).

In this period, 1,069 complaints were received regarding discolouration, 222 regarding taste/odour issues, 74 related to cloudy water, eight related to BWA/PHA, and a further 46 that were unable to be classified.

Figure 2: Types of customer complaints grouped by month for the FY2018-19 reporting period



Development of a customer complaints heat map, comparison of pipe materials and existing flushing programs have assisted us to make informed decisions and develop targeted strategies to reduce water quality complaints going forward.

The focus in FY2019-20 will be to build on the previous year’s learnings with further initiatives better designed to achieve our strategic aim to reduce 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

In 2016 we committed to accelerate our Regional Towns Water Supply Improvement Program (RTWSIP). This program was completed in August 2018, which means there are no longer any PHAs in Tasmania.

Over the next few years we will continue to work on strategic projects at Bryn Estyn, Forth and Leven WTPs to 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. We will also invest in ultra-violet disinfection units at several drinking water systems to improve the robustness of our water treatment plants.

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

4.2 Water system optimisation program

The Water Systems Optimisation Program (WSO) commenced in 2017 to improve our water systems.

Initiatives progressed throughout FY2018-19 include:

- All water treatment plants (WTP) assessed and classified for risk to identify systems that required optimisation to mitigate water quality risks
- Improved management, awareness and monitoring of WTP critical control points (CCP) with a reduction in CCP breaches
- Improved network residual disinfection capability through the maintaining of chlorine in the networks and subsequently operational compliance
- Improved operational procedures for WTPs as well as data visibility and operational reporting contributing to improved operational awareness
- Detail assessments of the majority of our WTPs to assess coagulation and filtration performance. This resulted in prioritisation of upgrades to assets that were found to be in poor condition as well as configurational changes to chemical dosing to improve efficiency. Thirty WTPs were assessed during FY2018-19
- Installation of network chlorine residual monitoring equipment which provides real-time information on network performance and alerts when performance falls below accepted operational limits.

4.3 Water quality portal

To improve reporting transparency we have increased the availability of drinking water data through an interactive map web-based platform (web application). The web application was implemented in December 2018, is updated with compliance results on a monthly basis and reports any exceedances above the ADWG health-based targets. The public interface is designed to simplify the way we share our water quality information.

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 applies to this ADWQR:

- *Public Health Act 1997*
- *Tasmanian Drinking Water Quality Guidelines 2015*
- *Australian Drinking Water Quality Guidelines v3.5 (August 2018)*
- *Fluoridation Act 1968*
- *Fluoridation Regulations 2019*
- *Tasmanian Code of Practice for the Fluoridation of Public Water Supplies 2018.*

Furthermore, our 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 described throughout this document is addressed in detail to meet the requirements specified under the relevant legislation. This ensures our management of each drinking water system meets our 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 (including DBPs and metals)
- Public Health alerts (Temporary Boil Water Alerts, Long Term Boil Water Alerts and Public Health Alerts)
- Fluoridation.
- Compliance sampling program (frequency of testing and number of tests completed).

5.2 Compliance sampling program

Compliance monitoring is conducted in the distribution network and is a verification of the water quality our customers receive. We must collect samples and test our drinking water systems in accordance with sampling requirements prescribed in the ADWG, TDWQG and our DWQRMP.

Drinking water quality monitoring confirms the final quality of water that is supplied to consumers. Therefore, the 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 location and number 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 ADWG methodology.

It should be noted in addition to our compliance sampling program, which samples the water the customer receives, we undertake additional operational, investigation and event-based monitoring, which is outside the scope of this report. However, where an exceedance against ADWG has occurred in operational, investigation or event-based monitoring it is not used for compliance assessment purposes, however it is disclosed in Section B.

5.3 Assessing microbiological compliance

Microbiological compliance is assessed as bacteriological contamination in relation to all *E. coli* samples taken from a system. For a system to be assessed as compliant, greater than 98 per cent of samples over the twelve-month period must be free of *E. coli* as required in the TDWQG.

We also undertake operational, investigative and event-based sampling to better understand our water systems, as directed by the DoH, after heavy rainfalls and sometimes in response to customer complaints. This suite of sampling is included in the compliance determination. Resamples to confirm original results are excluded from the determination as is consistent with the principles of the ADWG.

All instances of non-compliant results from all types of sampling must legally be notified to the DoH. The DoH can require instances whereby we must issue a BWA based on a failed result to protect public health.

Where an exceedance has occurred, it is included in Appendix B of this report.

5.4 Assessing non-microbiological compliance

Our DWQRMP sets out the non-microbiological compliance monitoring programs for each system as required by the TDWQG. These non-microbiological monitoring programs include metals and DBPs, with the number of sampling locations, frequencies and tested parameters differing between systems because of the risk-based approach that has been adopted.

In assessing non-microbiological compliance, only those samples taken against the compliance program are considered and assessed against the relevant ADWG health related limits. In order to be classified as a compliant system, 100 per cent of all compliance samples must comply with the ADWG health limits. Resamples to confirm original results are excluded from the determination as is consistent with the principles of the ADWG.

Laboratory results are reported with a high degree of resolution, sometimes containing up to four significant figures. The ADWG health limits are rounded to one or two significant figures and compliance should be assessed to the same number of significant figures as presented in a specified health limit. To do this a laboratory result needs to be rounded using accepted scientific convention. It is this rounded result that is compared for compliance with the ADWG health limits and not the laboratory reported result. This sometimes means that a reported result from a laboratory is in exceedance of an ADWG health limit, but after rounding the result becomes compliant (refer to Appendix E).

TasWater also undertakes operational, investigative and event-based sampling to better understand their water systems, as directed by the DoH, after heavy rainfalls and sometimes in response to customer complaints. This suite of sampling sits outside of the compliance determination, however in the interests of full disclosure any of these samples that do not comply with the ADWG health limits are listed in Section B of the relevant drinking water supply system.

All instances of non-compliant results based on unrounded laboratory reported data from all types of monitoring must legally be notify to the DoH. The DoH can require instances whereby TasWater must issue a PHA based on a failed result to protect public health.

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. It is consistent with the requirements of the *Fluoridation Act 1968* and *Fluoridation Regulations 2019*.

As the regulated entity we use a fluoride operating target of 1.00 mg/L in treated water. The fluoride target is specified as a concentration rather than a dose rate and we are 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 (clause 9.4.2) 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 (clause 9.4.2) 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 (clause 9.4.2). A system that records a fluoride concentration great 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

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

5.7 Suburbs serviced by water systems

To determine which drinking water supply system services a town or location, please refer to our [Water Quality Portal](#) available on our website.

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 potable systems

System	Treatment process	Detection date	Nature of event	Outcomes
Herrick	Full treatment	27/12/2018	A water sample taken on 27 December 2018 at Herrick Reservoir was positive for <i>E. coli</i> , which resulted in the Department of Health issuing a BWA for the town of Herrick. Samples were taken at the reservoir and reticulation sites on 29, 30 and 31 December and were clear (i.e. <1.0 MPN/100ml). The BWA was lifted on 2 January 2019.	Boil Water alert issued System flushed with clean water Subsequent samples clear of <i>E. coli</i>
Mathinna	Full treatment	05/02/2019	Routine sample taken from the Mathinna Reservoir detected <i>E. coli</i> 36.4 MPN/100mL. The sample taken from the reticulation network on the same day was clear of <i>E. coli</i> . DoH was immediately notified. The WTP had been working as designed and there were no obvious signs of loss of system integrity. Subsequent samples were clear of <i>E. coli</i> .	Reported to DoH
				Subsequent sample clear of <i>E. coli</i>

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

System	Parameter	Detection date	Mitigating actions
Gormanston	Lead	07/02/2019	Compliance sample detected Lead of 0.0246 mg/L in Gormanston. The one customer was advised to not consume the water.
Rosebery	Lead	29/08/2018	Weekly compliance sample detected Lead of 0.0486 mg/L in Rosebery. The system was resampled with no further exceedances identified.
Rosebery	Manganese	21/08/2018	Weekly compliance sample detected manganese of 0.8378 mg/L in Rosebery. The system was resampled with no further exceedances identified.

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	14/08/2018	Total Trihalomethane exceedance in compliance sample at GCSTE86 Coles Bay/Park Esp. New Sample Tap of 346 ug/L	Reported to DoH WTP upgrade project underway to retrofit a GAC filtration plant to improve DBP performance as well eliminate taste and odour issues
		05/12/2018	Total Trihalomethane exceedance in compliance sample at GCSTE86 Coles Bay/Park Esp. New Sample Tap of 274 ug/L	
		08/01/2019	Total Trihalomethane exceedance in compliance sample at GCSTE86 Coles Bay/Park Esp. New Sample Tap of 263 ug/L	

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

Parameter	ADWG Limit (ug/L)	Rounded Limit (ug/L)	Non-reportable exceedance
Dichloroacetic acid	100	150	ADWG exceedance in compliance sample at HRW51W07 Herrick 11 Gladstone Road on 11/09/2018 of 120 ug/L
Total Trihalomethane	250	255	ADWG exceedance in compliance sample at GCSTE86 Coles Bay/Park Esp. New Sample Tap on 12/02/2019 of 251 ug/L
			ADWG exceedance in compliance sample at GCSTE86 Coles Bay/Park Esp. New Sample Tap on 19/03/2019 of 254 ug/L
			ADWG exceedance in compliance sample at GCSTE86 Coles Bay/Park Esp. New Sample Tap on 02/04/2019 of 251 ug/L
Trichloroacetic acid	100	150	ADWG exceedance in compliance sample at EDSTE62 Ellendale/Fire Station Carpark of 116 ug/L
			ADWG exceedance in compliance sample at EDSTE62 Ellendale/Fire Station Carpark of 100 ug/L
			ADWG exceedance in compliance sample at HRW51W07 Herrick/11 Gladstone Road of 144 ug/L

7.0 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
CAPEX	Capital expenditure
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
Fluoride operational range	Refers to the target operating concentration of fluoride that is set at between 0.8 mg/L and 1.1 mg/L
FY	Financial year
GAC	Granular activated carbon
HACCP	Hazard Analysis Critical Control Point
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
NHMRC	National Health and Medical Research Council
Notification	Is the process of informing the Director of Public Health or a Public Health Officer within a defined timeframe of a non-compliant result
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
RTWSP	Regional Towns Water Supply Program
Reporting Year	Same as financial year (i.e. 1 July to 30 June)
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>)
TER	Tasmanian Economic Regulator
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 2018-19

Section B - Summary



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Acronyms and terms of reference

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

1. Adventure Bay drinking water system

1.1. System summary (2018–19)

Adventure Bay drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	1
Population serviced	1
Fluoride	n/a

Performance overview against health targets (2018–19)					
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

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Regional Towns Water Supply Program (J19629)	Major WTP improvements	In progress	November 2019	\$200,000

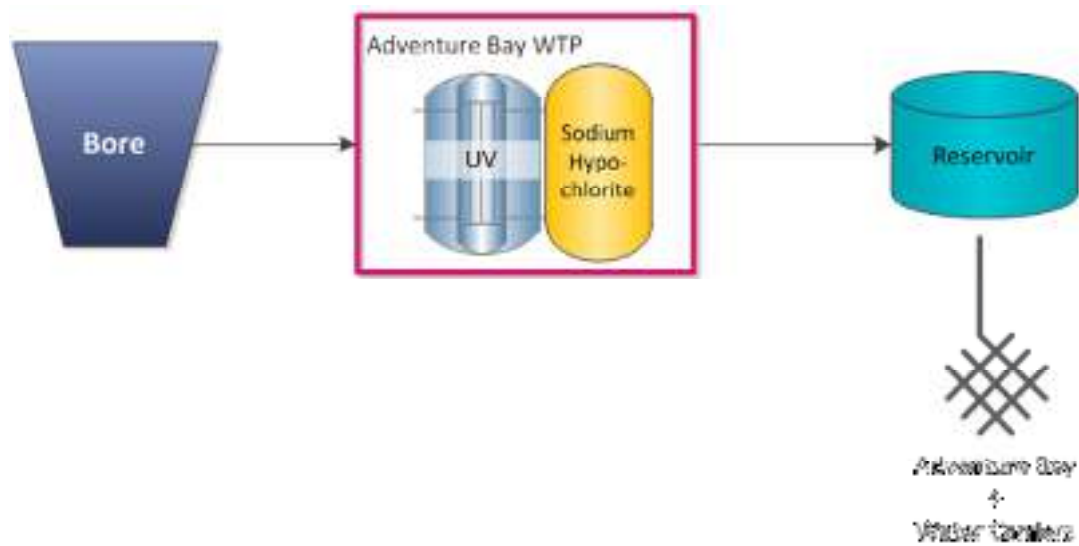


Figure 1.1-a Adventure Bay system schematic



Figure 1.1-b Map of Adventure Bay monitoring system

1.2. Summary of annual reticulation compliance (2018–19)

Table 1.2-a Sampling program

Planned sampling program (2018–19)							
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 (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100.0%	100.0%	100.0%	98.0%	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%

■ Compliant ■ Non-compliant

1.4. Analysis of current health performance (2018–19)

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	<0.0003
Barium	2	mg/L	4	0	100	0.0010	0.0008	0.0013
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	0.0011
Copper	2	mg/L	4	0	100	0.0329	0.0191	0.0393
Lead	0.01	mg/L	4	0	100	0.0006	0.0005	0.0007
Manganese	0.5	mg/L	4	0	100	0.0103	0.0087	0.0127
Mercury	0.001	mg/L	4	0	100	<0.00003	<0.00003	<0.00003
Molybdenum	0.05	mg/L	4	0	100	0.0009	0.0007	0.0011
Nickel	0.02	mg/L	4	0	100	0.0009	0.0006	0.0011
Selenium	0.01	mg/L	4	0	100	0.0001	<0.0001	0.0001

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	15	8	23
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	14.5	<1	32
Total trihalomethanes	250	µg/L	4	0	100	50	6	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	0.18	0	0.55
Colour True	HU	15	5.25	3	6
pH	Units	6.5 – 8.5	6.88	5.96	7.29
Turbidity	NTU	1	0.44	0.15	1.02

1.5. Analysis of overall system performance (2018–19)

Table 1.5-a Summary of system issues/public health alerts with notification details

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

2. Bicheno drinking water system

2.1. System summary (2018–19)

Bicheno drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	999
Population serviced	885
Fluoride	Sodium Fluoride

Performance overview against health targets (2018–19)					
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

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Bicheno	Instrumentation upgrade	Started	July 2019	\$83,000

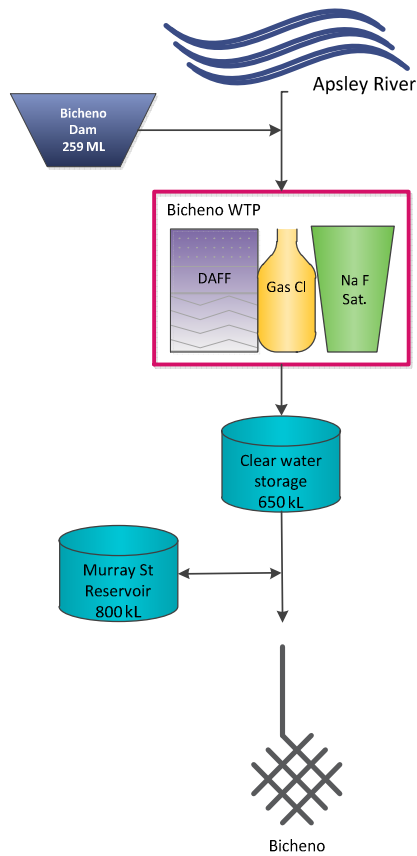


Figure 2.1-a Bicheno system schematic

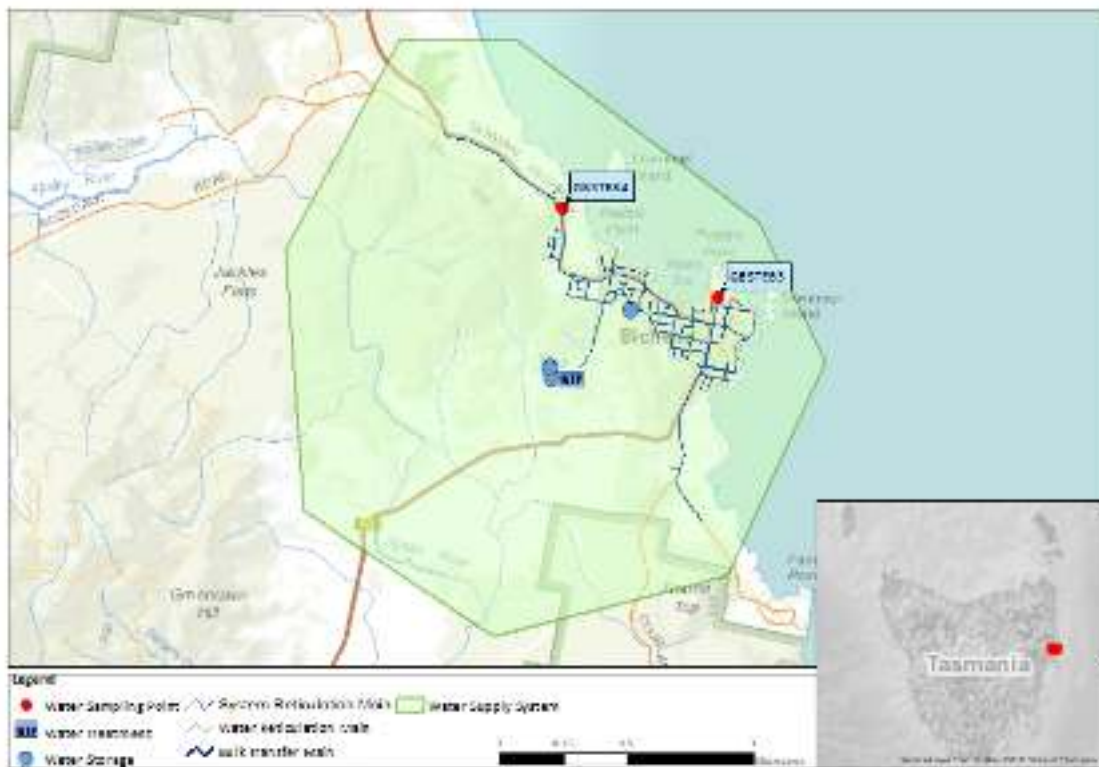


Figure 2.1-b Map of Bicheno monitoring system

2.2. Summary of annual reticulation compliance (2018–19)

Table 2.2-a Sampling program

Planned sampling program (2018–19)							
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	n/a
Number Planned Samples		52	4	4	48	4	n/a
Number Samples Tested		52	4	4	48	4	n/a

2.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

2.4. Analysis of current health performance (2018–19)

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	2018–19
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%

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	<0.0003
Barium	2	mg/L	4	0	100	0.0027	0.0024	0.0030
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Copper	2	mg/L	4	0	100	0.0061	0.0035	0.0092
Lead	0.01	mg/L	4	0	100	0.0002	0.0001	0.0002
Manganese	0.5	mg/L	4	0	100	0.0009	0.0005	0.0018
Mercury	0.001	mg/L	4	0	100	<0.00003	<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	0.0002

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	2.8	2	4
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	2.3	2	3
Total trihalomethanes	250	µg/L	4	0	100	31	31	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	0.41	0.07	0.79
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	6.92	6.41	7.46
Turbidity	NTU	1	0.94	0.10	9.85

2.5. Analysis of overall system performance (2018–19)

Table 2.5-a Summary of system issues/public health alerts with notification details

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

3. Bothwell drinking water system

3.1. System summary (2018–19)

Bothwell drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	314
Population serviced	466
Fluoride	n/a

Performance overview against health targets (2018–19)					
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

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	6	Discolouration, taste and odour

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Regional Towns Water Supply Program (J19625)	Upgrade to Bothwell WTP	Not started	TBD	TBD

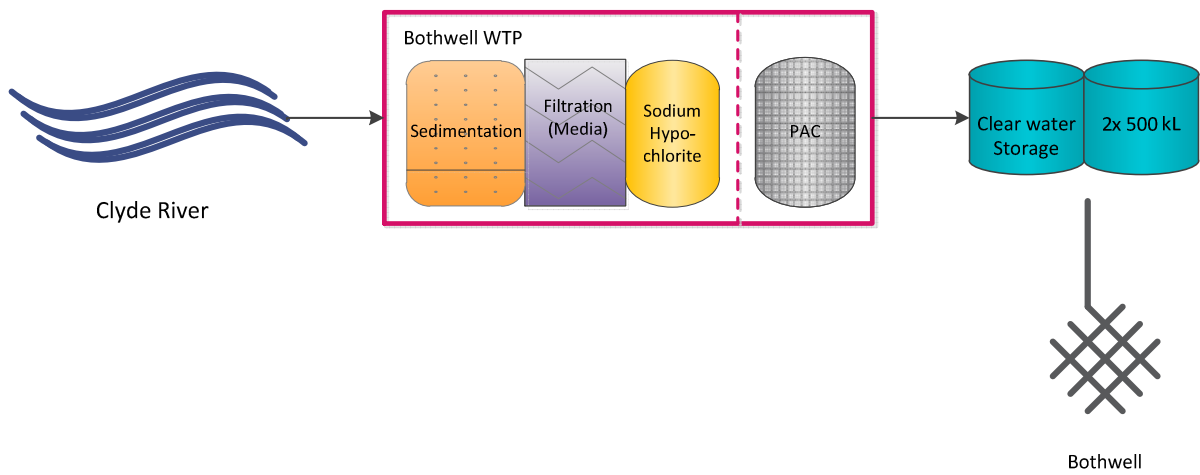


Figure 3.1-a Bothwell system schematic

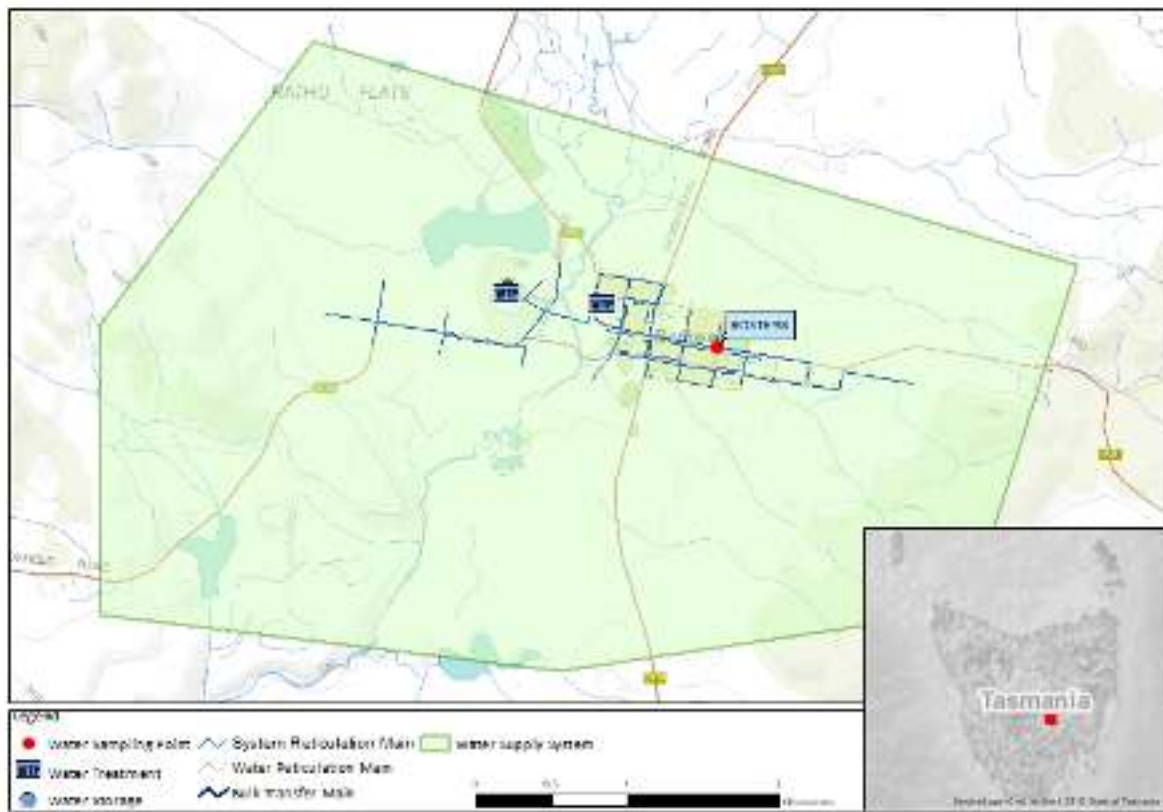


Figure 3.1-b Map of Bothwell monitoring system

3.2. Summary of annual reticulation compliance (2018–19)

Table 3.2-a Sampling program

Planned sampling program (2018–19)							
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		52	4	4	n/a	4	n/a
Number Samples Tested		52	4	4	n/a	4	n/a

3.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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

3.4. Analysis of current health performance (2018–19)

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	0.015	0.0099	0.0206
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	0.0027	0.0020	0.0035
Lead	0.01	mg/L	4	0	100	0.0001	<0.0001	0.0001
Manganese	0.5	mg/L	4	0	100	0.0069	0.0013	0.0131
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	0.0005	0.0004	0.0006
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	6.3	4	9
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	7.5	4	12
Total trihalomethanes	250	µg/L	4	0	100	59	33	100

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	0.46	0.08	0.98
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.1	6.8	7.5
Turbidity	NTU	1	0.36	0.07	4.00

3.5. Analysis of overall system performance (2018–19)

Table 3.5-a Summary of system issues/public health alerts with notification details

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

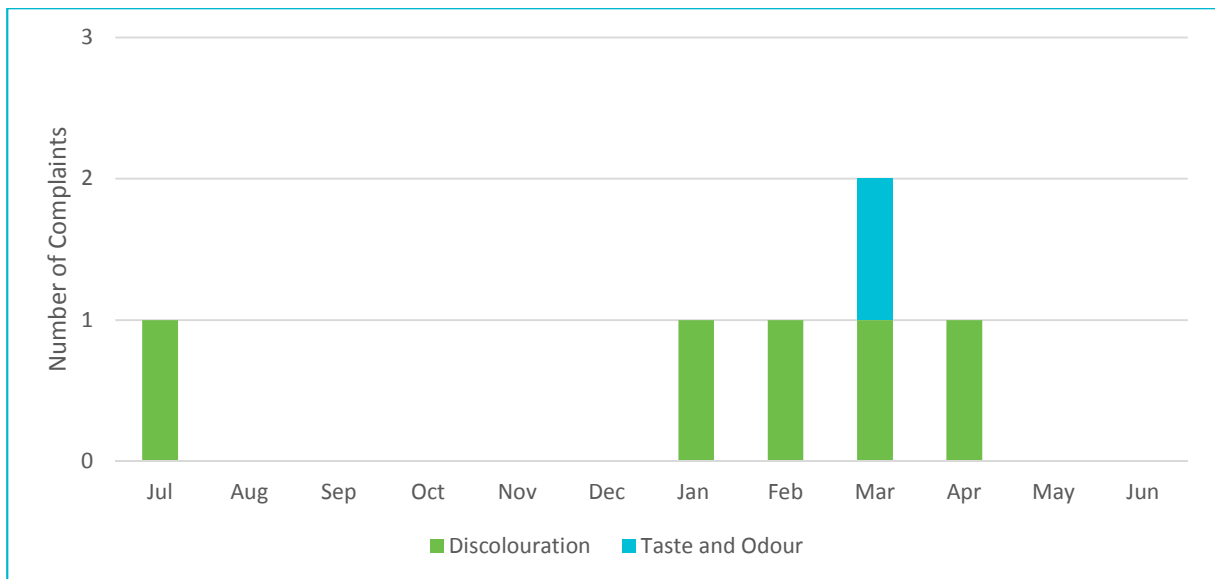


Figure 3.5-b Water quality customer complaints by month and type

4. Bracknell drinking water system

4.1. System summary (2018–19)

Bracknell drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	182
Population serviced	426
Fluoride	n/a

Performance overview against health targets (2018–19)					
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

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Regional Towns Water Supply Program	UV system upgrade	In progress	TBA	TBA

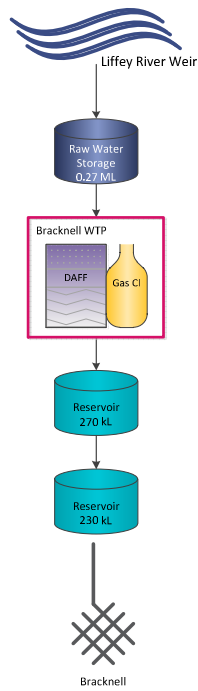


Figure 4.1-a Bracknell system schematic

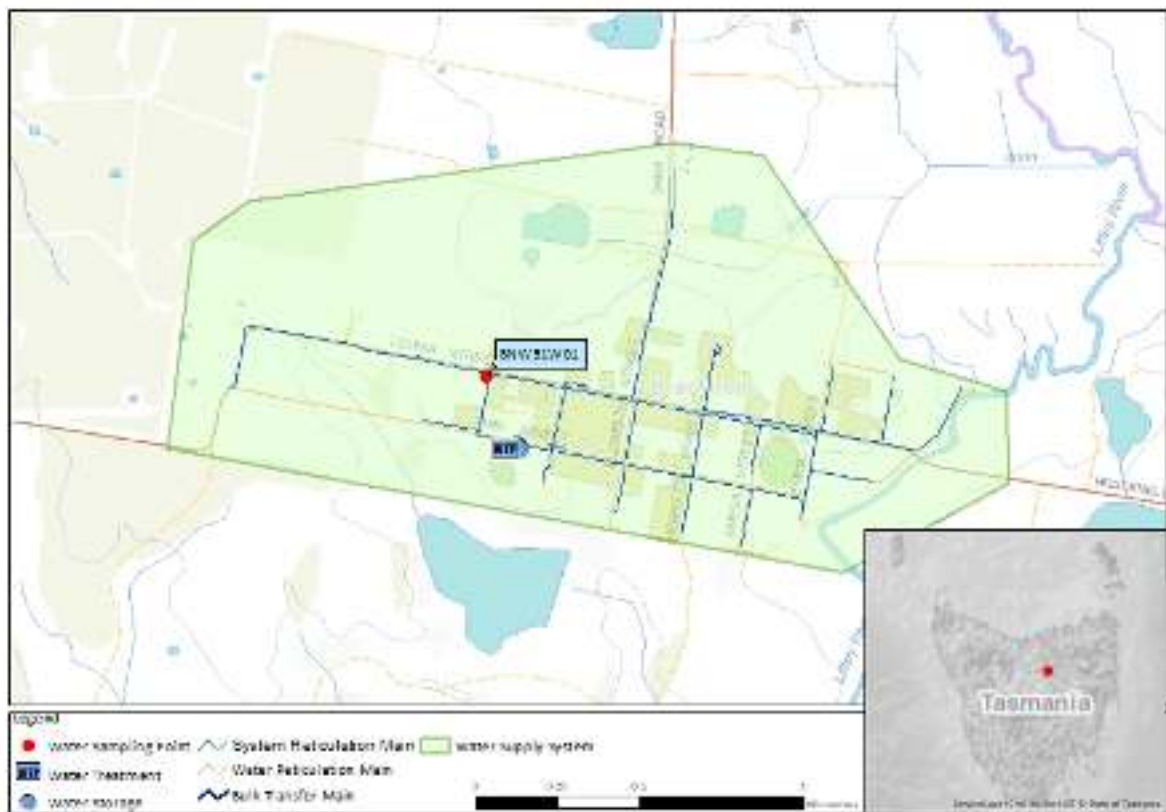


Figure 4.1-b Map of Bracknell monitoring system

4.2. Summary of annual reticulation compliance (2018–19)

Table 4.2-a Sampling program

Planned sampling program (2018–19)							
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		52	4	4	n/a	4	n/a
Number Samples Tested		52	4	4	n/a	4	n/a

4.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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

4.4. Analysis of current health performance (2018–19)

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	0.0071	0.0058	0.0098
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	0.0072	0.0024	0.0134
Lead	0.01	mg/L	4	0	100	0.0005	0.0002	0.0006
Manganese	0.5	mg/L	4	0	100	0.0033	0.0013	0.0051
Mercury	0.001	mg/L	4	0	100	0.00004	<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	0.0002
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	7.3	6	9
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	9.5	8	11
Total trihalomethanes	250	µg/L	4	0	100	22	19	26

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	0.91	0.56	1.38
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.26	6.52	7.7
Turbidity	NTU	1	0.24	0.07	0.58

4.5. Analysis of overall system performance (2018–19)

Table 4.5-a Summary of system issues/public health alerts with notification details

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

5. Bridport drinking water system

5.1. System summary (2018–19)

Bridport drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	1058
Population serviced	1234
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
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 (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	21	Discolouration, taste and odour, cloudy

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Bridport	Upgrade to WTP PAC system	In progress	January 2020	\$160,000
Bridport	Instrumentation upgrade	In progress	July 2019	\$60,000

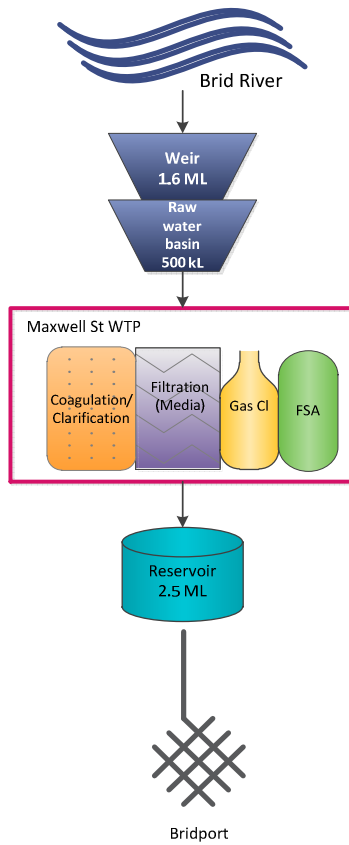


Figure 5.1-a Bridport system schematic

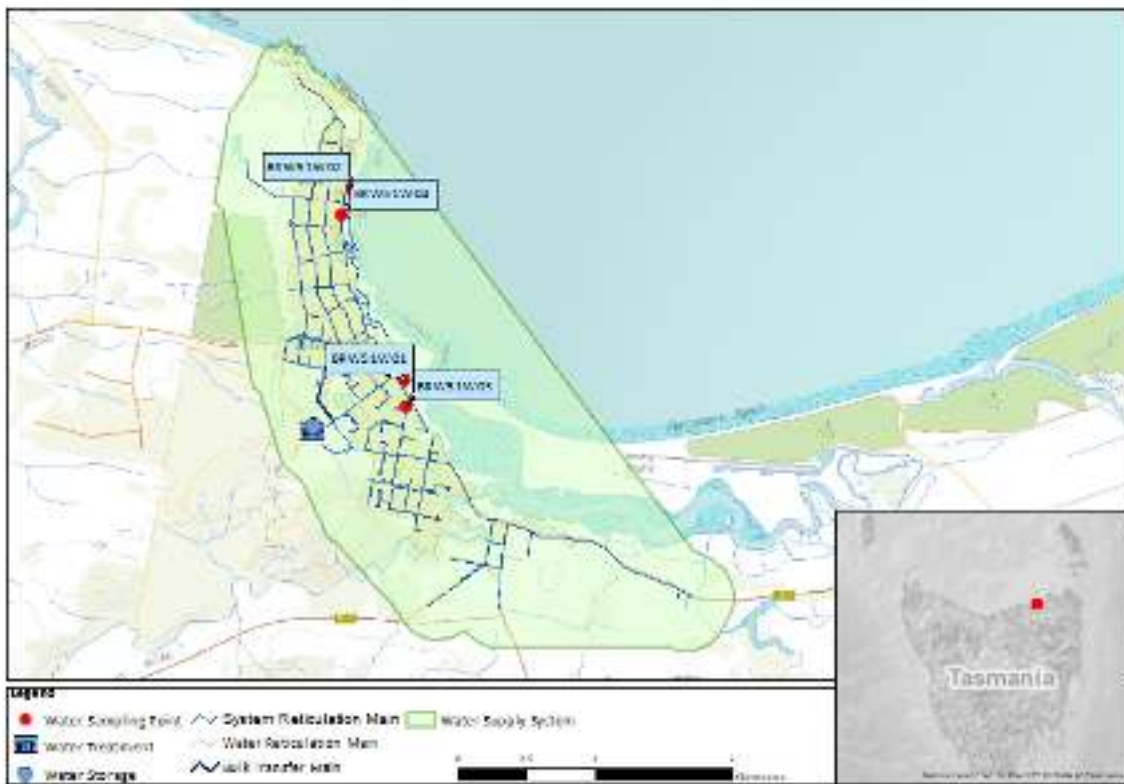


Figure 5.1-b Map of Bridport monitoring system

5.2. Summary of annual reticulation compliance (2018–19)

Table 5.2-a Sampling program

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Bridport/Visitor Centre	BRW51W01 ¹	W	Q	Q	M	Q	n/a
Bridport/Old Pier Bentley St	BRW51W02 ¹	W	n/a	n/a	n/a	n/a	n/a
Bridport/Emma Street	BRWS1W03 ²	W	Q	Q	2M	Q	n/a
Bridport/Bentley St down from Pier	BRWS1W04 ²	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 (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

¹ Until 28th August 2018

² From 28th August 2018, location more suitable

5.4. Analysis of current health performance (2018–19)

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	2018–19
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 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	0.0169	0.0143	0.0186
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	0.0073	0.0062	0.0094
Lead	0.01	mg/L	4	0	100	0.0010	0.0007	0.0014
Manganese	0.5	mg/L	4	0	100	0.0165	0.0121	0.0238
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	0.0004	0.0003	0.0005
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	4	2	7
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	50	32	65
Total trihalomethanes	250	µg/L	4	0	100	4	2	6

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	0.71	0.02	1.34
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.29	6.72	7.71
Turbidity	NTU	1	0.39	0.06	1.76

5.5. Analysis of overall system performance (2018–19)

Table 5.5-a Summary of system issues/public health alerts with notification details

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

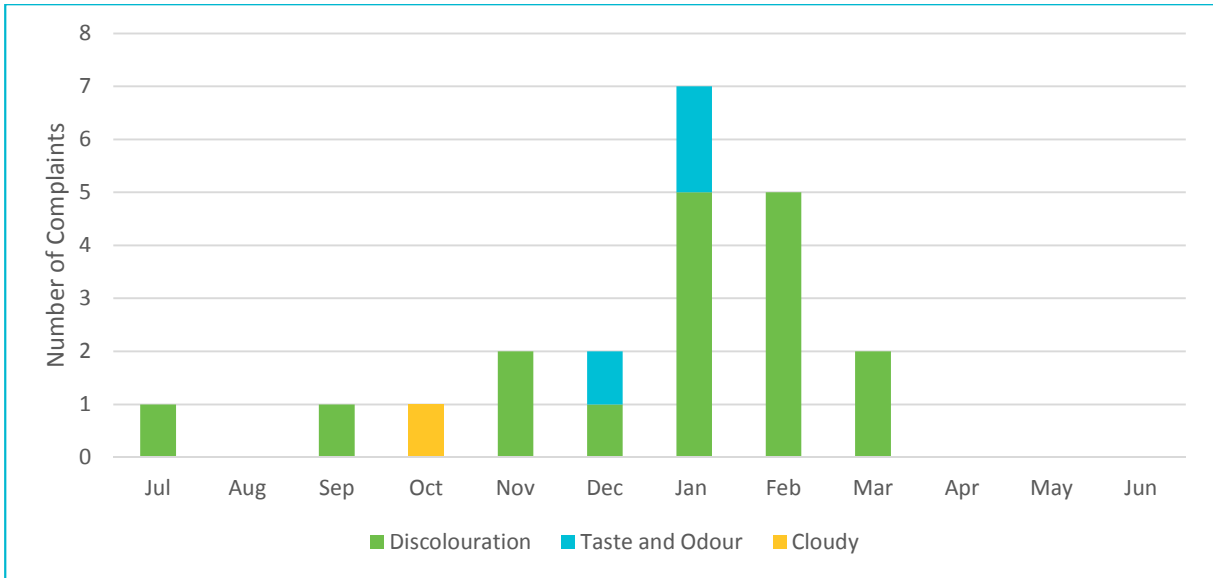


Figure 5.5-b Water quality customer complaints by month and type

6. Bronte Park drinking water system

6.1. System summary (2018–19)

Bronte Park drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	62
Population serviced	16
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	62	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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	1	Subject to BWA until August 2018
Notifications made to DoH	1	BWA removal
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP and associated infrastructure	WTP and associated infrastructure	Complete	Complete	\$2,990,000
Reticulation upgrade	Upgrade to the retic systems	Complete	Complete	\$626,000

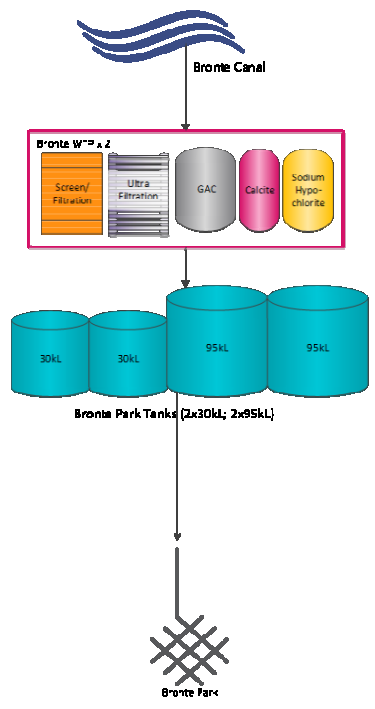


Figure 6.1-a Bronte Park system schematic

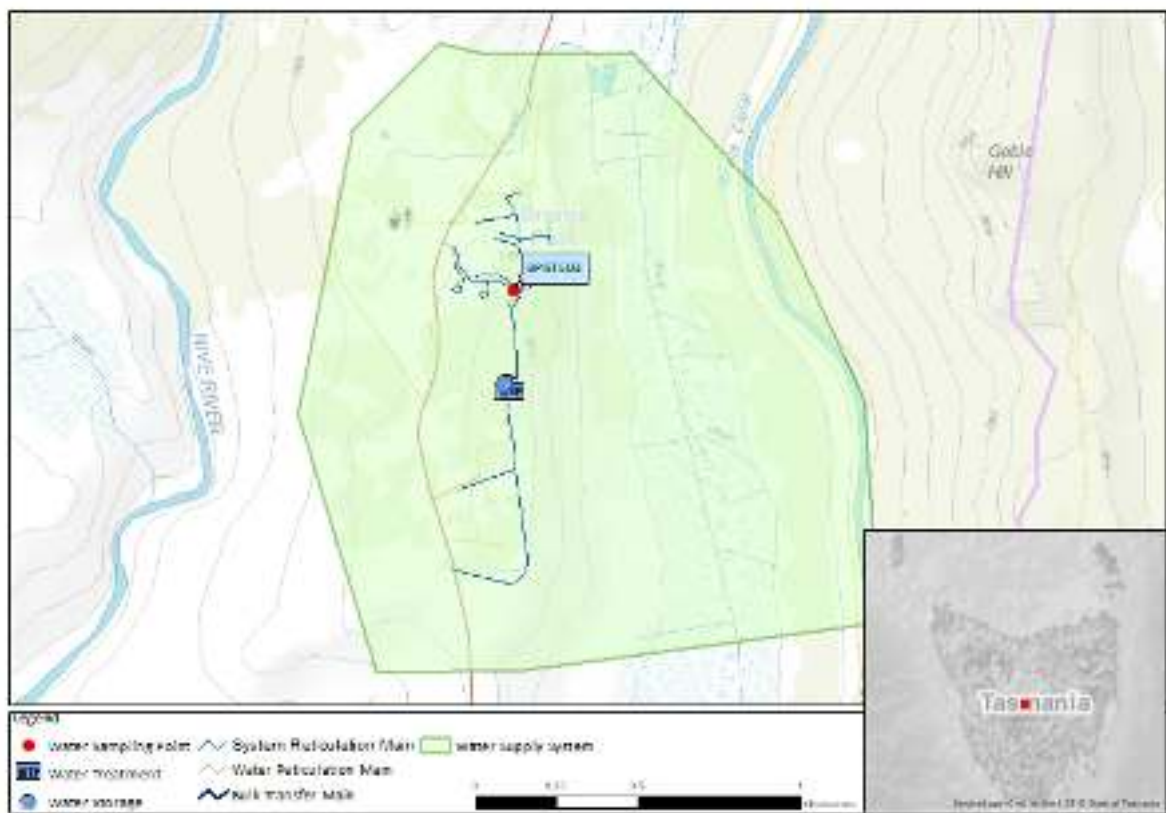


Figure 6.1-b Map of Bronte Park monitoring system

6.2. Summary of annual reticulation compliance (2018–19)

Table 6.2-a Sampling program

Planned compliance sampling program (2018–19)							
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		52	4	4	n/a	4	n/a
Number Samples Tested		55	4	4	n/a	4	n/a

6.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	n/a	n/a	80.8%	87.3%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	n/a	n/a	100.0%	100.0%	100.0%
Disinfection by products	n/a	n/a	91.7%	100.0%	100.0%

■ Compliant ■ Non-compliant

6.4. Analysis of current health performance (2018–19)

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	0.0166	0.0018	0.0324
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	0.0071	0.0045	0.0095
Lead	0.01	mg/L	4	0	100	0.0006	0.0004	0.0007
Manganese	0.5	mg/L	4	0	100	0.0049	0.0022	0.0067
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	0.0002	0.0001	0.0002
Selenium	0.01	mg/L	4	0	100	0.0001	<0.0001	0.0002

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	8	2	16
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	18	10	33
Total trihalomethanes	250	µg/L	4	0	100	11	1	24

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	0.83	0.41	1.15
Colour True	HU	15	<1	<1	2
pH	Units	6.5 – 8.5	7.63	7.18	8.20
Turbidity	NTU	1	0.25	0.12	0.54

6.5. Analysis of overall system performance (2018–19)

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

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
14/08/2018	BWA lifted	✓	✓

7. Bushy Park drinking water system

7.1. System summary (2018–19)

Bushy Park drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	125
Population serviced	273
Fluoride	Via Fenton Line

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	137	0
Fluoride	100.0%	<input checked="" type="checkbox"/>	100.0%	48	0
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	10	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	10	0

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	1	New system
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Water Supply Upgrade	Construction of new WTP and upgrade for towns of Gretna, Glenora and Bushy Park	Complete	April 2019	\$7,650,000

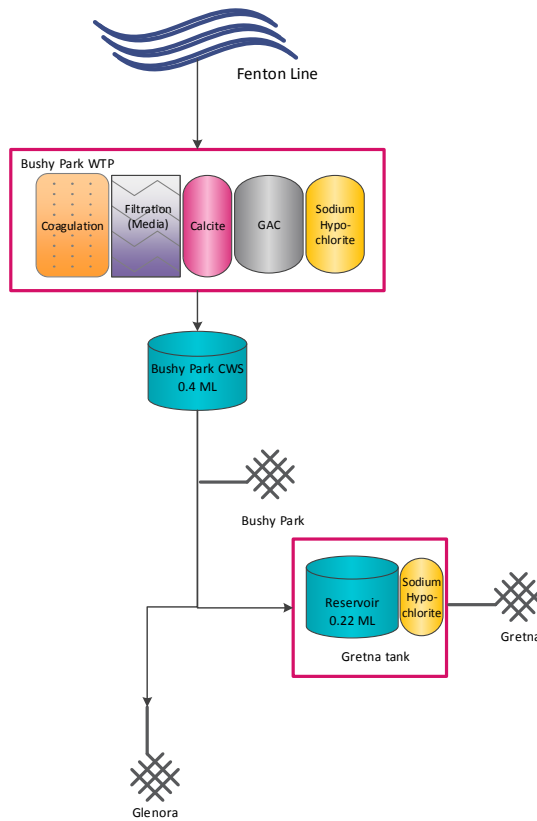


Figure 7.1-a Bushy Park system schematic

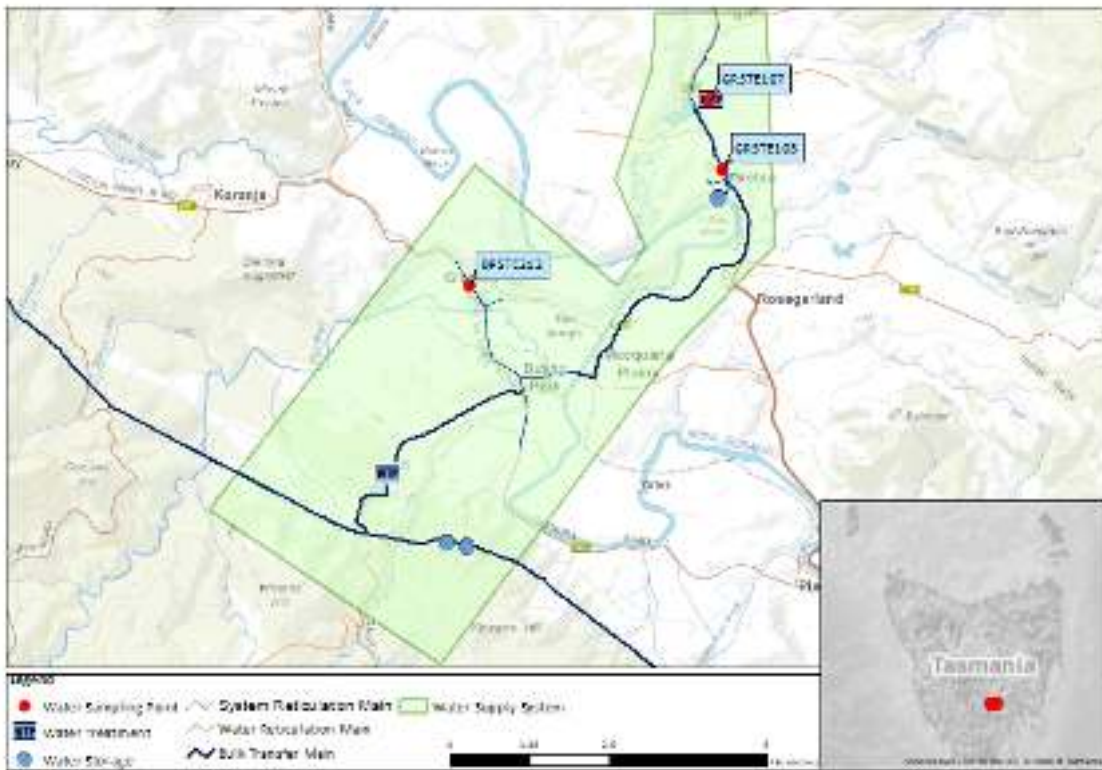


Figure 7.1-b Map of Bushy Park monitoring system

7.2. Summary of annual reticulation compliance (2018–19)

Table 7.2-a Sampling program

Planned compliance sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Glenora/Glenora Fire Station	BPSTE212 ³	W	Q	Q	n/a	Q	n/a
Gretna/CWS	GRSTE107 ⁴	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		104	10	10	n/a	10	n/a
Number Samples Tested		137	10	10	n/a	10	n/a

7.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	n/a	n/a	n/a	n/a	100.0%
Fluoride	n/a	n/a	n/a	n/a	100.0% ⁵
Metals	n/a	n/a	n/a	n/a	100.0%
Disinfection by products	n/a	n/a	n/a	n/a	100.0%

■ Compliant ■ Non-compliant

³ From 13th November 2018

⁴ Gretna was amalgamated to Bushy Park on 13th November 2018

⁵ Fluoride station on Fenton line (see Fentonbury/Westerway)

7.4. Analysis of current health performance (2018–19)

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	10	0	100	<0.0005	<0.0005	<0.0005
Arsenic	0.01	mg/L	10	0	100	<0.0003	<0.0003	<0.0003
Barium	2	mg/L	10	0	100	0.0047	0.0025	0.0083
Cadmium	0.002	mg/L	10	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	10	0	100	0.0001	<0.0001	0.0001
Copper	2	mg/L	10	0	100	0.0103	0.0027	0.0190
Lead	0.01	mg/L	10	0	100	0.0005	0.0001	0.0012
Manganese	0.5	mg/L	10	0	100	0.0006	0.0003	0.0016
Mercury	0.001	mg/L	10	0	100	0.00006	<0.00003	0.00019
Molybdenum	0.05	mg/L	10	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	10	0	100	0.0002	<0.0001	0.0004
Selenium	0.01	mg/L	10	0	100	<0.0001	<0.0001	<0.0001

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	10	0	100	9	2	32
Monochloroacetic acid	150	µg/L	10	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	10	0	100	13	4	44
Total trihalomethanes	250	µg/L	10	0	100	33	20	57

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	0.67	0.29	2.20
Colour True	HU	15	1.13	<1	3
pH	Units	6.5 – 8.5	7.37	6.63	7.95
Turbidity	NTU	1	0.28	0	0.75

7.5. Analysis of overall system performance (2018–19)

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

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
13/11/2018	Amalgamation of Gretna, Glenora and Bushy Park to form new Bushy Park system	Y	Y

8. Cam River drinking water system

8.1. System summary (2018–19)

Cam River drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	4405
Population serviced	8610
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	208	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 (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	25	Discolouration, taste and odour, cloudy, other

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

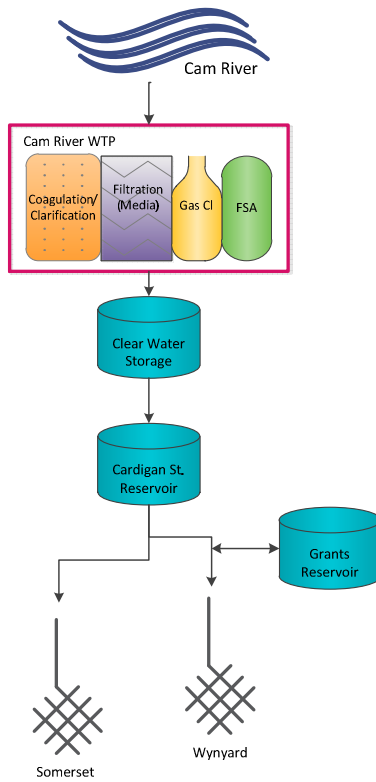


Figure 8.1-a Cam River system schematic

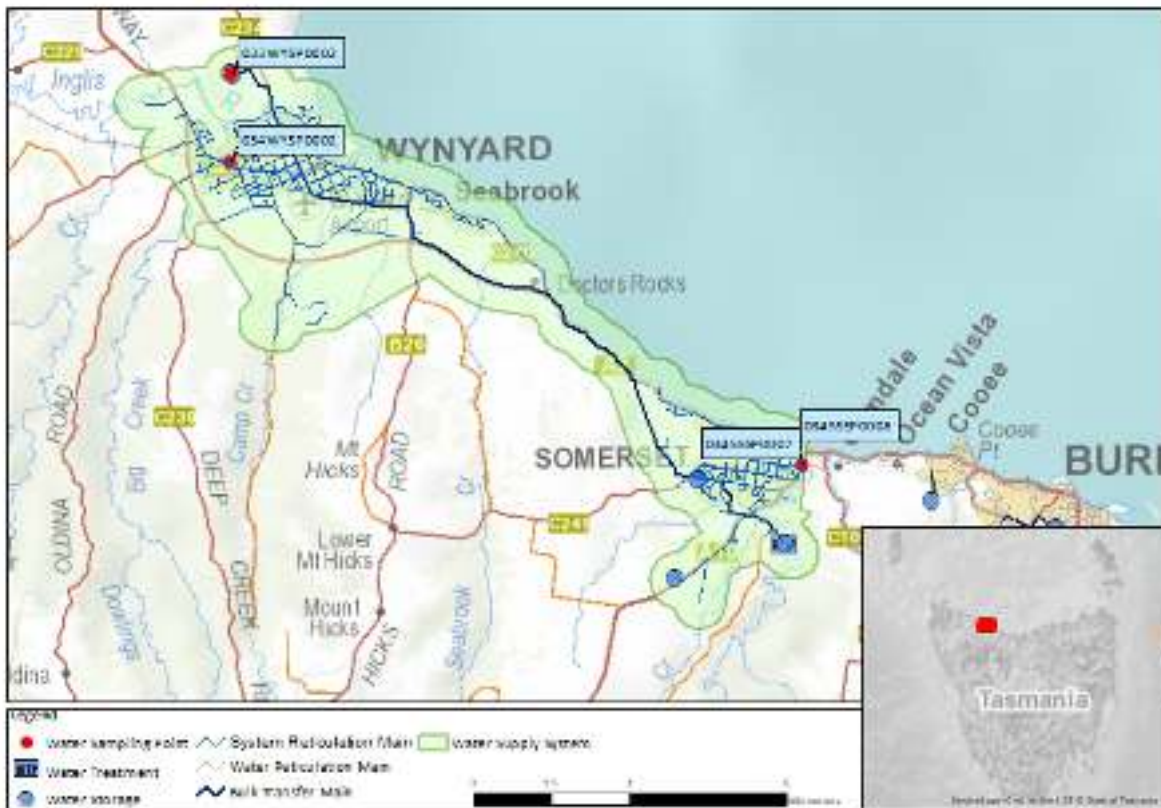


Figure 8.1-b Map of Cam River monitoring system

8.2. Summary of annual reticulation compliance (2018–19)

Table 8.2-a Sampling program

Planned sampling program (2018–19)							
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	W	Q	Q	2M	n/a	n/a
Wynyard/Big Creek Sampling Point	034WYSP0002	W	Q	Q	2M	Q	n/a
Number Planned Samples		208	8	8	48	4	n/a
Number Samples Tested		208	8	8	48	4	n/a

8.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	99.7%	99.4%	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

8.4. Analysis of current health performance (2018–19)

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	2018–19
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	92%

■ Compliant ■ Non-compliant

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	0.0069	0.0051	0.0088
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	0.0018	0.0005	0.0042
Lead	0.01	mg/L	8	0	100	0.0002	<0.0001	0.0003
Manganese	0.5	mg/L	8	0	100	0.0073	0.0015	0.0308
Mercury	0.001	mg/L	8	0	100	0.00005	<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	0.0006	0.0004	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	7	3	16
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	11	6	19
Total trihalomethanes	250	µg/L	8	0	100	60	40	84

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	0.67	0.12	1.20
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.32	0.29	8.4
Turbidity	NTU	1	0.31	0.06	0.75

8.5. Analysis of overall system performance (2018–19)

Table 8.5-a Summary of system issues/public health alerts with notification details

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

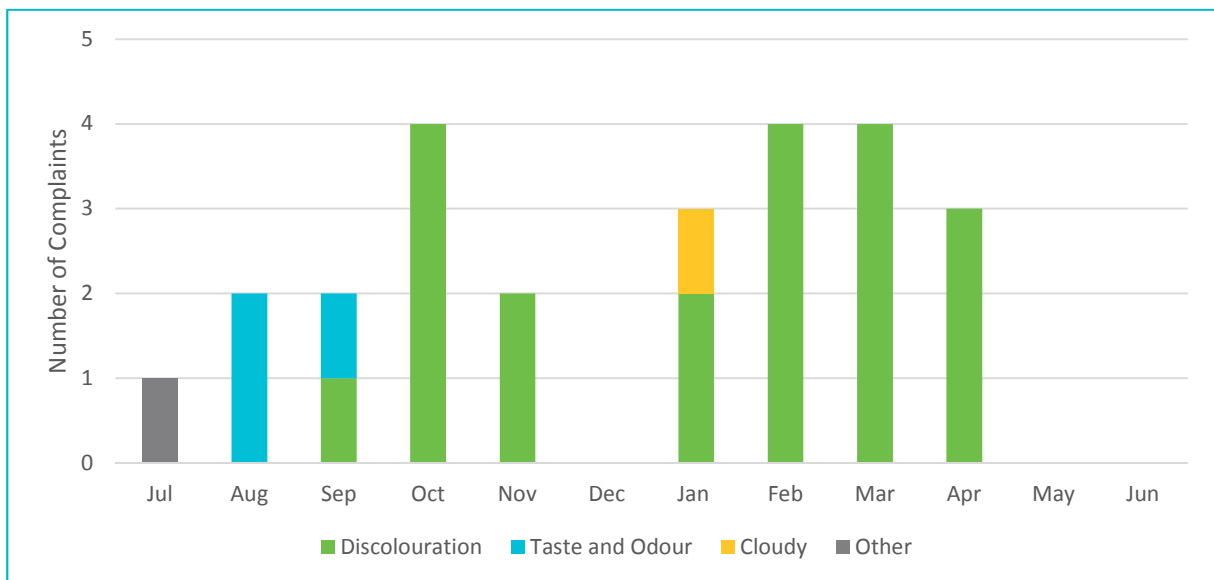


Figure 8.5-b Water quality customer complaints by month and type

9. Campbell Town drinking water system

9.1. System summary (2018–19)

Campbell Town drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	789
Population serviced	1187
Fluoride	Sodium Fluoride

Performance overview against health targets (2018–19)					
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 (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	5	Discolouration, taste and odour, cloudy

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Campbell Town WTP	Instrumentation upgrade to WTP	In progress	January 2020	\$20,000

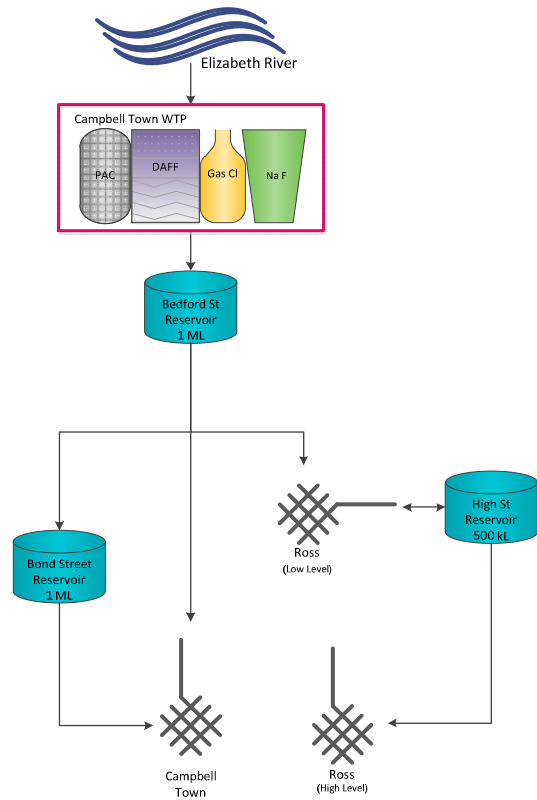


Figure 9.1-a Campbell Town system schematic

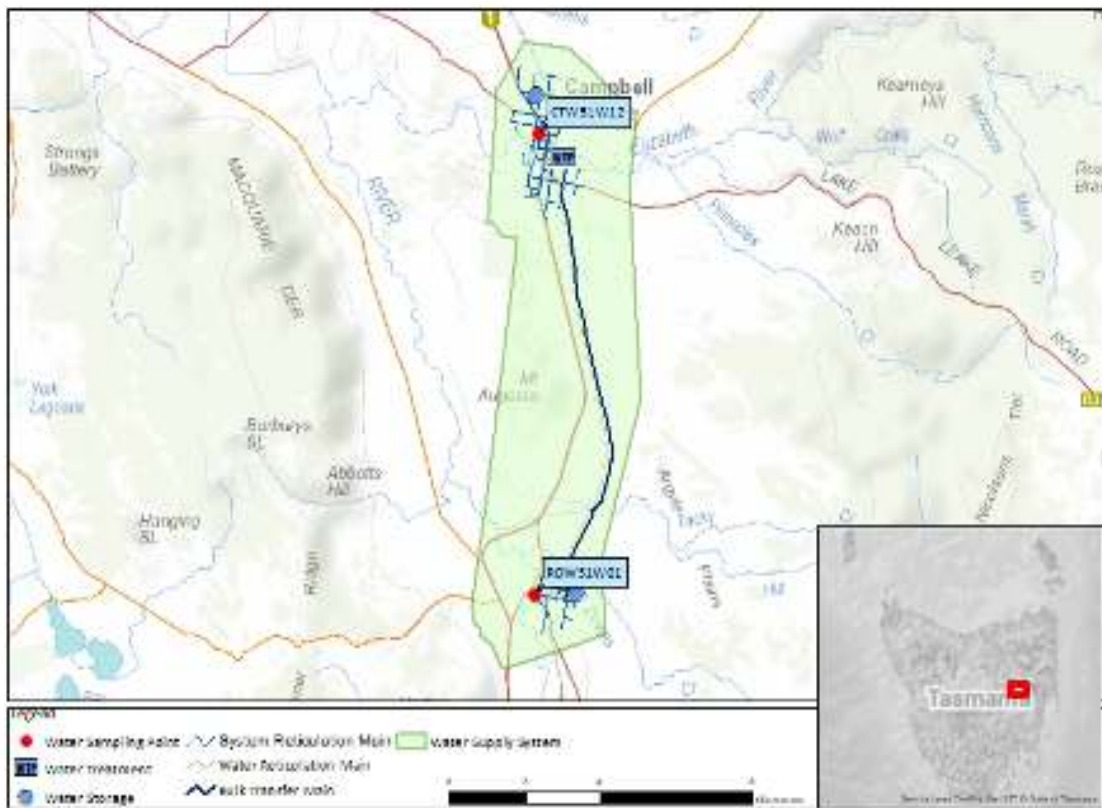


Figure 9.1-b Map of Campbell Town monitoring system

9.2. Summary of annual reticulation compliance (2018–19)

Table 9.2-a Sampling program

Planned sampling program (2018–19)							
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 (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

9.4. Analysis of current health performance (2018–19)

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	2018–19
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%

■ Compliant ■ Non-compliant

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	0.0107	0.0093	0.0126
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	0.0059	0.0037	0.0096
Lead	0.01	mg/L	4	0	100	0.0005	0.0003	0.0008
Manganese	0.5	mg/L	4	0	100	0.0010	0.0006	0.0017
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	0.0002	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	11	5	20
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	3
Trichloroacetic acid	100	µg/L	4	0	100	15	4	33
Total trihalomethanes	250	µg/L	4	0	100	71	48	104

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	0.44	0.05	0.87
Colour True	HU	15	<1	<1	2
pH	Units	6.5 – 8.5	7.21	6.60	7.66
Turbidity	NTU	1	0.34	0.11	0.79

9.5. Analysis of overall system performance (2018–19)

Table 9.5-a Summary of system issues/public health alerts with notification details

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

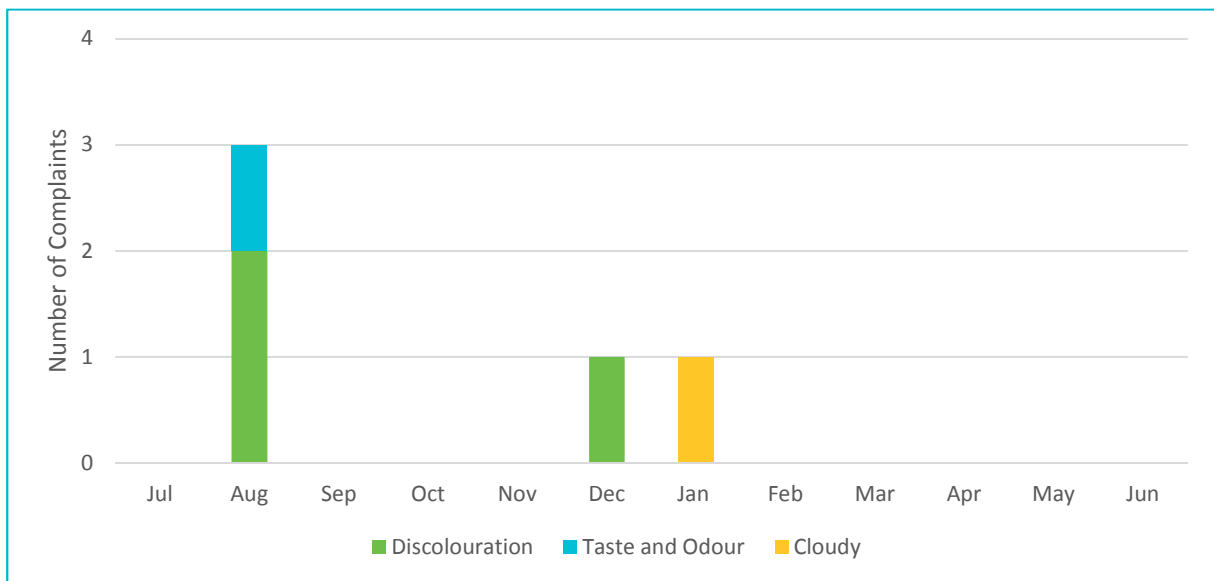


Figure 9.5-b Water quality customer complaints by month and type

10. Coles Bay drinking water system

10.1. System summary (2018–19)

Coles Bay drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	282
Population serviced	144
Fluoride	n/a

Performance overview against health targets (2018–19)					
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	94.0% ⁶	<input type="checkbox"/>	100.0%	12	3

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	1	Elevated DBPs
Public health alerts issued	0	
Notifications made to DoH	16	DBP exceedances in all sampling programs
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
WTP Project	Coles Bay GAC Installation	In progress	September 2020	\$250,000

⁶ Calculated using 48 tests over 12 sampling events (compliance sample program) with 3 failed THM tests

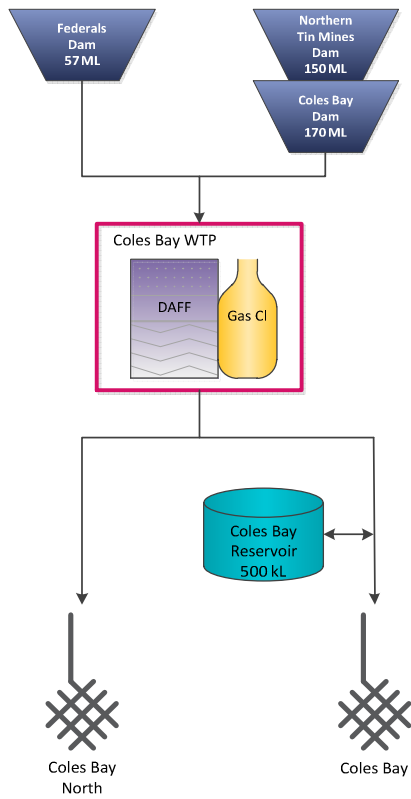


Figure 10.1-a Coles Bay system schematic



Figure 10.1-b Map of Coles Bay monitoring system

10.2. Summary of annual reticulation compliance (2018–19)

Table 10.2-a Sampling program

Planned sampling program (2018–19)							
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		52	4	12	n/a	4	n/a
Number Samples Tested		52	4	12	n/a	4	n/a

10.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%	94.0%	90.0%	87.5% ⁷	94.0% ⁸

■ Compliant ■ Non-compliant

⁷ Capital improvements identified to improve ongoing disinfection-by-product compliance

⁸ Calculated using 48 tests over 12 sampling events (compliance sample program) with 3 failed THM tests

10.4. Analysis of current health performance (2018–19)

Table 10.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
Total Trihalomethanes	14/08/2018	346 µg/L in regular compliance sampling (<i>relevant to compliance assessment</i>)	Y
Total Trihalomethanes	23/10/2018	258 µg/L in investigation sampling	Y
Total Trihalomethanes	20/11/2018	261 µg/L in investigation sampling	Y
Total Trihalomethanes	27/11/2018	281 µg/L in investigation sampling	Y
Total Trihalomethanes	05/12/2018	274 µg/L in regular compliance sampling (<i>relevant to compliance assessment</i>)	Y
Total Trihalomethanes	11/12/2018	270 µg/L in investigation sampling	Y
Total Trihalomethanes	18/12/2018	298 µg/L in investigation sampling	Y
Total Trihalomethanes	31/12/2018	275 µg/L in investigation sampling	Y
Total Trihalomethanes	08/01/2019	263 µg/L in regular compliance sampling (<i>relevant to compliance assessment</i>)	Y
Total Trihalomethanes	15/01/2019	264 µg/L in investigation sampling	Y
Total Trihalomethanes	22/01/2019	257 µg/L in investigation sampling	Y
Total Trihalomethanes	29/01/2019	272 µg/L in investigation sampling	Y
Total Trihalomethanes	19/02/2019	276 µg/L in investigation sampling	Y
Total Trihalomethanes	26/02/2019	262 µg/L in investigation sampling	Y
Total Trihalomethanes	12/03/2019	255 µg/L in investigation sampling	Y
Total Trihalomethanes	26/03/2019	280 µg/L in investigation sampling	Y

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	0.0039	0.0025	0.0060
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	0.0016	0.0009	0.0022
Lead	0.01	mg/L	4	0	100	0.0002	<0.0001	0.0002
Manganese	0.5	mg/L	4	0	100	0.0027	0.0013	0.0042
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	0.0002
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	17	7	26
Monochloroacetic acid	150	µg/L	12	0	100	4	<3	6
Trichloroacetic acid	100	µg/L	12	0	100	16	3	22
Total trihalomethanes	250	µg/L	12	3	75	246	195	346

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	0.51	0.03	1.62
Colour True	HU	15	1.25	<1	3.00
pH	Units	6.5 – 8.5	7.17	6.40	7.87
Turbidity	NTU	1	0.52	0.14	1.36

10.5. Analysis of overall system performance (2018–19)

Table 10.5-a Summary of system issues/public health alerts with notification details

Summary of system issues/public health alerts				
Date	Type	Description	DoH notification required	DoH notification complete
14/08/2018, 23/10/2018, 20/11/2018, 27/11/2018, 05/12/2018, 11/12/2018, 18/12/2018, 31/12/2018, 08/01/2018, 15/01/2019, 22/01/2019, 29/01/2019, 19/02/2019, 26/02/2019, 12/03/2019, 26/03/2019	DBP exceedances	Total trihalomethanes exceedances detected in sampling events in all sample programs. Improvements to the chlorine dosing system have been made with Granulated activated carbon (GAC) added to the media filter to remove DBP precursors. A more permanent GAC is being procured and will be implemented by September 2019.	✓	✓

11. Conara drinking water system

11.1. System summary (2018–19)

Conara drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	65
Population serviced	154
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	8	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	8	0

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	1	BWA removed 14/08/2018
Notifications made to DoH	1	BWA removal request
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Conara WTP upgrade	Upgrade of WTP and associated infrastructure	Complete	August 2018	\$5,600,000
Conara reticulation upgrade	Upgrade of the reticulation network	Complete	August 2018	\$1,200,000

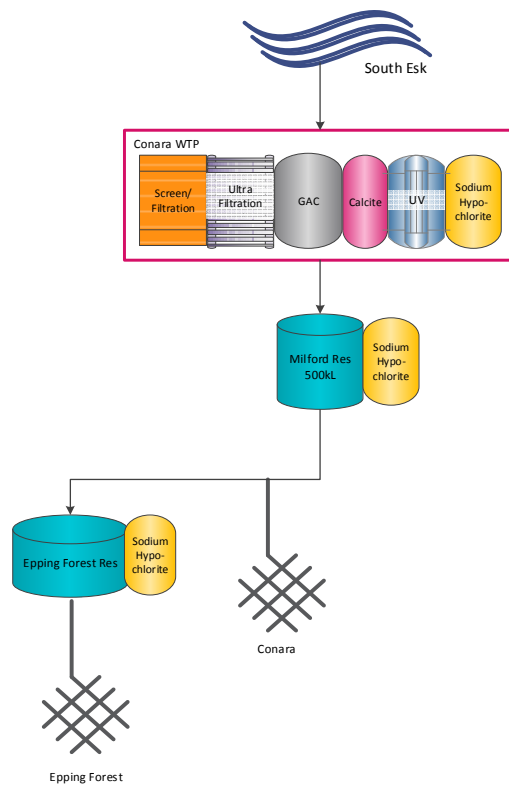


Figure 11.1-a Conara system schematic

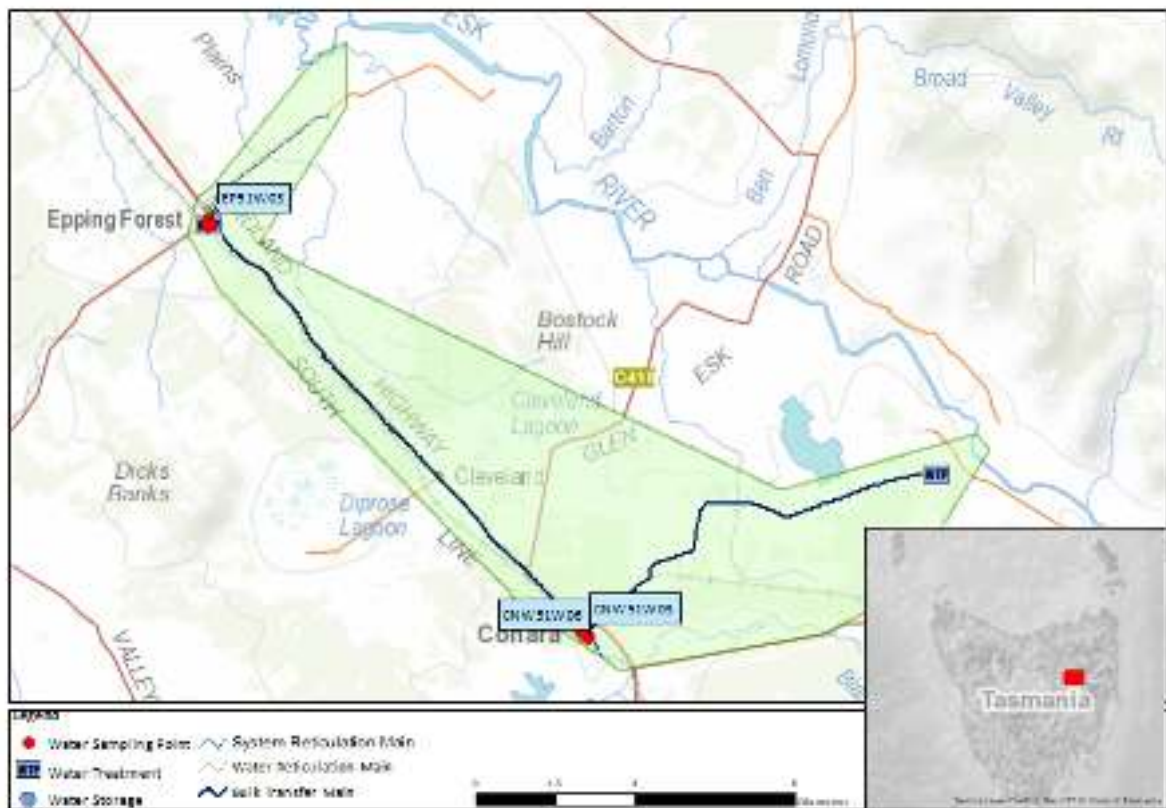


Figure 11.1-b Map of Conara monitoring system

11.2. Summary of annual reticulation compliance (2018–19)

Table 11.2-a Sampling program

Planned compliance sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Conara / Conara Rd near SPS	CNW51W03 ⁹	W	Q	Q	n/a	Q	n/a
Conara/Cnr Conara Rd and Panec St	CNW51W06 ¹⁰	W	Q	Q	n/a	Q	n/a
Epping/4 Barton Rd	EP51W03	W	Q	Q	n/a	Q	n/a
Number Planned Samples		104	8	8	n/a	8	n/a
Number Samples Tested		104	8	8	n/a	8	n/a

11.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100%	100%	100%	98.1%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100%	100%	97.9%	100.0%	100.0%
Disinfection by products	100%	81.0%	75.0%	87.5% ¹¹	100.0%

■ Compliant ■ Non-compliant

11.4. Analysis of current health performance (2018–19)

Table 11.4-a Summary of health guideline exceedances

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

⁹ Until 20th August 2018

¹⁰ From 20th August 2018

¹¹ 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	<0.0003
Barium	2	mg/L	8	0	100	0.0058	0.0025	0.0119
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	0.0018	0.0092
Lead	0.01	mg/L	8	0	100	0.0005	0.0002	0.0011
Manganese	0.5	mg/L	8	0	100	0.0034	0.0003	0.0079
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	0.0003	0.0002	0.0004
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	11	3	27
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	14	4	33
Total trihalomethanes	250	µg/L	8	0	100	30	10	53

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	0.64	0.25	1.08
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.61	6.65	8.41
Turbidity	NTU	1	0.39	0.10	1.11

11.5. Analysis of overall system performance (2018–19)

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

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
14/08/2018	BWA lifted	✓	✓

12. Cornwall drinking water system

12.1. System summary (2018–19)

Cornwall drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	46
Population serviced	47
Fluoride	n/a

Performance overview against health targets (2018–19)					
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

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts 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 (\$'000)
Cornwall WTP	Upgrade of WTP and associated infrastructure	Complete	August 2018	\$1,917,000
Cornwall reticulation upgrade	Upgrade of the reticulation network	Complete	August 2018	\$667,000

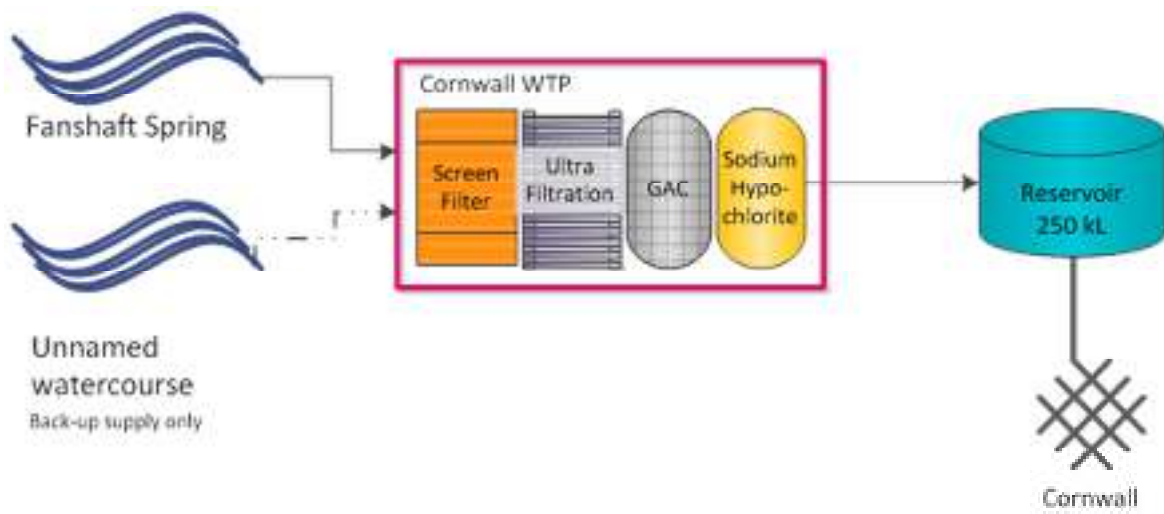


Figure 12.1-a Cornwall system schematic

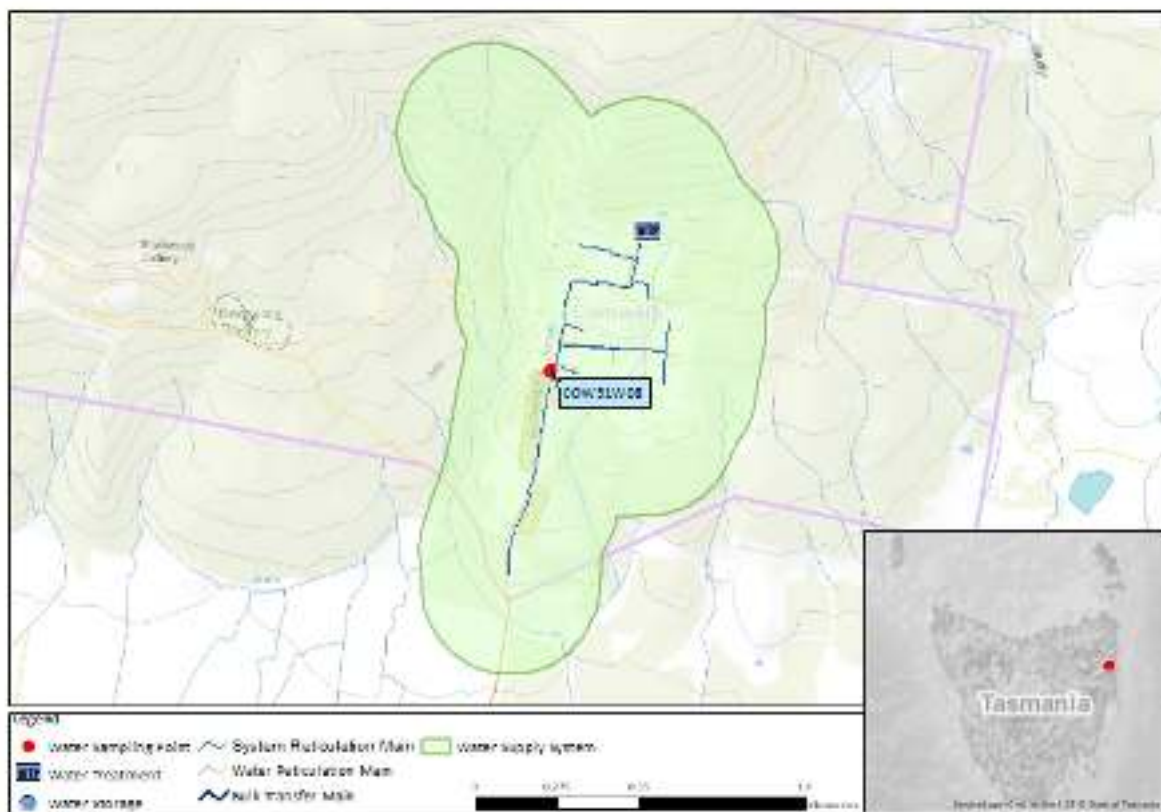


Figure 12.1-b Map of Cornwall monitoring system

12.2. Summary of annual reticulation compliance (2018–19)

Table 12.2-a Sampling program

Planned compliance sampling program (2018–19)							
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		52	4	4	n/a	4	n/a
Number Samples Tested		52	4	4	n/a	4	n/a

12.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	58.0%	67.0%	91.7%	91.7% ¹²	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	n/a	100.0%

■ Compliant ■ Non-compliant

12.4. Analysis of current health performance (2018–19)

Table 12.4-a Summary of health guideline exceedances

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

¹² 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	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	0.1367	0.1235	0.1466
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	0.0148	0.0130	0.0163
Lead	0.01	mg/L	4	0	100	0.0005	0.0004	0.0007
Manganese	0.5	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Mercury	0.001	mg/L	4	0	100	0.00003	<0.00003	0.00004
Molybdenum	0.05	mg/L	4	0	100	0.0007	0.0005	0.0008
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 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	<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	7	<4	8

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	0.79	0.60	1.20
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.65	6.64	8.19
Turbidity	NTU	1	0.18	0.06	0.61

12.5. Analysis of overall system performance (2018–19)

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

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

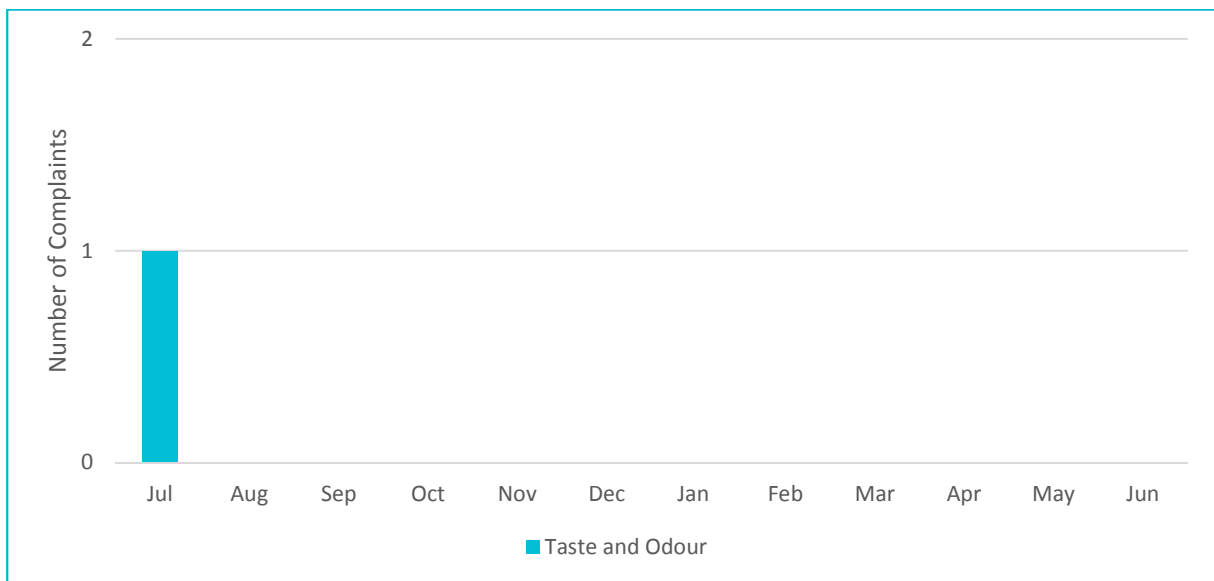


Figure 12.5-b Water quality customer complaints by month and type

13. Currie drinking water system

13.1. System summary (2018–19)

Currie drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	473
Population serviced	706
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
King Island Upgrade	WTP Upgrade, treated water reservoirs and pump station	In progress	TBA	\$7,862,000

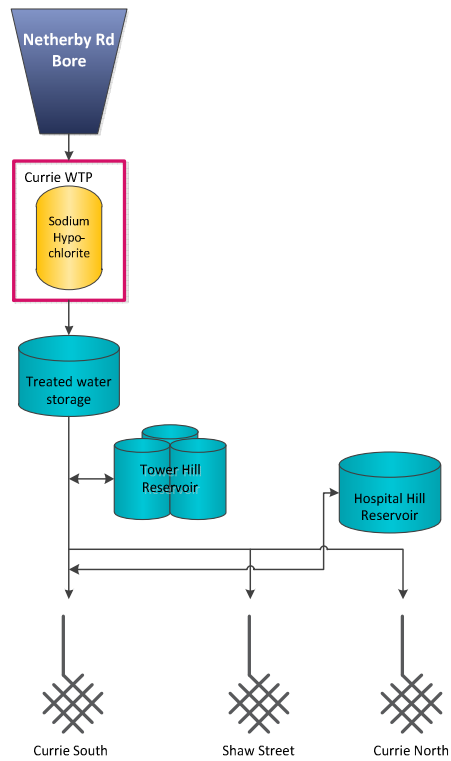


Figure 13.1-a Currie system schematic

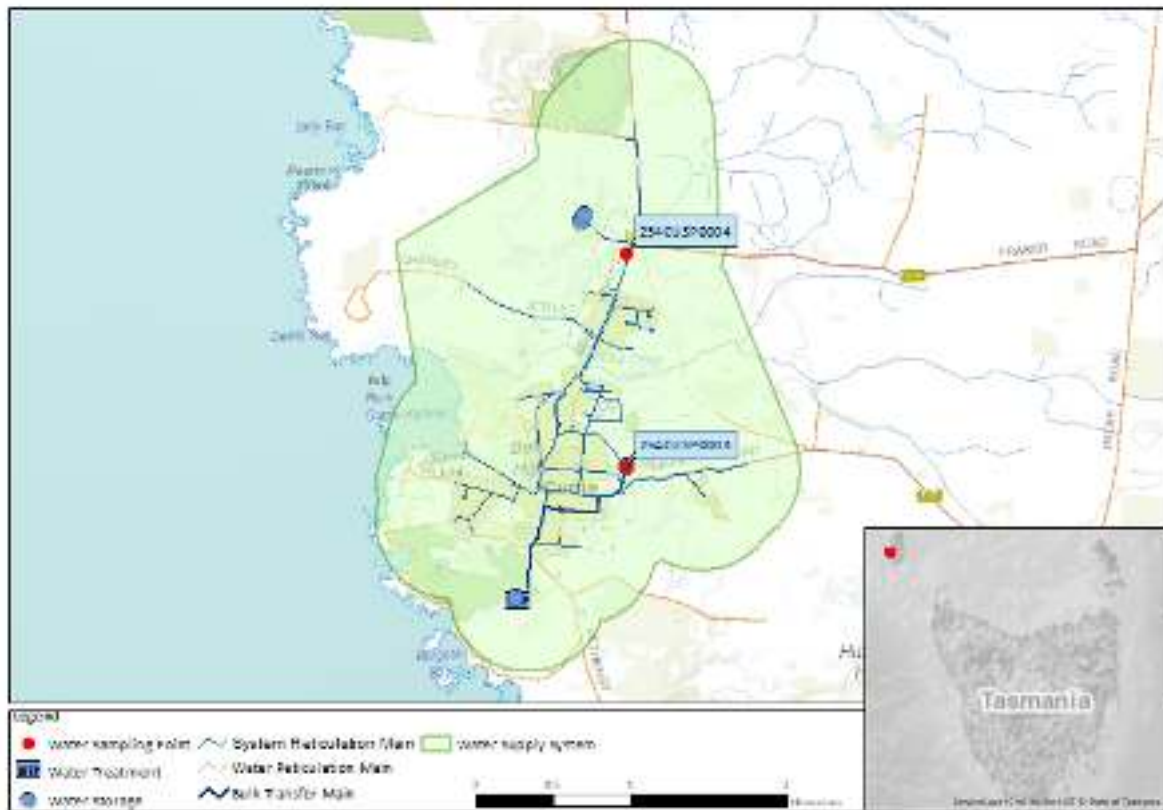


Figure 13.1-b Map of Currie monitoring system

13.2. Summary of annual reticulation compliance (2018–19)

Table 13.2-a Sampling program

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Currie/Hospital Tank Site 2	254CUSP0003	W	Q	Q	n/a	Q	n/a
Currie/Depot Site 3	254CUSP0004	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		104	4	4	n/a	4	n/a
Number Samples Tested		104	4	4	n/a	4	n/a

13.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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

13.4. Analysis of current health performance (2018–19)

Table 13.4-a Summary of health guideline exceedances

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

Table 13.4-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	0.0011	0.0009	0.0014
Barium	2	mg/L	4	0	100	0.0113	0.0105	0.0123
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	0.0027	0.0066
Lead	0.01	mg/L	4	0	100	0.0003	0.0001	0.0005
Manganese	0.5	mg/L	4	0	100	0.0006	0.0003	0.0007
Mercury	0.001	mg/L	4	0	100	0.0001	<0.00003	0.0003
Molybdenum	0.05	mg/L	4	0	100	0.0004	0.0003	0.0004
Nickel	0.02	mg/L	4	0	100	0.0003	0.0002	0.0003
Selenium	0.01	mg/L	4	0	100	0.0008	0.0007	0.0009

Table 13.4-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	3.75	<1	12
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	2.75	<1	8
Total trihalomethanes	250	µg/L	4	0	100	80	60	119

Table 13.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.25	0.03	1.07
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.61	7.20	8.13
Turbidity	NTU	1	0.19	0.01	1.25

13.5. Analysis of overall system performance (2018–19)

Table 13.5-a Summary of system issues/public health alerts with notification details

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

14. Deep Creek drinking water system

14.1. System summary (2018–19)

Deep Creek drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	2357
Population serviced	4389
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	208	0
Fluoride	100.0%	<input checked="" type="checkbox"/>	100.0%	48	0
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	12	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	12	0

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DOH	0	
Customer complaints	8	Discolouration, taste and odour, cloudy

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Smithton WTP	Instrumentation upgrade	In progress	In progress	\$54,000

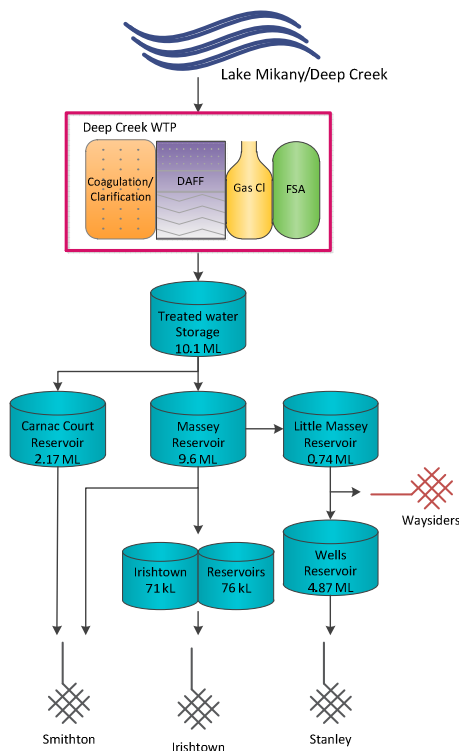


Figure 14.1-a Deep Creek system schematic



Figure 14.1-b Map of Deep Creek monitoring system

14.2. Summary of annual reticulation compliance (2018–19)

Table 14.2-a Sampling program

Planned sampling program (2018–19)							
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		208	12	12	48	8	n/a
Number Samples Tested		208	12	12	48	8	n/a

14.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	99.4%	99.0%	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

14.4. Analysis of current health performance (2018–19)

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	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 14.4-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	0.0093	0.0066	0.0125
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	0.0014	0.0011	0.0019
Lead	0.01	mg/L	12	0	100	0.0002	0.0001	0.0003
Manganese	0.5	mg/L	12	0	100	0.0087	0.0016	0.0262
Mercury	0.001	mg/L	12	0	100	0.00007	<0.00003	0.00024
Molybdenum	0.05	mg/L	12	0	100	<0.0001	<0.0001	0.0002
Nickel	0.02	mg/L	12	0	100	0.0007	0.0004	0.0014
Selenium	0.01	mg/L	12	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	12	0	100	8	2	20
Monochloroacetic acid	150	µg/L	12	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	12	0	100	6	1	12
Total trihalomethanes	250	µg/L	12	0	100	92	67	128

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	0.52	0.02	1.59
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.41	6.23	8.10
Turbidity	NTU	1	0.34	0.06	3.38

14.5. Analysis of overall system performance (2018–19)

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

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

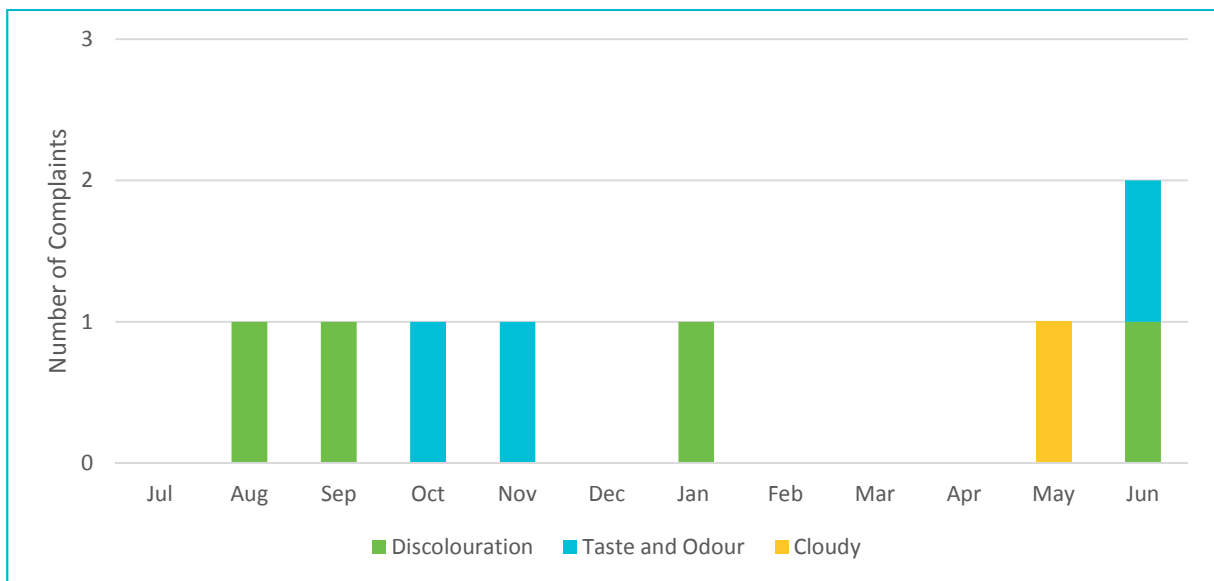


Figure 14.5-b Water quality customer complaints by month and type

15. Deloraine drinking water system

15.1. System summary (2018–19)

Deloraine drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	1301
Population serviced	2529
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
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 (2018–19)		
Indicator	Occurrences	Details
System issues	1	WTP failure
Public health alerts issued	1	Temporary BWA issued (07/7/2018-12/07/2018) due to failure of the WTP
Notifications made to DoH	1	WTP failure
Customer complaints	10	Discolouration, taste and odour, PHA notices, other (Illness, stained washing)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Upgrade Deloraine WTP	Instrumentation upgrade at Deloraine WTP	In progress	August 2019	\$245,000
Regional Towns Water Supply Project	UV system at Deloraine WTP	In progress	TBA	TBA

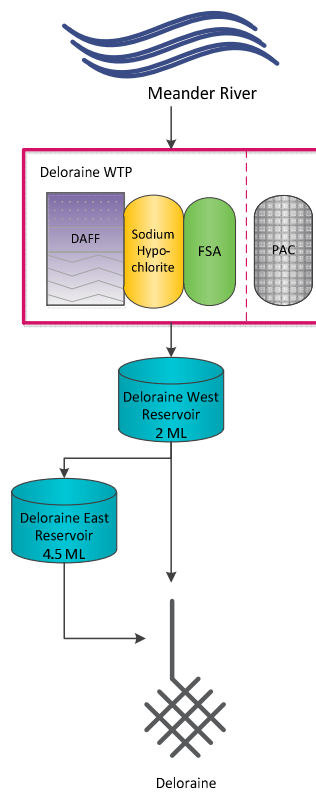


Figure 15.1-a Deloraine system schematic

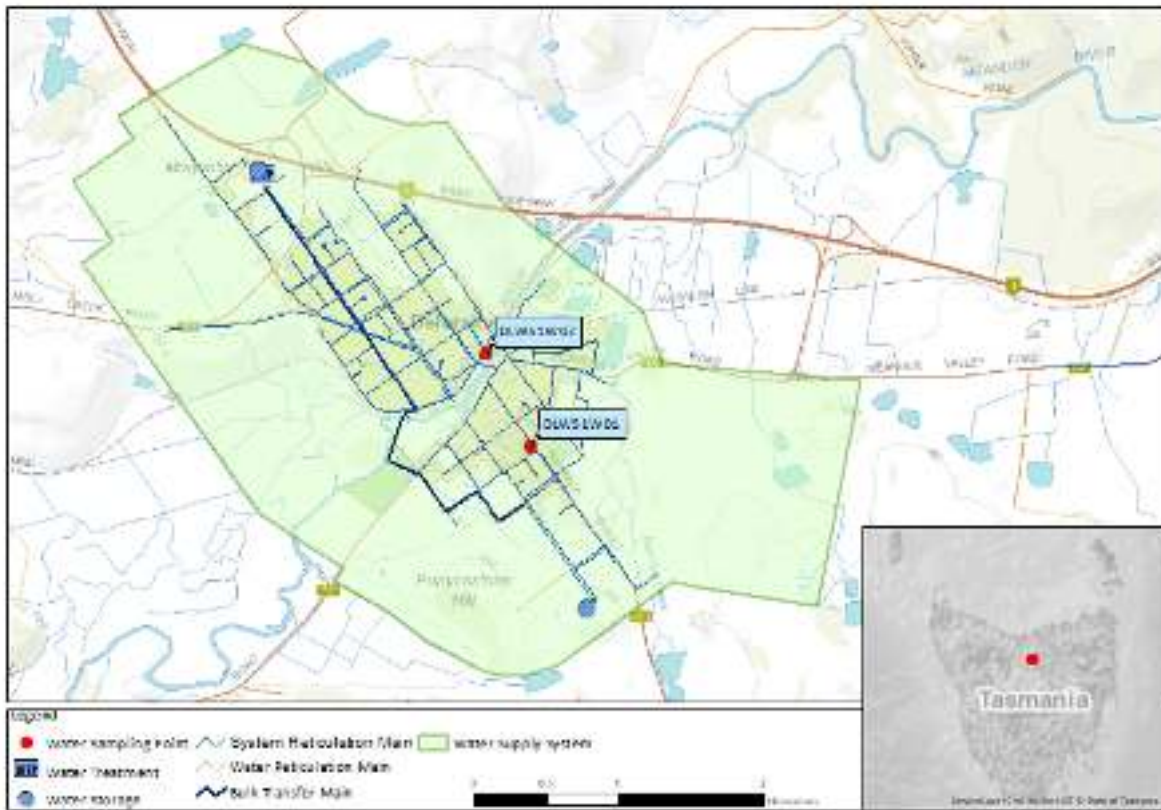


Figure 15.1-b Map of Deloraine monitoring system

15.2. Summary of annual reticulation compliance (2018–19)

Table 15.2-a Sampling program

Planned sampling program (2018–19)							
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		104	8	8	48	8	n/a
Number Samples Tested		104	8	8	48	8	n/a

15.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

15.4. Analysis of current health performance (2018–19)

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	2018–19
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	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	0.0057	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	0.0023	0.0006	0.0055
Lead	0.01	mg/L	8	0	100	0.0002	<0.0001	0.0004
Manganese	0.5	mg/L	8	0	100	0.0025	0.0010	0.0050
Mercury	0.001	mg/L	8	0	100	0.00003	<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	<0.0001

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	8	0	100	3	2	6
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	6	1	14
Total trihalomethanes	250	µg/L	8	0	100	17	10	26

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	0.72	0.35	1.14
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.35	6.75	7.93
Turbidity	NTU	1	0.27	0.06	0.89

15.5. Analysis of overall system performance (2018–19)

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

Summary of system issues			
Date	Description	DOH notification required	DOH notification complete
07/07/2018 -12/07/2018	<p>A BWA was issued on 7 July 2018 for the township of Deloraine due to the inability of the WTP to treat the highly turbid water that resulted from a significant rainfall event.</p> <p>The WTP was brought back online, the network was flushed, chlorine dosing was carried out and testing for cryptosporidium and giardia was completed and there were no detections</p> <p>The BWA was lifted on 12 July 2018.</p>	✓	✓

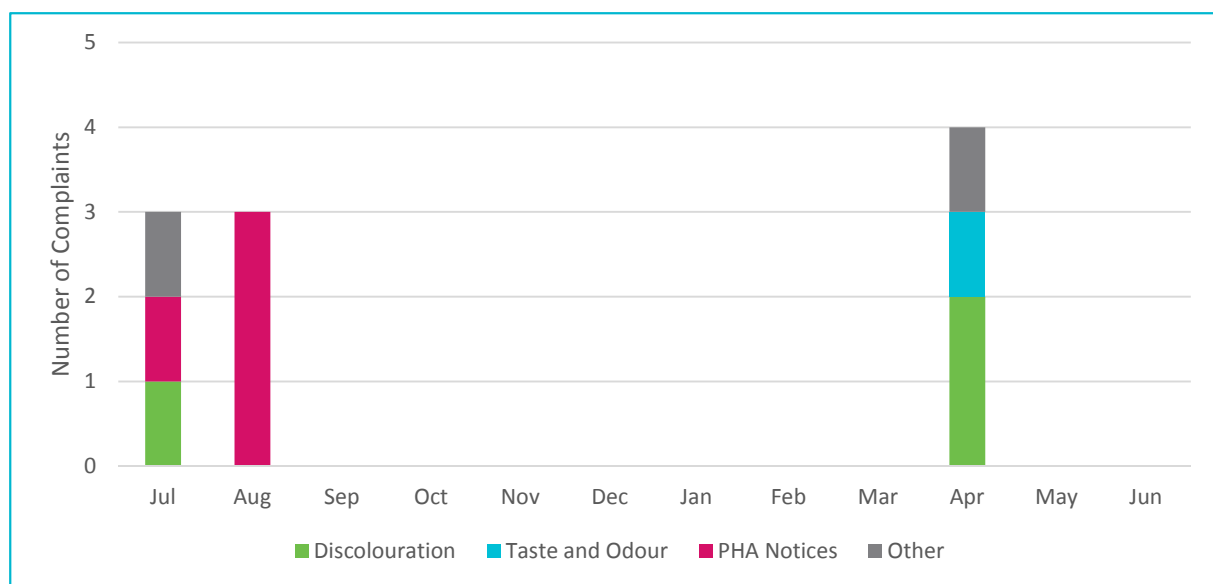


Figure 15.5-b Water quality customer complaints by month and type

16. Distillery Creek drinking water system

16.1. System summary (2018–19)

Distillery Creek drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	14211
Population serviced	26325
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	468	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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DOH	0	
Customer complaints	106	Discolouration, taste and odour, cloudy

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Upgrade Distillery Creek WTP	Instrumentation upgrade at Distillery Creek WTP	In progress	June 2020	\$70,000

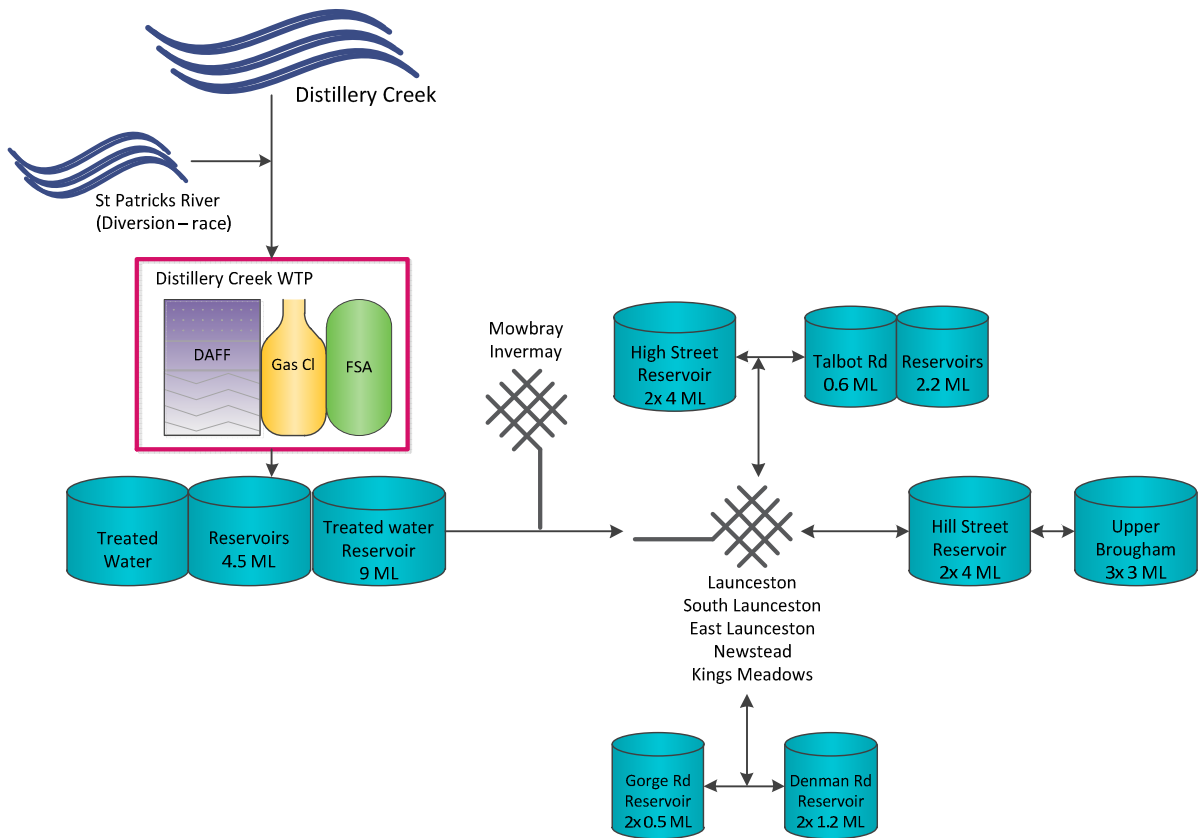


Figure 16.1-a Distillery Creek system schematic

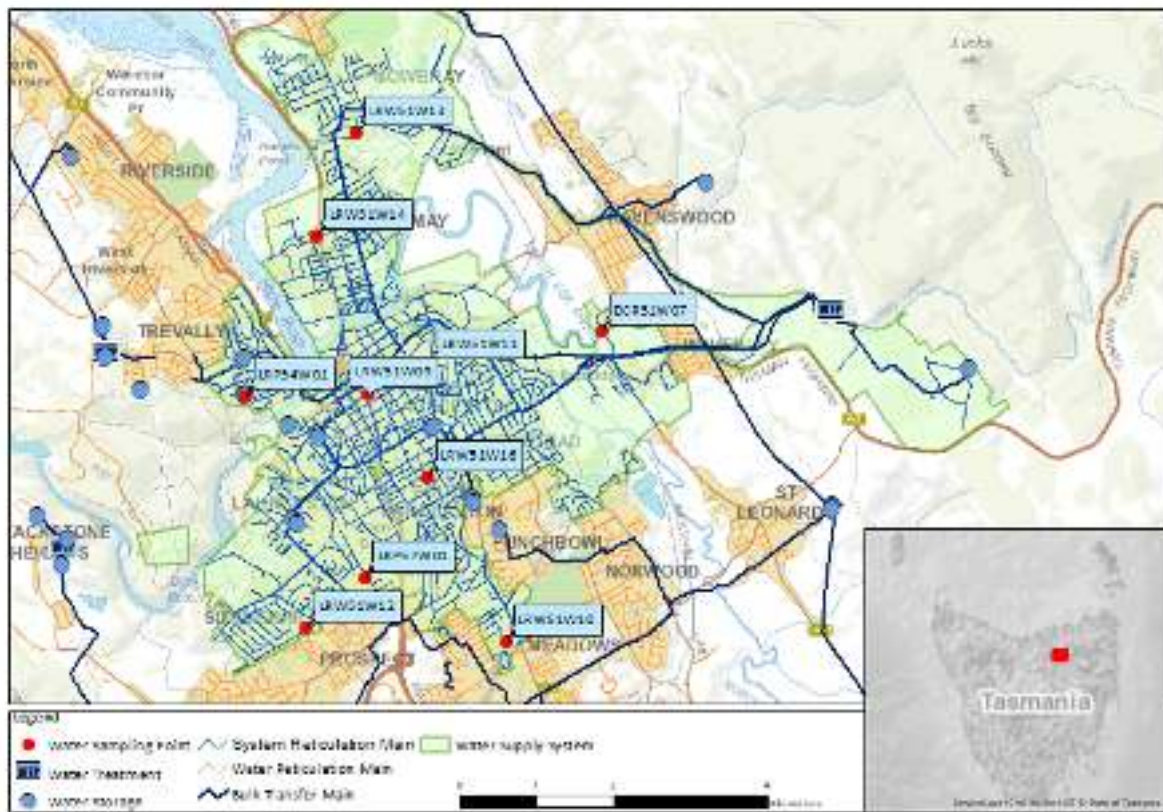


Figure 16.1-b Map of Distillery Creek monitoring system

16.2. Summary of annual reticulation compliance (2018–19)

Table 16.2.a Sampling program

Planned sampling program (2018–19)							
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		520	4	4	48	4	n/a
Number Samples Tested		520	4	4	48	4	n/a

16.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

16.4. Analysis of current health performance (2018–19)

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	2018–19
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 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	0.0108	0.0082	0.0122
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	0.0147	0.0001	0.0315
Lead	0.01	mg/L	4	0	100	0.0003	0.0002	0.0004
Manganese	0.5	mg/L	4	0	100	0.0051	0.0028	0.0113
Mercury	0.001	mg/L	4	0	100	0.00004	<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	0.0003	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	5	4	6
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	22	20	24
Total trihalomethanes	250	µg/L	4	0	100	6	4	7

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	0.52	0	1.39
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.17	6.14	7.71
Turbidity	NTU	1	0.40	0.17	2.10

16.5. Analysis of overall system performance (2018–19)

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

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

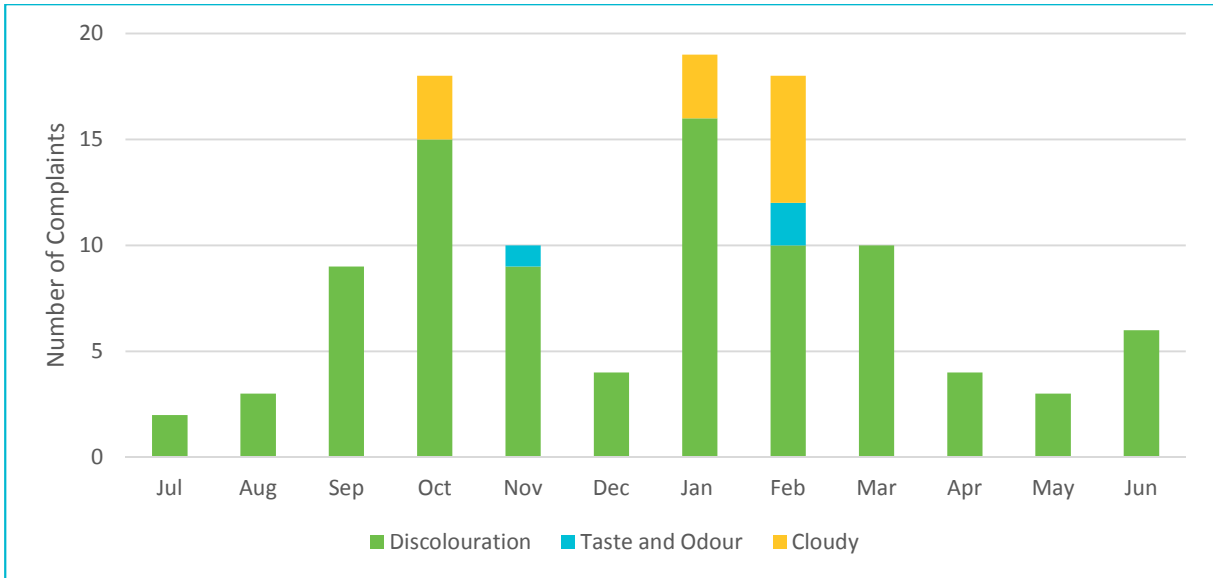


Figure 16.5-b Water quality customer complaints by month and type

17. Dover drinking water system

17.1. System summary (2018–19)

Dover drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	715
Population serviced	1011
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DOH	0	
Customer complaints	2	Discolouration

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Regional Towns Water Supply Program	Major WTP upgrade	Not started	TBA	TBA

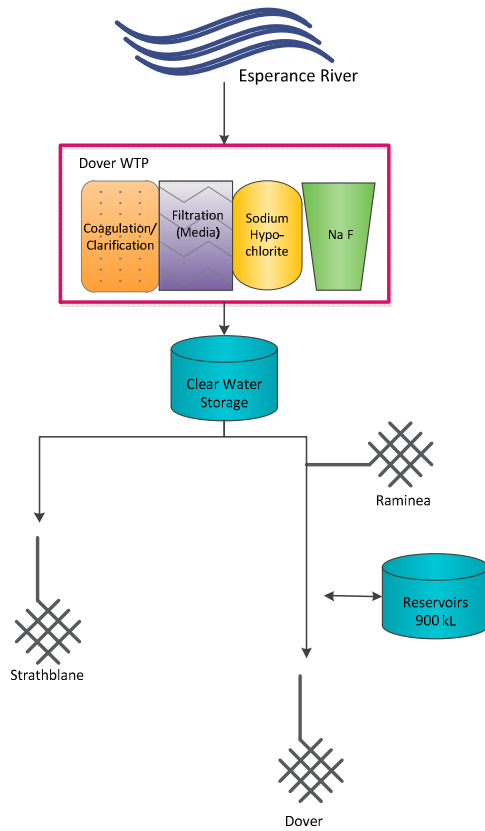


Figure 17.1-a Dover system schematic

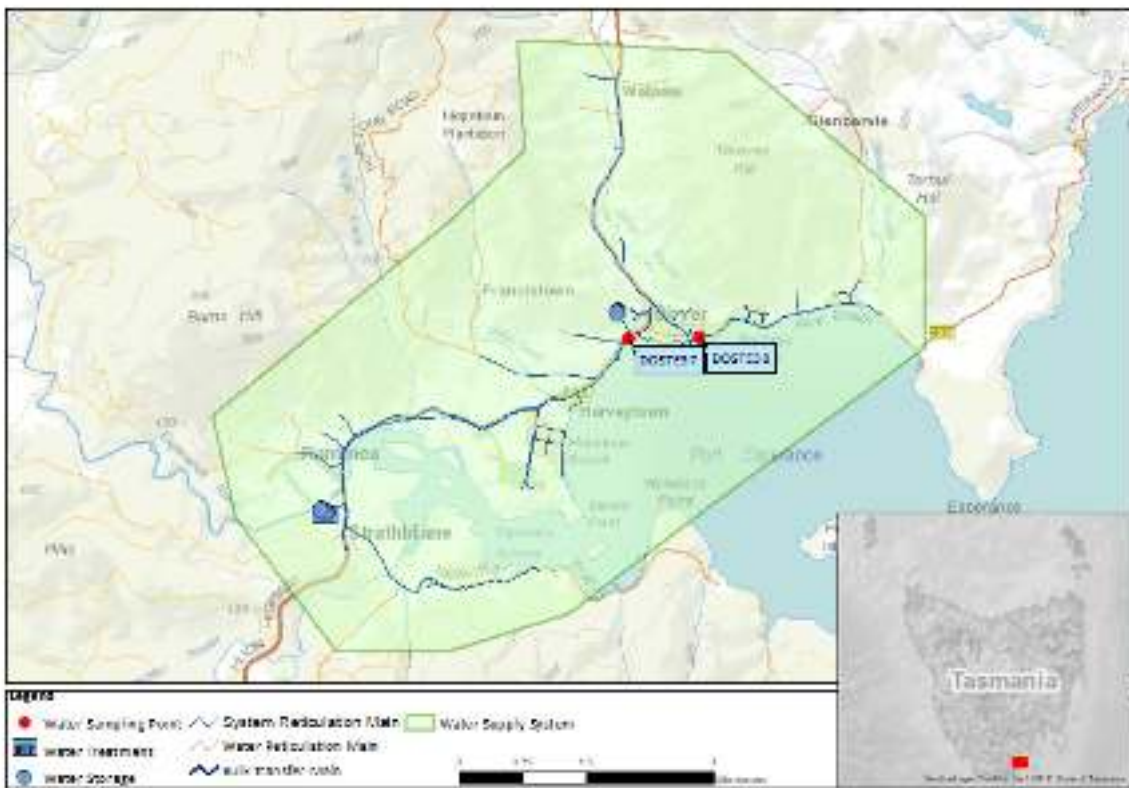


Figure 17.1-b Map of Dover monitoring system

17.2. Summary of annual reticulation compliance (2018–19)

Table 17.2-a Sampling program

Planned sampling program (2018–19)							
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

17.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

17.4. Analysis of current health performance (2018–19)

Table 17.4-a Summary of health guideline exceedances

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

Table 17.4-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	98%

■ Compliant ■ Non-compliant

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	0.0058	0.0057	0.0059
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	0.0135	0.0131	0.0139
Lead	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Manganese	0.5	mg/L	4	0	100	0.0012	0.0005	0.0018
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	0.0002	0.0001	0.0003
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	11	6	18
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	20	8	28
Total trihalomethanes	250	µg/L	4	0	100	46	25	56

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	0.53	0.05	1.15
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.44	6.93	8.17
Turbidity	NTU	1	0.34	0.12	0.72

17.5. Analysis of overall system performance (2018–19)

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

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

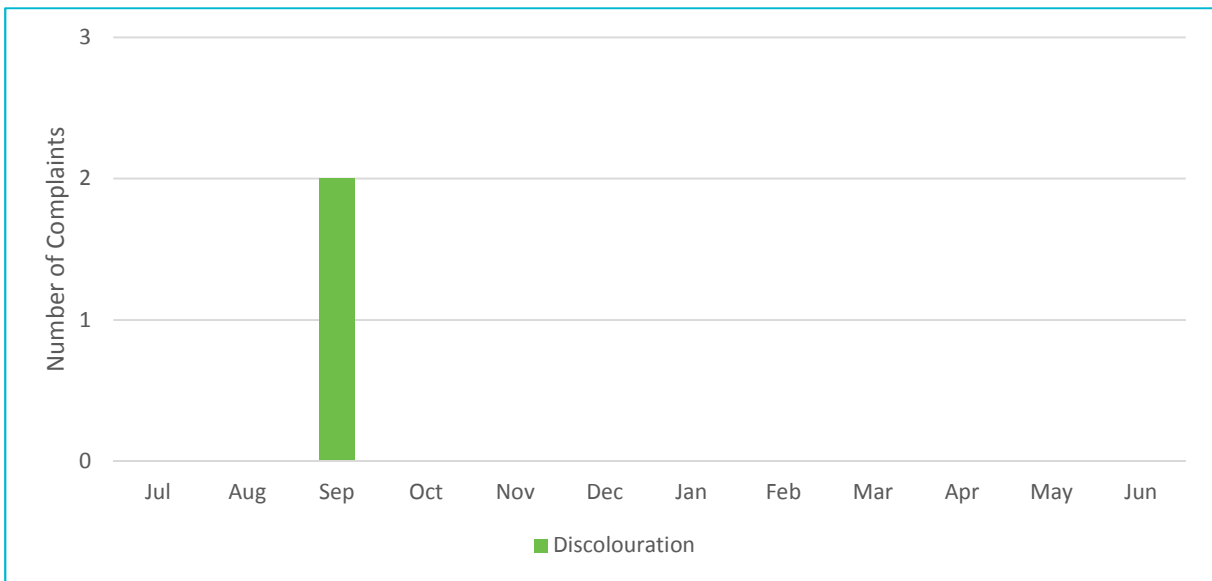


Figure 17.5-b Water quality customer complaints by month and type

18. Dowlings Creek drinking water system

18.1. System summary (2018–19)

Dowlings Creek drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	98
Population serviced	205
Fluoride	n/a

Performance overview against health targets (2018–19)					
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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	1	Discolouration

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	UV disinfection system including GAC installation	Not started	TBA	TBA

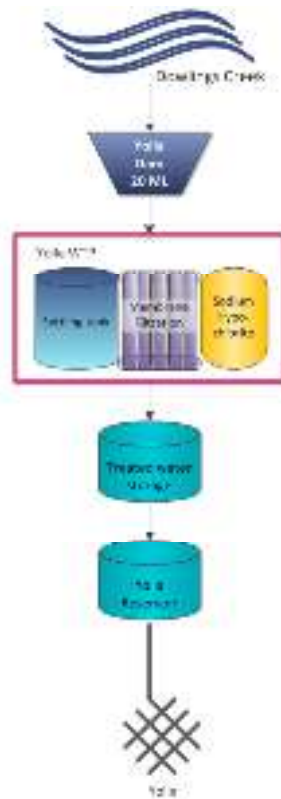


Figure 18.1-a Dowlings Creek system schematic

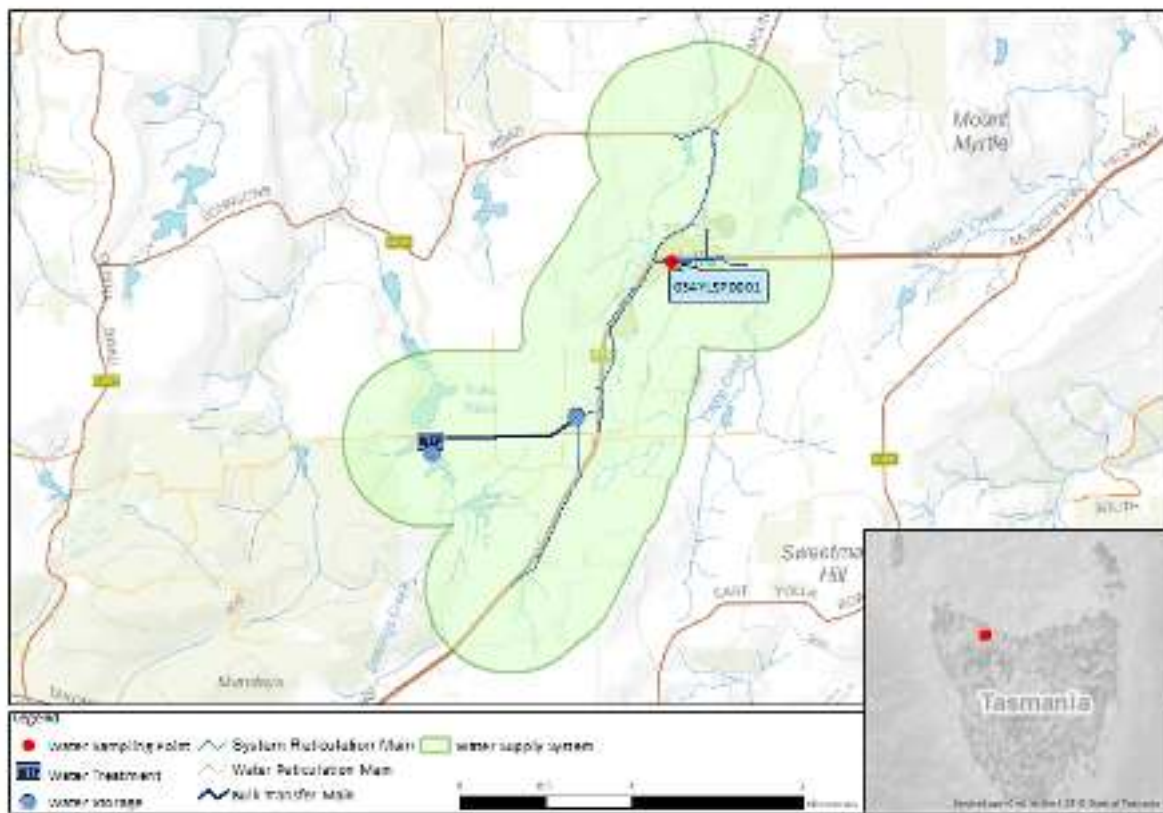


Figure 18.1-b Map of Dowlings Creek monitoring system

18.2. Summary of annual reticulation compliance (2018–19)

Table 18.2-a Sampling program

Planned sampling program (2018–19)							
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		52	4	4	n/a	4	n/a
Number Samples Tested		52	4	4	n/a	4	n/a

18.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100.0%	99.3%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	99.3%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%

■ Compliant ■ Non-compliant

18.4. Analysis of current health performance (2018–19)

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	0.0035	0.0030	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	0.0082	0.0080	0.0117
Lead	0.01	mg/L	4	0	100	0.0010	0.0002	0.0014
Manganese	0.5	mg/L	4	0	100	0.0260	0.0064	0.0427
Mercury	0.001	mg/L	4	0	100	0.00005	<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	0.0004	0.0006
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

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	4	0	100	19	3	25
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	4
Trichloroacetic acid	100	µg/L	4	0	100	35	29	45
Total trihalomethanes	250	µg/L	4	0	100	90	68	131

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	0.44	0.05	1.09
Colour True	HU	15	4.25	2	6
pH	Units	6.5 – 8.5	7.22	6.45	7.69
Turbidity	NTU	1	0.24	0.04	0.48

18.5. Analysis of overall system performance (2018–19)

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

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

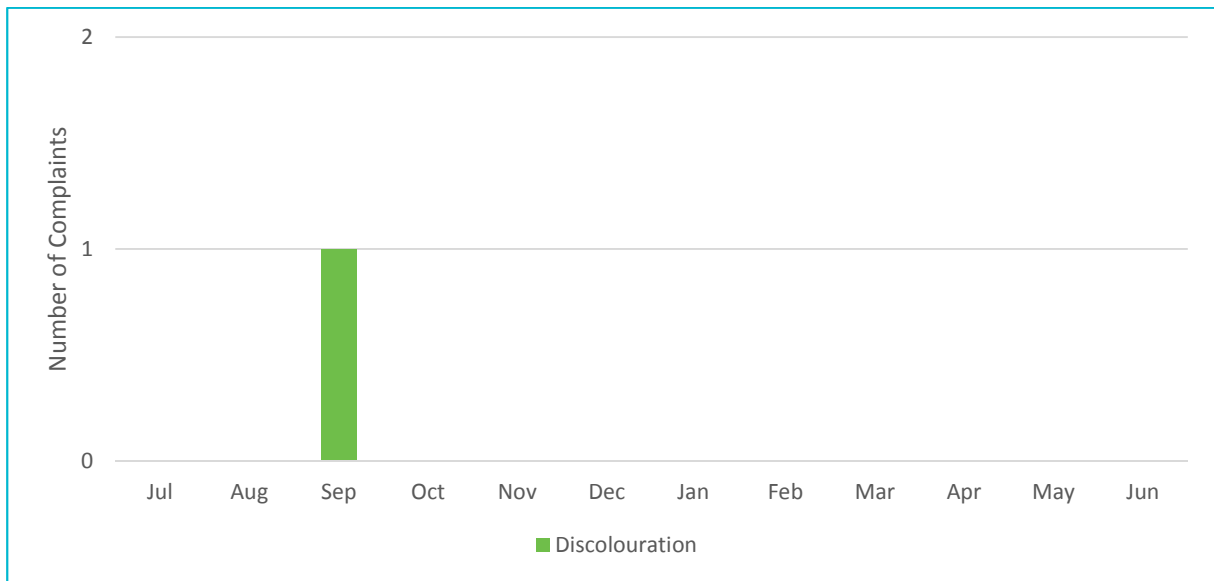


Figure 18.5-b Water quality customer complaints by month and type

19. Ellendale drinking water system

19.1. System summary (2018–19)

Ellendale drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	74
Population serviced	118
Fluoride	n/a

Performance overview against health targets (2018–19)					
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%	12	0

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DOH	0	
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	WTP replacement	Not started	TBA	TBA

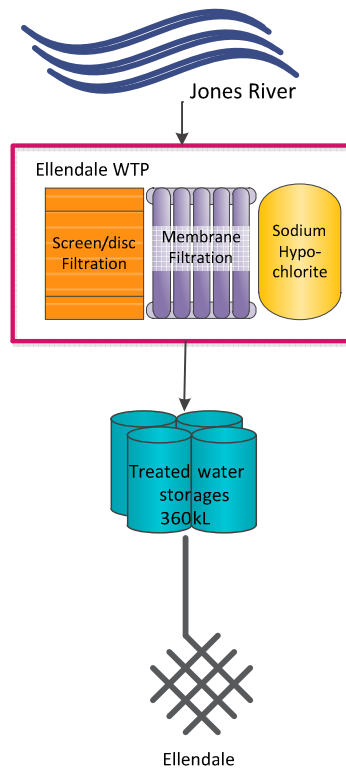


Figure 19.1-a Ellendale system schematic

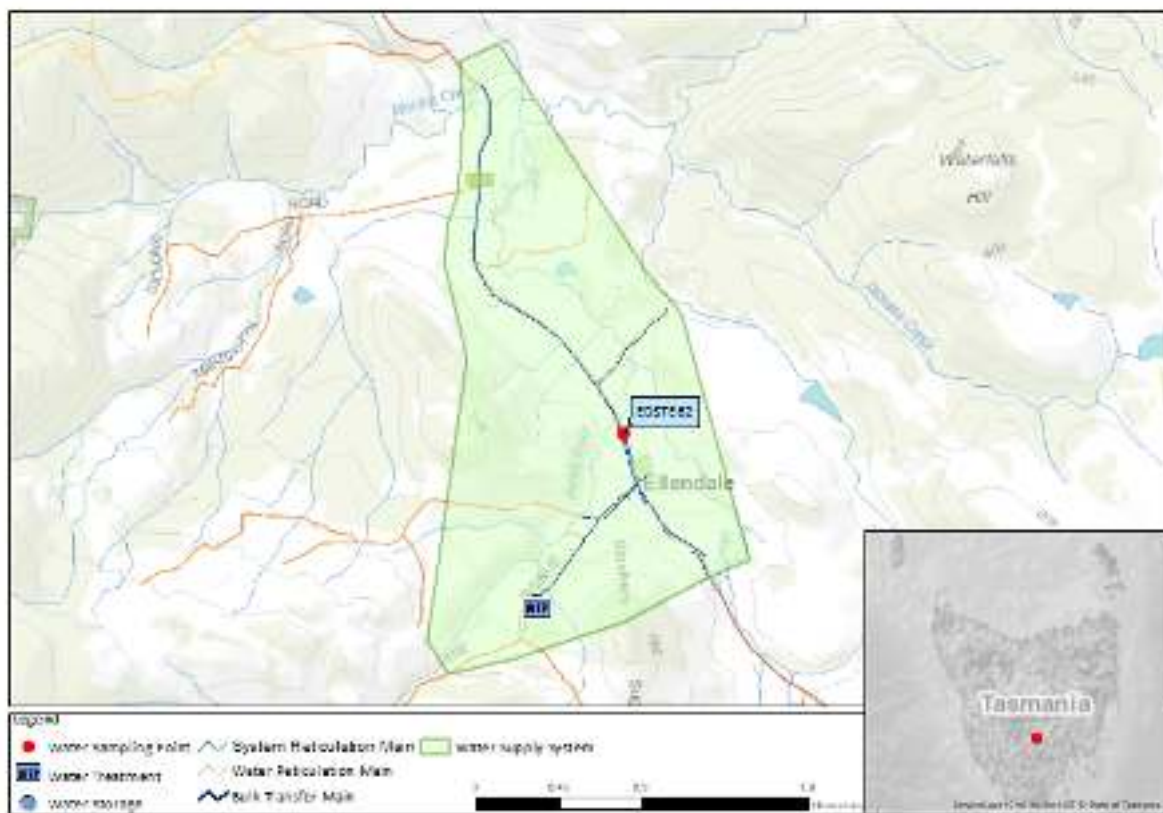


Figure 19.1-b Map of Ellendale monitoring system

19.2. Summary of annual reticulation compliance (2018–19)

Table 19.2-a Sampling program

Planned sampling program (2018–19)							
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		52	4	12	n/a	4	n/a
Number Samples Tested		52	4	12	n/a	4	n/a

19.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%	95.0%	95.8%	97.9%	100.0%

■ Compliant ■ Non-compliant

19.4. Analysis of current health performance (2018–19)

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	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	0.0041	0.0032	0.0053
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0003	0.0003	0.0003
Copper	2	mg/L	4	0	100	0.0027	0.0018	0.0033
Lead	0.01	mg/L	4	0	100	0.0002	<0.0001	0.0002
Manganese	0.5	mg/L	4	0	100	0.0007	0.0005	0.0009
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	0.0001	<0.0001	0.0002
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

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	12	0	100	30	17	49
Monochloroacetic acid	150	µg/L	12	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	12	0	100	76	47	116 ¹³
Total trihalomethanes	250	µg/L	12	0	100	99	77	143

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	0.56	0.03	1.19
Colour True	HU	15	4.25	2	7
pH	Units	6.5 – 8.5	7.57	6.83	7.96
Turbidity	NTU	1	0.25	0.07	0.72

¹³ Refer to Section A 5.0 for non-microbiological assessment of compliance and rounding.

19.5. Analysis of overall system performance (2018–19)

Table 19.5-a Summary of system issues/public health alerts

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

20. Fentonbury/Westerway drinking water system

20.1. System summary (2018–19)

Fentonbury/Westerway drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	126
Population serviced	264
Fluoride	Via Fenton Line

Performance overview against health targets (2018–19)					
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 (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	1	BWA removed
Notifications made to DoH	1	BWA removal request
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Small Towns	Fentonbury network renewals	In progress	July 2019	\$200,000

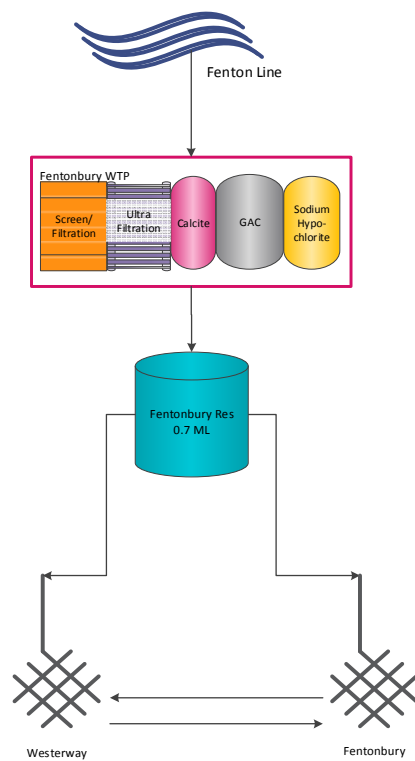


Figure 20.1-a Fentonbury/Westerway system schematic

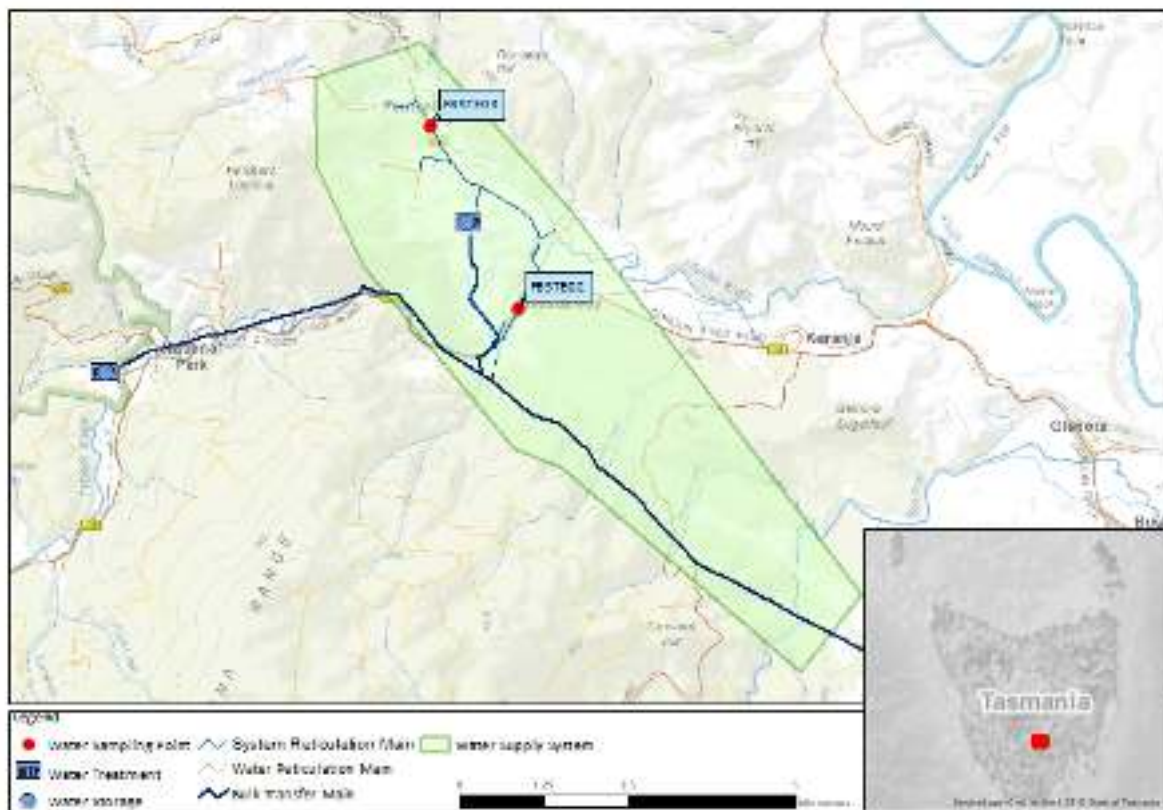


Figure 20.1-b Map of Fentonbury/Westerway monitoring system

20.2. Summary of annual reticulation compliance (2018–19)

Table 20.2-a Sampling program

Planned compliance sampling program (2018–19)							
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		104	8	8	48	8	n/a
Number Samples Tested		104	8	8	48	8	n/a

20.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	n/a	n/a	n/a	n/a	100.0%
Fluoride	n/a	n/a	n/a	n/a	100.0%
Metals	n/a	n/a	n/a	n/a	100.0%
Disinfection by products	n/a	n/a	n/a	n/a	100.0%

■ Compliant ■ Non-compliant

20.4. Analysis of current health performance (2018–19)

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 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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%

■ Compliant ■ Non-compliant

Table 20.4-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	0.0023	0.0010	0.0050
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	0.0025	0.0010	0.0051
Lead	0.01	mg/L	8	0	100	0.0003	0.0002	0.0004
Manganese	0.5	mg/L	8	0	100	0.0010	0.0004	0.0027
Mercury	0.001	mg/L	8	0	100	0.00006	<0.00003	0.00016
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	<0.0001

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	8	0	100.0%	19	13	28
Monochloroacetic acid	150	µg/L	8	0	100.0%	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100.0%	28	21	43
Total trihalomethanes	250	µg/L	8	0	100.0%	54	94	77

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	0.57	0.04	1.46
Colour True	HU	15	2.08	<1	5
pH	Units	6.5 – 8.5	7.89	6.81	9.08
Turbidity	NTU	1	0.37	0.15	1.06

20.5. Analysis of overall system performance (2018–19)

Table 20.5-a Summary of system issues/public health alerts with notification details

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
14/08/2018	BWA Lifted	✓	✓

21. Fingal drinking water system

21.1. System summary (2018–19)

Fingal drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	401
Population serviced	666
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	8	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	8	0

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts 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				

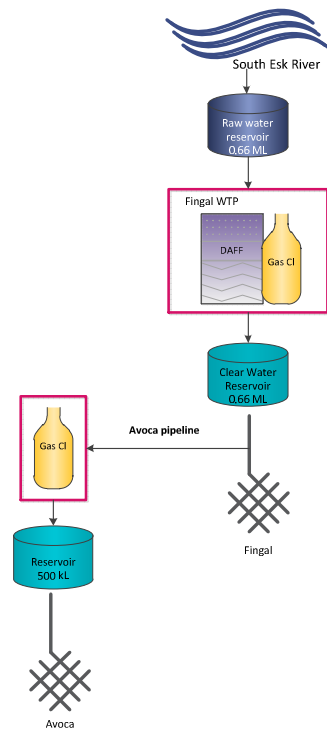


Figure 21.1-a Fingal system schematic

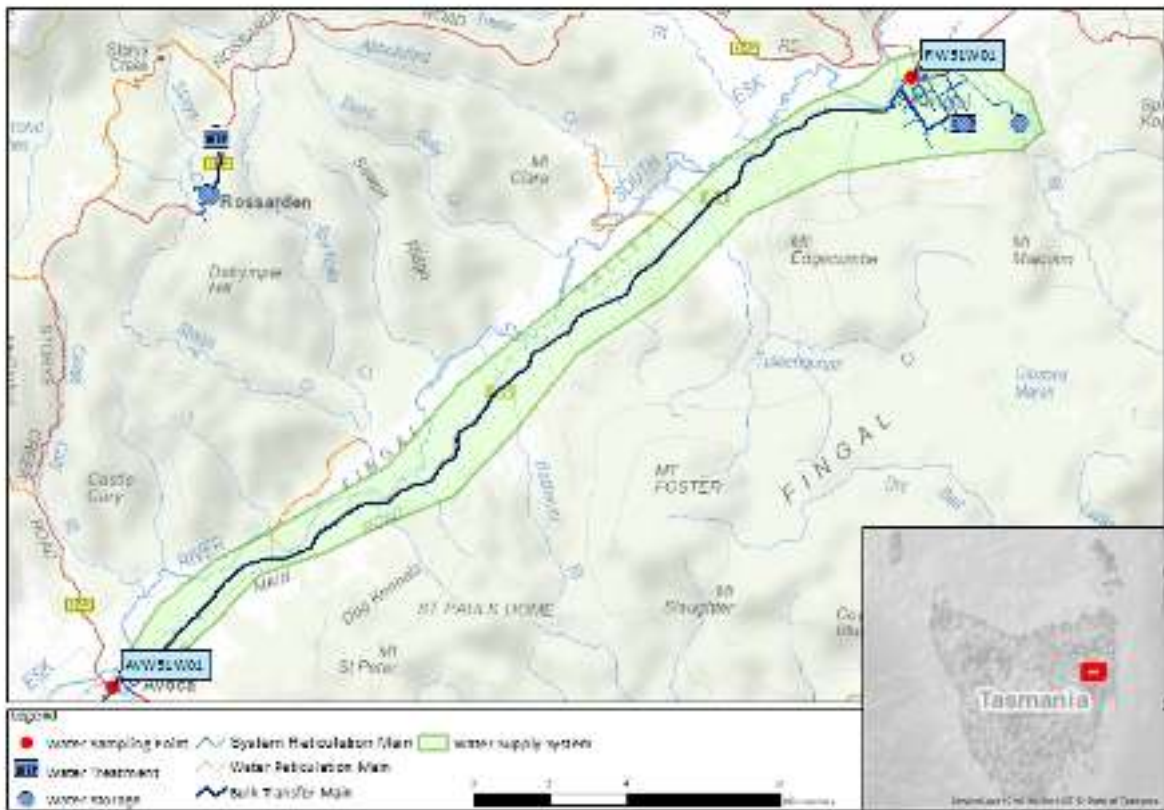


Figure 21.1-b Map of Fingal monitoring system

21.2. Summary of annual reticulation compliance (2018–19)

Table 21.2-a Sampling program

Planned sampling program (2018–19)							
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/Miners Park	FIW51W01	W	Q	Q	n/a	Q	n/a
Number Planned Samples		104	8	8	n/a	8	n/a
Number Samples Tested		104	8	8	n/a	8	n/a

21.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	97.0%	100.0%	100.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	98.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%

■ Compliant ■ Non-compliant

21.4. Analysis of current health performance (2018–19)

Table 21.4-a Summary of health guideline exceedances

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

Table 21.4-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	0.0058	0.0048	0.0073
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	0.0039	0.0022	0.0067
Lead	0.01	mg/L	8	0	100	0.0001	<0.0001	0.0002
Manganese	0.5	mg/L	8	0	100	0.0018	0.0002	0.0092
Mercury	0.001	mg/L	8	0	100	0.00006	<0.00003	0.00017
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	0.0002
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 21.4-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	12	4	23
Monochloroacetic acid	150	µg/L	8	0	100	2	<3	4
Trichloroacetic acid	100	µg/L	8	0	100	12	5	21
Total trihalomethanes	250	µg/L	8	0	100	38	26	63

Table 21.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.88	0.17	2.18
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.29	6.50	7.91
Turbidity	NTU	1	0.29	0.09	1.17

21.5. Analysis of overall system performance (2018–19)

Table 21.5-a Summary of system issues/public health alerts with notification details

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

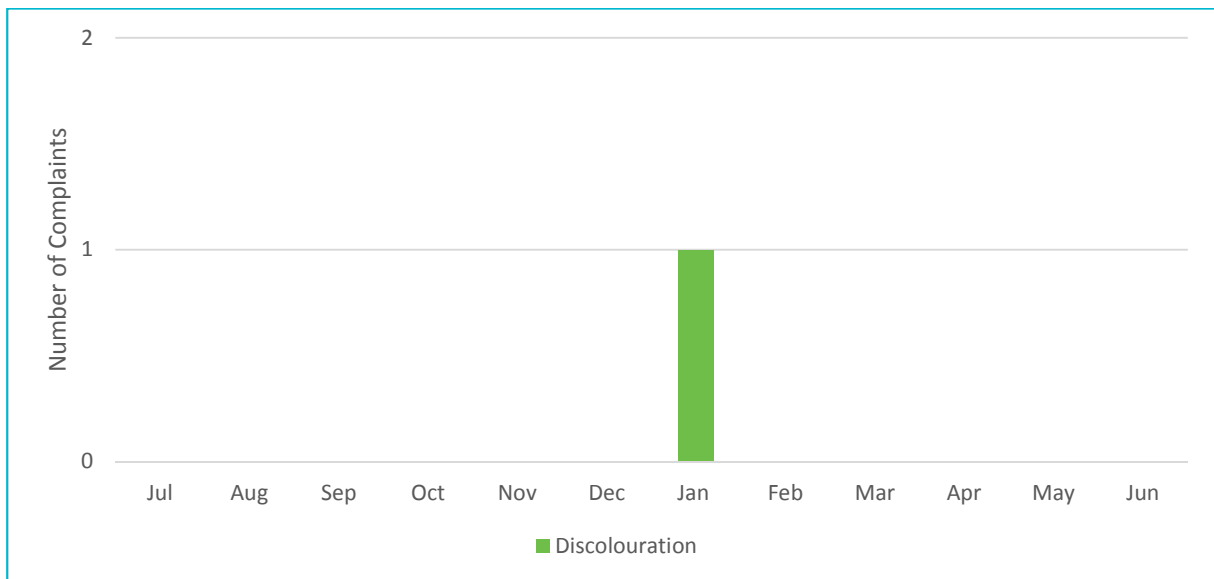


Figure 21.5-b Water quality customer complaints by month and type

22. Forth River drinking water system

22.1. System summary (2018–19)

Forth River drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	18679
Population serviced	35551
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	364	0
Fluoride	100.0%	<input checked="" type="checkbox"/>	100.0%	48	0
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	16	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	12	0

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	103	Discolouration, taste and odour, cloudy, other (stained water, chlorine)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Forth WTP	WTP upgrade	In progress	June 2021	\$1,000,000

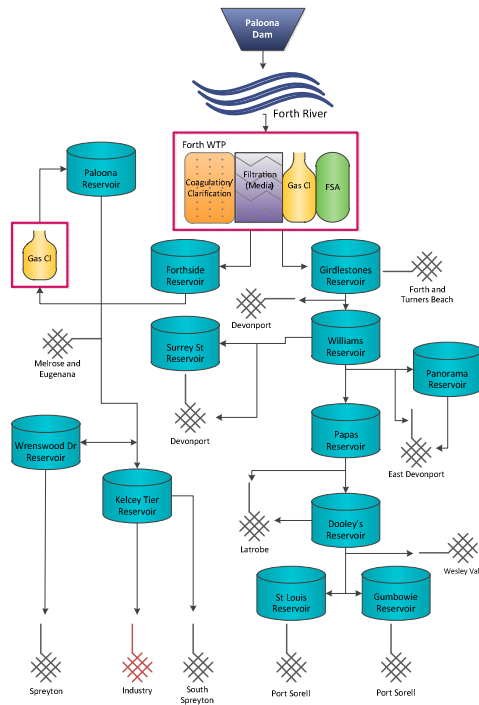


Figure 22.1-a Forth River system schematic

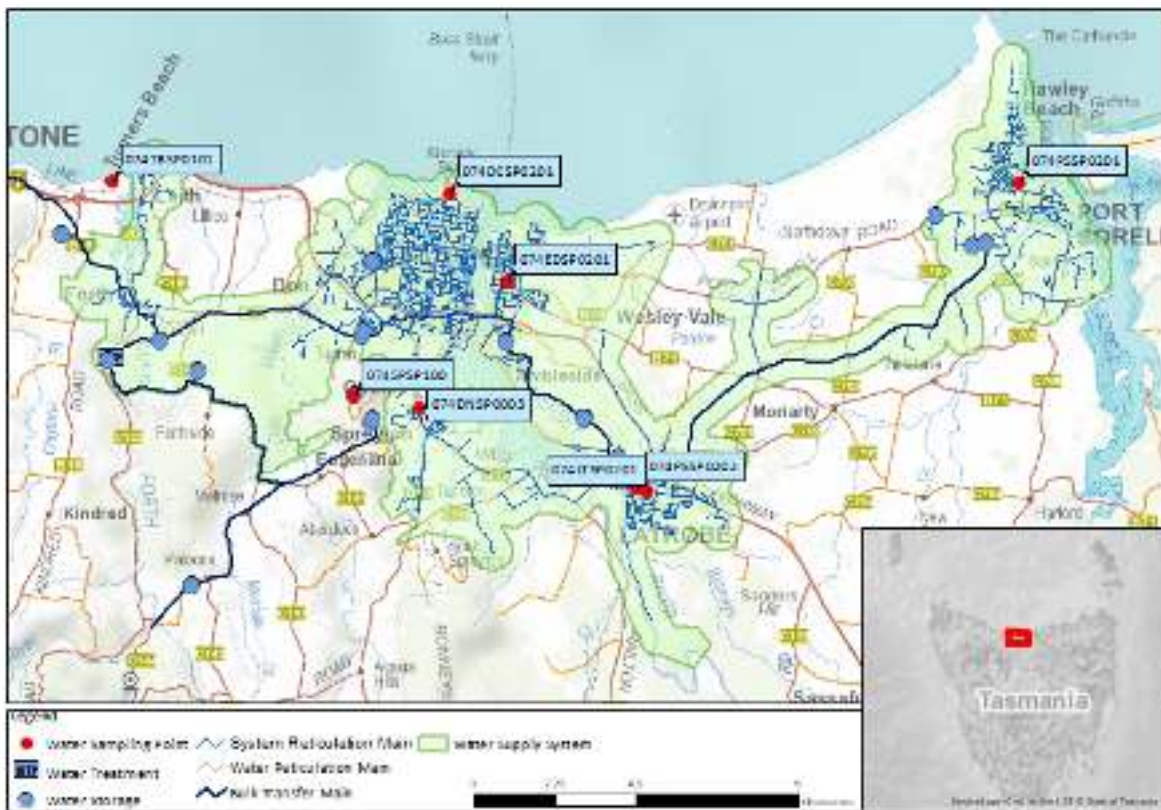


Figure 22.1-b Map of Forth River monitoring system

22.2. Summary of annual reticulation compliance (2018–19)

Table 22.2-a Sampling program

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Forth/Spreyton Memorial Hall	074DNSP0003	W	n/a	n/a	n/a	n/a	n/a
Forth/Mersey Bluff Surf Club Sample Point	074DCSP0201	W	Q	Q	n/a	Q	n/a
Forth/Wright St Sample Point	074EDSP0201	W	Q	n/a	n/a	n/a	n/a
Forth/Latrobe Town Hall Sample Point	074LTSP0201 ¹⁴	W	n/a	n/a	2M	n/a	n/a
Forth/Fire Station	074LTSP0202	W	n/a	n/a	2M	n/a	n/a
Forth/Port Sorell Surf Club Sample Point	074PSSP0201	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	W	Q	Q	n/a	Q	n/a
Number Planned Samples		364	16	12	48	12	n/a
Number Samples Tested		364	16	12	48	12	n/a

22.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100.0%	100.0%	100.0%	99.7%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	99.4%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%

■ Compliant ■ Non-compliant

¹⁴ Replaced by Forth/Fire Station 074LTSP0202 23rd July 2018

22.4. Analysis of current health performance (2018–19)

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	2018–19
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%
■ Compliant ■ Non-compliant	

Table 22.4-c 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	0.0022
Barium	2	mg/L	16	0	100	0.0078	0.0052	0.0111
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	0.0004
Copper	2	mg/L	16	0	100	0.0153	<0.0001	0.0794
Lead	0.01	mg/L	16	0	100	0.0002	<0.0001	0.0006
Manganese	0.5	mg/L	16	0	100	0.0048	<0.0001	0.0199
Mercury	0.001	mg/L	16	0	100	0.00005	<0.00003	0.00028
Molybdenum	0.05	mg/L	16	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	16	0	100	0.0002	<0.0001	0.0003
Selenium	0.01	mg/L	16	0	100	<0.0001	<0.0001	0.0002

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	12	0	100	10	1	29
Monochloroacetic acid	150	µg/L	12	0	100	<3	<3	3
Trichloroacetic acid	100	µg/L	12	0	100	18	12	34
Total trihalomethanes	250	µg/L	12	0	100	65	31	91

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	0.31	0	1.38
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.21	5.87	9.39
Turbidity	NTU	1	0.48	0	17.4

22.5. Analysis of overall system performance (2018–19)

Table 22.5-a Summary of system issues/public health alerts with notification details

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

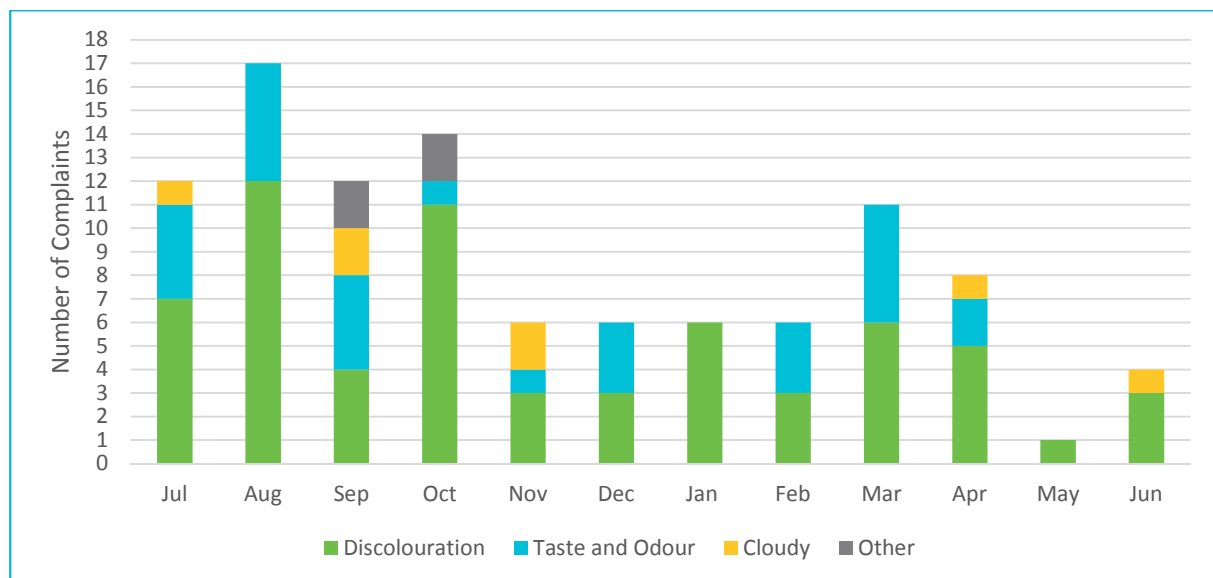


Figure 22.5-b Water quality customer complaints by month and type

23. Gawler River drinking water system

23.1. System summary (2018–19)

Gawler River drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	6089
Population serviced	12337
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	156	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%	4	0

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	246	Discolouration, taste and odour, cloudy, other (stained washing)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Instrumentation upgrade	Instrumentation upgrade of Gawler WTP	In progress	October 2019	\$88,000

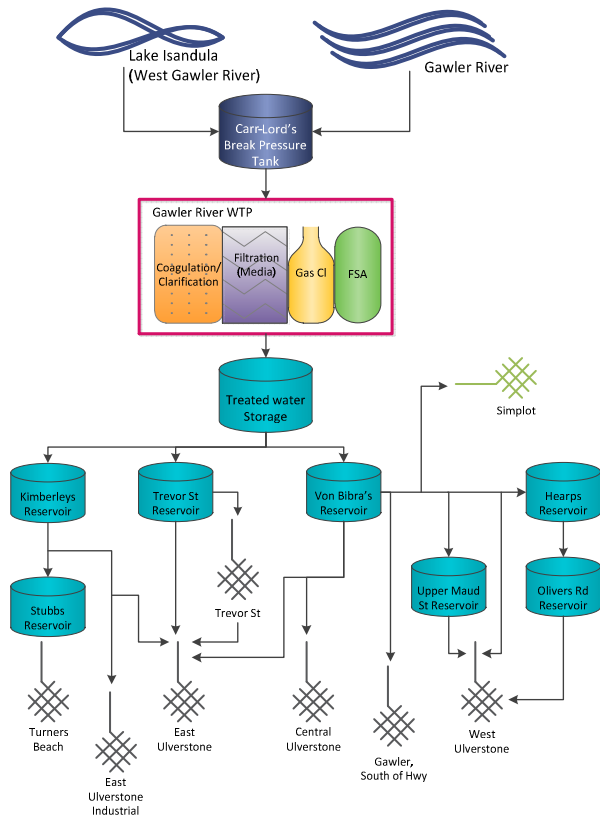


Figure 23.1-a Gawler River system schematic



Figure 23.1-b Map of Gawler River monitoring system

23.2. Summary of annual reticulation compliance (2018–19)

Table 23.2-a Sampling program

Planned sampling program (2018–19)							
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		156	8	4	48	8	n/a
Number Samples Tested		156	8	4	48	8	n/a

23.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	99.75%	99.8%	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

23.4. Analysis of current health performance (2018–19)

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 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)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%

■ Compliant ■ Non-compliant

Table 23.4-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	0.0144	0.0104	0.0208
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	0.0004	<0.0001	0.0013
Copper	2	mg/L	8	0	100	0.0090	0.0020	0.0192
Lead	0.01	mg/L	8	0	100	0.0003	<0.0001	0.0011
Manganese	0.5	mg/L	8	0	100	0.0126	0.0013	0.0510
Mercury	0.001	mg/L	8	0	100	0.00005	<0.00003	0.0001
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0008	0.0002	0.0015
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

Table 23.4-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	12
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	17	12	23
Total trihalomethanes	250	µg/L	4	0	100	70	66	75

Table 23.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.38	0	1.14
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.06	6.19	7.86
Turbidity	NTU	1	0.59	0	8.49

23.5. Analysis of overall system performance (2018–19)

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

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

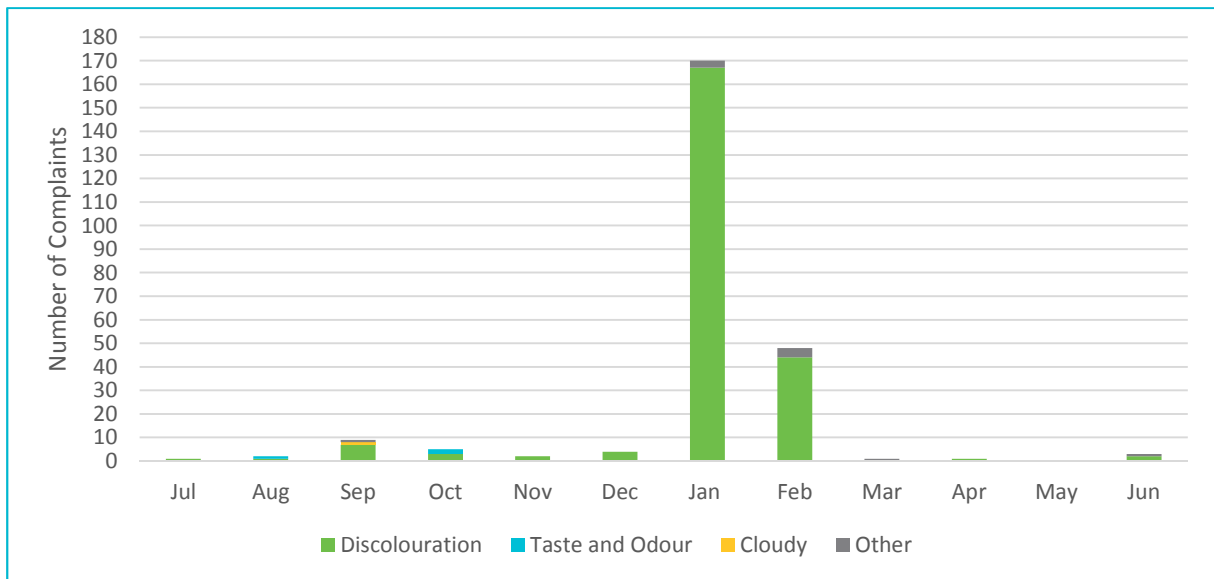


Figure 23.5-b Water quality customer complaints by month and type

24. Gladstone drinking water system

24.1. System summary (2018–19)

Gladstone drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	81
Population serviced	116
Fluoride	n/a

Performance overview against health targets (2018–19)					
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

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	5	Discolouration

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Gladstone WTP	Upgrade of Gawler WTP and associated infrastructure	In progress	October 2019	\$2,250,000
Gladstone reticulation	Upgrade of reticulation system	In progress	TBA	TBA

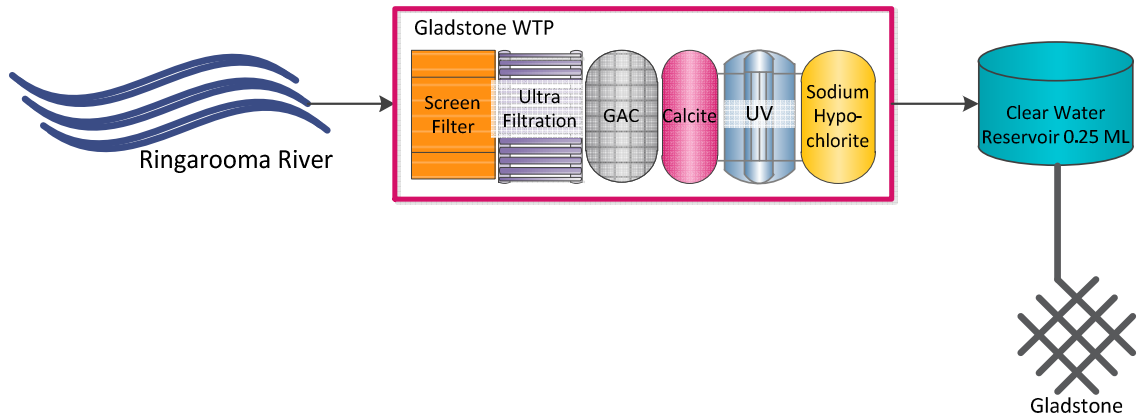


Figure 24.1-a Gladstone system schematic

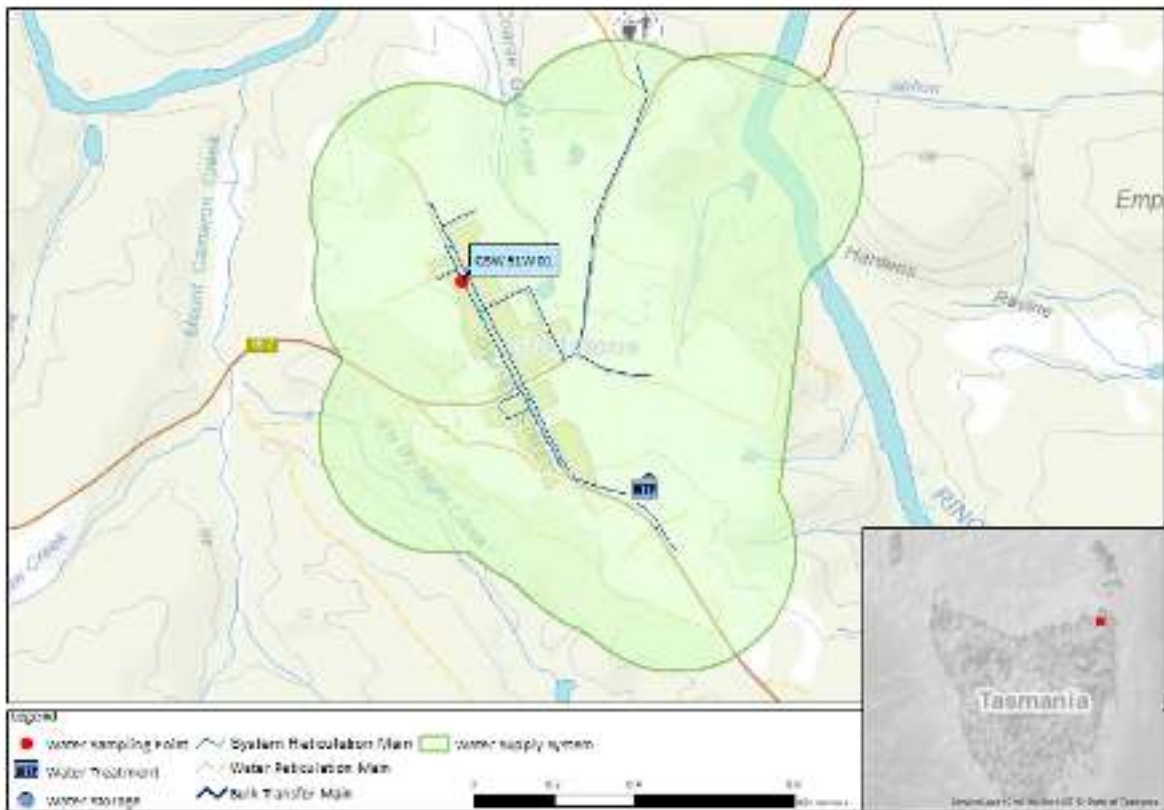


Figure 24.1-b Map of Gladstone monitoring system

24.2. Summary of annual reticulation compliance (2018–19)

Table 24.2-a Sampling program

Planned compliance sampling program (2018–19)							
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		52	4	4	n/a	4	n/a
Number Samples Tested		52	4	4	n/a	4	n/a

24.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	36.9%	33.3%	16.7%	50.0%	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	n/a	100.0%

■ Compliant ■ Non-compliant

24.4. Analysis of current health performance (2018–19)

Table 24.4-a Summary of health guideline exceedances

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

Table 24.4-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	0.0044	0.0030	0.0060
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	0.0069	0.0034	0.0010
Lead	0.01	mg/L	4	0	100	0.0006	0.0002	0.0007
Manganese	0.5	mg/L	4	0	100	0.0190	0.0079	0.0478
Mercury	0.001	mg/L	4	0	100	0.00009	<0.00003	0.00021
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 24.4-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	11	27
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	4
Trichloroacetic acid	100	µg/L	4	0	100	25	9	33
Total trihalomethanes	250	µg/L	4	0	100	69	54	85

Table 24.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.73	0.33	1.2
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.24	6.64	7.84
Turbidity	NTU	1	0.53	0.21	1.13

24.5. Analysis of overall system performance (2018–19)

Table 24.5-a Summary of system issues/public health alerts with notification details

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

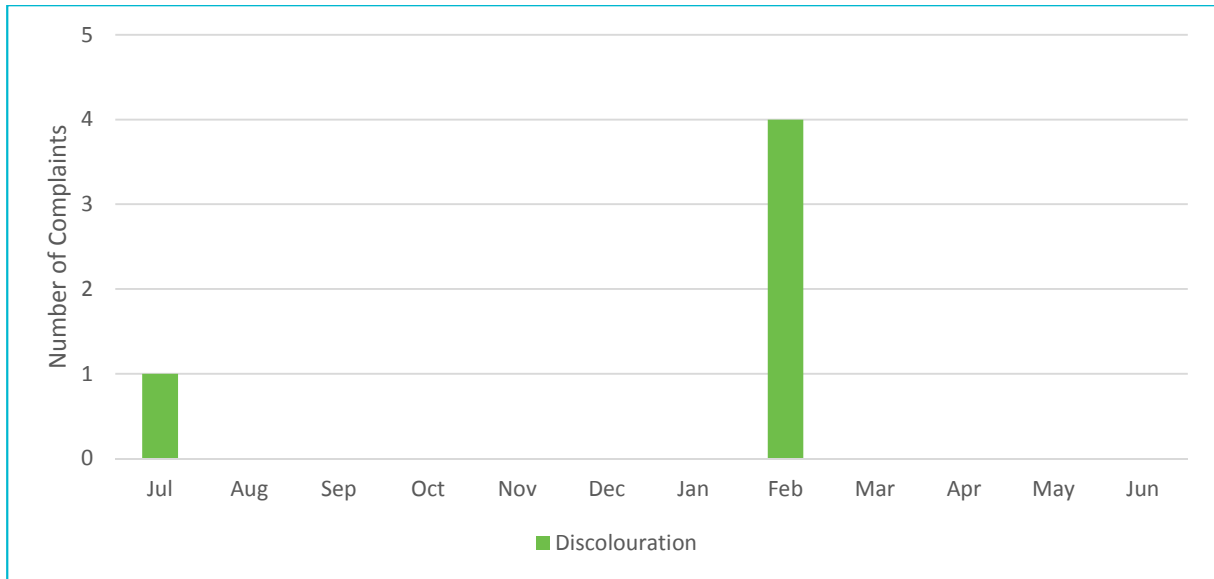


Figure 24.5-b Water quality customer complaints by month and type

25. Gormanston drinking water system

25.1. System summary (2018–19)

Gormanston drinking water system	
System status (as at 30 June 2019)	Limited quality customer (DNC)
Total number of connections	1
Population serviced	1
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	44.4%	⊘	98.0%	9	5
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	98.8%	⊘	100.0%	7	1
DBPs	n/a	n/a	n/a	n/a	n/a

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	2	Micro exceedances and lead exceedance
Public health alerts issued	1	Customer advised of DNC
Notifications made to DoH	7	<i>E. coli</i> exceedances, lead exceedance + DNC
Customer complaints	0	

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

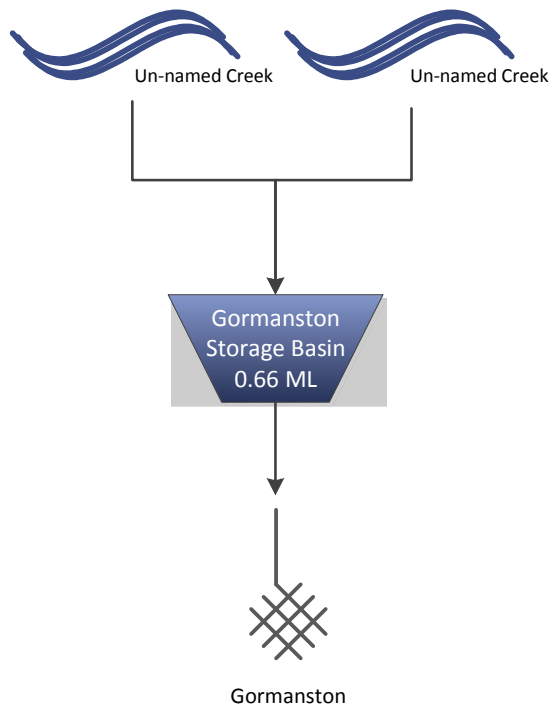


Figure 25.1-a Gormanston system schematic

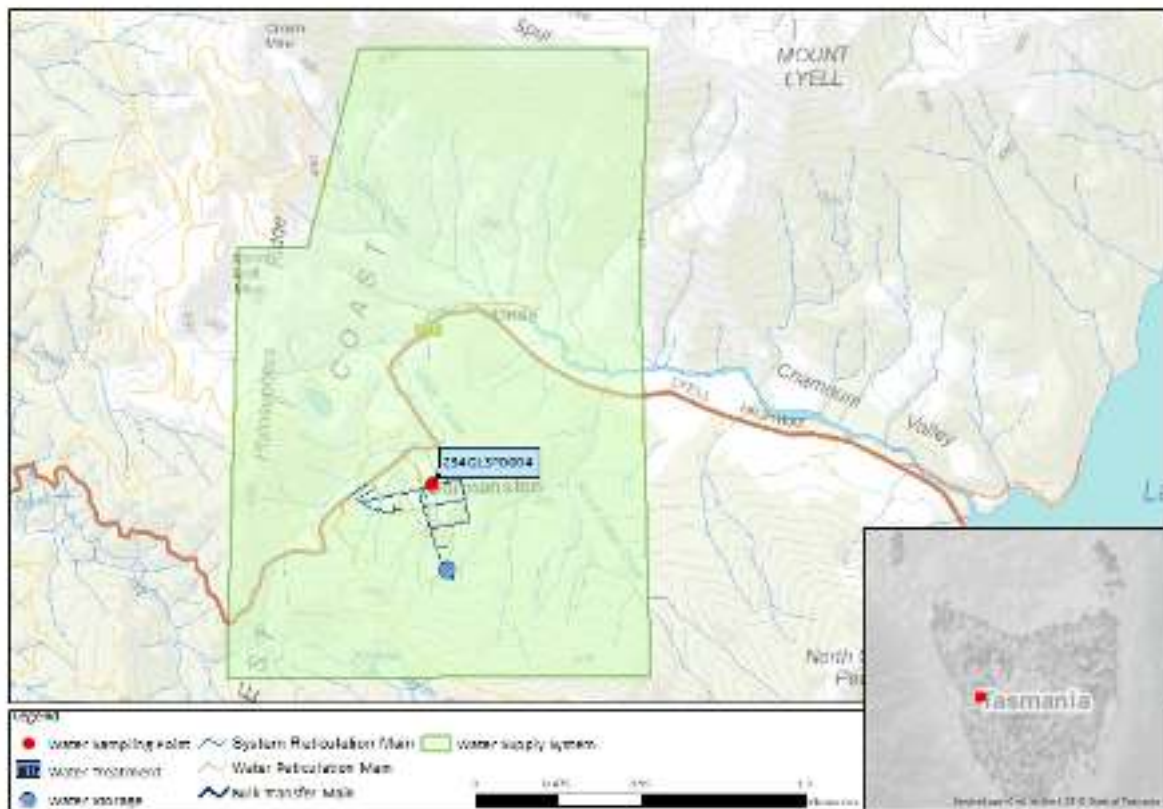


Figure 25.1-b Map of Gormanston monitoring system

25.2. Summary of annual reticulation compliance (2018–19)

Table 25.2-a Sampling program

Planned compliance sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Gormanston/Mongomery St.	234GLSP0004	M	M ¹⁵	n/a	n/a	n/a	n/a
Number Planned Samples		12	10	n/a	n/a	n/a	n/a
Number Samples Tested		12	7	n/a	n/a	n/a	n/a

25.3. Summary of current and historic performance (2014–19)

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

¹⁵ Tested Quarterly until October 2018

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	84.6%	48.9%	50.0%	66.7%	44.4%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	97.7%	100.0%	100.0%	98.8%
Disinfection by products	n/a	n/a	n/a	n/a	n/a

■ Compliant ■ Non-compliant

25.4. Analysis of current health performance (2018–19)

Table 25.4-a Summary of health guideline exceedances¹⁶

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
<i>E. coli</i>	13/11/2018	<i>E. coli</i> of 1 MPN/100mL in monthly compliance sample – resampling not required subject to PHA	<input checked="" type="checkbox"/>
<i>E. coli</i>	5/12/2018	<i>E. coli</i> of 4.2 MPN/100mL in monthly compliance sample – resampling not required subject to PHA	<input checked="" type="checkbox"/>
Lead	7/2/2019	Lead of 0.0246 mg/L in monthly compliance sample – resampling not required subject to PHA	<input checked="" type="checkbox"/>
<i>E. coli</i>	20/2/2019	<i>E. coli</i> of 1 MPN/100mL in monthly compliance sample – resampling not required subject to PHA	<input checked="" type="checkbox"/>
<i>E. coli</i>	10/4/2019	<i>E. coli</i> of 3.6 MPN/100mL in monthly compliance sample – resampling not required subject to PHA	<input checked="" type="checkbox"/>
<i>E. coli</i>	15/5/2019	<i>E. coli</i> of 20 MPN/100mL in monthly compliance sample – resampling not required subject to PHA	<input checked="" type="checkbox"/>

¹⁶ System subject to PHA, resampling not required

Figure 25.4-b Microbiological non-compliances by month

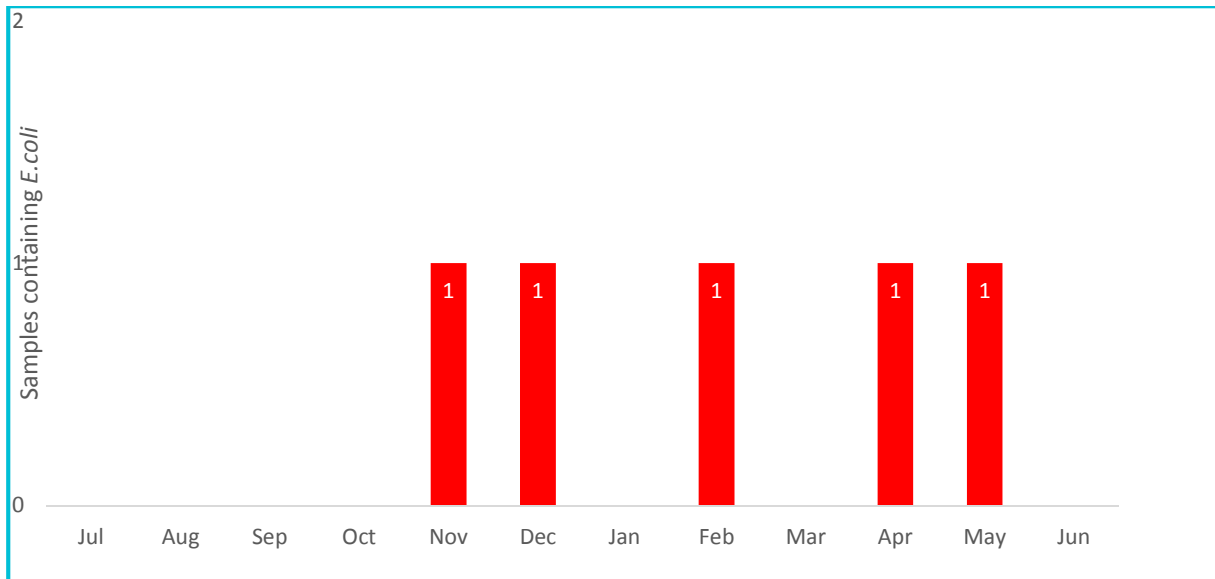


Table 25.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	6	0	100	0.0005	<0.0005	0.0007
Arsenic	0.01	mg/L	7	0	100	0.0026	0.0008	0.0082
Barium	2	mg/L	7	0	100	0.0055	0.0021	0.0151
Cadmium	0.002	mg/L	7	0	100	0.0001	<0.0001	0.0001
Chromium	0.05	mg/L	7	0	100	0.0011	0.0002	0.0039
Copper	2	mg/L	7	0	100	0.0542	0.0310	0.1220
Lead	0.01	mg/L	7	1	86	0.0064	0.0020	0.0246
Manganese	0.5	mg/L	7	0	100	0.0200	0.0014	0.1174
Mercury	0.001	mg/L	6	0	100	0.00004	<0.00003	0.0001
Molybdenum	0.05	mg/L	7	0	100	0.0002	<0.0001	0.0006
Nickel	0.02	mg/L	7	0	100	0.0003	0.0002	0.0005
Selenium	0.01	mg/L	7	0	100	0.0005	0.0001	0.0017

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	n/a	n/a	n/a
Colour True	HU	15	n/a	n/a	n/a
pH	Units	6.5 – 8.5	5.72	4.90	8.01
Turbidity	NTU	1	12.78	0.43	50.9

25.5. Analysis of overall system performance (2018–19)

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

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
13/11/2018 05/12/2018 20/02/2019 10/04/2019 15/05/2019	<i>E.coli</i> detections mitigated by a BWA	N	N
07/02/2019	Lead detection	Y	Y
19/02/2019	DNC issued to the connected customer following lead detection	Y	Y

26. Grassy drinking water system

26.1. System summary (2018–19)

Grassy drinking water system	
System status (as at 30 June 2018)	Potable
Total number of connections	132
Population serviced	109
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
King Island Upgrade	WTP Upgrade, treated water reservoirs and pump station	In progress	TBA	\$10,473,597

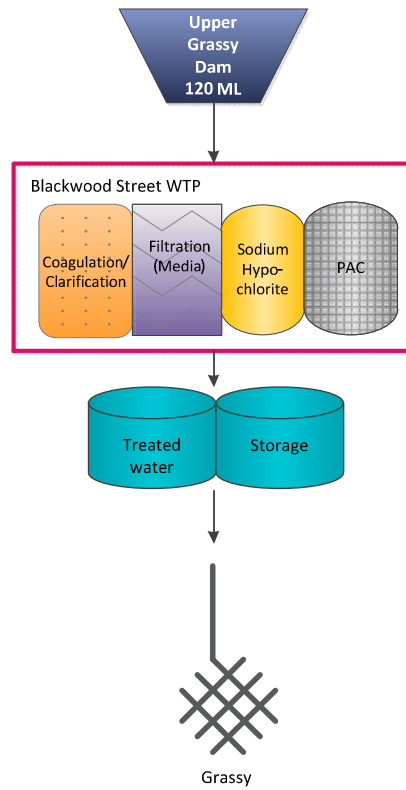


Figure 26.1-a Grassy system schematic

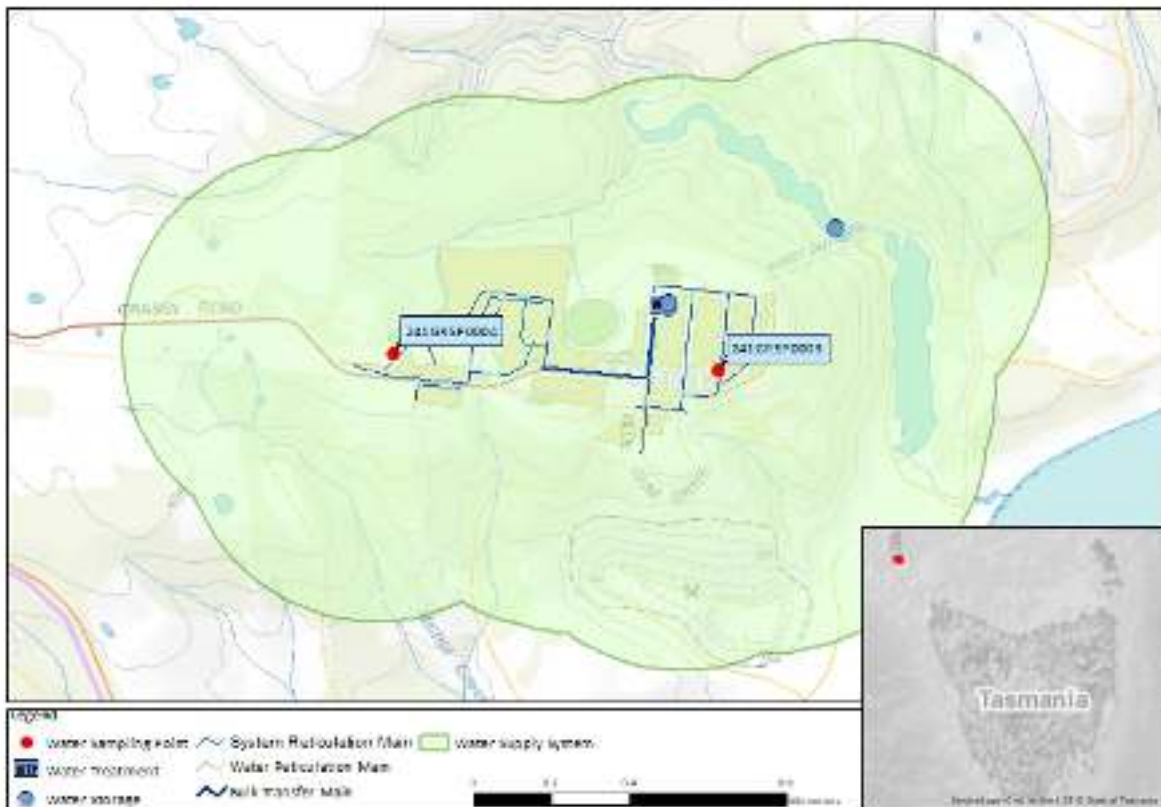


Figure 26.1-b Map of Grassy monitoring system

26.2. Summary of annual reticulation compliance (2018–19)

Table 26.2-a Sampling program

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Grassy/Sassafrass St Site 2	241GRSP0003	W	n/a	n/a	n/a	n/a	n/a
Grassy/Ti Tree Drive Site 3	241GRSP0004	W	Q	Q	n/a	Q	n/a
Number Planned Samples		104	4	4	n/a	4	n/a
Number Samples Tested		104	4	4	n/a	4	n/a

26.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	99.4%	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

26.4. Analysis of current health performance (2018–19)

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 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	0.0038	0.0033	0.0041
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	0.0063	0.0198
Lead	0.01	mg/L	4	0	100	0.0002	<0.0001	0.0003
Manganese	0.5	mg/L	4	0	100	0.0197	0.0047	0.0406
Mercury	0.001	mg/L	4	0	100	0.00007	<0.00003	0.00011
Molybdenum	0.05	mg/L	4	0	100	0.0073	0.0036	0.0104
Nickel	0.02	mg/L	4	0	100	0.0011	0.0008	0.0014
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 26.4-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	6	4	8
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	5	2	8
Total trihalomethanes	250	µg/L	4	0	100	111	92	120

Table 26.4-d 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	<1	<1	1
pH	Units	6.5 – 8.5	7.19	6.16	7.58
Turbidity	NTU	1	0.22	0.10	2.6

26.5. Analysis of overall system performance (2018–19)

Table 26.5-a Summary of system issues/public health alerts with notification details

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

27. Greater Hobart drinking water system

27.1. System summary (2018–19)

Greater Hobart drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	91,990
Population serviced	192,957
Fluoride	Lake Fenton: Sodium fluoride All others: Fluorosilicic acid

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	☑	98.0%	5826	0
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 (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	1	BWA lifted from Colebrook
Notifications made to DoH	1	BWA lifted from Colebrook
Customer complaints	431	Discolouration, taste and odour, cloudy, PHA notices, other (fluoride, chlorine, illness, stained washing)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Bryn Estyn Upgrade	Upgrade to WTP	In progress	June 2022	\$500,000
Merton Fluoride	Dosing replacement	In progress	TBA	\$183,000
Regional Towns Water Supply Program	WTP and associated infrastructure	Complete	August 2018	\$2,997,646
Regional Towns Water Supply Program	Fentonbury–Westerway WTP and associated infrastructure	Complete	August 2018	\$3,698,930

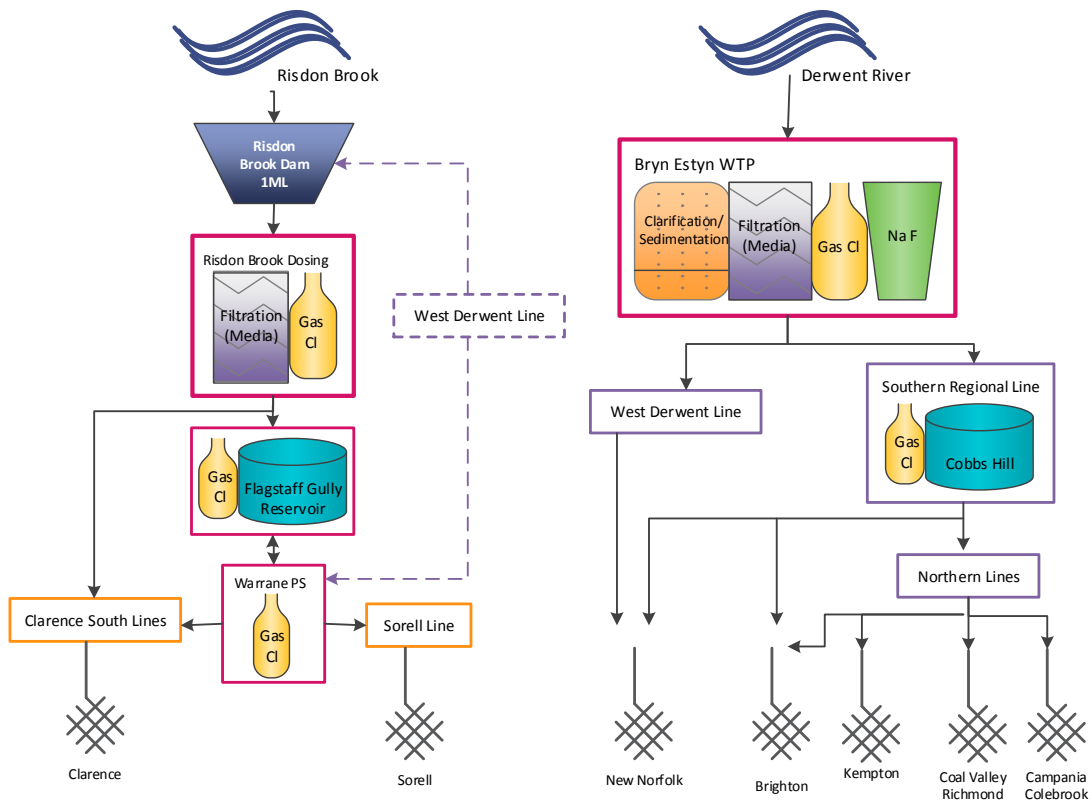
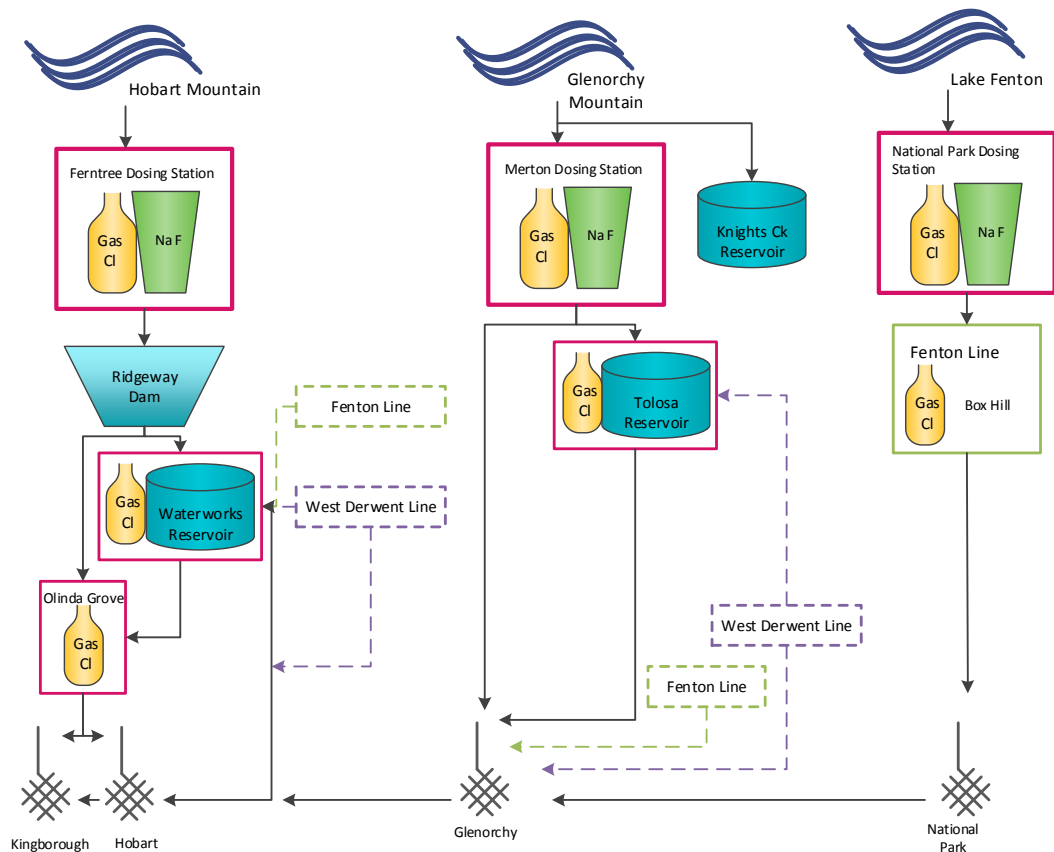


Figure 27.1-a Greater Hobart system schematic

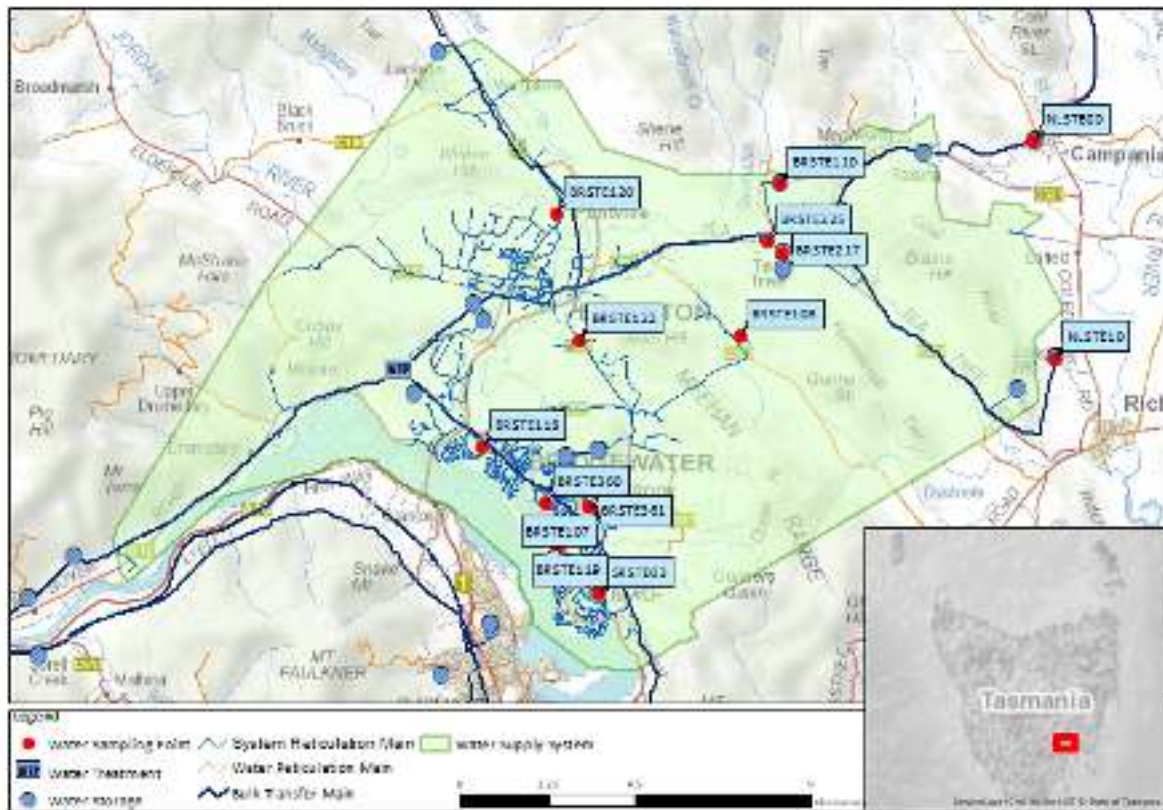


Figure 27.1-b Map of Greater Hobart – Brighton monitoring system

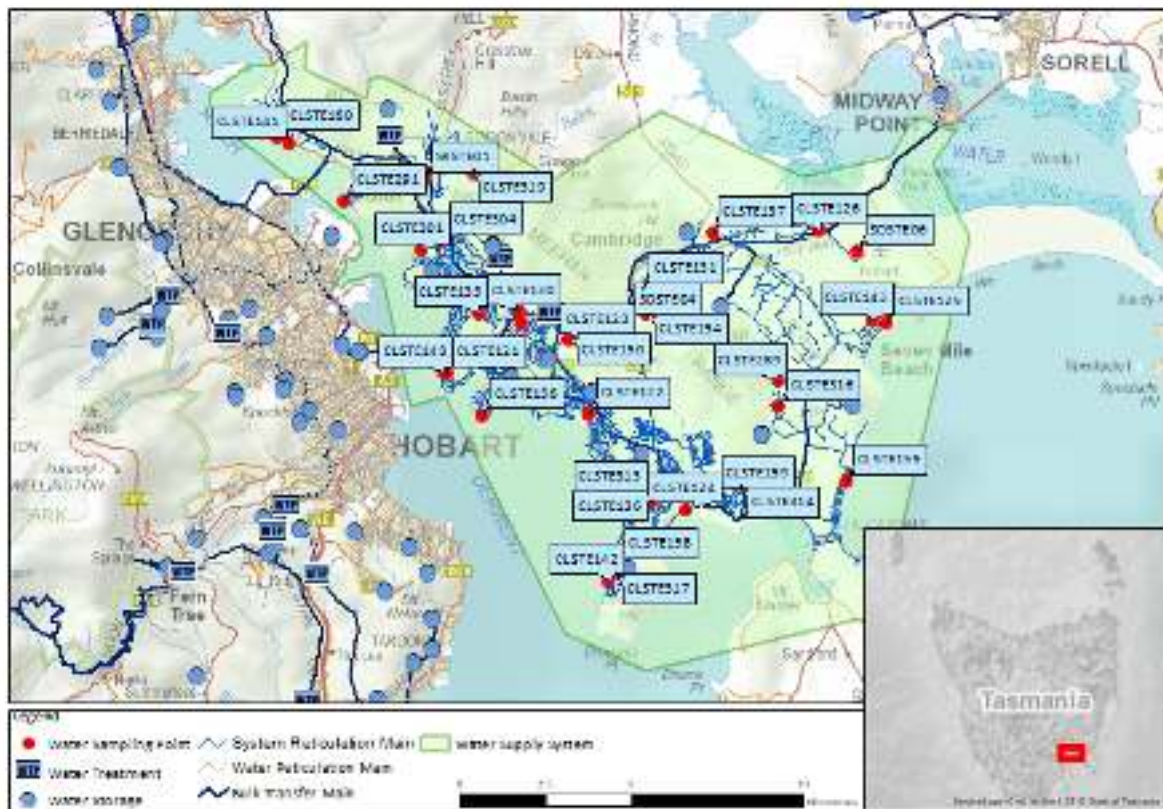


Figure 27.1-c Map of Greater Hobart – Clarence monitoring system

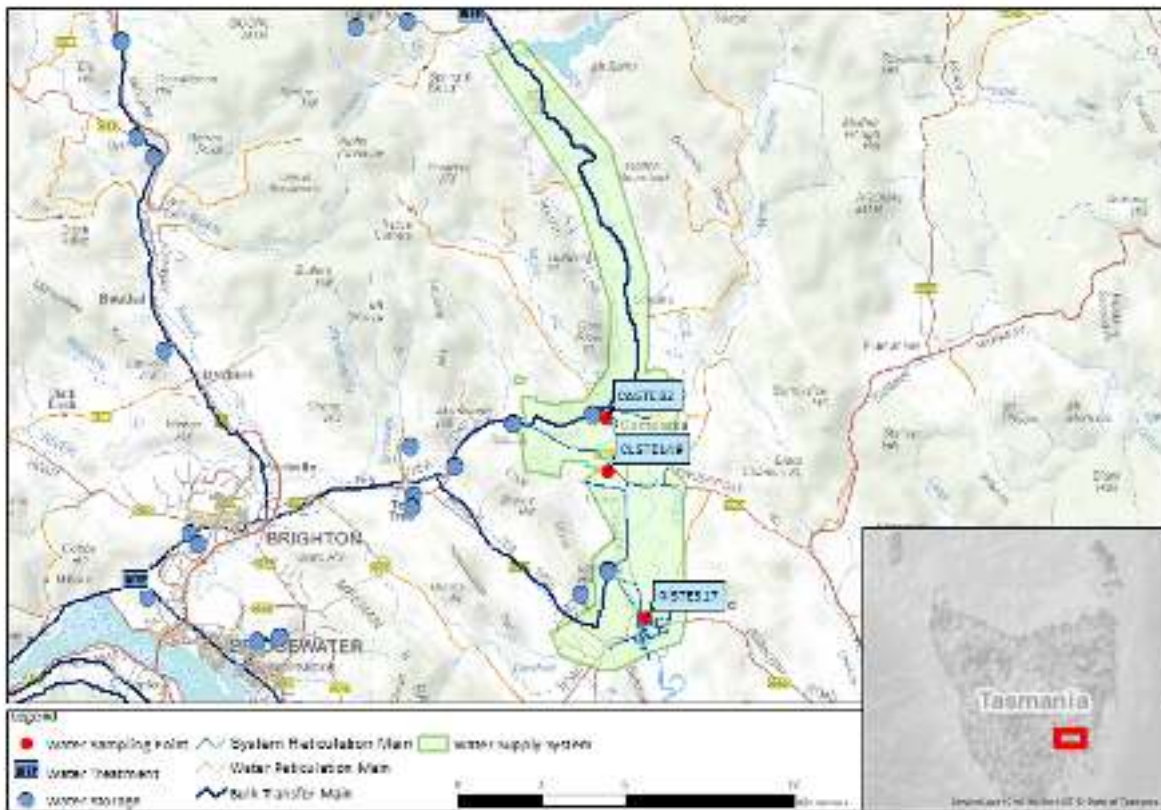


Figure 27.1-d Map of Greater Hobart – Coal Valley monitoring system

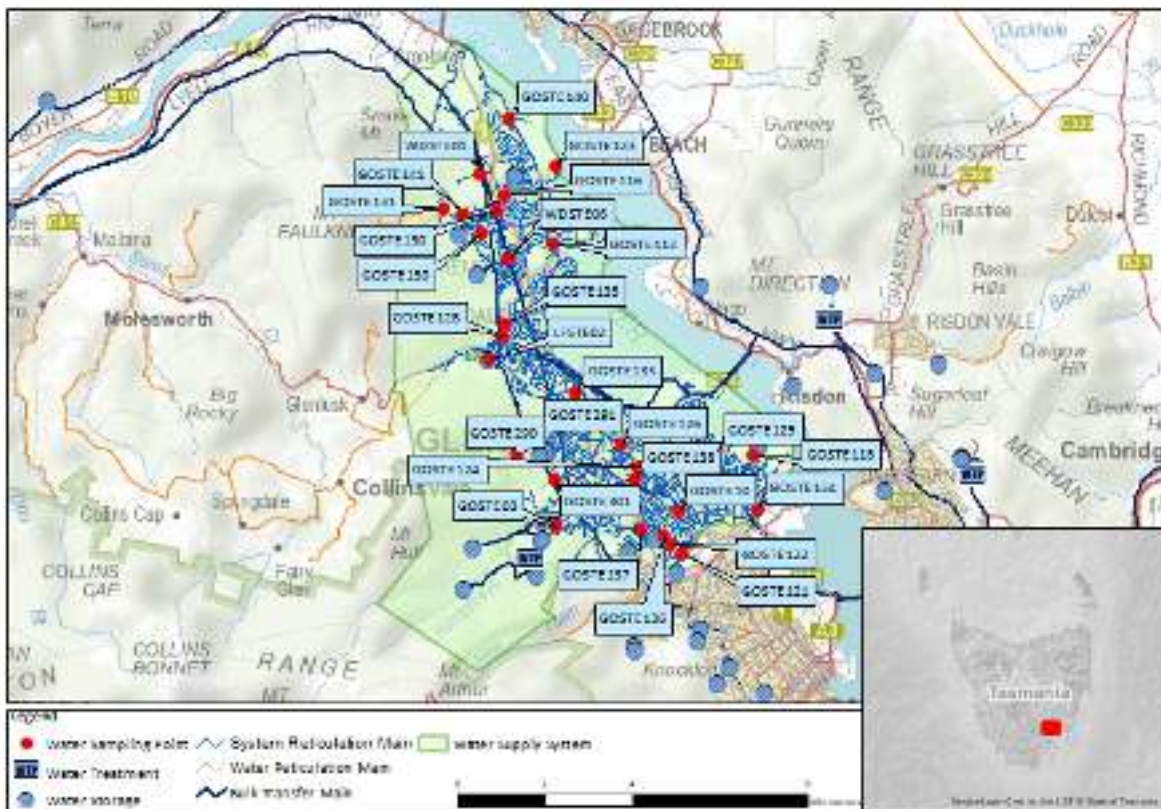


Figure 27.1-e Map of Greater Hobart – Glenorchy monitoring system

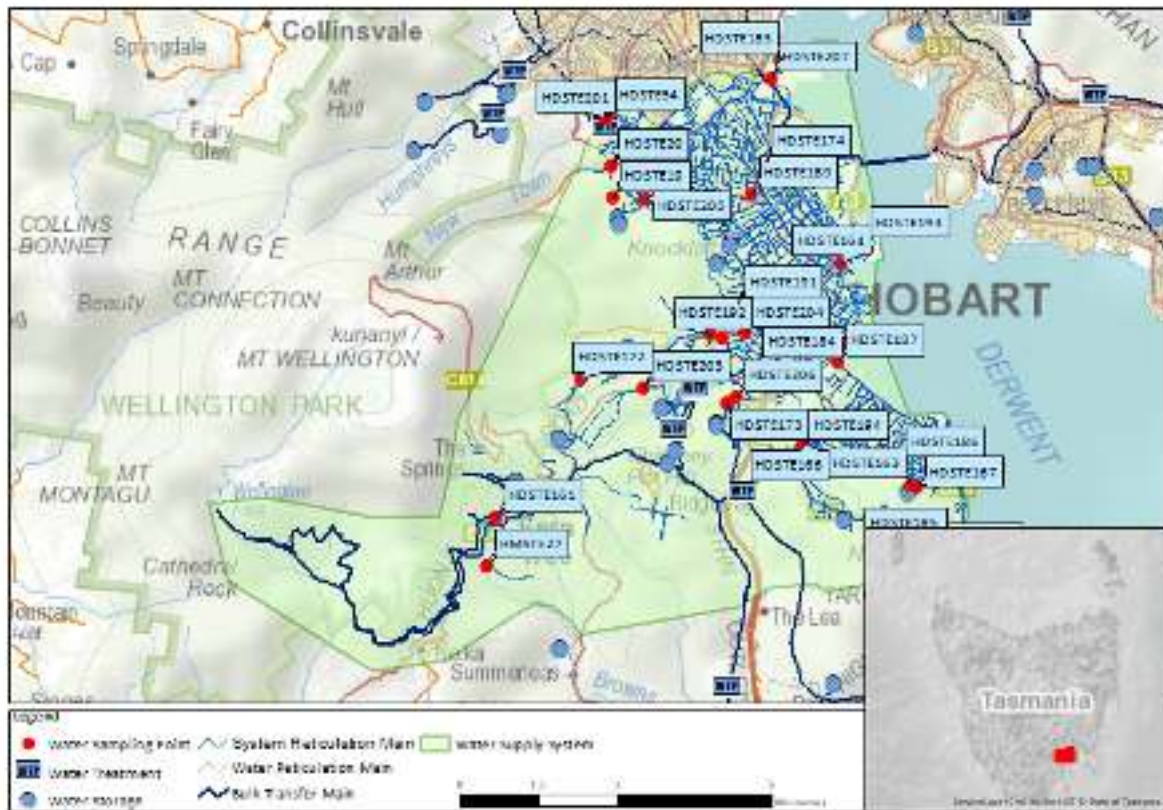


Figure 27.1-f Map of Greater Hobart – Hobart monitoring system



Figure 27.1-g Map of Greater Hobart – Kingborough monitoring system

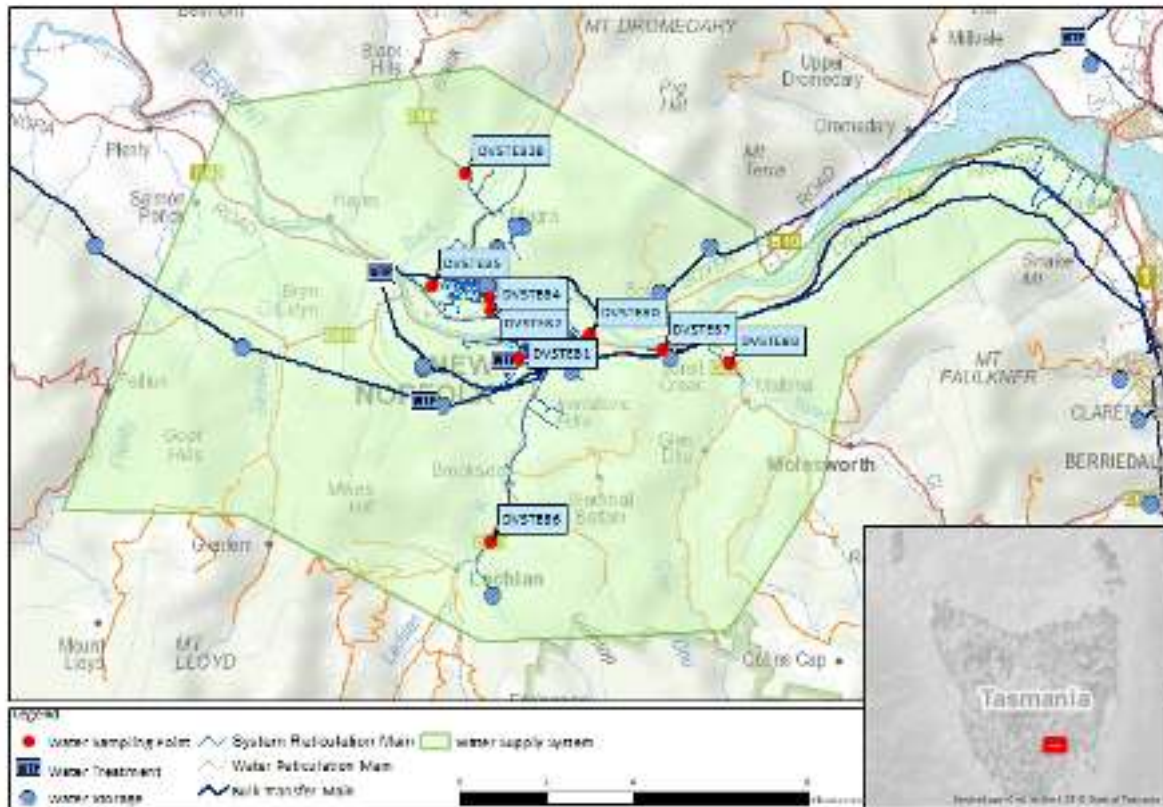


Figure 27.1-h Map of Greater Hobart – New Norfolk monitoring system

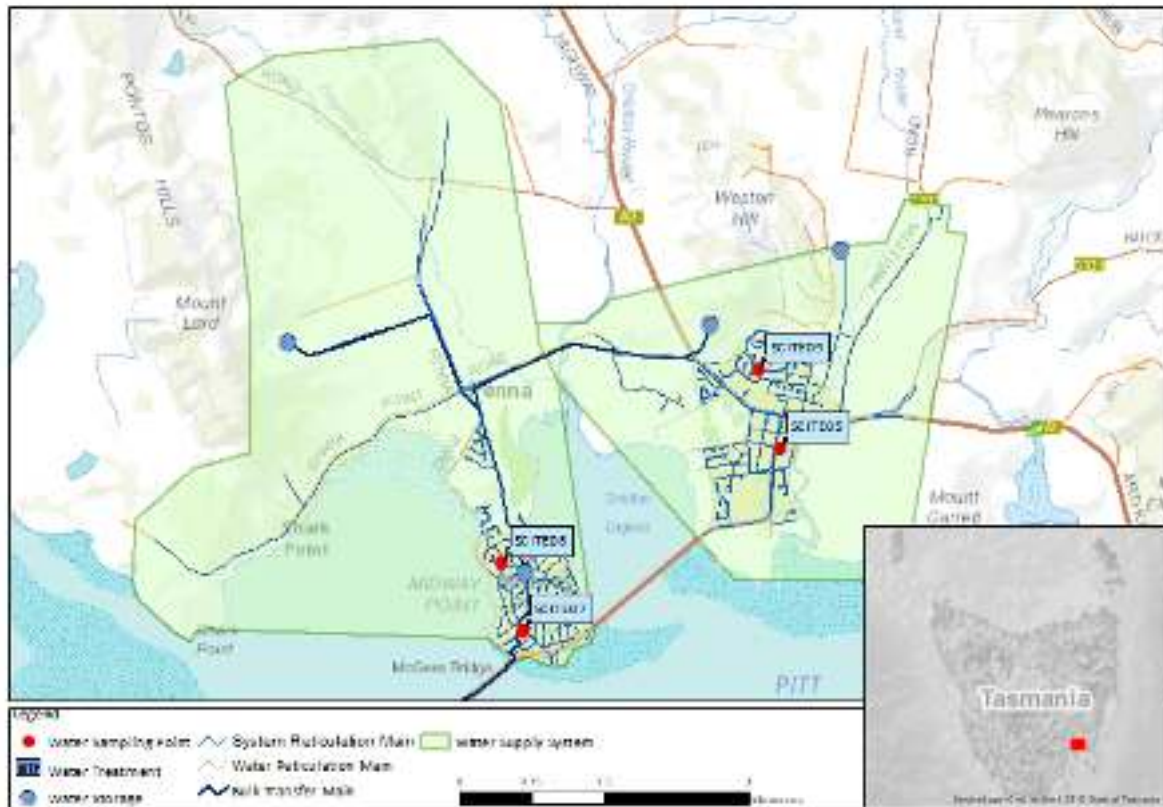


Figure 27.1-i Map of Greater Hobart – Sorell monitoring system

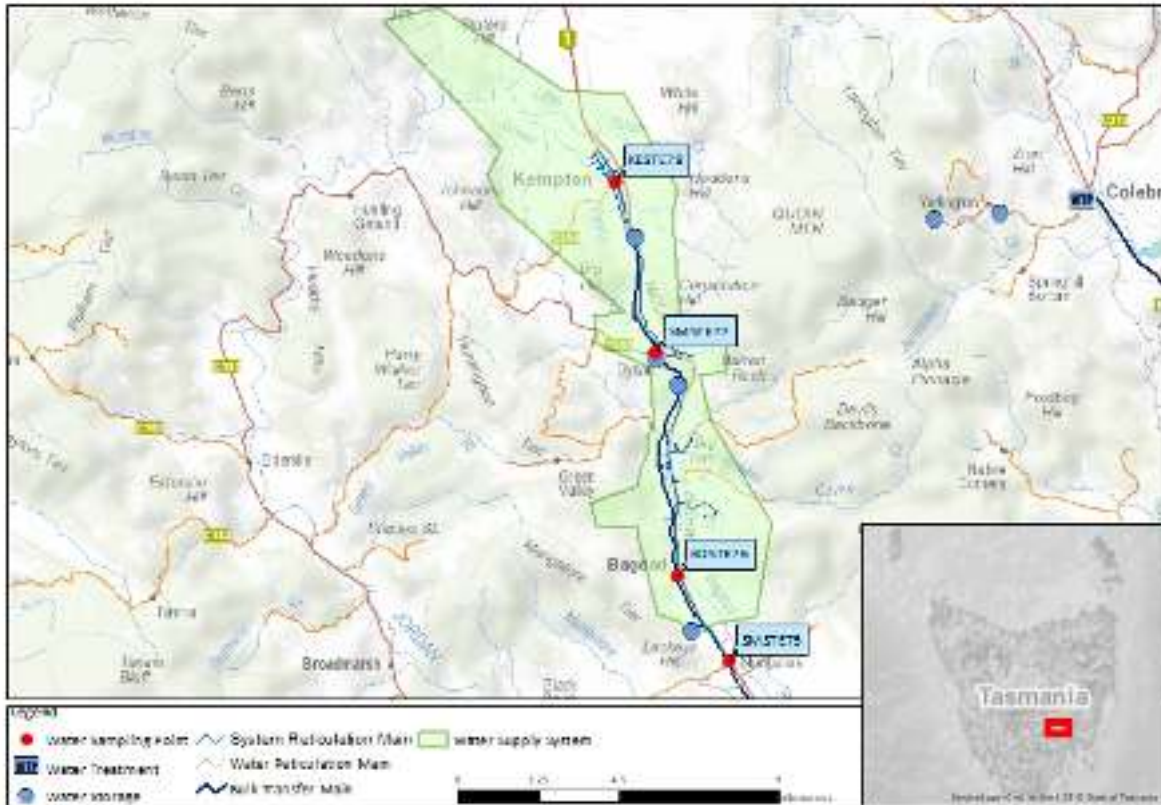


Figure 27.1-j Map of Greater Hobart – Southern Midlands monitoring system

27.2. Summary of annual reticulation compliance (2018–19)

Table 27.2-a Sampling program – Brighton

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Old Beach/238 Old Beach Rd, Sample Tap	BRSTE107 ¹⁷	W	n/a	n/a	n/a	n/a	n/a
Tea Tree/Glen Rose Dr, Sample Tap	BRSTE108 ¹⁸	W	n/a	n/a	n/a	n/a	n/a
Tea Tree/Merrieworth Rd, Sample tap	BRSTE110 ¹⁹	W	n/a	n/a	n/a	n/a	n/a
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 ²⁰	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		567	4	4	24	4	n/a
Number Samples Tested		567	4	4	24	4	n/a

¹⁷ Replaced by BRSTE361 from 24th September 2018

¹⁸ Replaced by BRSTE122 from 12th November 2018

¹⁹ Replaced by BRSTE225 from 22nd October 2018

²⁰ New site added 7th August 2018

Table 27.2-b Sampling program – Clarence

Planned sampling program (2018–19)							
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	W	n/a	n/a	n/a	n/a	n/a
598 Oceana Drive	CLSTE313	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		1260	8	8	0	8	n/a
Number Samples Tested		1260	8	8	0	8	n/a

Table 27.2-c Sampling program – Coal Valley

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Richmond, 12 Victoria St/Fire Station Sample Tap	RISTE317	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		208	12	12	0	12	n/a
Number Samples Tested		208	12	12	0	12	n/a

Table 27.2-d Sampling program – Glenorchy

Planned sampling program (2018–19)							
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	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, 2 Gerrard St/Sample Tap	GOSTE121 ²¹	W	Q	Q	n/a	Q	n/a
Moonah, 2/10 Dawkins Court/Sample Tap	GOSTE122 ²²	W	n/a	n/a	n/a	n/a	n/a
Austins Ferry, 20 Wendourie Parade/Sample Tap	GOSTE123 ²³	W	n/a	n/a	n/a	n/a	n/a
Derwent Park, 49 Windsor St/Sample Tap	GOSTE124 ²⁴	W	n/a	n/a	n/a	n/a	n/a
Goodwood, Gepp Parade Outside Public Toilets/Sample tap	GOSTE125 ²⁵	W	n/a	n/a	n/a	n/a	n/a

²¹ Replaced by GOSTE137 from 1st September 2018

²² Replaced by GOSTE136 from 1st September 2018

²³ Replaced by GOSTE140 from 1st September 2018

²⁴ Replaced by GOSTE138 from 1st September 2018

²⁵ Replaced by GOSTE134 from 6th August 2018

Glenorchy City Council chambers/Sample Tap	GOSTE126 ²⁶	W	n/a	n/a	n/a	n/a	n/a
Chigwell, Shop 2 Allunga Rd /Sample Tap	GOSTE128 ²⁷	W	n/a	n/a	n/a	n/a	n/a
Austins Ferry Primary School/New Sample Tap	GOSTE130 ²⁸	W	Q	Q	n/a	Q	n/a
Claremont, 59 Toffolis Road/Garden Tap	GOSTE131 ²⁹	W	n/a	n/a	n/a	n/a	n/a
Montrose, 1 Beneve Court/Sample Tap	GOSTE290 ³⁰	W	n/a	n/a	n/a	n/a	n/a
Moonah, 125 Springfield Ave	GOSTE137	W	n/a	n/a	2M	n/a	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	LFSTE14	W	n/a	n/a	n/a	n/a	n/a
Hilton Rd	WDSTE01	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		1001	8	8	48	8	n/a
Number Samples Tested		1001	8	8	48	8	n/a

Table 27.2-e Sampling program – Hobart

Planned sampling program (2018–19)

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/crn Copley and Pottery Rd	HDSTE205 ³¹	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
Bentley Pk crn Girrabong & Bentley Rd	HDSTE201 ³²	W	n/a	n/a	n/a	n/a	n/a
50B Pottery Rd	HDSTE202 ³³	W	n/a	n/a	n/a	n/a	n/a

²⁶ Removed 8th October 2018

²⁷ Replaced by GOSTE135 from 1st September 2018

²⁸ Replaced by GOSTE141 from 8th October 2018

²⁹ Replaced by GOSTE139 from 1st September 2018

³⁰ Replaced by GOSTE291 from 8th October 2018

³¹ Replaced by HDSTE208 8th October 2018

³² Site removed 8th October 2018

South Hobart/Soccer Ground	HDSTE204 ³⁴	W	n/a	n/a	n/a	n/a	n/a
Lenah Valley/PRV Pit, Cnr Girrabong/Mowbray Crt	HDSTE54	W	n/a	n/a	n/a	n/a	n/a
Sth Hobart, 56 Cascade Rd/Sample Tap	HDSTE158 ³⁵	W	n/a	n/a	n/a	n/a	n/a
Fern Tree, 9 Grays Rd/Sample tap	HDSTE161 ³⁶	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/Argyle St Sample Tap	HDSTE164 ³⁷	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, Nelson Rd/Tangara Rd /Sample tap	HDSTE166 ³⁸	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
Sandy Bay, 26 Nicholas Drive/Sample tap	HDSTE167 ³⁹	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
Sandy Bay, Marieville Esp/Sample tap	HDSTE184 ⁴⁰	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
Sandy Bay, Channel Hwy, Opp No1 Trugganni Track ^b	HDSTE185 ⁴¹	W	Q	Q	n/a	Q	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
Sth Hobart, 317 Strickland Ave /Sample Tap	HDSTE172 ⁴²	W	n/a	n/a	n/a	n/a	n/a
Tolmans Hill/9 Woodridge Rd Sample tap	HDSTE173 ⁴³	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
Hobart/Boa Vista Rd	HDSTE174 ⁴⁴	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
New Town, SP Lab	HDSTE183	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
Lenah Valley/opp 70 Brushy Creek Rd	HDSTE19 ⁴⁵	W	n/a	n/a	n/a	n/a	n/a
287 Lenah Valley Rd	HDSTE20	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		846	4	4	48	8	n/a
Number Samples Tested		846	4	4	48	8	n/a

³³ Replaced by HDSTE54

³⁴ Replaced by HDSTE192 8th October 2018

³⁵ Replaced by HDSTE204 6th August 2018

³⁶ Replaced by HMSTE27 17th September 2018

³⁷ Replaced by HDSTE193 22nd October 2018

³⁸ Replaced by HDSTE194 12th November 2018

³⁹ Replaced by HDSTE186 6th August 2018

⁴⁰ Replaced by HDSTE187 6th August 2018

⁴¹ Replaced by KBSTE336 1st October 2018

⁴² Replaced by HDSTE203 6th August 2018

⁴³ Replaced by HDSTE206 6th August 2018

⁴⁴ Replaced by HDSTE189 6th August 2018

⁴⁵ Replaced by HDSTE20 6th August 2018

Table 27.2-f Sampling program – Kingborough

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Blackmans Bay Beach opp 2 Esplanade	KBSTE301 ⁴⁶	W	n/a	n/a	n/a	n/a	n/a
Blackmans Bay/23 Wells Parade	KBSTE313	W	n/a	n/a	n/a	n/a	n/a
Kingston Fire & Ambulance Station, crn Redwood Rd & Hawthorn Drive	KBSTE302 ⁴⁷	W	n/a	n/a	n/a	n/a	n/a
Kingston High Level/181 Redwood Rd	KBSTE311	W	n/a	n/a	n/a	n/a	n/a
Tradelink 50 Browns Road	KBSTE303 ⁴⁸	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
Baringa Rd Bus Stop	KBSTE305	W	n/a	n/a	n/a	n/a	n/a
28 Albion Heights Drive	KBSTE306 ⁴⁹	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 Primary School, Boronia Low Level/Sample tap	KBSTE224 ⁵⁰	W	n/a	n/a	n/a	n/a	n/a
Kingston Beach/Osborne Esplanade	KBSTE310	W	Q	Q	n/a	Q	n/a
Kingston Beach/Foreshore Sample Tap	KBSTE225 ⁵¹	W	Q	Q	n/a	Q	n/a
Snug, Frosts Rd – Museum Channel Highway,/Sample tap	KBSTE226	W	n/a	n/a	n/a	n/a	n/a
Margate, Sandfly Rd, Margate Cemetery/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/Dickson St (at STP)	KBSTE229	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
Kingston Beach, St Aloysius, Mirramar Park/Sample tap	KBSTE231 ⁵²	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 ⁵³	W	n/a	n/a	n/a	n/a	n/a
Bayton Street - Patriach Drive PRV Pit	KBSTE315 ⁵⁴	W	n/a	n/a	n/a	n/a	n/a
Ash Drive - 69 Brightwater Road	KBSTE316 ³⁴	W	n/a	n/a	n/a	n/a	n/a
Mt Pleasant - 51 Summerleas Road	KBSTE317 ³⁴	W	n/a	n/a	n/a	n/a	n/a

⁴⁶ Replaced by KBSTE313 17th September 2018

⁴⁷ Replaced by KBSTE311 17th September 2018

⁴⁸ Replaced by KBSTE318 14th January 2019

⁴⁹ Replaced by KBSTE309 7th August 2018

⁵⁰ Site removed 3rd December 2018, zone covered by KBSTE310

⁵¹ Replaced by KBSTE310 17th September 2018

⁵² Replaced by KBSTE314 24th September 2018

⁵³ New site added 17th September 2018

⁵⁴ New site added 3rd December 2018

Margate Offtake/Margate Esp off Beach Rd	KBSTE319 ⁵⁵	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		956	8	8	0	8	n/a
Number Samples Tested		956	8	8	0	8	n/a

Table 27.2-g Sampling program – New Norfolk

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
New Norfolk, George St/Sample Tap	DVSTE58	W	Q	Q	n/a	Q	n/a
Corumbene Nursing Home	DVSTE80	W	n/a	n/a	n/a	n/a	n/a
New Norfolk Fire Station	DVSTE82	W	n/a	n/a	n/a	n/a	n/a
Magra Fire Station	DVSTE83 ⁵⁶	W	n/a	n/a	n/a	n/a	n/a
Magra House (102 Blackhills Rd)	DVSTE83B	W	n/a	n/a	n/a	n/a	n/a
Fairview Primary School	DVSTE84	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
385 Lachlan Rd	DVSTE86	W	n/a	n/a	n/a	n/a	n/a
1267 Lyell Hwy Sorell Creek	DVSTE87	W	n/a	n/a	n/a	n/a	n/a
Molesworth Rd Cemetary	DVSTE88	W	n/a	n/a	n/a	n/a	n/a
Number Planned Samples		520	4	4	0	4	n/a
Number Samples Tested		520	4	4	0	4	n/a

Table 27.2-h Sampling program – Sorell

Planned sampling program (2018–19)							
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

⁵⁵ New site added 21st January 2019 to cover the Margate Reservoir Zone

⁵⁶ Site access issues sampled from DVSTE83B during the access issue

Sorell/William Street	SCITE06	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		208	4	4	0	4	n/a
Number Samples Tested		208	4	4	0	4	n/a

Table 27.2-i Sampling program – Southern Midlands

Planned sampling program (2018–19)							
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

27.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	>99.9%	100.0%	99.9%	99.9%	99.9%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	99.9%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%

■ Compliant ■ Non-compliant

27.4. Analysis of current health performance (2018–19)

Table 27.4-a Summary of health guideline exceedances with notification details

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

Table 27.4-b Fluoride distribution performance – Bryn Estyn

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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 27.4-c Fluoride distribution performance – Fern Tree

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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 27.4-d Fluoride distribution performance – Merton

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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 27.4-e 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	0.0009
Barium	2	mg/L	56	0	100	0.0059	0.0011	0.0134
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	0.0091	0.0004	0.0812
Lead	0.01	mg/L	56	0	100	0.0005	<0.0001	0.0021
Manganese	0.5	mg/L	56	0	100	0.0021	0.0004	0.0075
Mercury	0.001	mg/L	56	0	100	0.00005	<0.00003	0.00029
Molybdenum	0.05	mg/L	56	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	56	0	100	0.0001	<0.0001	0.0004
Selenium	0.01	mg/L	56	0	100	<0.0001	<0.0001	<0.0001

Table 27.4-f 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	7	1	27
Monochloroacetic acid	150	µg/L	56	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	56	0	100	18	9	67
Total trihalomethanes	250	µg/L	56	0	100	40	14	115

Table 27.4-g General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.56	0	2.2
Colour True	HU	15	<1	<1	2
pH	Units	6.5 – 8.5	7.45	5.63	9.93
Turbidity	NTU	1	0.47	0.11	32

27.5. Analysis of overall system performance (2018–19)

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

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
9/7/18	BWA lifted from Colebrook	✓	✓

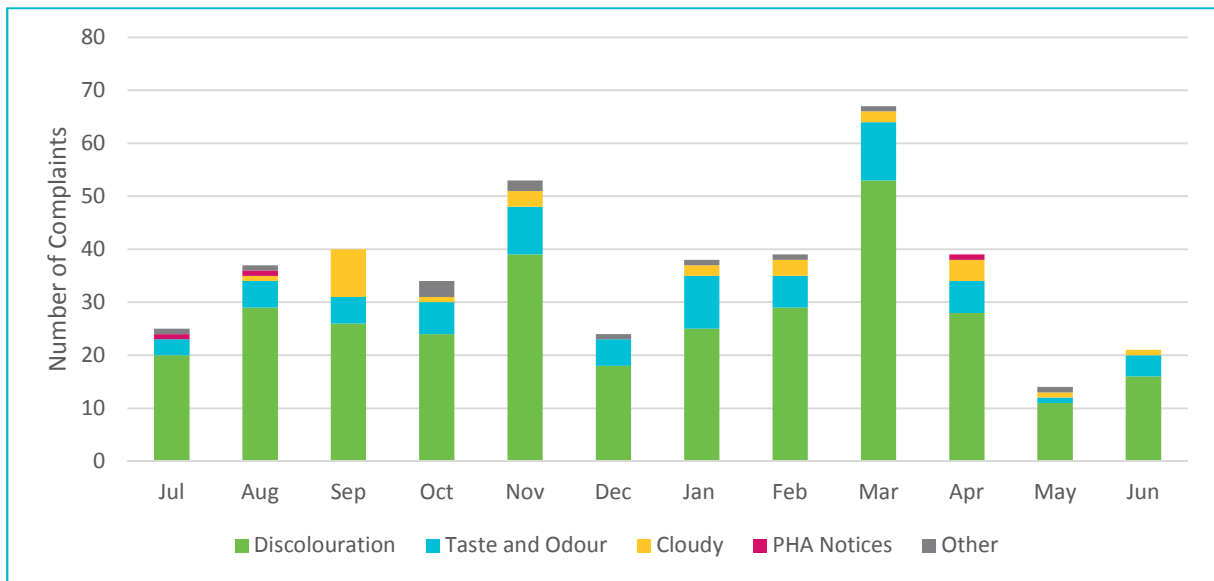


Figure 27.5-b Water quality customer complaints by month and type

28. Herrick drinking water system

28.1. System summary (2018–19)

Herrick drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	26
Population serviced	46
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	98.1%	☑	98.0%	53	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 (2018–19)		
Indicator	Occurrences	Details
System issues	1	<i>E. coli</i> exceedance
Public health alerts issued	1	BWA issued (27/12/2018–02/01/2019)
Notifications made to DoH	2	<i>E. coli</i> exceedance + BWA
Customer complaints	2	Taste and odour, cloudy

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	WTP and associated infrastructure	Complete	August 2018	\$1,959,772
Regional Towns Water Supply Program	Reticulation upgrade	Complete	August 2018	\$557,364

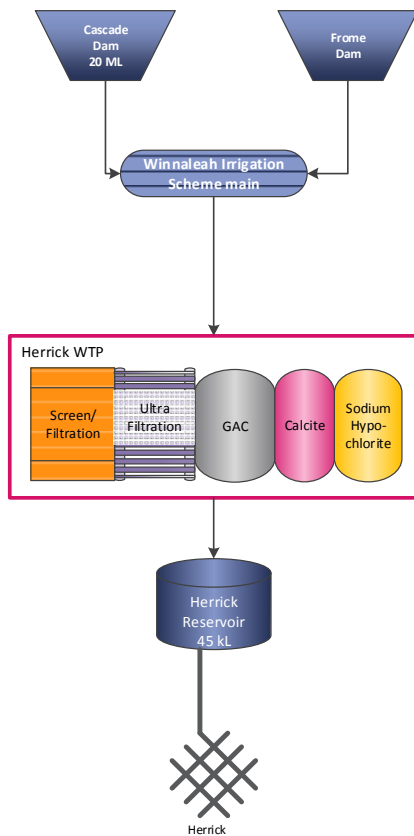


Figure 28.1-a Herrick system schematic

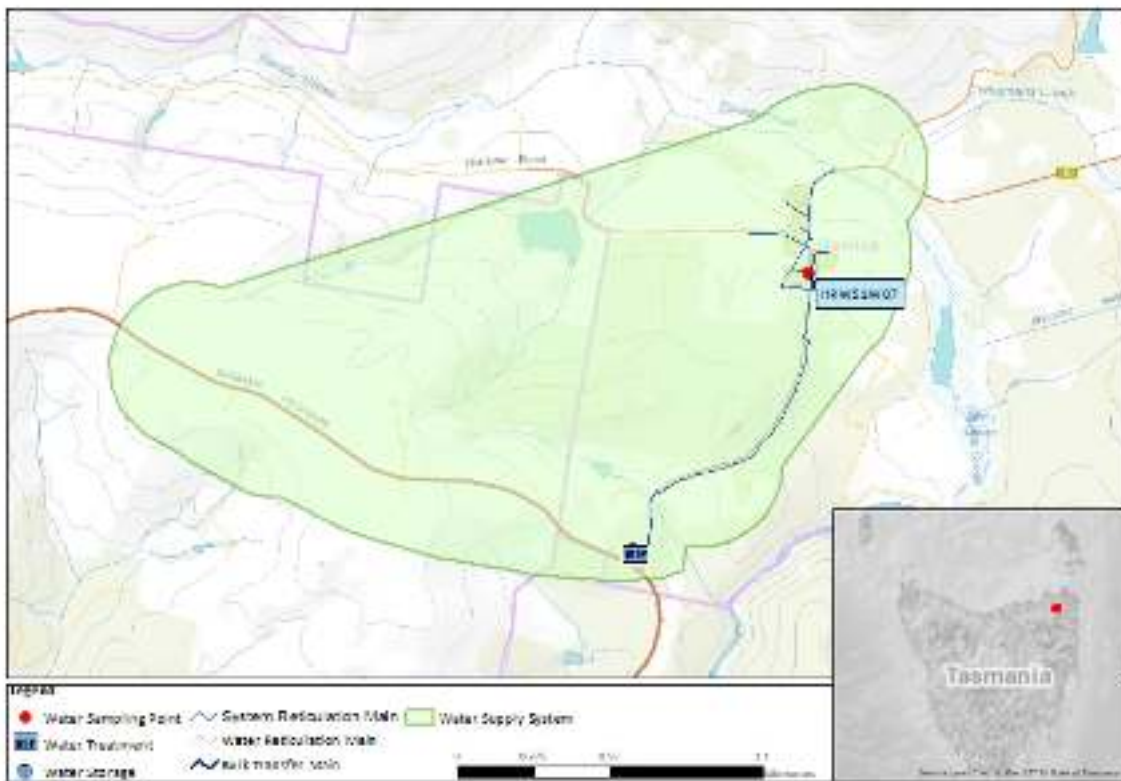


Figure 28.1-b Map of Herrick monitoring system

28.2. Summary of annual reticulation compliance (2018–19)

Table 28.2-a Sampling program

Planned compliance sampling program (2018–19)							
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		52	4	4	n/a	4	n/a
Number Samples Tested		52	4	4	n/a	4	n/a

28.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	64.7%	66.7%	58.3%	66.7%	98.1%
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	n/a	100.0%

■ Compliant ■ Non-compliant

28.4. Analysis of current health performance (2018–19)

Table 28.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
<i>E. coli</i>	27/12/2018	<i>E. coli</i> of 16 MPN/100 mL at operational site.	✓

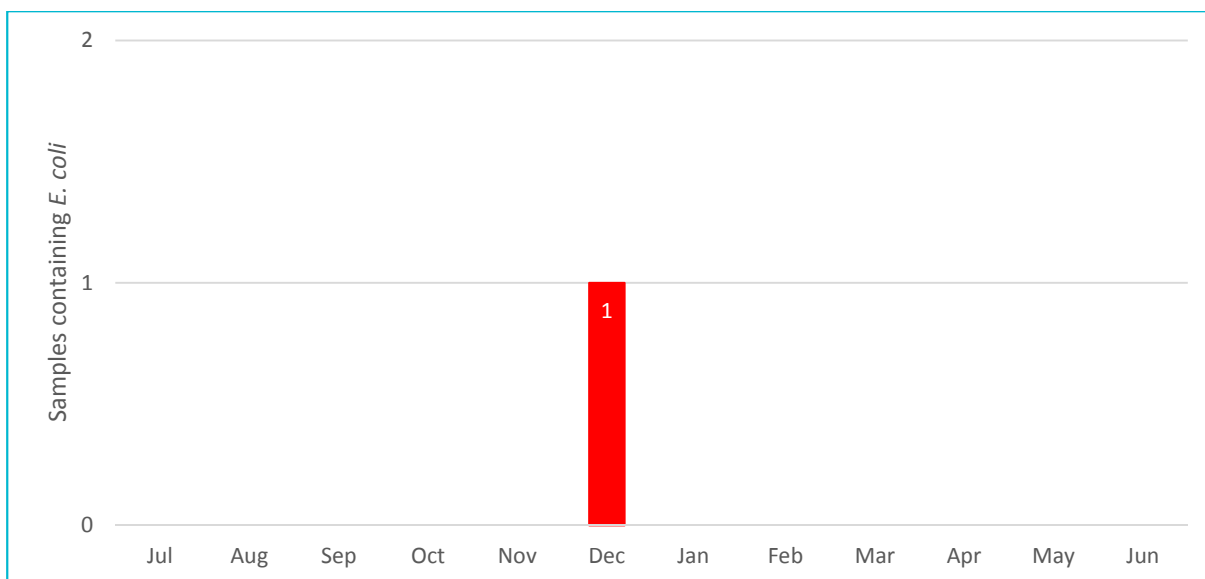


Figure 28.4-b Microbiological non-compliances by month

Table 28.4-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	0.0279	0.0055	0.0808
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	0.0027	0.0012	0.0039
Lead	0.01	mg/L	4	0	100	0.0007	0.0005	0.0010
Manganese	0.5	mg/L	4	0	100	0.0076	0.0018	0.0144
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	0.0004	0.0002	0.0006
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 28.4-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	54	20	120*
Monochloroacetic acid	150	µg/L	4	0	100	5	<3	9
Trichloroacetic acid	100	µg/L	4	0	100	67	18	144
Total trihalomethanes	250	µg/L	4	0	100	90	35	152*

*Refer to rounding convention rules in Section A 5.4

Table 28.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.70	0.16	1.41
Colour True	HU	15	4	<1	9
pH	Units	6.5 – 8.5	7.72	6.42	9.58
Turbidity	NTU	1	0.53	0.21	0.96

28.5. Analysis of overall system performance (2018–19)

Table 28.5-a Summary of system issues/public health alerts with notification details

Summary of system issues			
Date	Description	DHHS notification required	DHHS notification complete
27/12/2018–02/01/2019	A water sample taken on 27 December 2018 at Herrick Reservoir was positive for <i>E. coli</i> , which resulted in the Department of Health issuing a BWA for the town of Herrick. Samples taken at the reservoir and reticulation sites on 29, 30 and 31 December were clear (i.e. <1.0 MPN/100 mL). The BWA was lifted on 2 January 2019.	✓	✓
14/8/2019	BWA Lifted	✓	✓

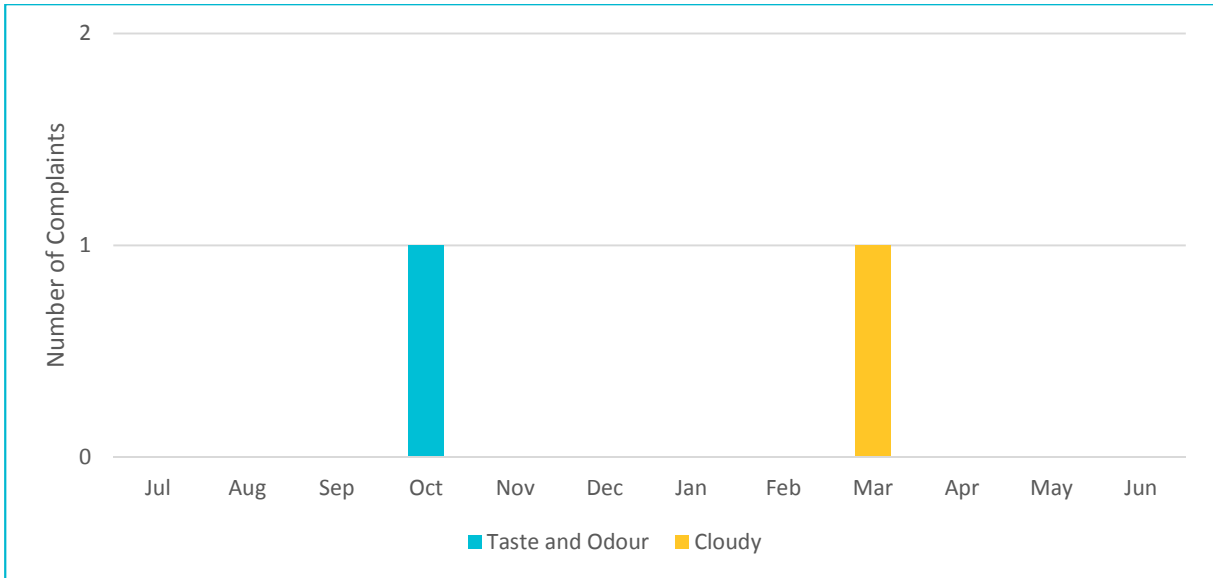


Figure 28.5-b Water quality customer complaints by month and type

29. Huon Valley drinking water system

29.1. System summary (2018–19)

Huon Valley drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	4547
Population serviced	9160
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	466	0
Fluoride	100.0%	<input checked="" type="checkbox"/>	100.0%	48	0
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	12	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	28	0

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	1	BWA lifted from Judbury
Notifications made to DoH	1	BWA lifted from Judbury
Customer complaints	15	Discolouration, taste and odour, cloudy, chlorine

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	UV disinfection system	Not started	TBA	TBA

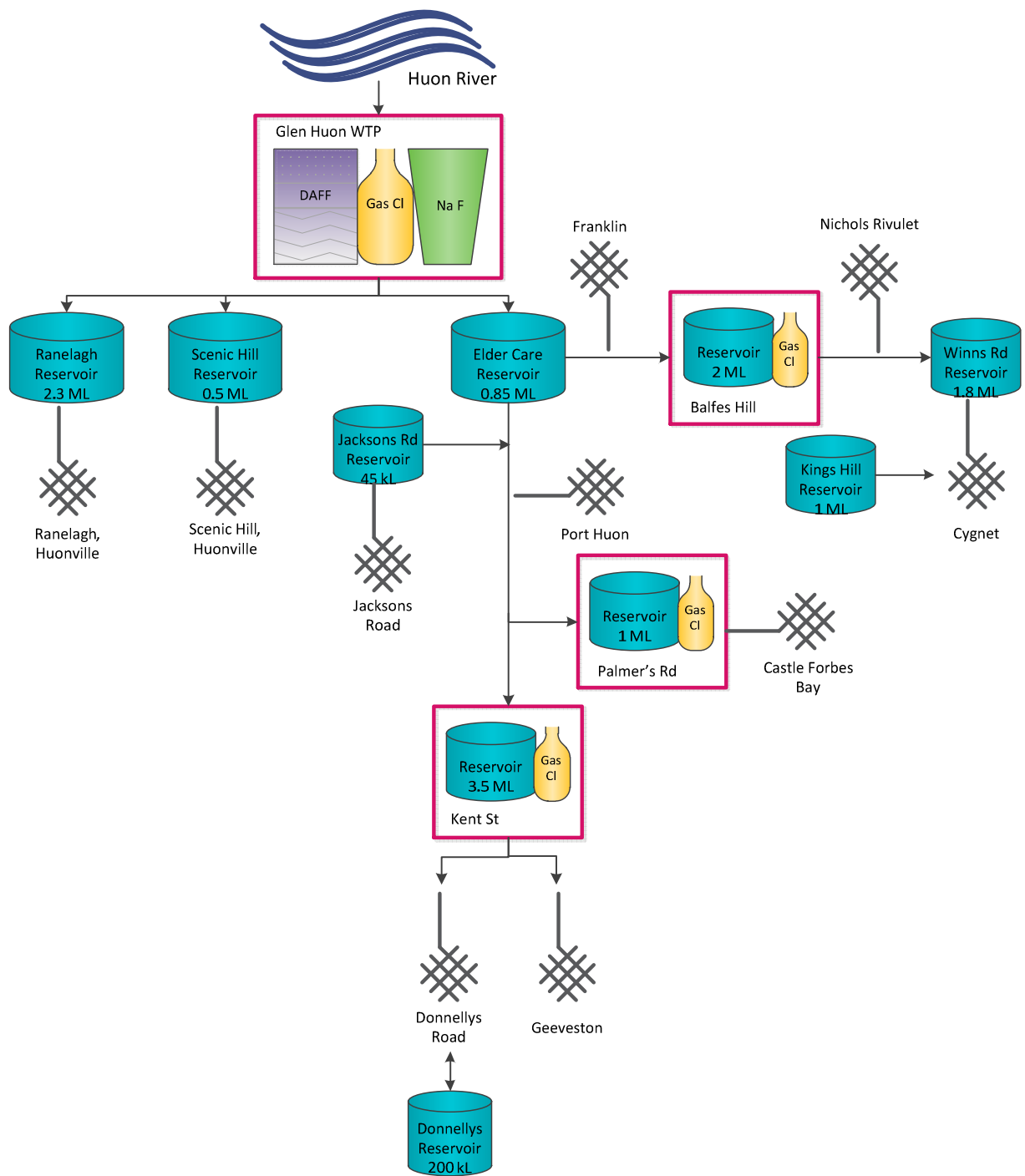


Figure 29.1-a Huon Valley system schematic

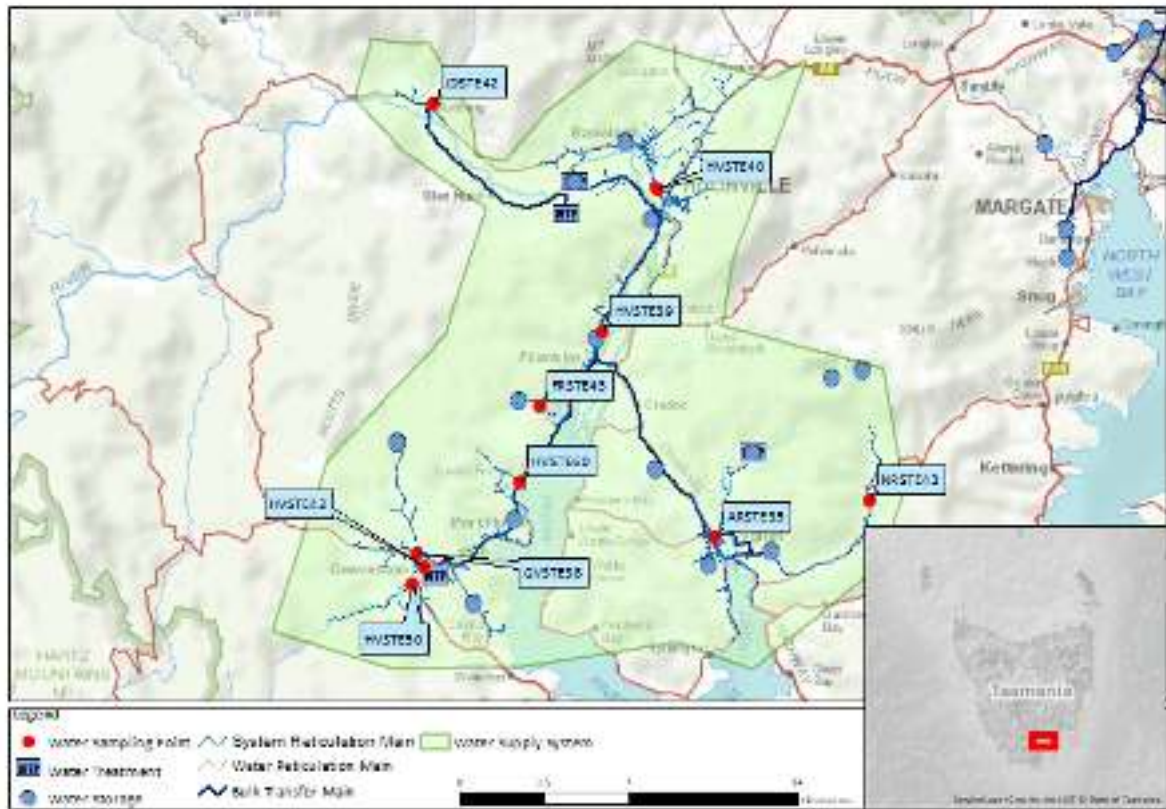


Figure 29.1-b Map of Huon Valley monitoring system

29.2. Summary of annual reticulation compliance (2018–19)

Table 29.2-a Sampling program

Planned sampling program (2018–19)								
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	n/a
South Franklin, Jacksons Rd/Sample Tap	FRSTE45	W	n/a	Q	n/a	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	n/a
Huonville Retic/Football Club Entrance, Wilmot Rd, Sample Tap	HVSTE40	W	Q	Q	2M	Q	n/a	n/a
Geeveston/Intersection Bridge, School Rd, Main Rd	HVSTE42 ⁵⁷	W	Q	Q	2M	Q	n/a	n/a
Geeveston/Fourfoot Rd 1st Bridge	GVSTE38	W	n/a	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	n/a
Nicholls Rivulet, Sample Tap	NRSTE43	W	n/a	Q	n/a	n/a	n/a	n/a
Judbury/19 George Street	JDSTE42 ⁵⁸	W	Q	Q	n/a	Q	n/a	n/a
Number Planned Samples		468	12	28	48	12	n/a	
Number Samples Tested		466	12	28	48	12	n/a	

29.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100.0%	99.7%	99.7%	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

⁵⁷ Missed 1/2/19, 7/2/19, 15/2/19 due to break and no water. 15/2/19 sampled HVSTE50 instead. DoH confirmed dispensations for missing samples.

⁵⁸ From 1st August 2018

29.4. Analysis of current health performance (2018–19)

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	2018–19
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%
■ Compliant ■ Non-compliant	

Table 29.4-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	0.0072	0.0045	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	0.0001
Copper	2	mg/L	12	0	100	0.0053	0.0021	0.0113
Lead	0.01	mg/L	12	0	100	0.0003	<0.0001	0.0008
Manganese	0.5	mg/L	12	0	100	0.0014	0.0003	0.0042
Mercury	0.001	mg/L	12	0	100	0.00004	<0.00003	0.00006
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	0.0002
Selenium	0.01	mg/L	12	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	28	0	100	6	<1	24
Monochloroacetic acid	150	µg/L	28	0	100	<3	<3	3
Trichloroacetic acid	100	µg/L	28	0	100	24	<1	58
Total trihalomethanes	250	µg/L	28	0	100	49	32	73

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	0.37	0.01	1.13
Colour True	HU	15	<1	<1	2
pH	Units	6.5 – 8.5	7.58	6.44	8.95
Turbidity	NTU	1	0.31	0.09	1.38

29.5. Analysis of overall system performance (2018–19)

Table 29.5-a Summary of system issues/public health alerts with notification details

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
01/08/2019	BWA Lifted from Judbury	✓	✓

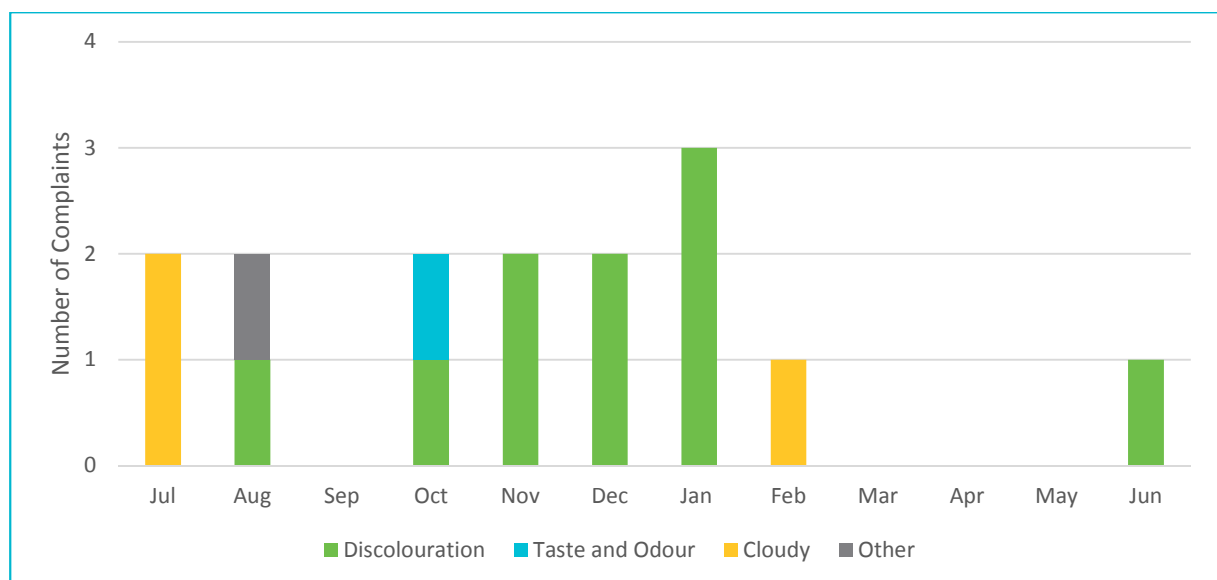


Figure 29.5-b Water quality customer complaints by month and type

30. Lady Barron drinking water system

30.1. System summary (2018–19)

Lady Barron drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	107
Population serviced	93
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	68	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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Re-chlorination	Lady Barron re-chlorination (Vinegar Hill)	In progress	June 2021	\$136,000
Lady Barron WTP	Installation of powdered activated carbon dosing at Lady Barron WTP	In progress	TBA	\$125,000

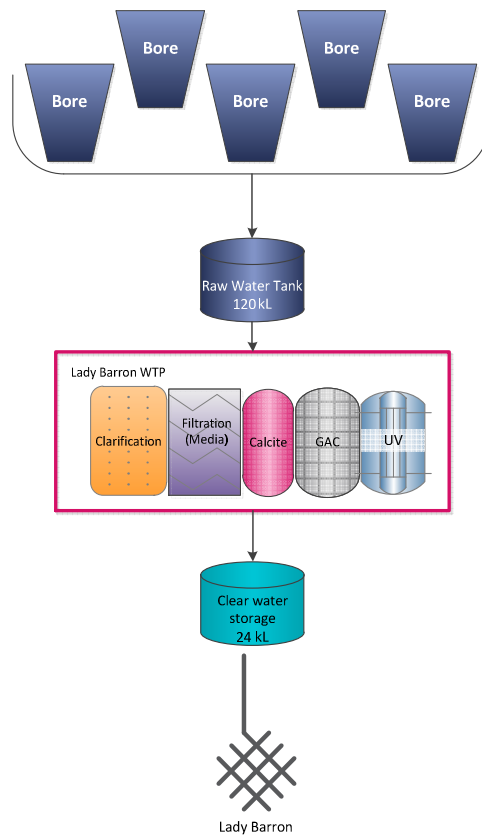


Figure 30.1-a Lady Barron system schematic



Figure 30.1-b Map of Lady Barron monitoring system

30.2. Summary of annual reticulation compliance (2018–19)

Table 30.2-a Sampling program

Planned sampling program (2018–19)							
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
Lady Barron/45–47 Franklin Parade (650160)	LBW51W06 ⁵⁹	W	Q	Q	n/a	Q	n/a
Number Planned Samples		68	4	4	n/a	4	n/a
Number Samples Tested		68	4	4	n/a	4	n/a

30.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	95.0%	91.7%	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	n/a	100.0%	100.0%

■ Compliant ■ Non-compliant

30.4. Analysis of current health performance (2018–19)

Table 30.4-a Summary of health guideline exceedances

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

⁵⁹ Until 19th July 2018

Table 30.4-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	0.0358	0.0284	0.0491
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	0.0036
Lead	0.01	mg/L	4	0	100	0.0005	0.0004	0.0006
Manganese	0.5	mg/L	4	0	100	0.0005	0.0002	0.0007
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	0.0006	0.0005	0.0006
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 30.4-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	2	<1	3
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	<1	<1	2
Total trihalomethanes	250	µg/L	8	0	100	134	80	168

Table 30.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.61	0.14	1.47
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.24	6.81	7.97
Turbidity	NTU	1	0.42	0.11	1.24

30.5. Analysis of overall system performance (2018–19)

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

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

31. Lake Barrington drinking water system

31.1. System summary (2018–19)

Lake Barrington drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	1198
Population serviced	2388
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	0
Fluoride	100.0%	<input checked="" type="checkbox"/>	100.0%	102	0
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	8	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	8	0

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts 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
Lake Barrington WTP	Instrumentation upgrade	In progress	TBA	\$110,000

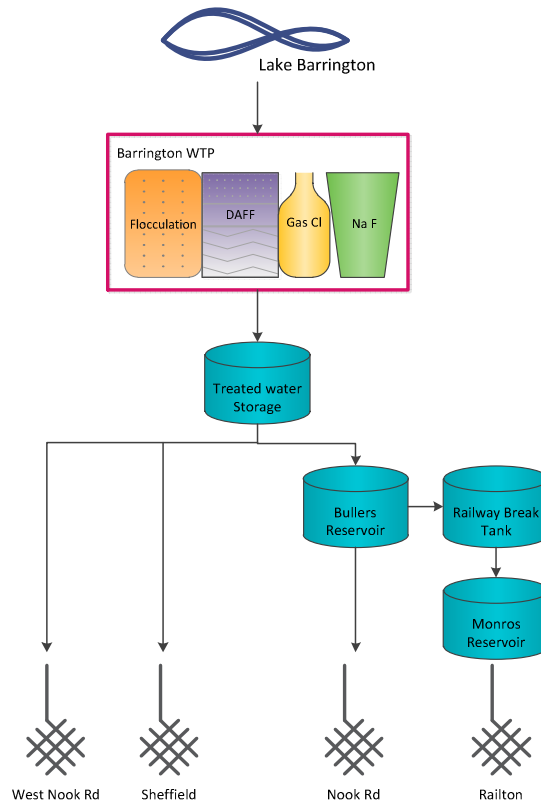


Figure 31.1-a Lake Barrington system schematic

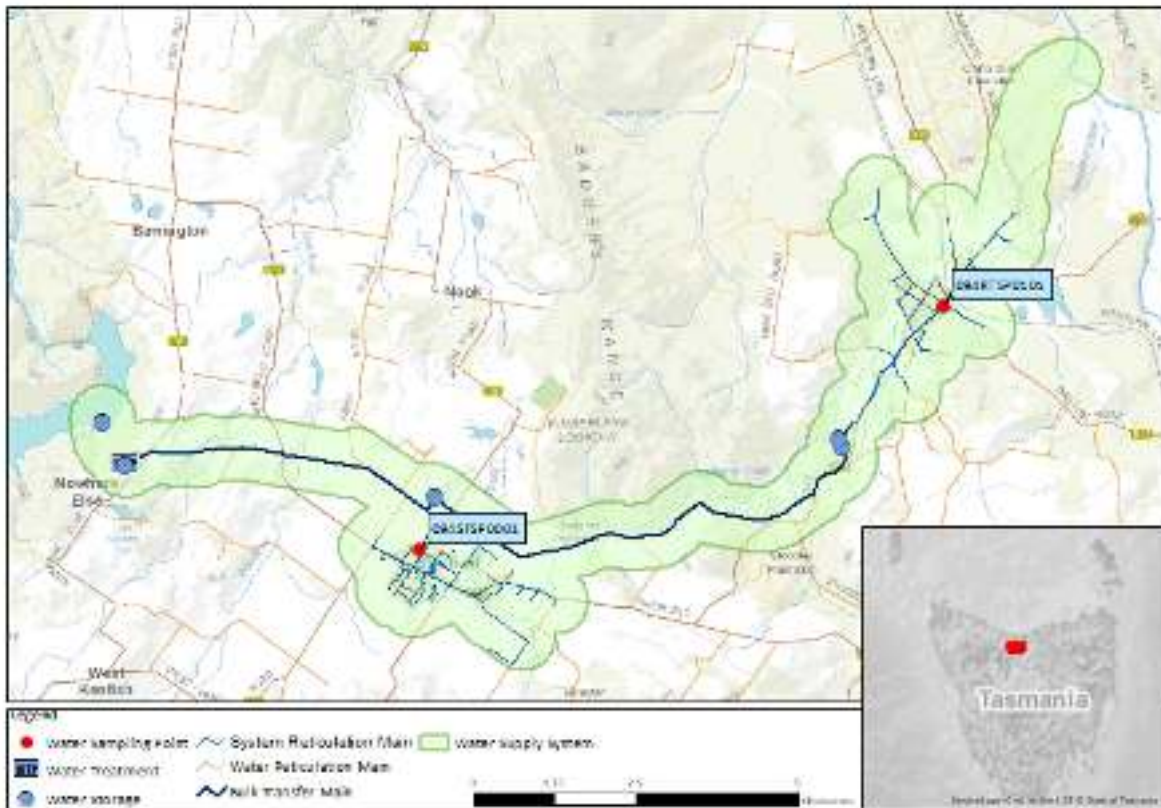


Figure 31.1-b Map of Lake Barrington monitoring system

31.2. Summary of annual reticulation compliance (2018–19)

Table 31.2-a Sampling program

Planned sampling program (2018–19)							
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	52	8	n/a

31.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%	99.9%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%

■ Compliant ■ Non-compliant

31.4. Analysis of current health performance (2018–19)

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 - Barrington

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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%

■ Compliant ■ Non-compliant

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	0.0076	0.0048	0.0100
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	0.0009	0.0002	0.0021
Lead	0.01	mg/L	8	0	100	<0.0001	<0.0001	0.0001
Manganese	0.5	mg/L	8	0	100	0.0022	0.0002	0.0041
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	0.0002	<0.0001	0.0003
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

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	10	2	18
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	25	10	40
Total trihalomethanes	250	µg/L	8	0	100	55	36	80

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	0.61	0.08	1.14
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.47	6.3	8.86
Turbidity	NTU	1	0.31	0.12	2.55

31.5. Analysis of overall system performance (2018–19)

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

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

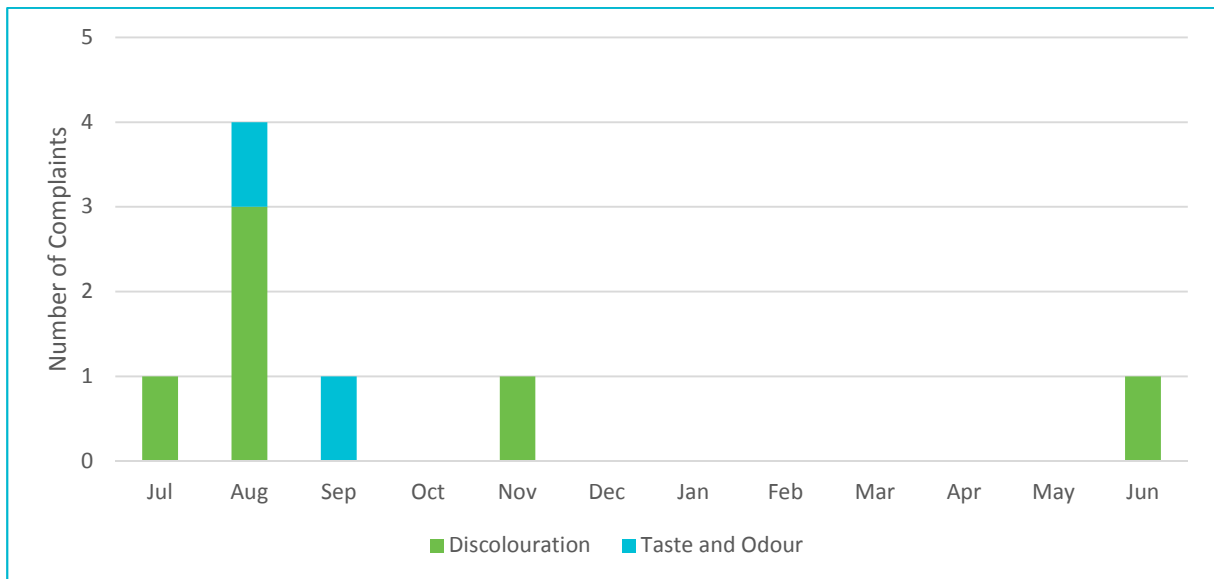


Figure 31.5-b Water quality customer complaints by month and type

32. Leven River drinking water system

32.1. System summary (2018–19)

Leven River drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	2218
Population serviced	4596
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	126	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

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	1	Low fluoride
Public health alerts issued	0	
Notifications made to DoH	1	Low fluoride
Customer complaints	48	Discolouration, taste and odour, other

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Leven WTP	Whitehills WTP upgrade	In progress	June 2021	\$200,000

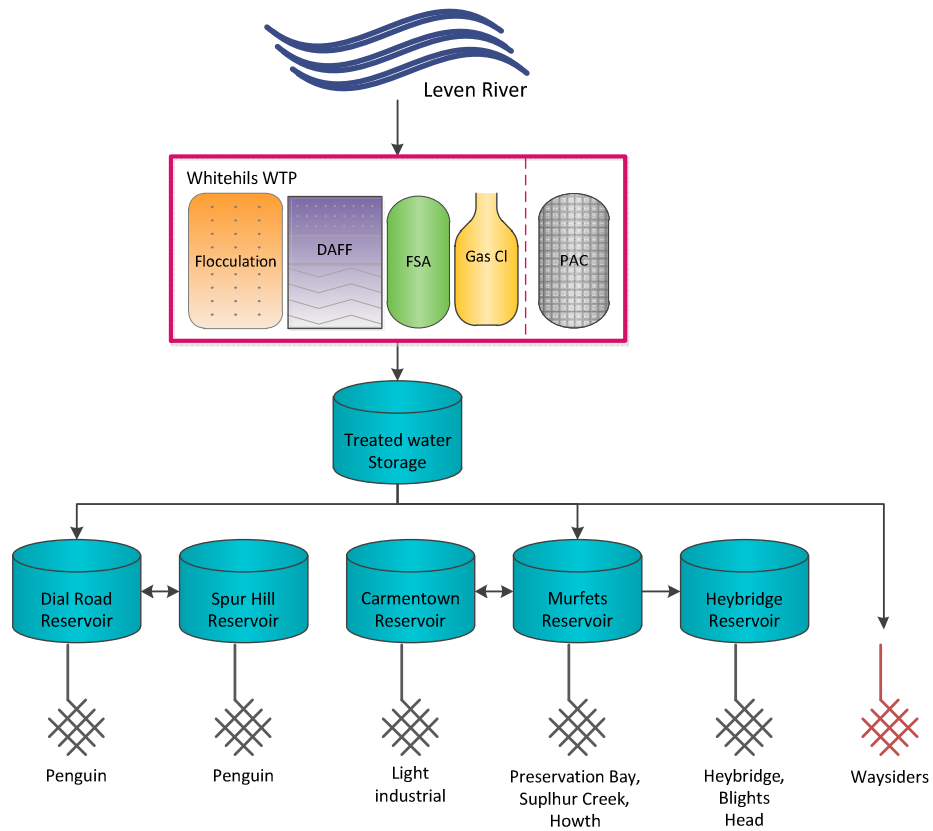


Figure 32.1-a Leven River system schematic

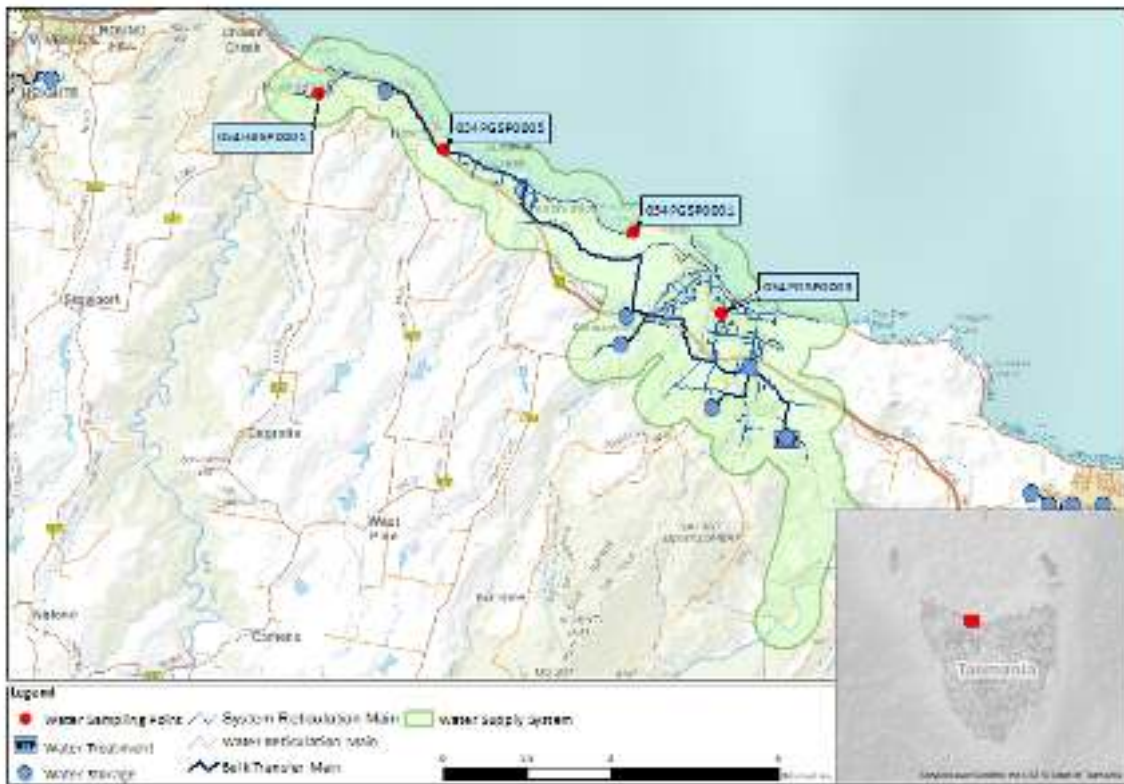


Figure 32.1-b Map of Leven River monitoring system

32.2. Summary of annual reticulation compliance (2018–19)

Table 32.2-a Sampling program

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Whitehills/Heybridge Fire Station Tap	054HBSP0001 ⁶⁰	W	Q	Q	2M	Q	n/a
Whitehills/Penguin Surf Club Tap	054PGSP0001	W	n/a	n/a	n/a	n/a	n/a
Whitehills/Penguin - 315 Preservation Drive	054PGSP0005 ⁶¹	W	Q	Q	2M	Q	n/a
Whitehills/Patrick St Clinic Sample Point	054PGSP0003	W	Q	Q	2M	Q	n/a
Number Planned Samples		126	8	8	48	8	n/a
Number Samples Tested		126	8	8	48	8	n/a

32.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100.0%	99.6%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	99.5%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%

■ Compliant ■ Non-compliant

⁶⁰ Until 26th November 2018

⁶¹ From 26th November 2018

32.4. Analysis of current health performance (2018–19)

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 - Whitehills

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)	0.4
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

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	0.0004
Barium	2	mg/L	8	0	100	0.0175	0.0105	0.0296
Cadmium	0.002	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	8	0	100	0.0004	0.0002	0.0012
Copper	2	mg/L	8	0	100	0.0062	0.0011	0.0258
Lead	0.01	mg/L	8	0	100	0.0004	<0.0001	0.0010
Manganese	0.5	mg/L	8	0	100	0.0034	0.0007	0.0101
Mercury	0.001	mg/L	8	0	100	0.00006	<0.00003	0.00016
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	0.0006
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	14	<1	33
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	12	<1	24
Total trihalomethanes	250	µg/L	8	0	100	48	23	93

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	0.60	<1	1.67
Colour True	HU	15	<3	<3	2
pH	Units	6.5 – 8.5	7.46	6.25	9.67
Turbidity	NTU	1	0.9	0.13	5.34

32.5. Analysis of overall system performance (2018–19)

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

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
Aug 2018 – June 2019	Low fluoride levels detected	Y	Y

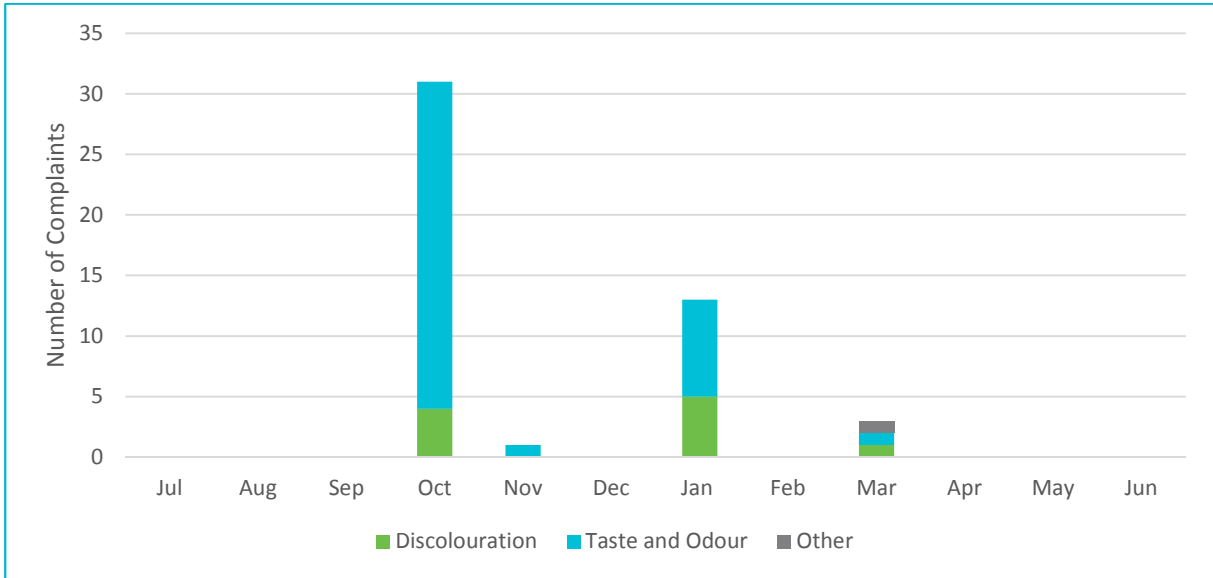


Figure 32.5-b Water quality customer complaints by month and type

33. Longford drinking water system

33.1. System summary (2018–19)

Longford drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	4436
Population serviced	9184
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	208	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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	34	Discolouration, taste and odour, other (stained washing)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	UV disinfection system	Not started	TBA	TBA
Upgrade WTP	Instrumentation upgrade at Longford WTP	In progress	TBA	\$110,000

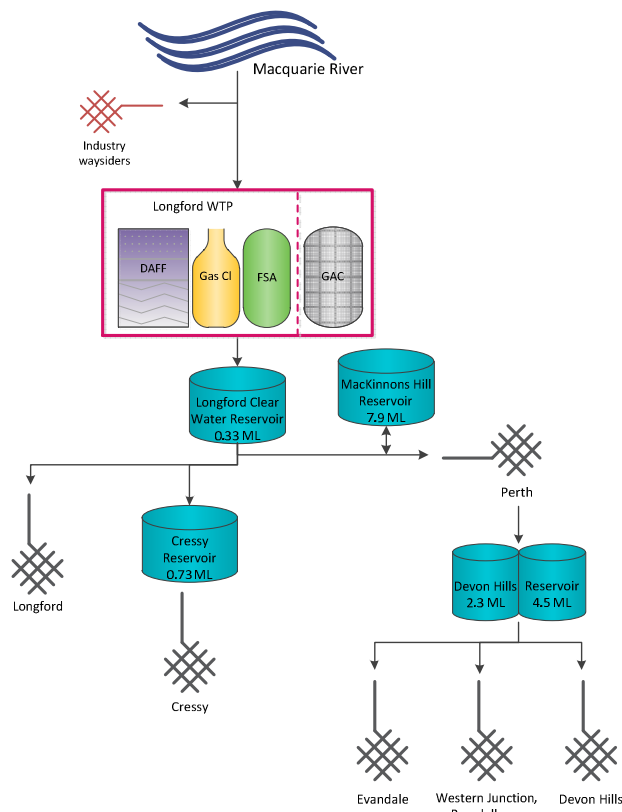


Figure 33.1-a Longford system schematic

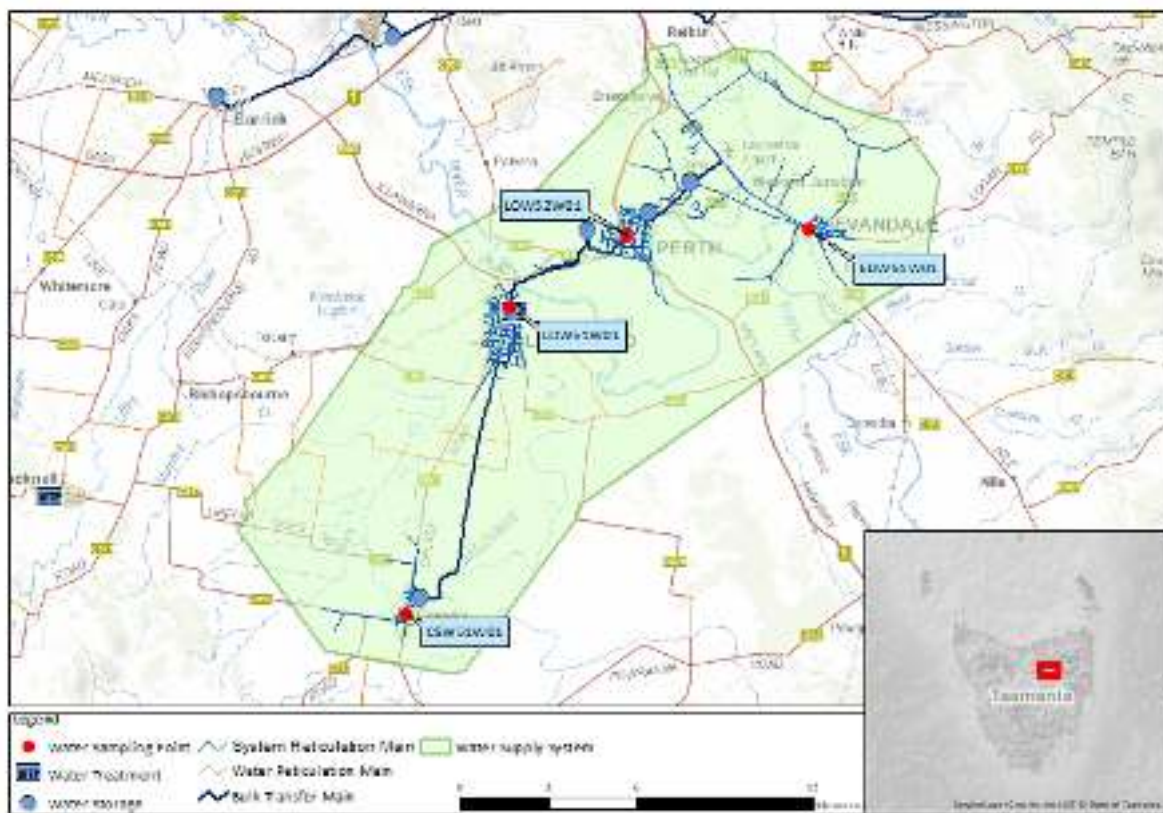


Figure 33.1-b Map of Longford monitoring system

33.2. Summary of annual reticulation compliance (2018–19)

Table 33.2-a Sampling program

Planned sampling program (2018–19)							
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		208	8	8	48	8	n/a
Number Samples Tested		208	8	8	48	8	n/a

33.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	99.5%	100.0%	99.5%	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

33.4. Analysis of current health performance (2018–19)

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 Fluoride distribution performance - Longford

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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%

■ Compliant ■ Non-compliant

Table 33.4-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	0.0074	0.0048	0.0110
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	0.0105	0.0028	0.0214
Lead	0.01	mg/L	8	0	100	0.0002	<0.0001	0.0006
Manganese	0.5	mg/L	8	0	100	0.0040	0.0016	0.0074
Mercury	0.001	mg/L	8	0	100	0.00004	<0.00003	0.00005
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 33.4-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	4	9
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	9	4	13
Total trihalomethanes	250	µg/L	8	0	100	24	14	41

Table 33.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.76	0.06	1.28
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.15	6.39	7.73
Turbidity	NTU	1	0.30	0.07	1.12

33.5. Analysis of overall system performance (2018–19)

Table 33.5-a Summary of system issues/public health alerts

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

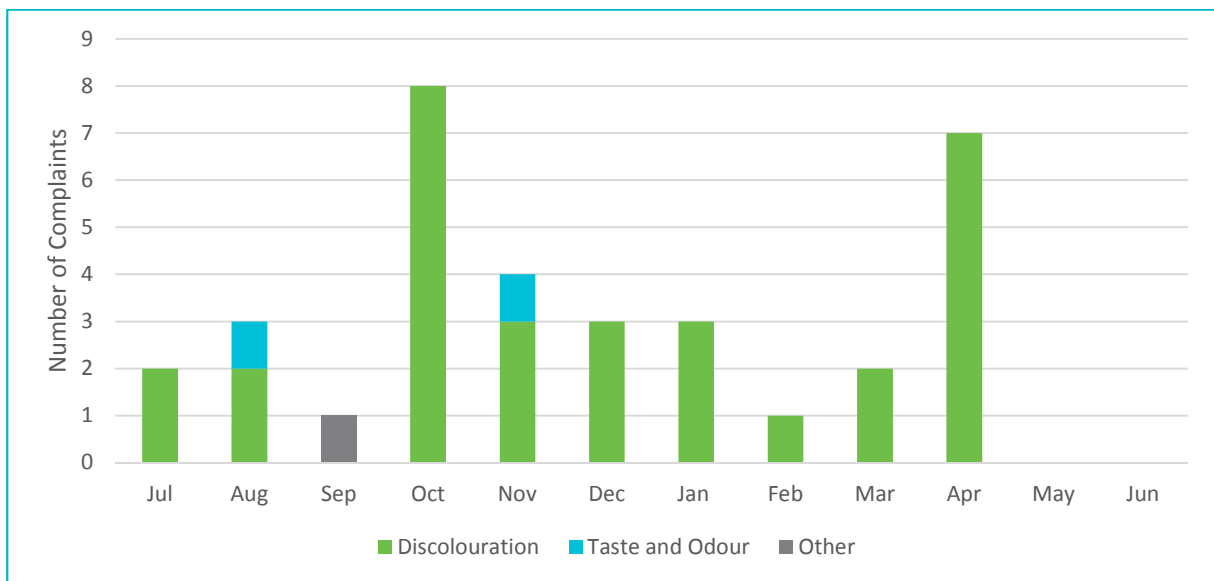


Figure 33.5-b Water quality customer complaints by month and type

34. Manuka River drinking water system

34.1. System summary (2018–19)

Manuka River drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	572
Population serviced	731
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	4	Discolouration, cloudy, other (stained washing)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	UV disinfection system	Not started	TBA	TBA
Strahan WTP	Instrumentation upgrade at Strahan WTP	In progress	TBA	TBA

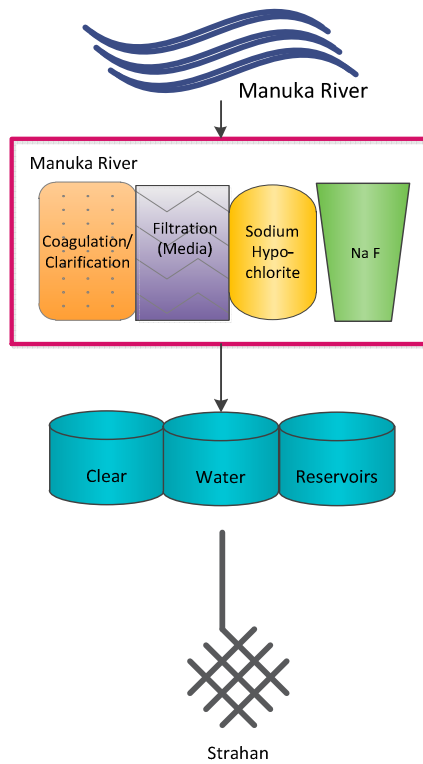


Figure 34.1-a Manuka River system schematic

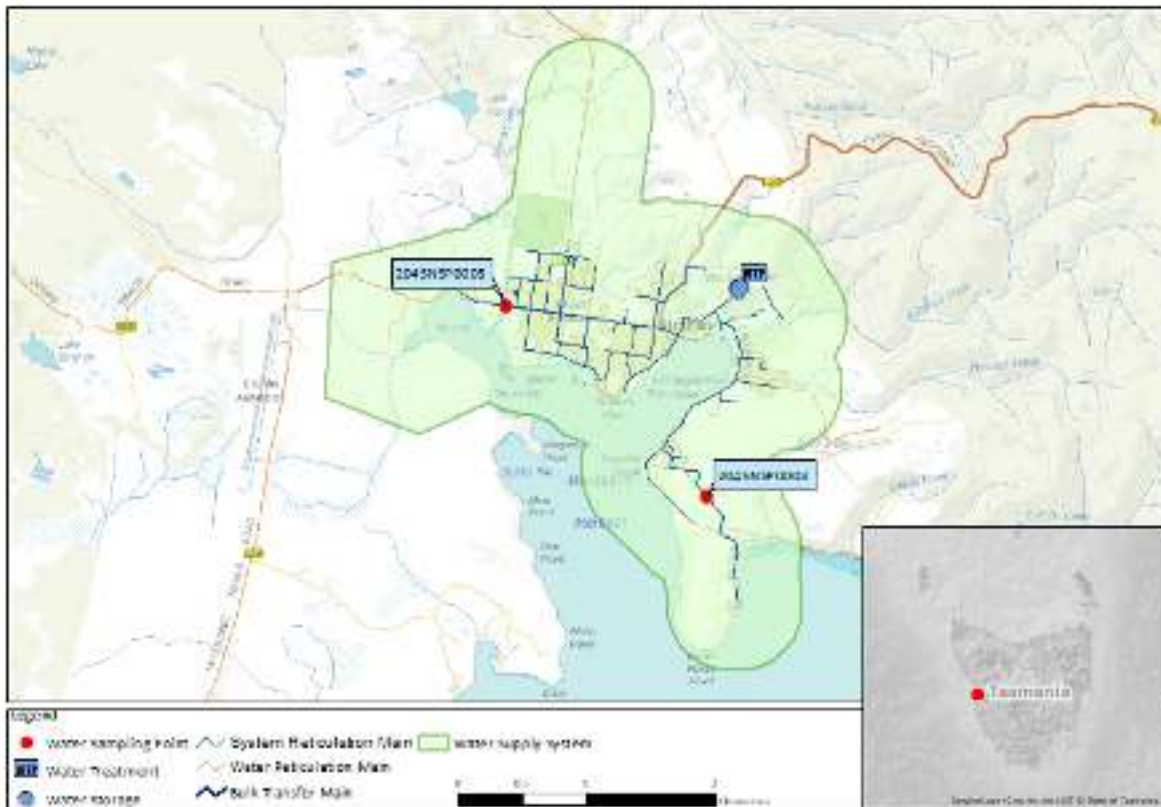


Figure 34.1-b Map of Manuka River monitoring system

34.2. Summary of annual reticulation compliance (2018–19)

Table 34.2-a Sampling program

Planned sampling program (2018–19)							
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

34.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	99.6%	99.3%	99.6%	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

34.4. Analysis of current health performance (2018–19)

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 Fluoride distribution performance -Strahan

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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%

■ Compliant ■ Non-compliant

Table 34.4-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	0.0004
Barium	2	mg/L	8	0	100	0.0063	0.0056	0.0071
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	0.0011
Copper	2	mg/L	8	0	100	0.0415	0.0042	0.2809
Lead	0.01	mg/L	8	0	100	0.0007	0.0002	0.0034
Manganese	0.5	mg/L	8	0	100	0.0023	0.0007	0.0076
Mercury	0.001	mg/L	8	0	100	<0.00003	<0.00003	0.00004
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0020	0.0010	0.0075
Selenium	0.01	mg/L	8	0	100	<0.0001	<0.0001	<0.0001

Table 34.4-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	11	7	17
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	3
Trichloroacetic acid	100	µg/L	8	0	100	17	7	32
Total trihalomethanes	250	µg/L	8	0	100	67	50	82

Table 34.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.53	0.05	0.96
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.09	6.29	7.80
Turbidity	NTU	1	0.28	0.06	7.96

34.5. Analysis of overall system performance (2018–19)

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

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

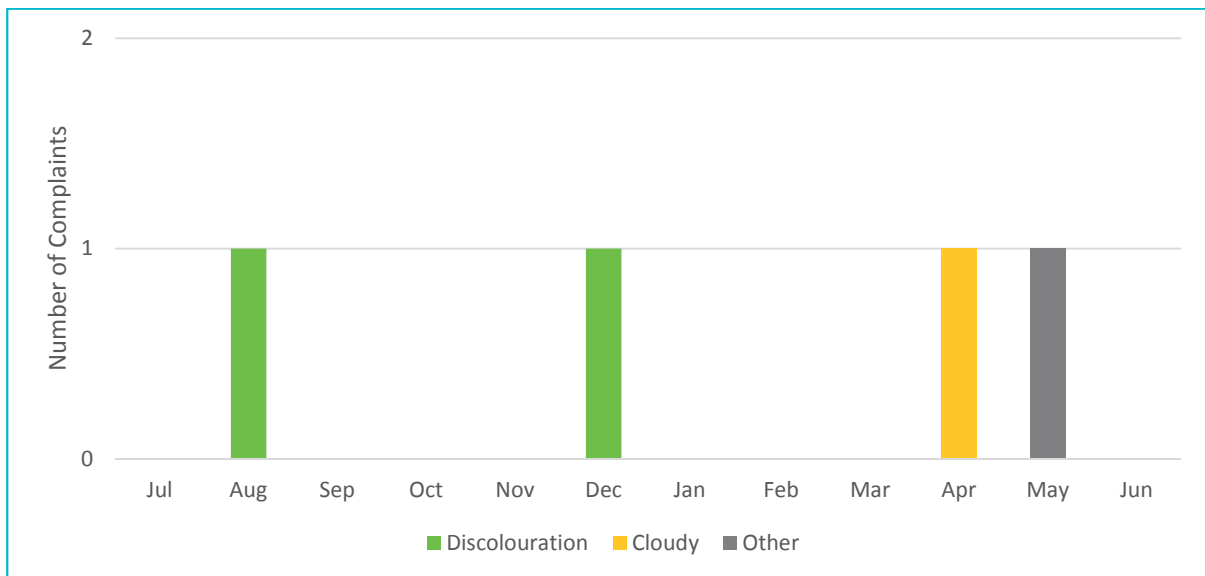


Figure 34.5-b Water quality customer complaints by month and type

35. Mathinna drinking water system

35.1. System summary (2018–19)

Mathinna drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	78
Population serviced	110
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	98.1%	<input checked="" type="checkbox"/>	98.0%	53	1
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

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	1	<i>E. coli</i> exceedance
Public health warnings issued	1	BWA lifted
Notifications made to DoH	2	<i>E. coli</i> exceedance & BWA lifted
Customer complaints	1	Discolouration

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	WTP and associated infrastructure	Complete	August 2018	\$2,377,263
Regional Towns Water Supply Program	Reticulation upgrade	Complete	August 2018	\$750,736

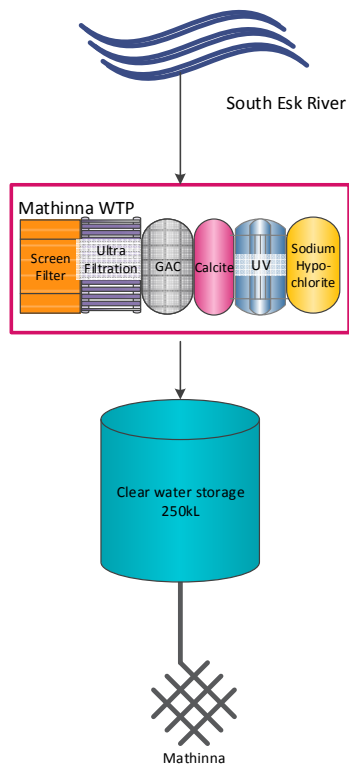


Figure 35.1-a Mathinna system schematic

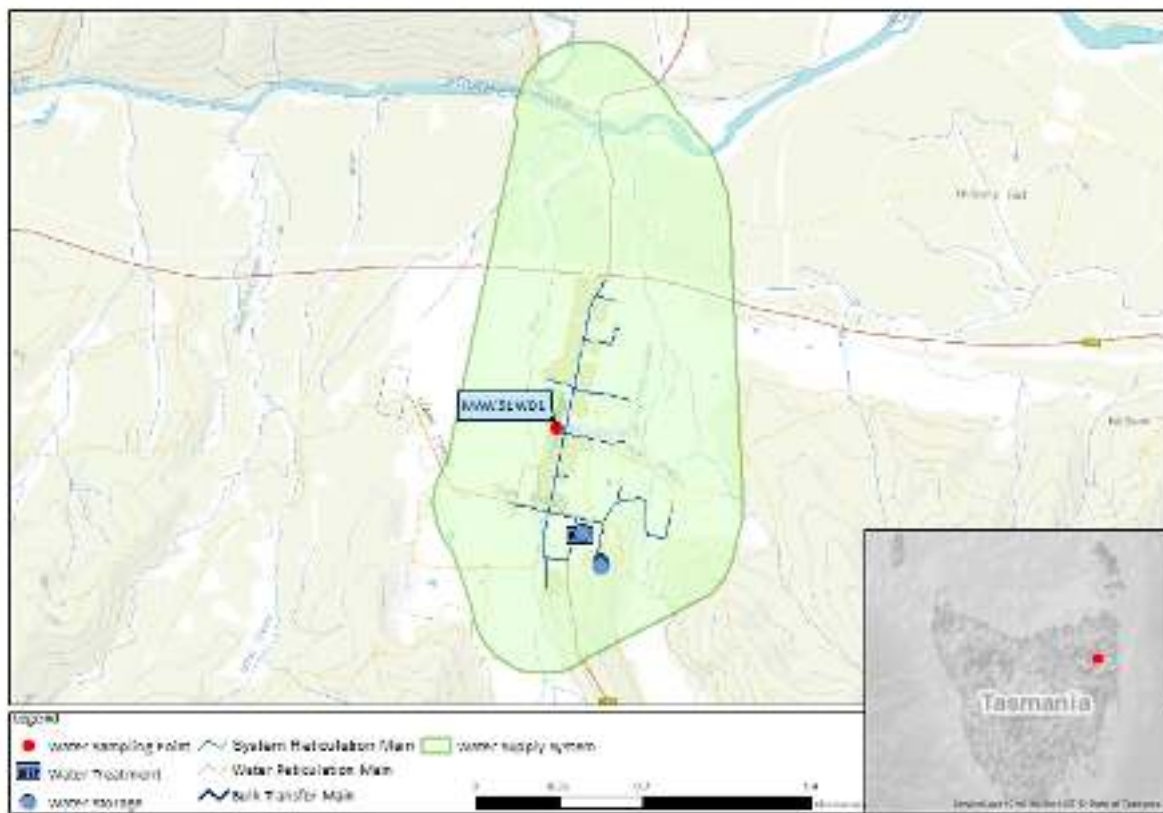


Figure 35.1-b Map of Mathinna monitoring system

35.2. Summary of annual reticulation compliance (2018–19)

Table 35.2-a Sampling program

Planned compliance sampling program (2018–19)							
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

35.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	17.0%	33.0%	16.7%	66.7%	98.1%
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	n/a	100.0%

■ Compliant ■ Non-compliant

35.4. Analysis of current health performance (2018–19)

Table 35.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
<i>E. coli</i>	5/2/2019	E. coli of 36.4 MPN/100 mL in routine operational sample from Mathinna Reservoir.	✓

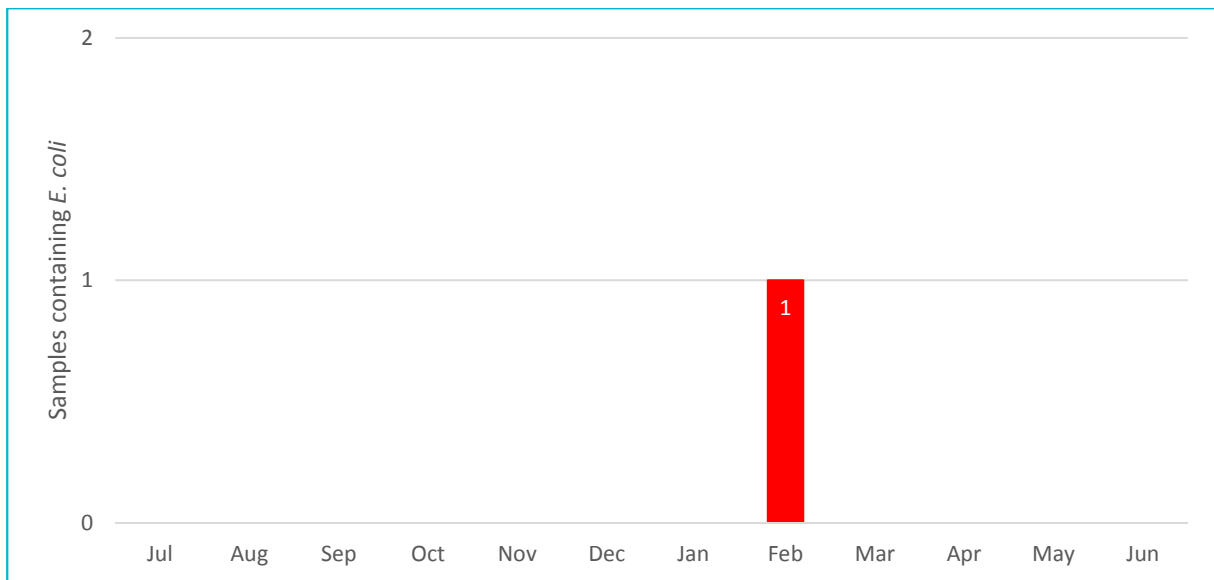


Figure 35.4-b Microbiological non-compliances by month

Table 35.4-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	0.0160	0.0051	0.0308
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	0.0025	0.0016	0.0047
Lead	0.01	mg/L	4	0	100	0.0001	<0.0001	0.0002
Manganese	0.5	mg/L	4	0	100	0.0033	0.0004	0.0091
Mercury	0.001	mg/L	4	0	100	0.00011	0.00006	0.00015
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0002	0.0001	0.0002
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 35.4-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	40	12	76
Monochloroacetic acid	150	µg/L	8	0	100	4	<3	5
Trichloroacetic acid	100	µg/L	8	0	100	50	16	92
Total trihalomethanes	250	µg/L	8	0	100	64	30	99

Table 35.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.80	0.48	1.19
Colour True	HU	15	1.2	<1	2
pH	Units	6.5 – 8.5	7.3	6.73	8.2
Turbidity	NTU	1	0.31	0.12	0.85

35.5. Analysis of overall system performance (2018–19)

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

Summary of system issues			
Date	Description	DHHS notification required	DHHS notification complete
03/08/2018	BWA lifted	✓	✓
05/02/2019	Routine sample taken from the Mathinna Reservoir detected <i>E. coli</i> 36.4 MPN/100 mL. The sample taken from the reticulation network on the same day was clear of <i>E. coli</i> . DoH was immediately notified. The water treatment plant had been working as designed and there were no obvious signs of loss of system integrity. Subsequent samples were clear of <i>E. coli</i> .	✓	✓

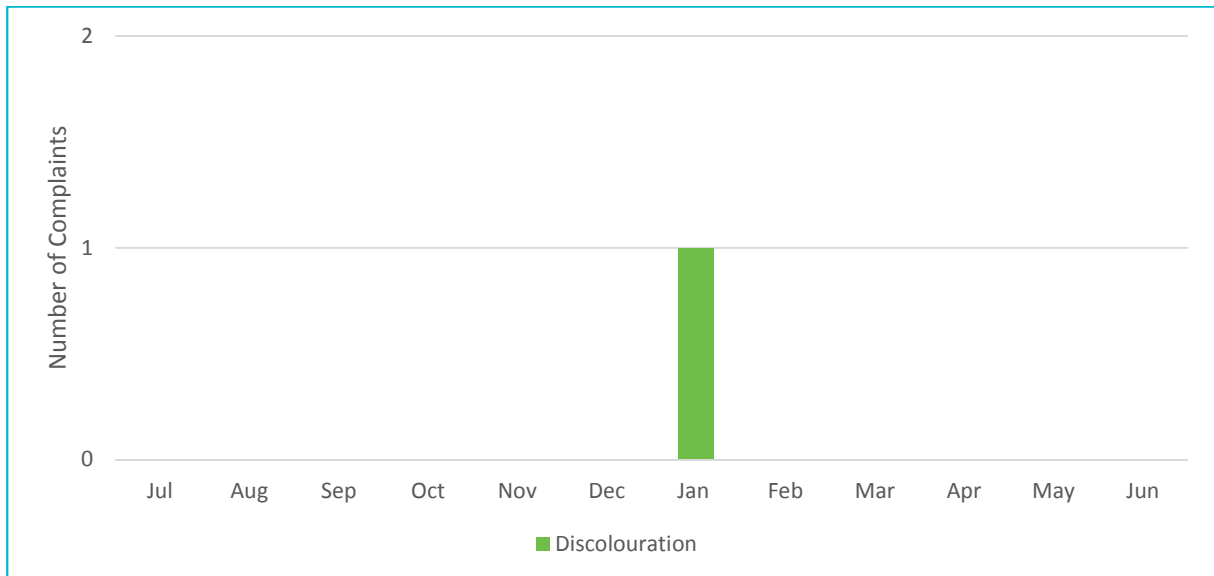


Figure 35.5-b Water quality customer complaints by month and type

36. Maydena drinking water system

36.1. System summary (2018–19)

Maydena drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	142
Population serviced	214
Fluoride	n/a

Performance overview against health targets (2018–19)					
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%	3	0

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	1	Cloudy

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	WTP and associated infrastructure	Complete	Aug 2018	\$3,759,393

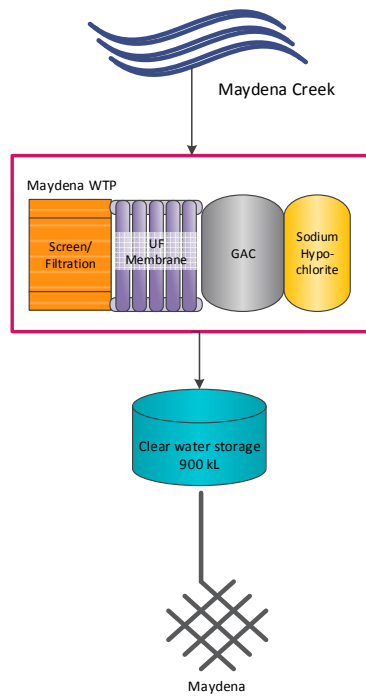


Figure 36.1-a Maydena system schematic

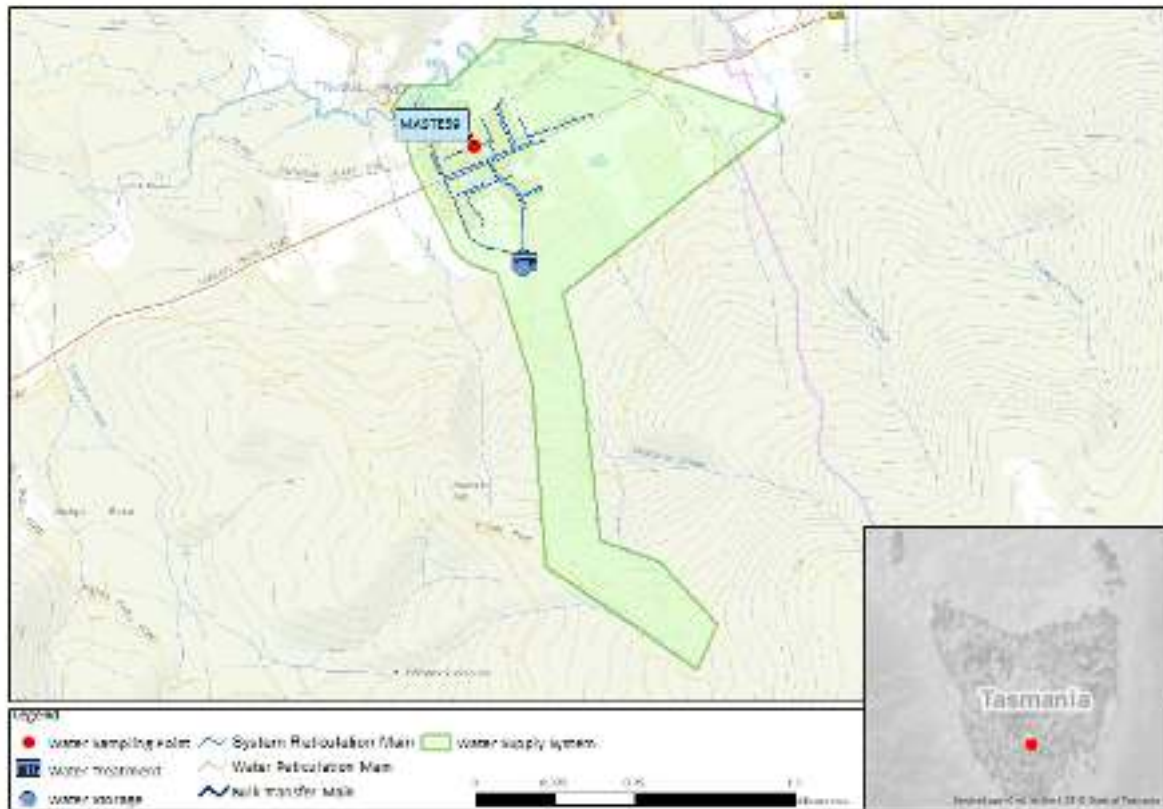


Figure 36.1-b Map of Maydena monitoring system

36.2. Summary of annual reticulation compliance (2018–19)

Table 36.2-a Sampling program

Planned sampling program (2018–19)							
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		52	4	4	n/a	4	n/a
Number Samples Tested		52	4	3	n/a	4	n/a

36.3. Summary of current and historic performance (2014–19)

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

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100.0%	98.0%	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

36.4. Analysis of current health performance (2018–19)

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	0.0022	0.0029
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0008	0.0002	0.0011
Copper	2	mg/L	4	0	100	0.0018	0.0013	0.0027
Lead	0.01	mg/L	4	0	100	0.0002	<0.0001	0.0002
Manganese	0.5	mg/L	4	0	100	0.0003	0.0002	0.0003
Mercury	0.001	mg/L	4	0	100	0.00005	<0.00003	0.00010
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 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	12	0	100	11	8	13
Monochloroacetic acid	150	µg/L	12	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	12	0	100	13	10	17
Total trihalomethanes	250	µg/L	12	0	100	28	25	31

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	0.75	0.46	1.3
Colour True	HU	15	1.4	<1	5
pH	Units	6.5 – 8.5	7.6	7.0	8.25
Turbidity	NTU	1	0.33	0.08	0.90

36.5. Analysis of overall system performance (2018–19)

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

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
14/8/18	BWA lifted	✓	✓

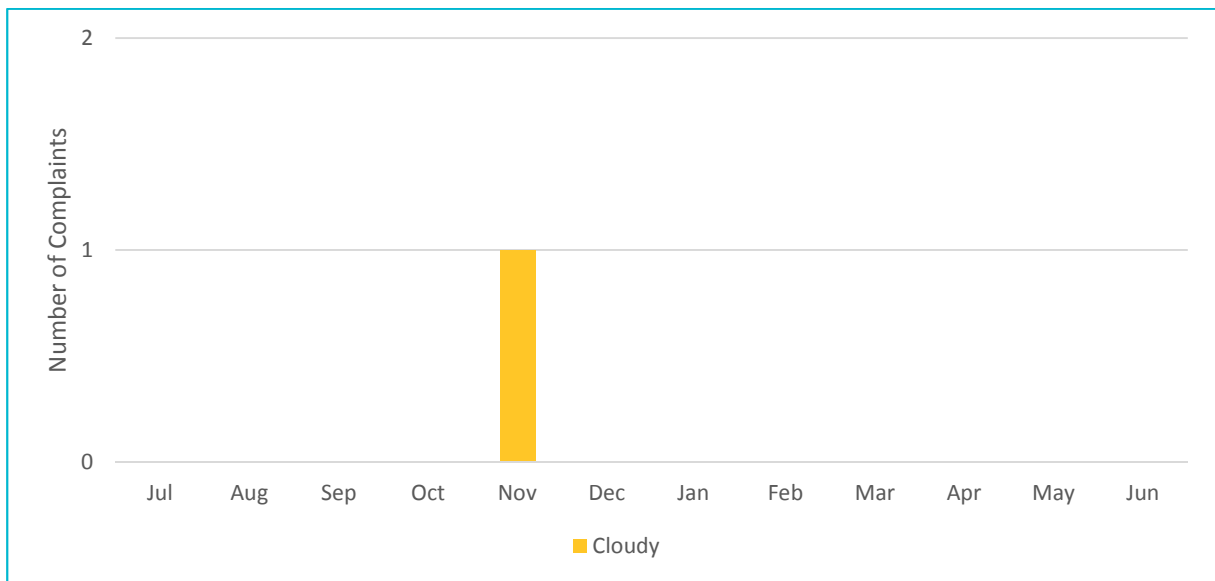


Figure 36.5-b Water quality customer complaints by month and type

37. Mole Creek drinking water system

37.1. System summary (2018–19)

Mole Creek drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	194
Population serviced	341
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	57	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%	5	0

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	

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

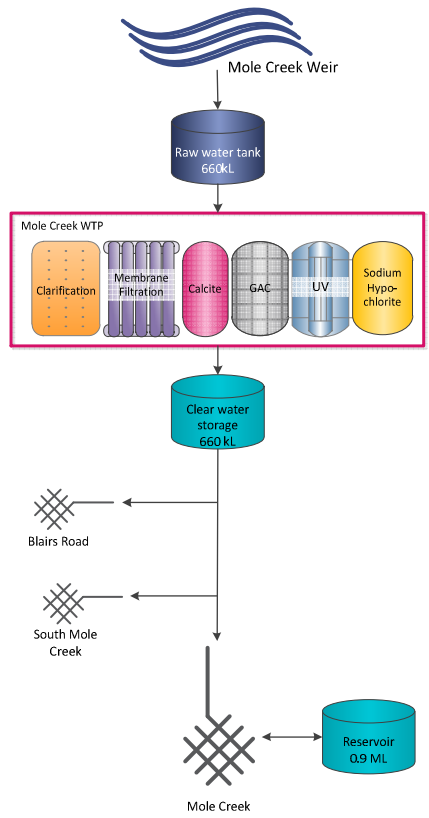


Figure 37.1-a Mole Creek system schematic

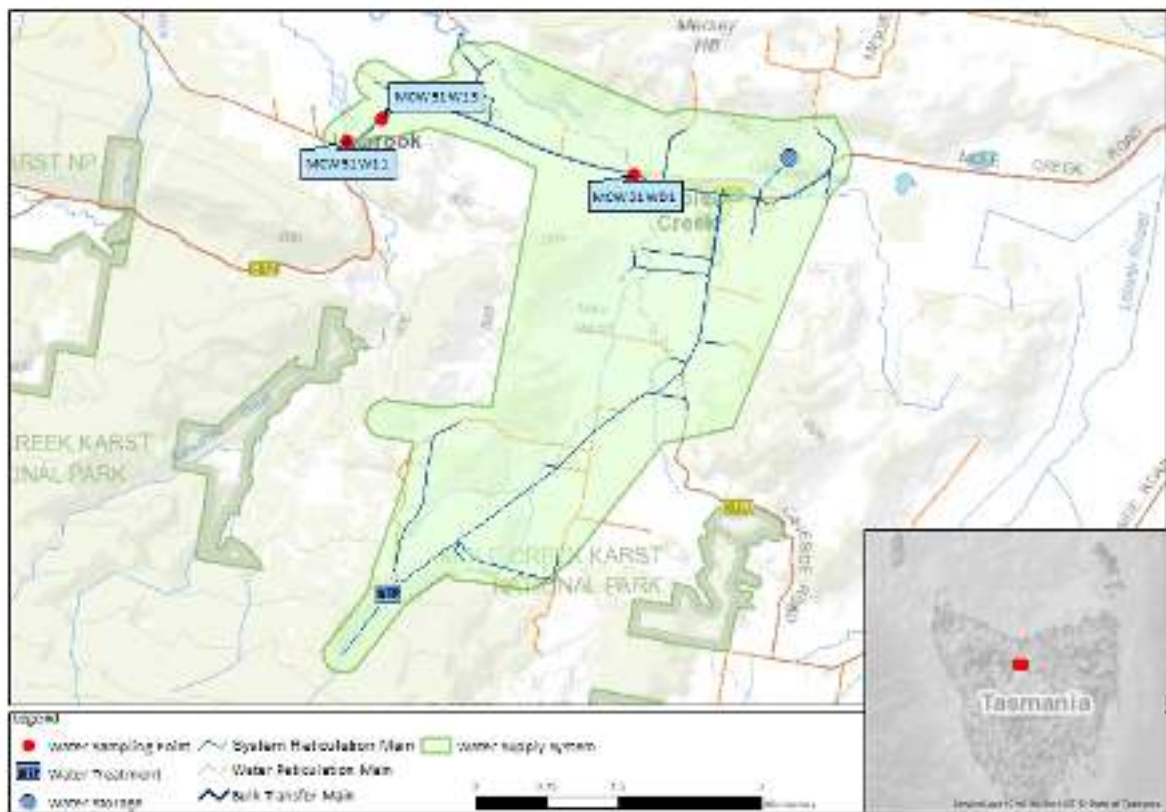


Figure 37.1-b Map of Mole Creek monitoring system

37.2. Summary of annual reticulation compliance (2018–19)

Table 37.2-a Sampling program

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Mole Creek/Pioneer Drive (650094)	MCW51W01	W	Q	Q ⁶²	n/a	Q	n/a
Mole Creek/291 Liena Road	MCW51W13 ⁶³	W	Q	n/a	n/a	Q	n/a
Number Planned Samples		57	4	4	n/a	8	n/a
Number Samples Tested		57	4	5	n/a	8	n/a

37.3. Summary of current and historic performance (2014–19)

Table 37.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	7.0%	17.4%	50.0%	99.0%	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%

■ Compliant ■ Non-compliant

37.4. Analysis of current health performance (2018–19)

Table 37.4-a Summary of health guideline exceedances

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

⁶² Monthly until 7th August 2018

⁶³ Until 7th August 2018

Table 37.4-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	0.0030	0.0027	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	0.0002
Copper	2	mg/L	4	0	100	0.0003	0.0002	0.0004
Lead	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Manganese	0.5	mg/L	4	0	100	0.0001	<0.0001	0.0003
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	<0.0001	<0.0001	<0.0001
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 37.4-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	2	<1	3
Monochloroacetic acid	150	µg/L	12	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	12	0	100	2	<1	3
Total trihalomethanes	250	µg/L	12	0	100	9	5	11

Table 37.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.74	0.50	1.06
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.43	7.01	8.33
Turbidity	NTU	1	0.30	0.06	0.93

37.5. Analysis of overall system performance (2018–19)

Table 37.5-a Summary of system issues/public health alerts

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

38. National Park drinking water system

38.1. System summary (2018–19)

National Park drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	33
Population serviced	46
Fluoride	Via Fenton Line

Performance overview against health targets (2018–19)					
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
■ Compliant ■ Non-compliant					

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	1	Subject to BWA until 14/08/2018
Public health warnings issued	1	BWA removed
Notifications made to DoH	1	BWA removed
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
National Park WTP	National Park WTP and associated infrastructure	Complete	August 2018	\$3,000,000

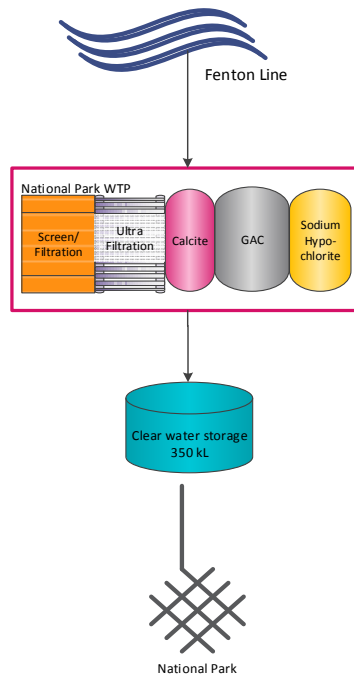


Figure 38.1-a National Park system schematic

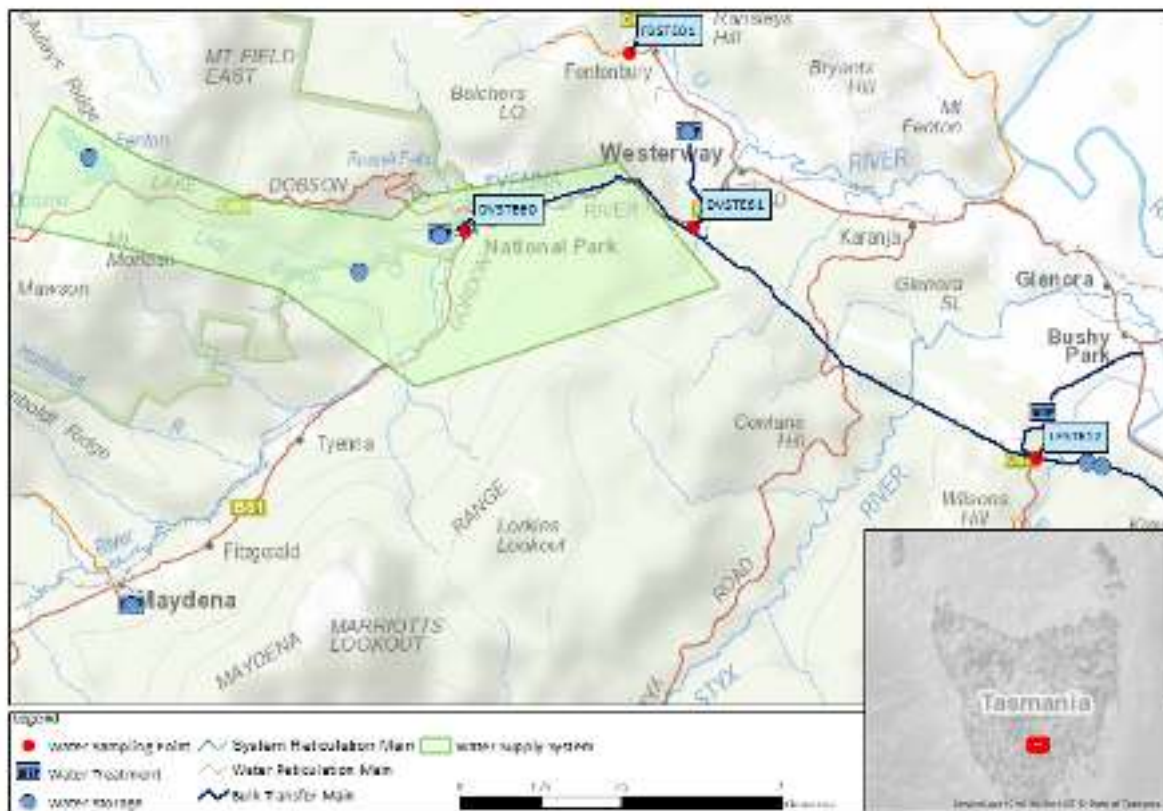


Figure 38.1-b Map of National Park monitoring system

38.2. Summary of annual reticulation compliance (2018–19)

Table 38.2-a Sampling program

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
National Park/crn Weir Rd and Gordon River Rd	DVSTE60 ⁶⁴	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

38.3. Summary of current and historic performance (2014–19)

Table 38.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2017–18
Microbiological	n/a	n/a	n/a	n/a	100.0%
Fluoride	n/a	n/a	n/a	n/a	100.0% ⁶⁵
Metals	n/a	n/a	n/a	n/a	100.0%
Disinfection by products	n/a	n/a	n/a	n/a	100.0%

■ Compliant ■ Non-compliant

38.4. Analysis of current health performance (2018–19)

Table 38.4-a Summary of health guideline exceedances

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

⁶⁴ National Park was part of the Greater Hobart system until 14th August 2018

⁶⁵ Fluoride station on Fenton line

Table 38.4-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	0.0033	0.0012	0.0062
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	0.0027	0.0016	0.0041
Lead	0.01	mg/L	4	0	100	0.0004	0.0002	0.0006
Manganese	0.5	mg/L	4	0	100	0.0012	0.0004	0.0022
Mercury	0.001	mg/L	4	0	100	0.00005	<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	<0.0001	0.0001	0.0002
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 38.4-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	1	0	100	16	12	19
Monochloroacetic acid	150	µg/L	1	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	1	0	100	19	14	24
Total trihalomethanes	250	µg/L	1	0	100	29	22	34

Table 38.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.72	0.06	1.86
Colour True	HU	15	2.15	<1	6
pH	Units	6.5 – 8.5	7.80	7.06	9.65
Turbidity	NTU	1	0.42	0.15	0.96

38.5. Analysis of overall system performance (2018–19)

Table 38.5-a Summary of system issues/public health alerts

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
14/08/2018	BWA removed	✓	✓

39. North Esk drinking water system

39.1. System summary (2018–19)

North Esk drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	14,576
Population serviced	31,157
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	676	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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	45	Discolouration, taste and odour, cloudy, other (stained washing)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
No projected capital investment				

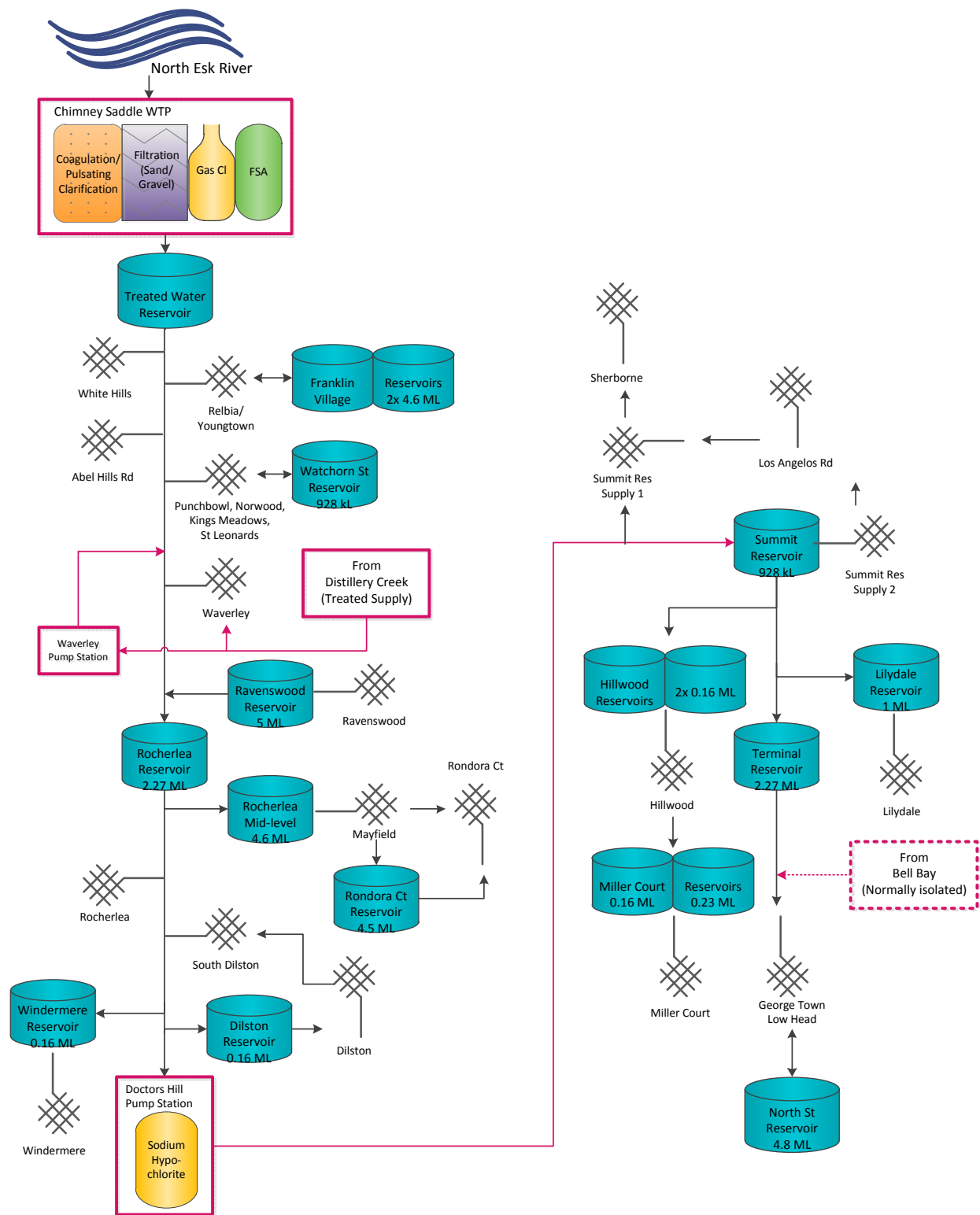


Figure 39.1-a North Esk system schematic

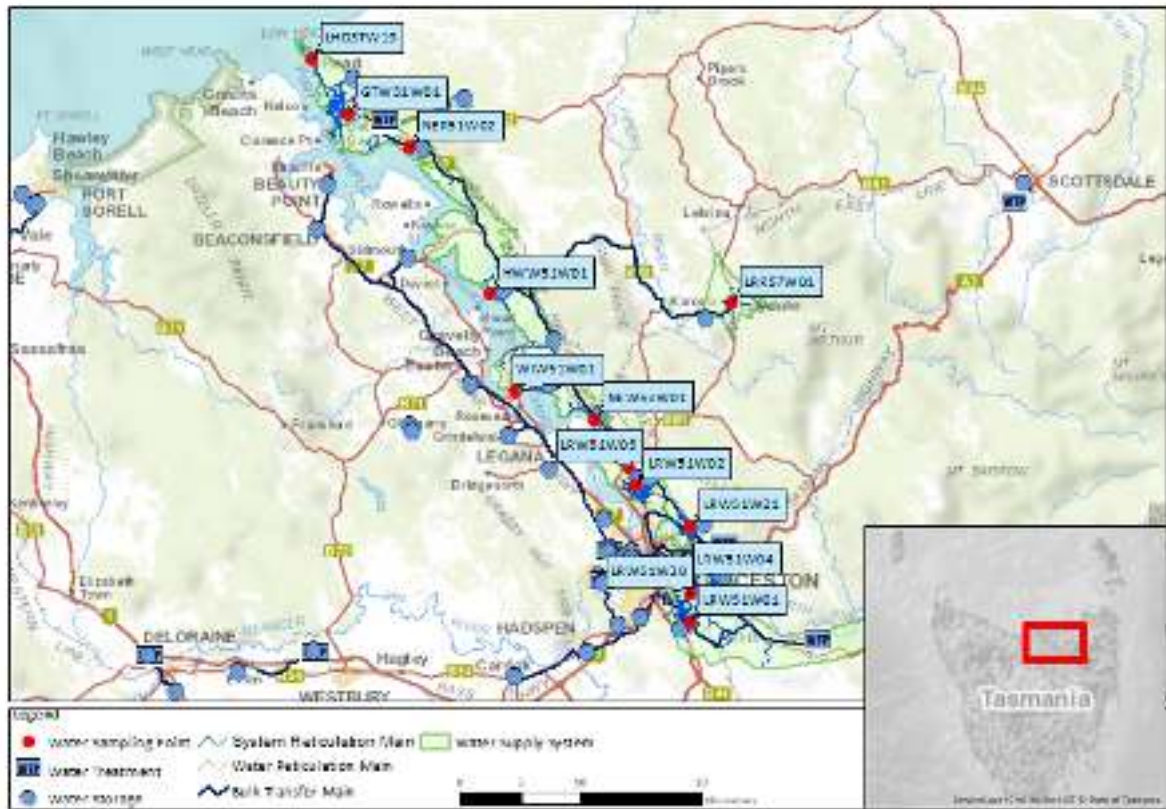


Figure 39.1-b Map of North Esk monitoring system

39.2. Summary of annual reticulation compliance (2018–19)

Table 39.2-a Sampling program

Planned sampling program (2018–19)							
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		676	4	4	12	4	n/a
Number Samples Tested		676	4	4	12	4	n/a

39.3. Summary of current and historic performance (2014–19)

Table 39.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	99.0%	99.0%	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					

39.4. Analysis of current health performance (2018–19)

Table 39.4-a Summary of health guideline exceedances

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

Table 39.4-b Fluoride distribution performance – North Esk

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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

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	0.0082	0.0071	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	0.0001
Copper	2	mg/L	4	0	100	0.0027	0.0013	0.0048
Lead	0.01	mg/L	4	0	100	0.0002	0.0001	0.0004
Manganese	0.5	mg/L	4	0	100	0.0013	0.0005	0.0020
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 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	3	2	4
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	10	6	13
Total trihalomethanes	250	µg/L	4	0	100	24	15	28

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	0.51	0.01	1.72
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.11	0.22	8.35
Turbidity	NTU	1	0.35	0.11	7.19

39.5. Analysis of overall system performance (2018–19)

Table 39.5-a Summary of system issues/public health alerts

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

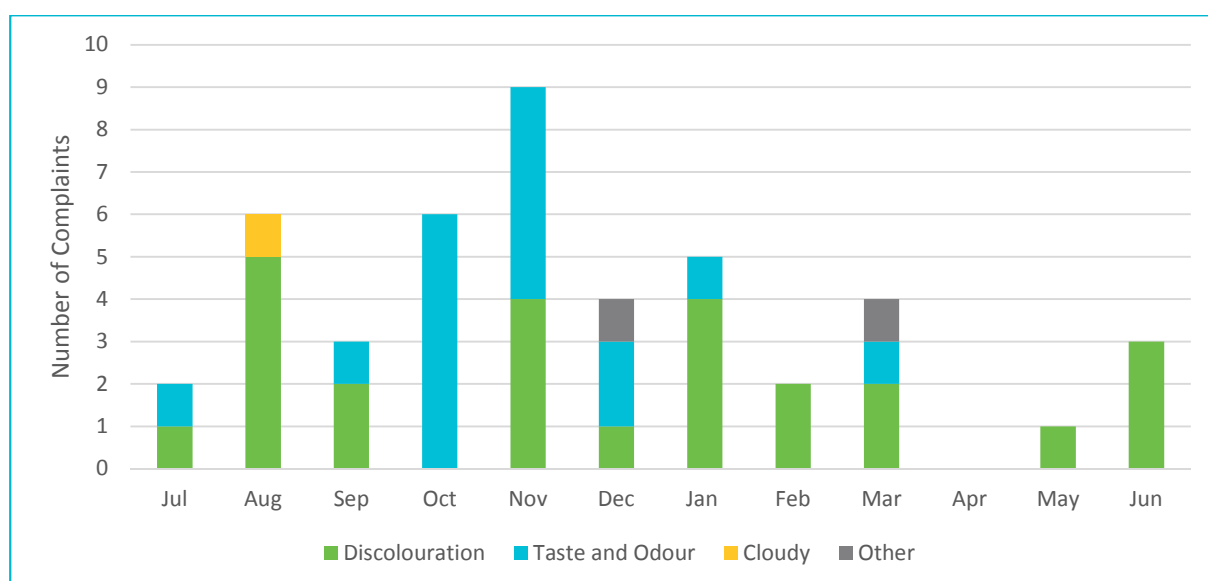


Figure 39.5-b Water quality customer complaints by month and type

40. Oatlands drinking water system

40.1. System summary (2018–19)

Oatlands drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	509
Population serviced	789
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
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

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	WTP and associated infrastructure	Not started	TBA	TBA

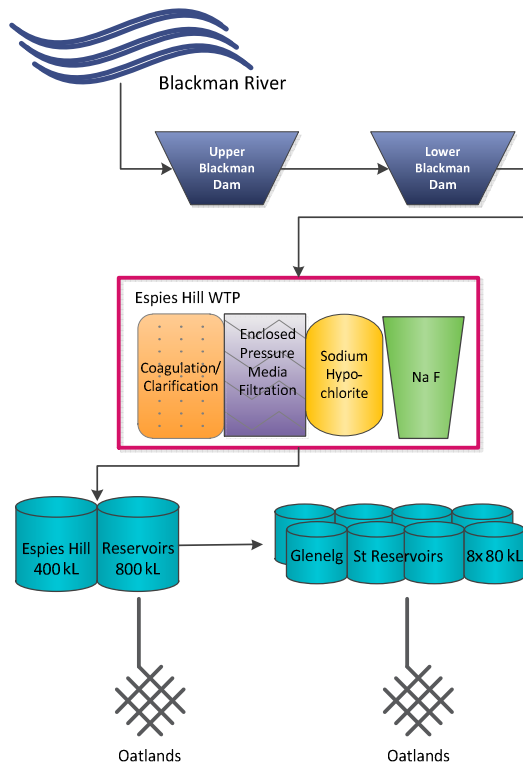


Figure 40.1-a Oatlands system schematic

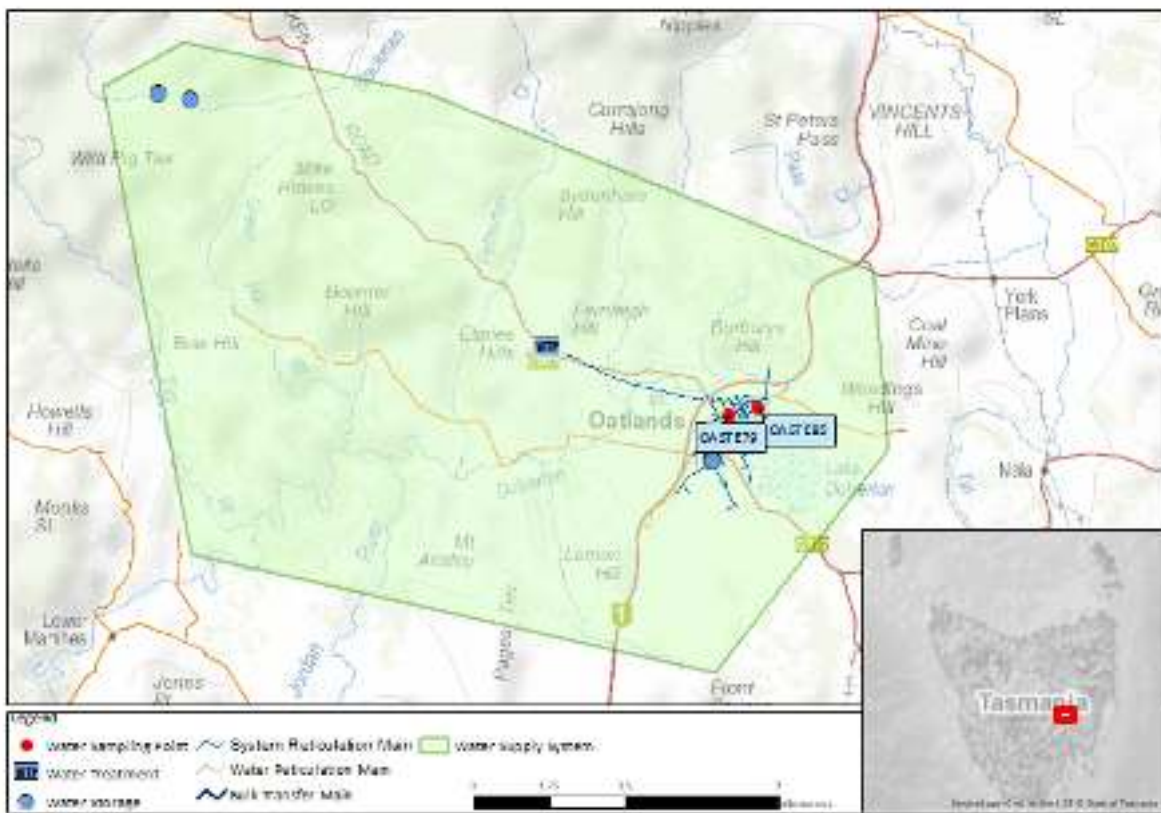


Figure 40.1-b Map of Oatlands monitoring system

40.2. Summary of annual reticulation compliance (2018–19)

Table 40.2-a Sampling program

Planned sampling program (2018–19)							
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

40.3. Summary of current and historic performance (2014–19)

Table 40.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

40.4. Analysis of current health performance (2018–19)

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 Fluoride distribution performance - Oatlands

Distribution fluoride performance	
Indicator	2018–19
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%

■ Compliant ■ Non-compliant

Table 40.4-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	0.0047	0.0035	0.0054
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0001	<0.0001	0.0002
Copper	2	mg/L	4	0	100	0.0037	0.0017	0.0072
Lead	0.01	mg/L	4	0	100	0.0002	0.0001	0.0003
Manganese	0.5	mg/L	4	0	100	0.0002	<0.0001	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	0.0003	0.0002	0.0003
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 40.4-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	16	10	24
Monochloroacetic acid	150	µg/L	4	0	100	4	<3	6
Trichloroacetic acid	100	µg/L	4	0	100	25	21	30
Total trihalomethanes	250	µg/L	4	0	100	56	39	71

Table 40.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.59	0.44	0.80
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.30	6.88	7.69
Turbidity	NTU	1	0.21	0.11	0.77

40.5. Analysis of overall system performance (2018–19)

Table 40.5-a Summary of system issues/public health alerts

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

41. Orford drinking water system

41.1. System summary (2018–19)

Orford drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	1140
Population serviced	703
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
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

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Orford Fluoride Project	Upgrade to fluoride dosing	In progress	TBA	\$190,000
WTP Upgrade	Orford WTP upgrade	In progress	TBA	\$549,000

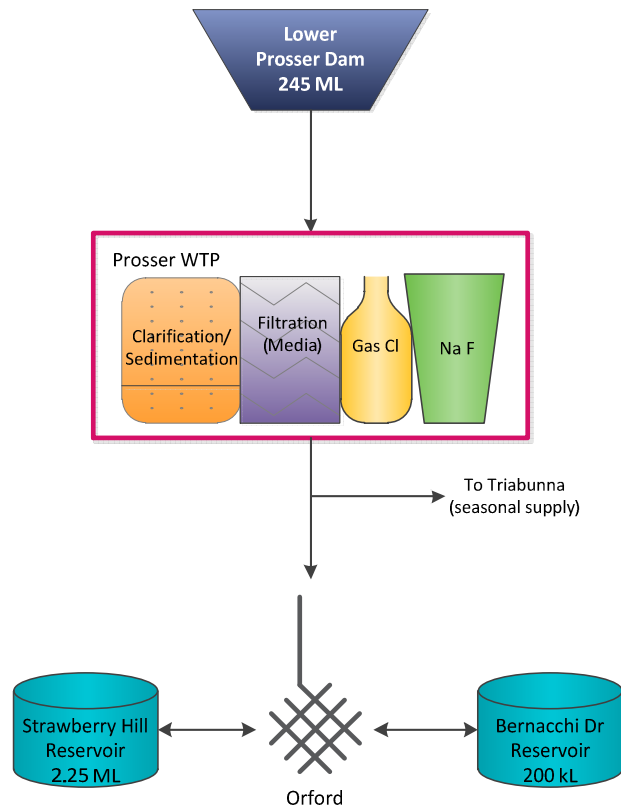


Figure 41.1-a Orford system schematic

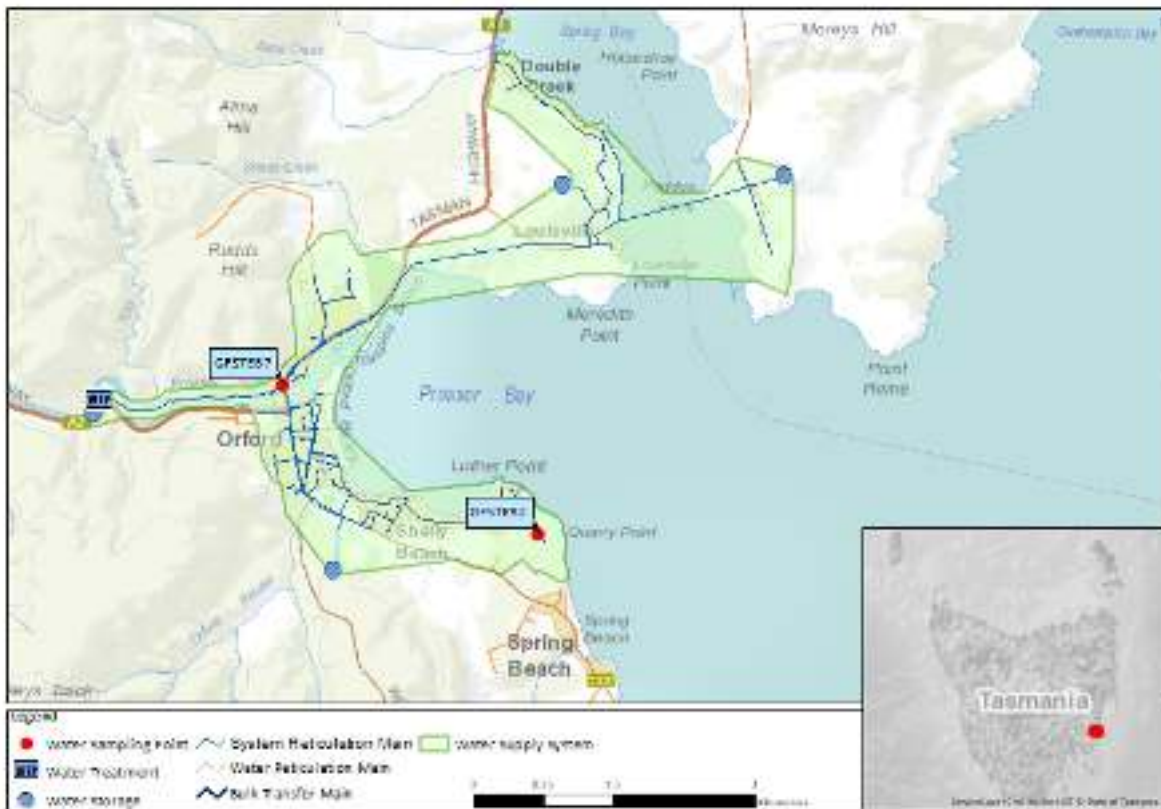


Figure 41.1-b Map of Orford monitoring system

41.2. Summary of annual reticulation compliance (2018–19)

Table 41.2-a Sampling program

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Orford/Manning Drive	GFSTE92	n/a	n/a	n/a	2M	n/a	n/a
Orford/Old Convict Rd Sample Tap	GFSTE87	W	Q	Q	2M	Q	n/a
Number Planned Samples		52	4	4	48	4	n/a
Number Samples Tested		52	4	4	48	4	n/a

41.3. Summary of current and historic performance (2014–19)

Table 41.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

41.4. Analysis of current health performance (2018–19)

Table 41.4-a Summary of health guideline exceedances

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

Table 41.4-b Fluoride distribution performance - Orford

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)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 41.4-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	0.0169	0.0133	0.0226
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	0.0097	0.0059	0.0118
Lead	0.01	mg/L	4	0	100	0.0007	0.0003	0.0010
Manganese	0.5	mg/L	4	0	100	0.0004	0.0002	0.0005
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	0.0004	0.0001	0.0005
Selenium	0.01	mg/L	4	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	4	0	100	10	<1	20
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	18	5	28
Total trihalomethanes	250	µg/L	4	0	100	112	103	122

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	0.70	0.02	2.03
Colour True	HU	15	1.75	1	3
pH	Units	6.5 – 8.5	7.12	6.46	7.73
Turbidity	NTU	1	0.24	0.12	0.69

41.5. Analysis of overall system performance (2018–19)

Table 41.5-a Summary of system issues/public health alerts

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

42. Ouse and Hamilton drinking water system

42.1. System summary (2018–19)

Ouse and Hamilton drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	270
Population serviced	390
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	8	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	8	0

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	2	Discolouration, cloudy

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

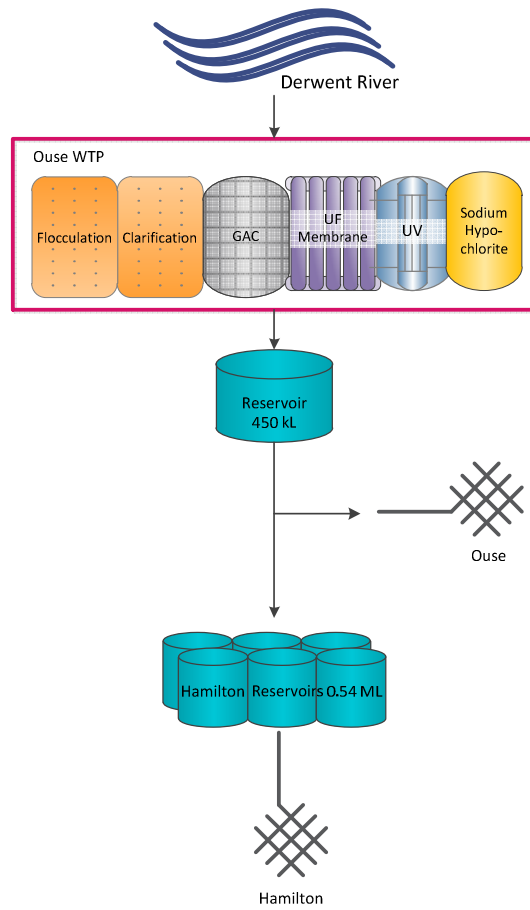


Figure 42.1-a Ouse and Hamilton system schematic

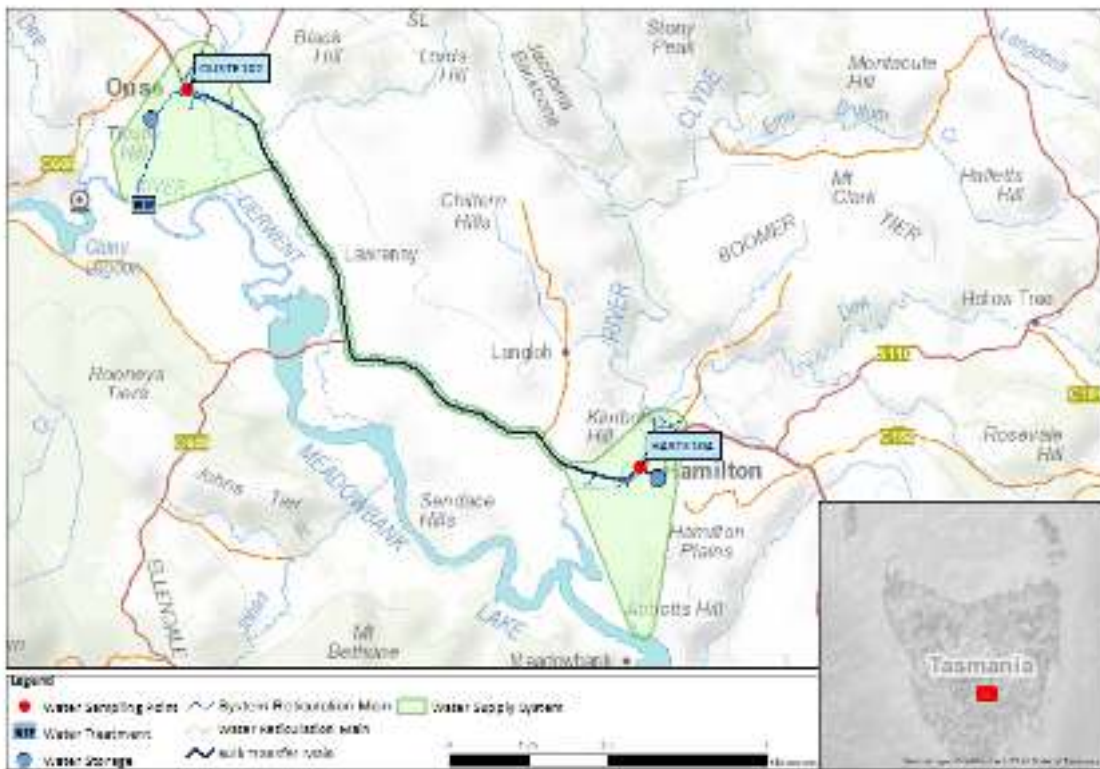


Figure 42.1-b Map of Ouse and Hamilton monitoring system

42.2. Summary of annual reticulation compliance (2018–19)

Table 42.2-a Sampling program

Planned sampling program (2018–19)							
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		104	8	8	n/a	8	n/a
Number Samples Tested		104	8	8	n/a	8	n/a

42.3. Summary of current and historic performance (2014–19)

Table 42.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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

42.4. Analysis of current health performance (2018–19)

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 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	0.0021	0.0019	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	0.0001
Copper	2	mg/L	8	0	100	0.0058	0.0033	0.0083
Lead	0.01	mg/L	8	0	100	0.0002	0.0001	0.0002
Manganese	0.5	mg/L	8	0	100	0.0007	0.0002	0.0012
Mercury	0.001	mg/L	8	0	100	<0.00003	<0.00003	<0.00003
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	<0.0001

Table 42.4-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	6	4	11
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	7	3	16
Total trihalomethanes	250	µg/L	8	0	100	18	11	31

Table 42.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.56	0.05	1.15
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	6.93	6.47	7.54
Turbidity	NTU	1	0.14	0.06	0.51

42.5. Analysis of overall system performance (2018–19)

Table 42.5-a Summary of system issues/public health alerts

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

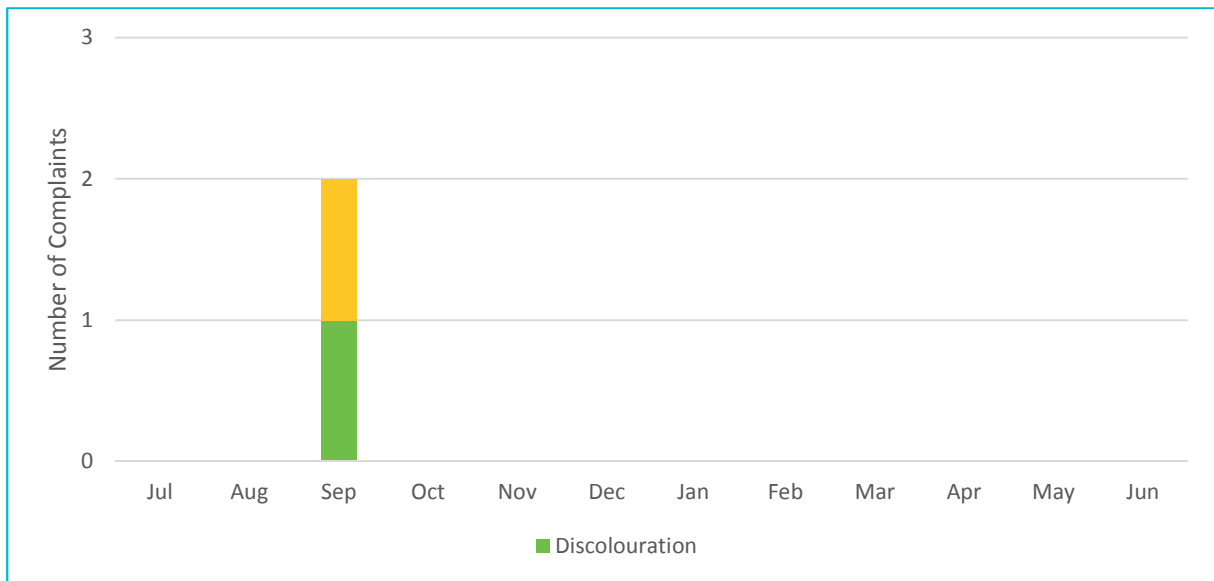


Figure 42.5-b Water quality customer complaints by month and type

43. Pet River drinking water system

43.1. System summary (2018–19)

Pet River drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	9,043
Population serviced	17,694
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	260	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

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	110	Discolouration, taste and odour, cloudy, other (stained washing, illness)

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

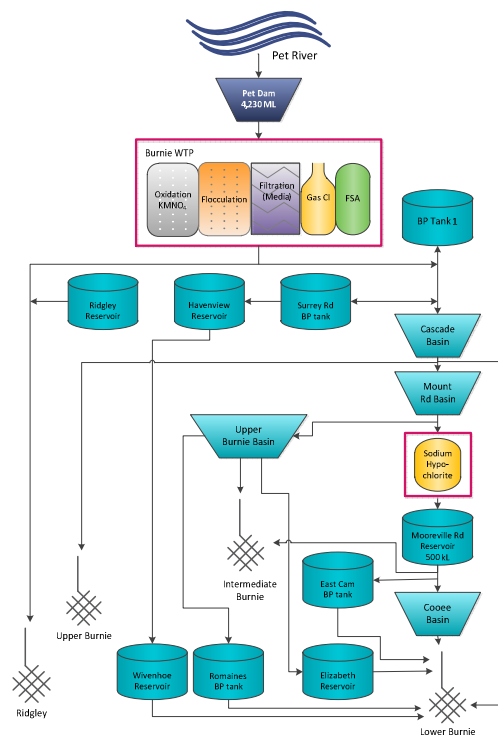


Figure 43.1-a Pet River system schematic

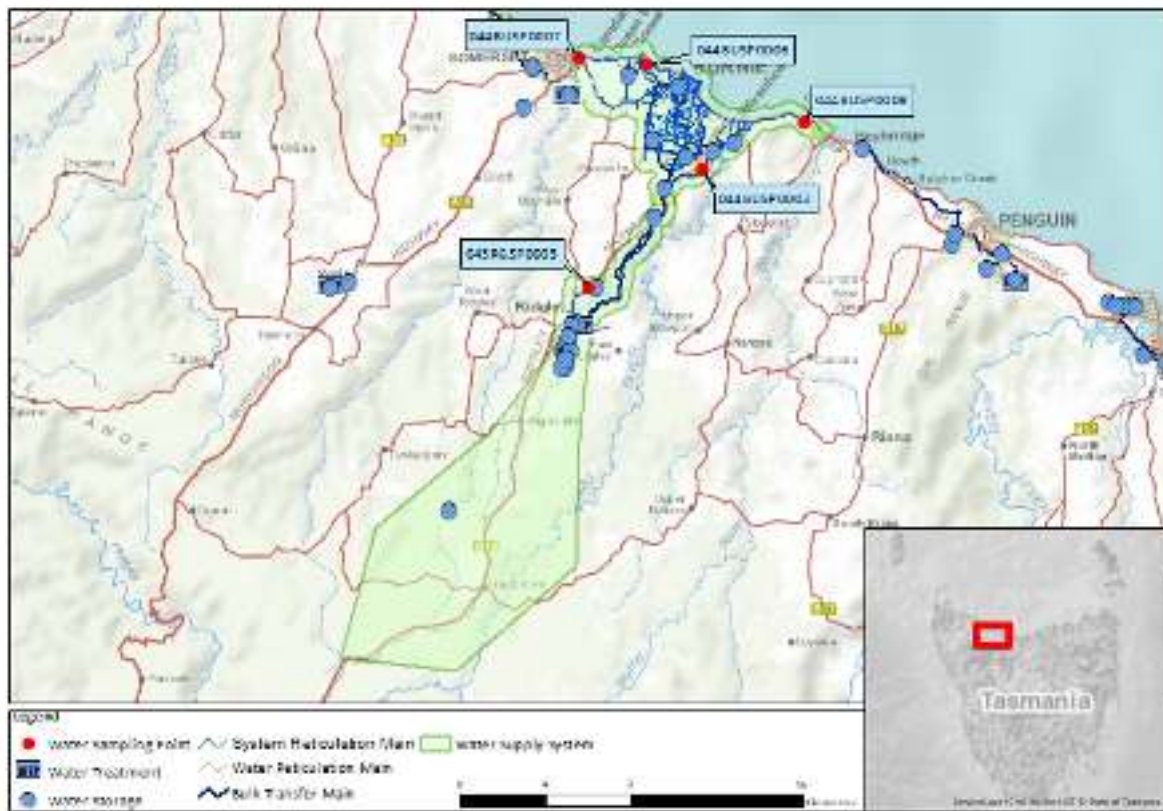


Figure 43.1-b Map of Pet River monitoring system

43.2. Summary of annual reticulation compliance (2018–19)

Table 43.2-a Sampling program

Planned sampling program (2018–19)								
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	n/a
Burnie/Lactos Sample Point	044BUSP0003	W	n/a	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	n/a
Burnie/Scarfe St Sample Point	044BUSP0007	W	Q	Q	2M	Q	Q	n/a
Burnie/Chasm Cr Sample Point	044BUSP0008	W	Q	Q	n/a	Q	Q	n/a
Number Planned Samples		260	8	8	48	8	8	n/a
Number Samples Tested		260	8	8	48	8	8	n/a

43.3. Summary of current and historic performance (2014–19)

Table 43.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100.0%	99.8%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	99.8%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%

■ Compliant ■ Non-compliant

43.4. Analysis of current health performance (2018–19)

Table 43.4-a Summary of health guideline exceedances

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

Table 43.4-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 – 1.2 mg/L)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 43.4-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	0.0058	0.0047	0.0066
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	0.0332	0.0006	0.1679
Lead	0.01	mg/L	8	0	100	0.0002	<0.0001	0.0004
Manganese	0.5	mg/L	8	0	100	0.0087	0.0017	0.0328
Mercury	0.001	mg/L	8	0	100	0.00005	<0.00003	0.00010
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	0.0001
Nickel	0.02	mg/L	8	0	100	0.0003	<0.0001	0.0010
Selenium	0.01	mg/L	8	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	8	0	100	3	<1	8
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	6	3	8
Total trihalomethanes	250	µg/L	8	0	100	62	44	72

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	0.48	0.01	1.22
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.79	6.07	9.65
Turbidity	NTU	1	0.30	0.03	3.90

43.5. Analysis of overall system performance (2018–19)

Table 43.5-a Summary of system issues/public health alerts with notification details

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

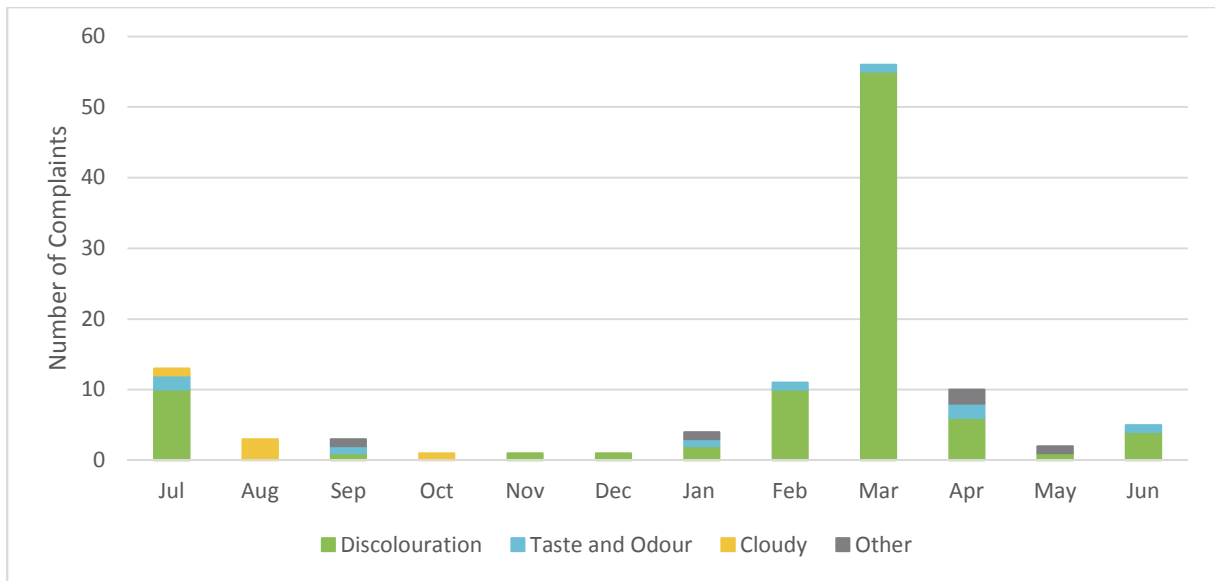


Figure 43.5-b Water quality customer complaints by month and type

44. Queenstown (Conglomerate Creek) drinking water system

44.1. System summary (2018–19)

Queenstown drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	1,464
Population serviced	1,931
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	156	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%	4	0

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	17	Discolouration, taste and odour, other (chlorine)

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

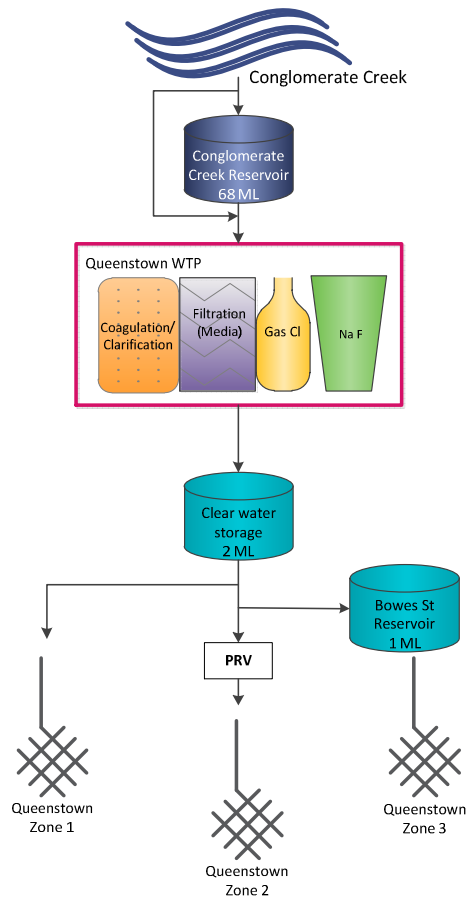


Figure 44.1-a Queenstown system schematic

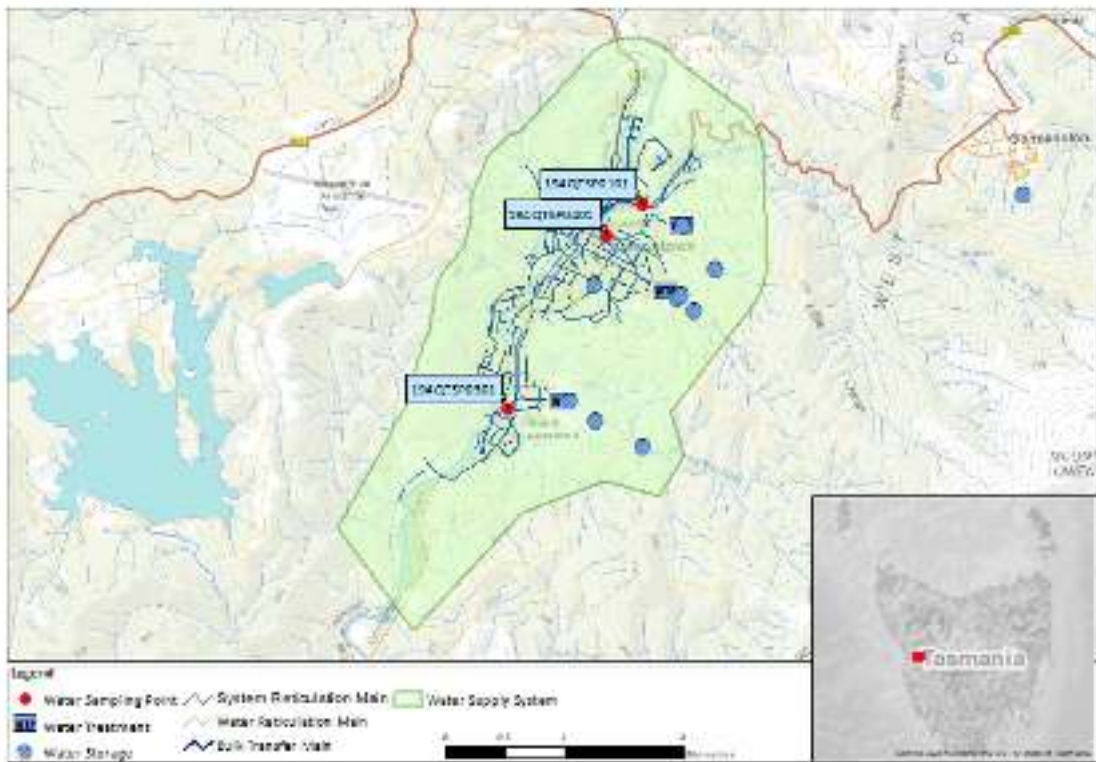


Figure 44.1-b Map of Queenstown monitoring system

44.2. Summary of annual reticulation compliance (2018–19)

Table 44.2-a Sampling program

Planned sampling program (2018–19)							
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		156	8	4	48	4	n/a
Number Samples Tested		156	8	4	48	4	n/a

44.3. Summary of current and historic performance (2014–19)

Table 44.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	99.5%	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 (2018–19)

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 - Queenstown

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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%

■ Compliant ■ Non-compliant

Table 44.4-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	0.0196	0.0162	0.0232
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	0.0011
Copper	2	mg/L	8	0	100	0.0085	0.0051	0.0163
Lead	0.01	mg/L	8	0	100	0.0001	<0.0001	0.0003
Manganese	0.5	mg/L	8	0	100	0.0047	0.0033	0.0086
Mercury	0.001	mg/L	8	0	100	0.00005	<0.00003	0.00016
Molybdenum	0.05	mg/L	8	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	8	0	100	0.0004	0.0003	0.0006
Selenium	0.01	mg/L	8	0	100	0.0001	<0.0001	0.0002

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	49	20	67
Monochloroacetic acid	150	µg/L	4	0	100	4	<3	6
Trichloroacetic acid	100	µg/L	4	0	100	64	48	74
Total trihalomethanes	250	µg/L	4	0	100	113	97	126

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	0.77	0.03	1.25
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.22	6.52	7.89
Turbidity	NTU	1	0.34	0.08	1.59

44.5. Analysis of overall system performance (2018–19)

Table 44.5-a Summary of system issues/public health alerts

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

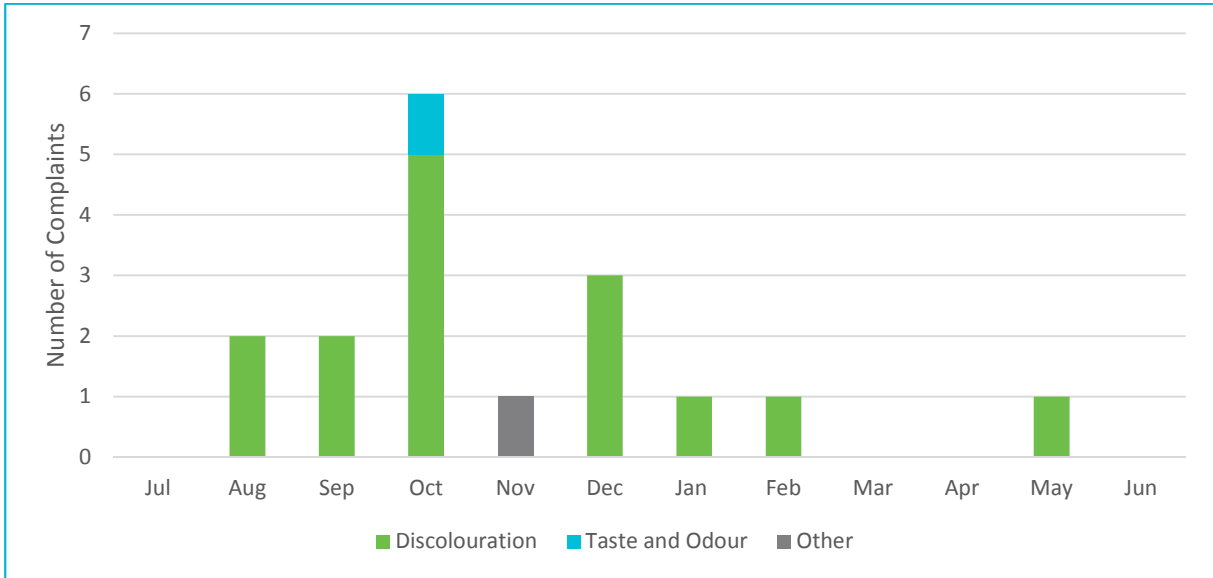


Figure 44.5-b Water quality customer complaints by month and type

45. Ringarooma System drinking water system

45.1. System summary (2018–19)

Ringarooma System drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	662
Population serviced	964
Fluoride	Sodium Fluoride

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	260	0
Fluoride	100.0%	<input checked="" type="checkbox"/>	100.0%	48	0
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	20	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	20	0

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	4	Taste and odour, PHA notices, other (illness)

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

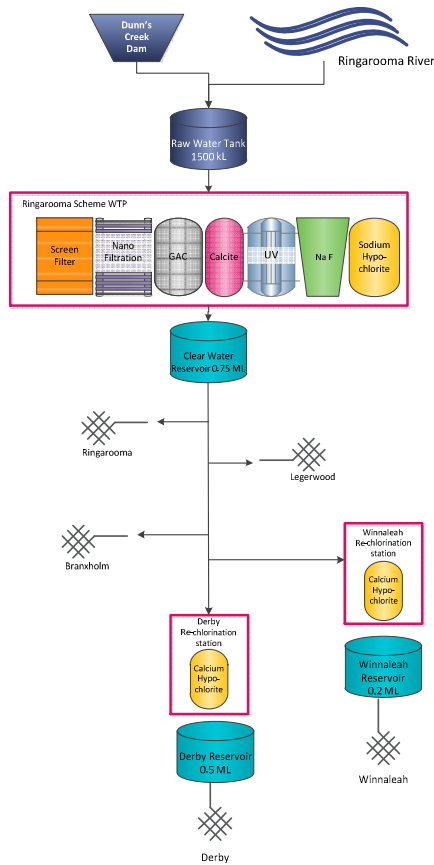


Figure 45.1-a Ringarooma System schematic

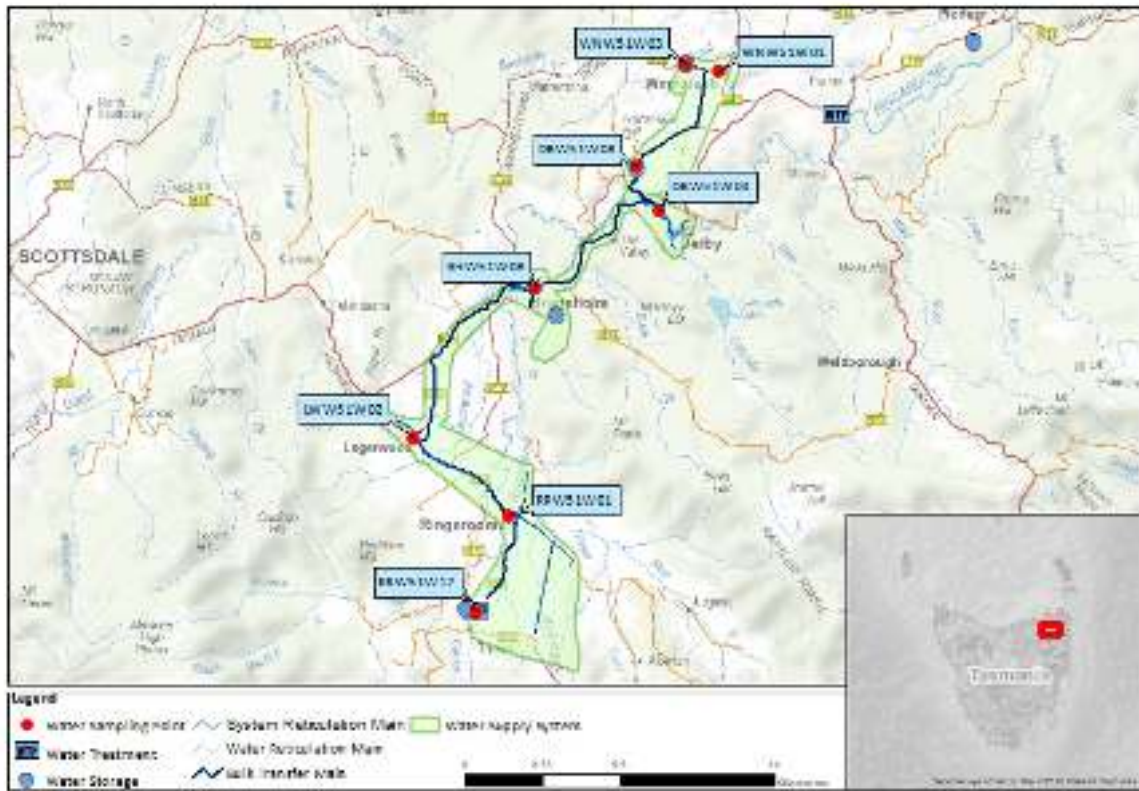


Figure 45.1-b Map of Ringarooma System monitoring system

45.2. Summary of annual reticulation compliance (2018–19)

Table 45.2-a Sampling program

Planned sampling program (2018–19)							
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		260	20	20	24	20	n/a
Number Samples Tested		260	20	20	24	20	n/a

45.3. Summary of current and historic performance (2014–19)

Table 45.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	0.0%	0.0%	50.0%	100.0%	100.0%
Fluoride	n/a	n/a	n/a	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	100.0%	100.0%
Disinfection by products	n/a	n/a	n/a	100.0%	100.0%

■ Compliant ■ Non-compliant

45.4. Analysis of current health performance (2018–19)

Table 45.4-a Summary of health guideline exceedances

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

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)	0.8
Mean dose (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	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	0.0039	0.0031	0.0050
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	0.0002
Copper	2	mg/L	20	0	100	0.0096	0.0048	0.0287
Lead	0.01	mg/L	20	0	100	0.0007	0.0002	0.0021
Manganese	0.5	mg/L	20	0	100	0.0009	<0.0001	0.0066
Mercury	0.001	mg/L	20	0	100	0.00004	<0.00003	0.00008
Molybdenum	0.05	mg/L	20	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	20	0	100	0.0004	<0.0001	0.0051
Selenium	0.01	mg/L	20	0	100	<0.0001	<0.0001	<0.0001

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	52	0	100	18	7	32
Monochloroacetic acid	150	µg/L	52	0	100	<3	<3	4
Trichloroacetic acid	100	µg/L	52	0	100	27	12	48
Total trihalomethanes	250	µg/L	52	0	100	41	28	58

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	0.80	0.11	1.50
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.14	6.0	7.9
Turbidity	NTU	1	0.25	0.05	1.4

45.5. Analysis of overall system performance (2018–19)

Table 45.5-a Summary of system issues/public health alerts

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

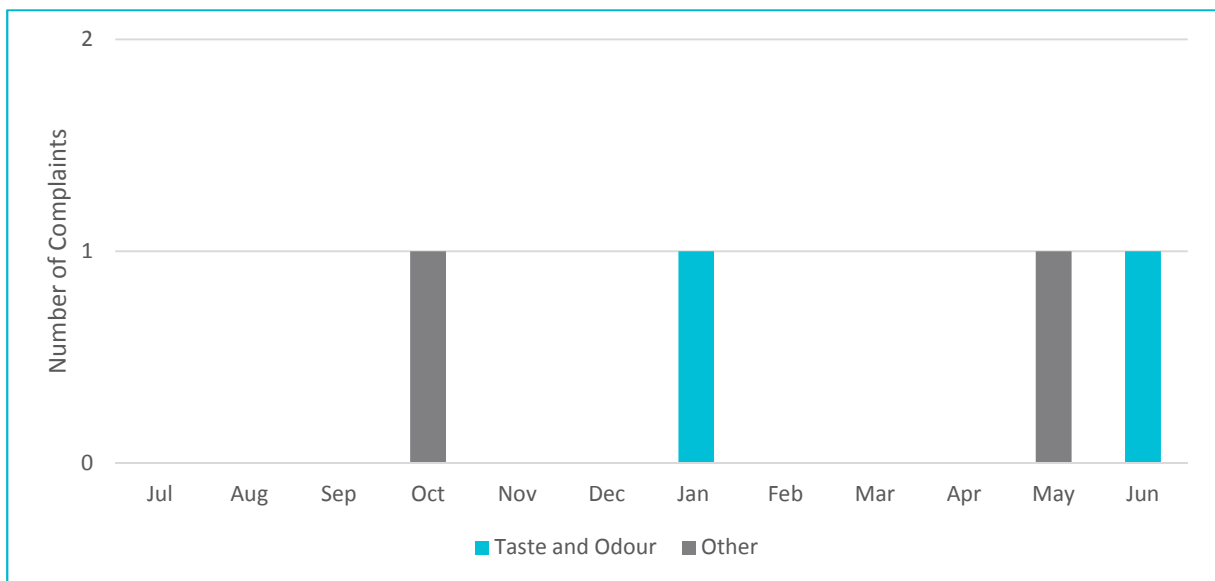


Figure 45.5-b Water quality customer complaints by month and type

46. Rocky Creek drinking water system

46.1. System summary (2018–19)

Rocky Creek drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	157
Population serviced	351
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
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 (2018–19)		
Indicator	Occurrences	Details
System issues	2	BWA removed + low fluoride
Public health alerts issued	1	BWA removed
Notifications made to DoH	2	Low fluoride
Customer complaints	6	Discolouration, taste and odour, cloudy

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	WTP and associated infrastructure	Complete	August 2018	\$3,608,659

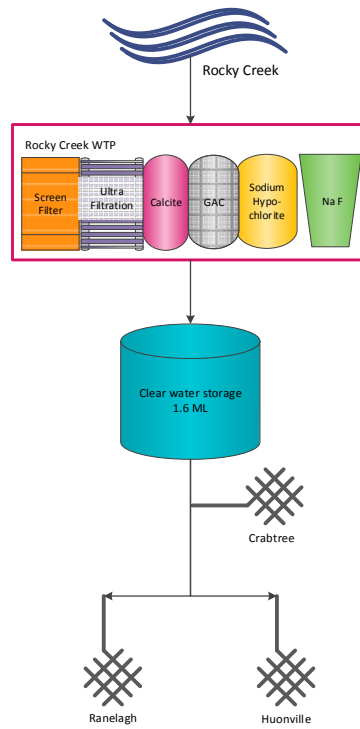


Figure 46.1-a Rocky Creek system schematic

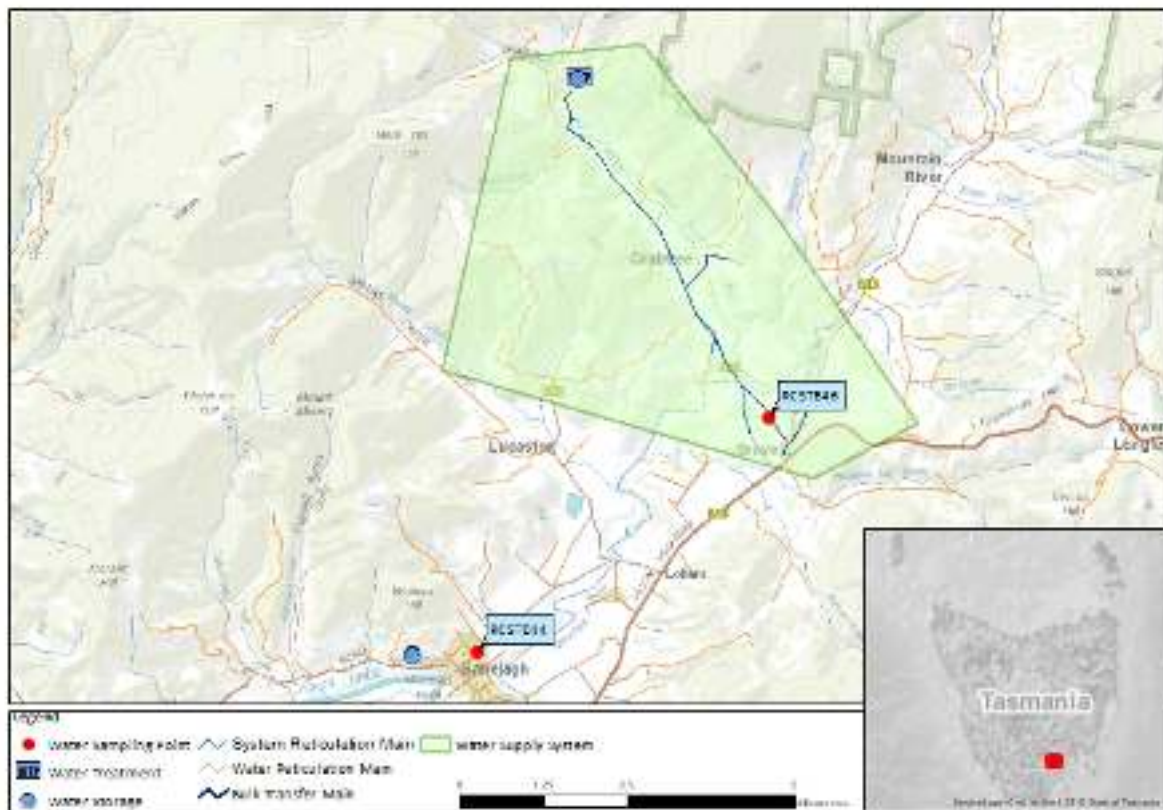


Figure 46.1-b Map of Rocky Creek monitoring system

46.2. Summary of annual reticulation compliance (2018–19)

Table 46.2-a Sampling program

Planned compliance sampling program (2018–19)							
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

46.3. Summary of current and historic performance (2014–19)

Table 46.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100.0%	98.1%	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

46.4. Analysis of current health performance (2018–19)

Table 46.4-a Summary of health guideline exceedances

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

Table 46.4-b Fluoride distribution performance – Rocky Creek

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)	0.7
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 46.4-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	0.0033	0.0017	0.0043
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0002	<0.0001	0.0003
Copper	2	mg/L	4	0	100	0.0039	0.0010	0.0054
Lead	0.01	mg/L	4	0	100	0.0005	<0.0001	0.0011
Manganese	0.5	mg/L	4	0	100	0.0115	0.0003	0.0396
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 46.4-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	15	11	22
Total trihalomethanes	250	µg/L	4	0	100	31	23	43

Table 46.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.52	0.09	1.16
Colour True	HU	15	1.29	<1	3
pH	Units	6.5 – 8.5	7.85	6.90	8.76
Turbidity	NTU	1	0.42	0.12	1.69

46.5. Analysis of overall system performance (2018–19)

Table 46.5-a Summary of system issues/public health alerts with notification details

Summary of system issues			
Date	Description	DHHS notification required	DHHS notification complete
Aug 2018 – June 2019	Low fluoride levels detected	✓	✓
14/08/2018	BWA lifted	✓	✓

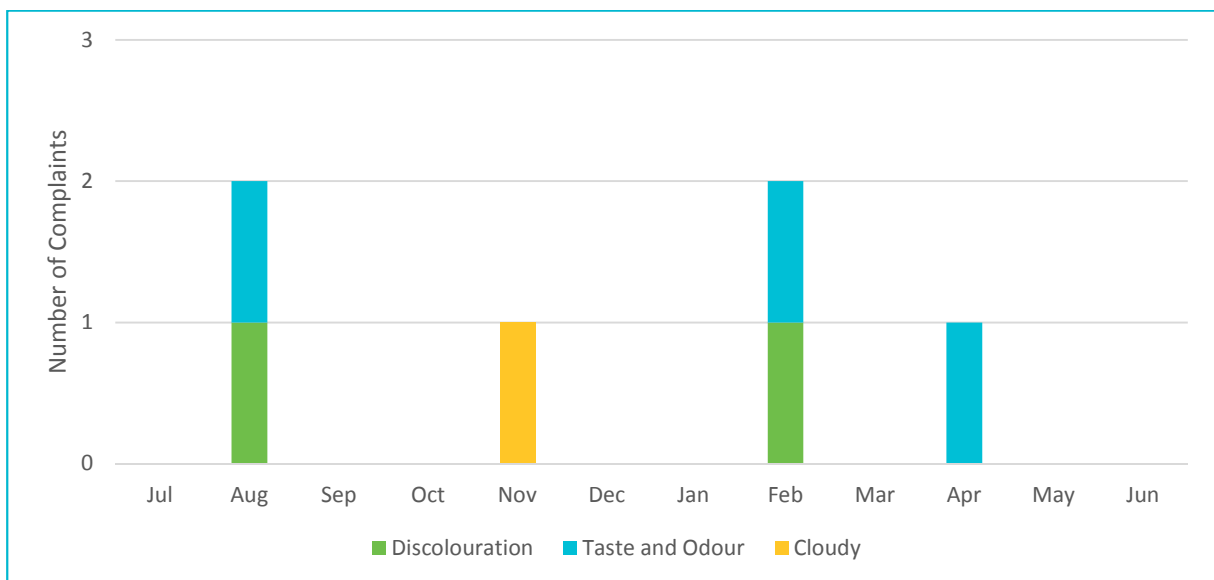


Figure 46.5-b Water quality customer complaints by month and type

47. Rosebery drinking water system

47.1. System summary (2018–19)

Rosebery drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	657
Population serviced	692
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	176	0
Fluoride	100.0%	<input checked="" type="checkbox"/>	100.0%	48	0
Metals	99.9%	<input type="checkbox"/>	100.0%	176	2
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	10	0

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	2	Lead and manganese exceedances
Public health alerts issued	0	
Notifications made to DoH	2	Lead and manganese exceedances
Customer complaints	8	Discolouration, cloudy

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Rosebery WTP	New WTP	Complete	Complete	\$8,397,728

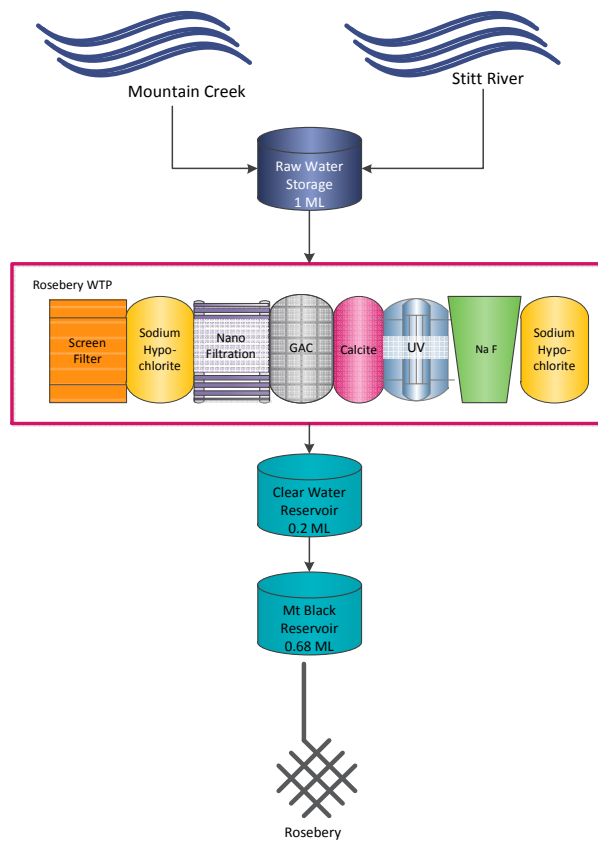


Figure 47.1-a Rosebery system schematic

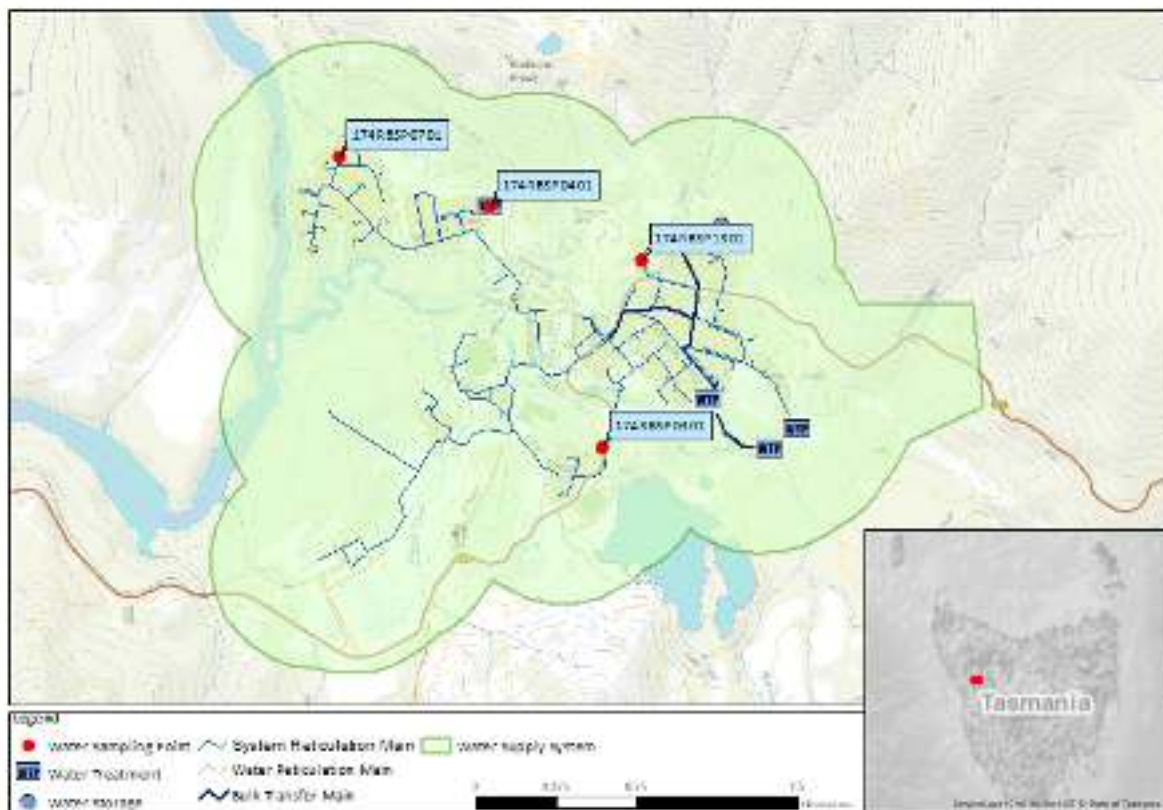


Figure 47.1-b Map of Rosebery monitoring system

47.2. Summary of annual reticulation compliance (2018–19)

Table 47.2-a Sampling program

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Rosebery/Murchison Highway Tap Behind Public Toilets	174RBSP0301	W	W	Q	2M	Q	n/a
Rosebery/Howard St Sample Point	174RBSP0401 ⁶⁶	W	W	n/a	n/a	n/a	n/a
Rosebery/Blackwood St Sample Point	174RBSP0701	W	W	Q	2M	Q	n/a
Rosebery/Rear of Hospital	174RBSP1301	W	W	n/a	n/a	n/a	n/a
Number Planned Samples		176	176	16	48	8	n/a
Number Samples Tested		176	2112	16	48	8	n/a

47.3. Summary of current and historic performance (2014–19)

Table 47.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	99.6%	99.1%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	99.6%	99.9%	99.9%	99.9% ⁶⁷	99.9% ⁶⁸
Disinfection by products	95.4%	97.1%	100.0%	100.0%	100.0% ⁶⁹

■ Compliant ■ Non-compliant

⁶⁶ Until 19th November 2018

⁶⁷ New WTP to improve ADWG compliance

⁶⁸ Two failed tests

⁶⁹ DBP samples missed compliance deemed 'unknown'

47.4. Analysis of current health performance (2018–19)

Table 47.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
<i>Manganese</i>	21/8/2018	Detection of 0.8378 mg/L in regular compliance sampling.	✓
<i>Lead</i>	29/8/2018	Detection of lead of 0.0486 mg/L in regular compliance sampling.	✓

Table 47.4-b Fluoride distribution performance - Rosebery

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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%

■ Compliant ■ Non-compliant

Table 47.4-c Metals performance

Metals – health regulated parameters								
Parameter	Limit	Unit	Samples	Exceedances	Performance %	Mean	Min.	Max.
Antimony	0.003	mg/L	176	0	100	<0.0005	<0.0005	0.0008
Arsenic	0.01	mg/L	176	0	100	0.0004	<0.0003	0.0077
Barium	2	mg/L	176	0	100	0.0049	0.0025	0.0084
Cadmium	0.002	mg/L	176	0	100	<0.0001	<0.0001	0.0002
Chromium	0.05	mg/L	176	0	100	0.0001	<0.0001	0.0007
Copper	2	mg/L	176	0	100	0.0363	0.0008	0.6940
Lead	0.01	mg/L	176	1	99	0.0010	<0.0001	0.0486
Manganese	0.5	mg/L	176	1	99	0.0095	<0.0001	0.8378
Mercury	0.001	mg/L	176	0	100	0.0005	<0.00003	0.00028
Molybdenum	0.05	mg/L	176	0	100	0.0005	<0.0001	0.0005
Nickel	0.02	mg/L	176	0	100	0.0005	<0.0001	0.0033
Selenium	0.01	mg/L	176	0	100	0.0005	<0.0001	0.0006

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	10*	0	100	16	2	32
Monochloroacetic acid	150	µg/L	10*	0	100	<3	<3	4
Trichloroacetic acid	100	µg/L	10*	0	100	12	1	26
Total trihalomethanes	250	µg/L	10*	0	100	20	14	27

*Two DBP samples missed

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	0.80	0.04	1.64
Colour True	HU	15	<1	<1	5
pH	Units	6.5 – 8.5	6.88	6.08	7.67
Turbidity	NTU	1	0.79	0.10	12.2

47.5. Analysis of overall system performance (2018–19)

Table 47.5-a Summary of system issues/public health alerts

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
21/08/2018	Manganese level exceedance. The system was resampled with no further exceedances identified. A new WTP was commissioned in October 2018 to reduce the risk of metals contamination.	✓	✓
29/08/2018	Lead level exceedance. The system was resampled with no further exceedances identified. A new WTP was commissioned in October 2018 to reduce the risk of metals contamination.	✓	✓

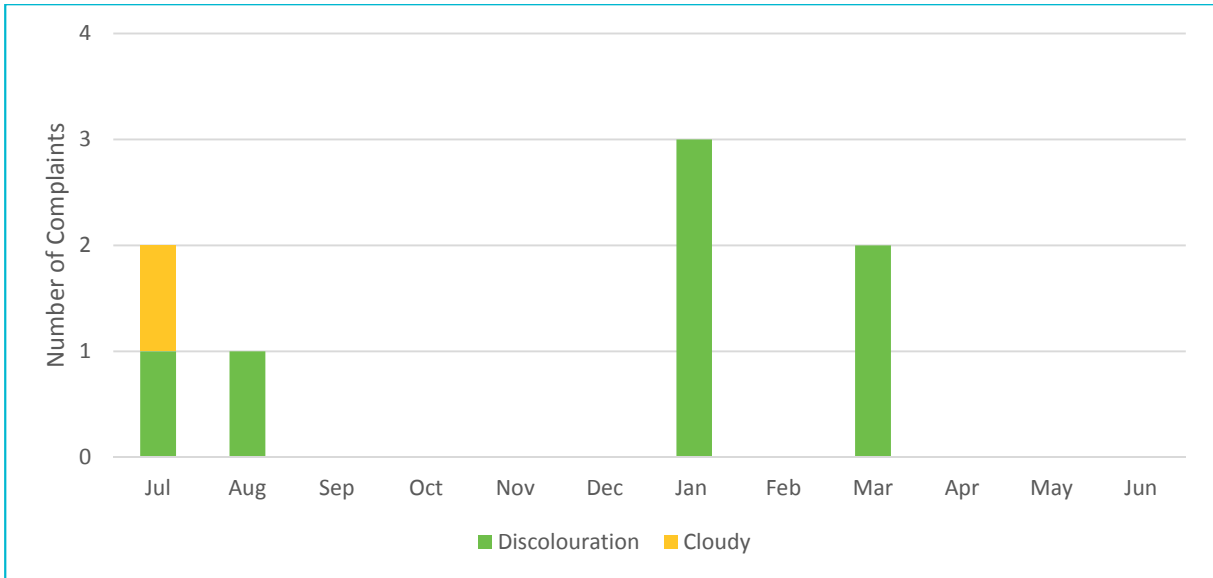


Figure 47.5-b Water quality customer complaints by month and type

48. Rossarden drinking water system

48.1. System summary (2018–19)

Rossarden drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	55
Population serviced	16
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	0
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	8	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	8	0

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	1	Subject to PHA until 03/08/2018
Public health alerts issued	0	
Notifications made to DoH	1	PHA removed
Customer complaints	0	

Current and future planned capital investment						
Project	Overview		Progress	Est. Delivery	Est. Spend (\$'000)	
Regional Towns Water Supply Program	WTP and associated infrastructure		Complete	August 2018	\$2,368,808	
Regional Towns Water Supply Program	Reticulation upgrade		Complete	August 2018	\$985,212	

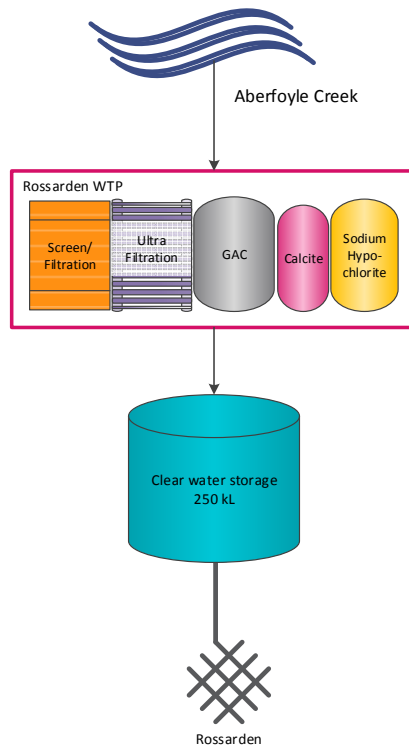


Figure 48.1-a Rossarden system schematic

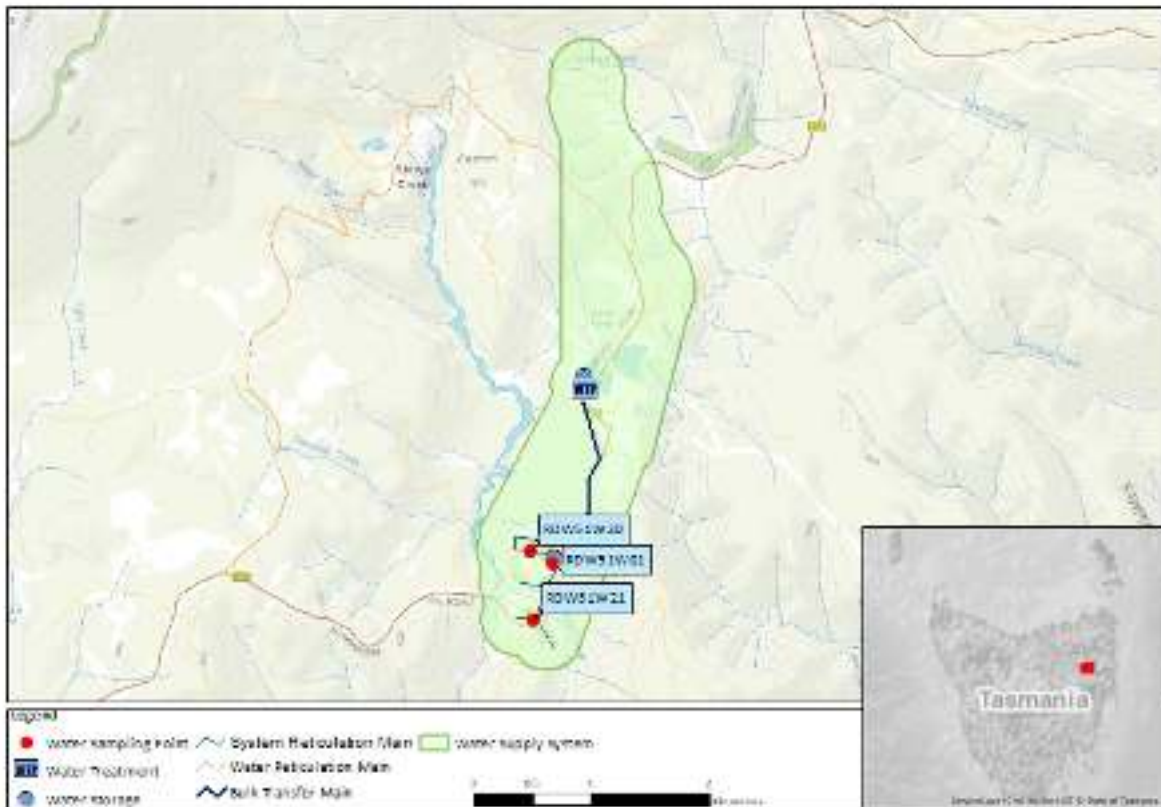


Figure 48.1-b Map of Rossarden monitoring system

48.2. Summary of annual reticulation compliance (2018–19)

Table 48.2-a Sampling program

Planned compliance sampling program (2018–19)							
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		104	8	8	n/a	8	n/a
Number Samples Tested		104	8	8	n/a	8	n/a

48.3. Summary of current and historic performance (2014–19)

Table 48.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100.0%	100.0%	100.0%	99.4%	100.0%
Fluoride	n/a	n/a	n/a	n/a	n/a
Metals	n/a	n/a	n/a	n/a	100.0%
Disinfection by products	n/a	n/a	n/a	n/a	100.0%

■ Compliant ■ Non-compliant

48.4. Analysis of current health performance (2018–19)

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 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	0.0024	0.0011	0.0037
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	0.0027	0.0007	0.0049
Lead	0.01	mg/L	8	0	100	0.0004	<0.0001	0.0006
Manganese	0.5	mg/L	8	0	100	0.0055	0.0022	0.0077
Mercury	0.001	mg/L	8	0	100	0.00005	<0.00003	0.00009
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 48.4-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	8	3	15
Monochloroacetic acid	150	µg/L	8	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	8	0	100	12	3	24
Total trihalomethanes	250	µg/L	8	0	100	17	11	25

Table 48.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.76	0.38	1.89
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.64	6.61	8.53
Turbidity	NTU	1	0.39	0.13	0.84

48.5. Analysis of overall system performance (2018–19)

Table 48.5-a Summary of system issues/public health alerts with notification details

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
03/08/2019	PHA lifted	✓	✓

49. Scamander drinking water system

49.1. System summary (2018–19)

Scamander drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	508
Population serviced	586
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts 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 (\$'000)
Scamander WTP	Instrumentation upgrade at Scamander WTP	In progress	In progress	\$70,000

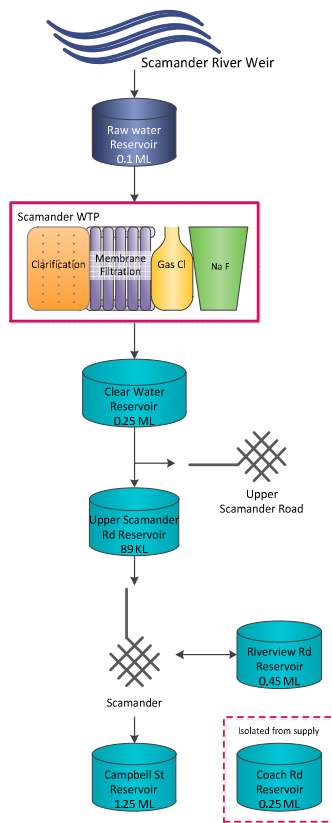


Figure 49.1-a Scamander system schematic

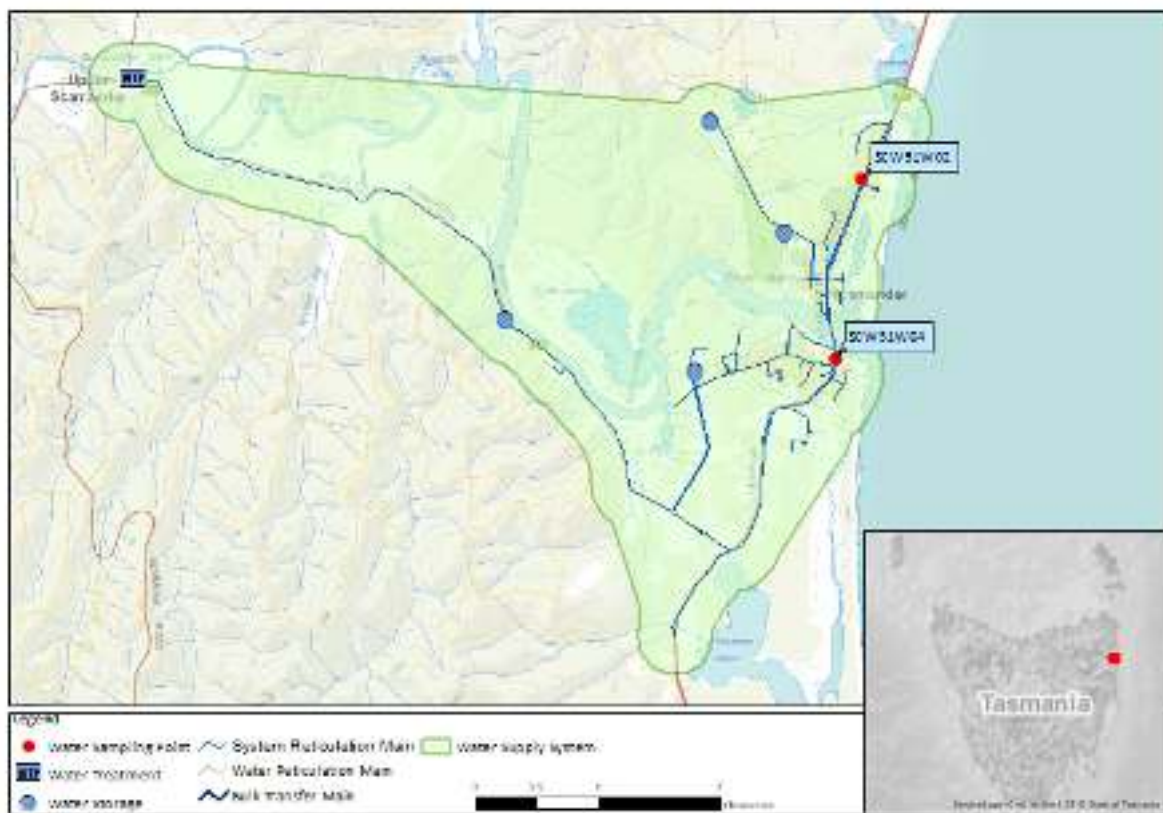


Figure 49.1-b Map of Scamander monitoring system

49.2. Summary of annual reticulation compliance (2018–19)

Table 49.2-a Sampling program

Planned sampling program (2018–19)							
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		52	4	4	48	4	n/a
Number Samples Tested		52	4	4	48	4	n/a

49.3. Summary of current and historic performance (2014–19)

Table 49.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	94.0%	100.0%	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	100.0%	100.0%	100.0%	100.0%	100.0%

■ Compliant ■ Non-compliant

49.4. Analysis of current health performance (2018–19)

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 - Scamander

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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

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	0.0071	0.0058	0.0079
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	0.0018	0.0040
Lead	0.01	mg/L	4	0	100	0.0006	0.0004	0.0010
Manganese	0.5	mg/L	4	0	100	0.0022	0.0005	0.0052
Mercury	0.001	mg/L	4	0	100	0.00006	<0.00003	0.00015
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	<0.0001	<0.0001	0.0001
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	13	7	23
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	4
Trichloroacetic acid	100	µg/L	4	0	100	15	7	25
Total trihalomethanes	250	µg/L	4	0	100	47	24	80

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	0.77	0.29	1.13
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.06	6.35	7.71
Turbidity	NTU	1	0.28	0.07	0.78

49.5. Analysis of overall system performance (2018–19)

Table 49.5-a Summary of system issues/public health alerts

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

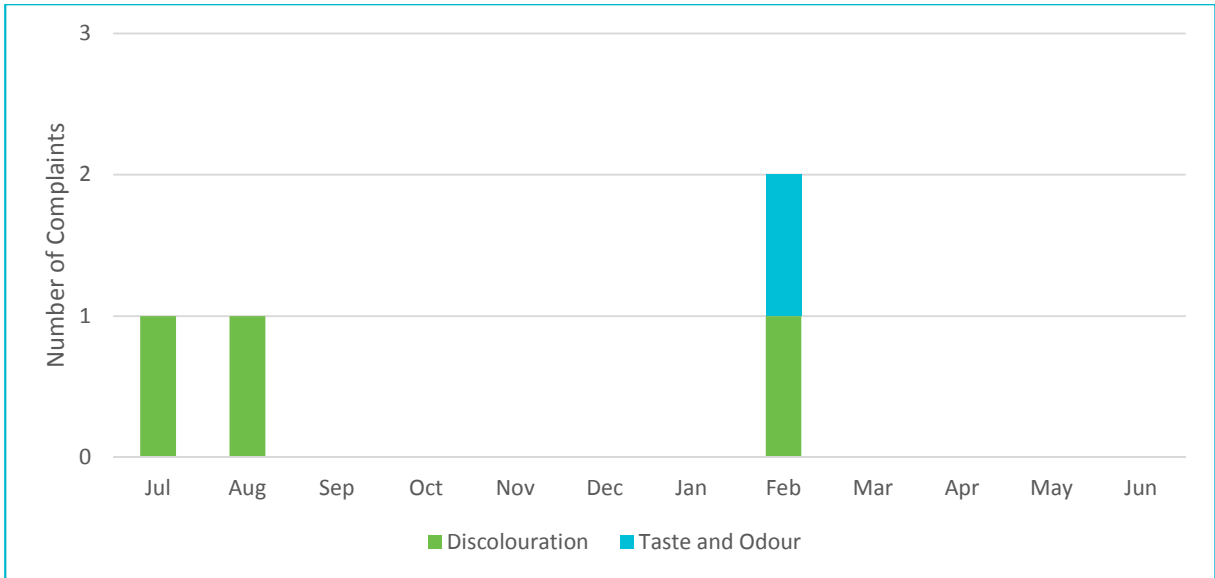


Figure 49.5-b Water quality customer complaints by month and type

50. Scottsdale drinking water system

50.1. System summary (2018–19)

Scottsdale drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	1292
Population serviced	2605
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	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

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	5	Discolouration, taste and odour, PHA notice

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	UV disinfection system	Not started	TBA	TBA

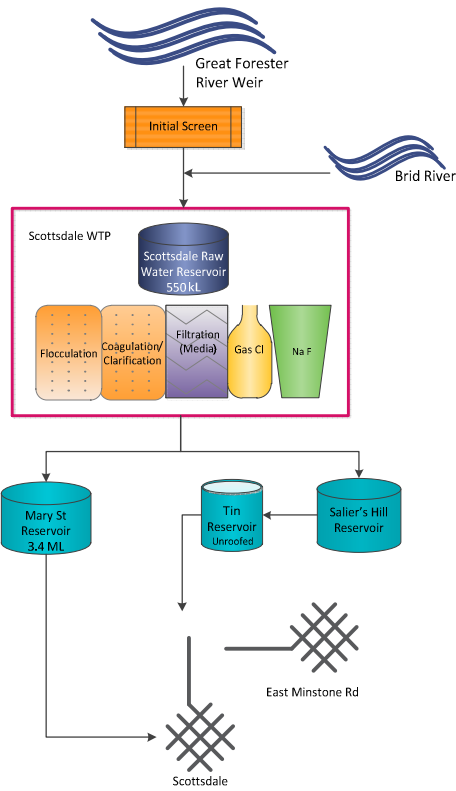


Figure 50.1-a Scottsdale system schematic

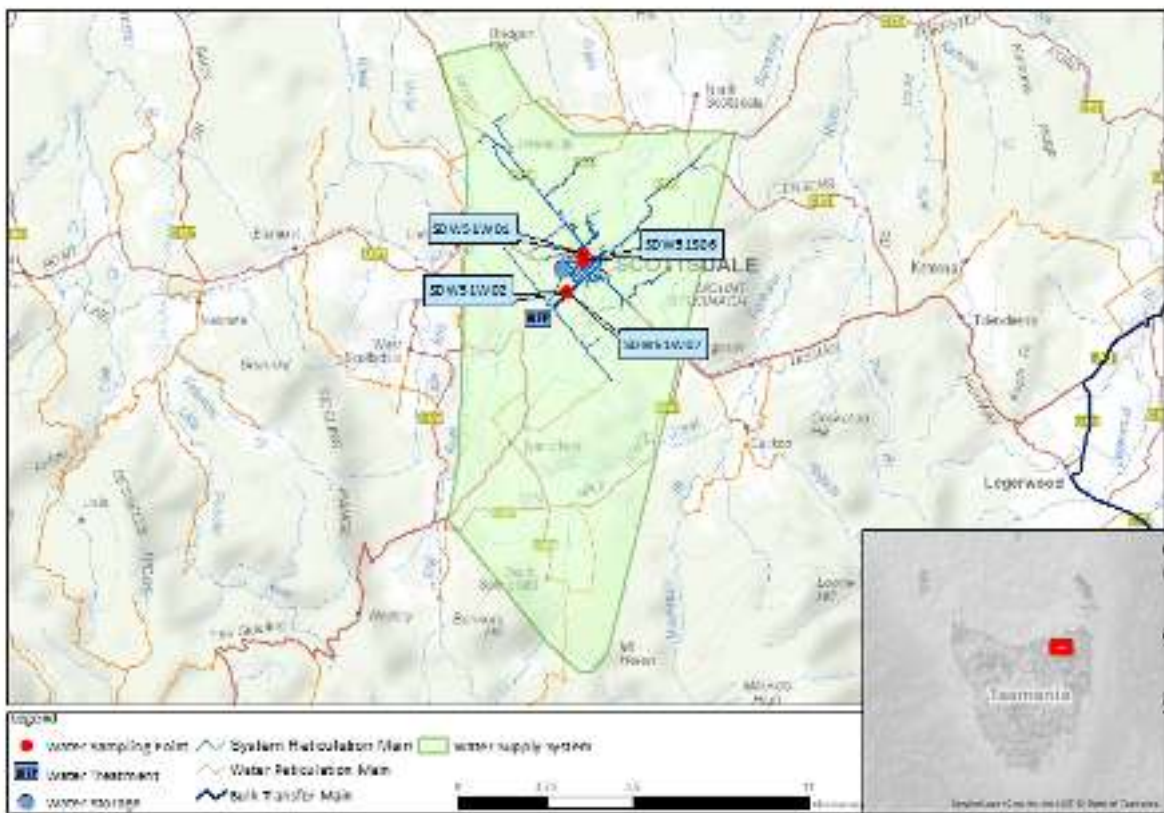


Figure 50.1-b Map of Scottsdale monitoring system

50.2. Summary of annual reticulation compliance (2018–19)

Table 50.2-a Sampling program

Planned sampling program (2018–19)							
Site name	Site Code	Micros	Metals	DBP	Fluoride (Lab)	Chemical Profile	Process Chemicals
Scottsdale/Recreation Ground	SDW51W01	W	Q	Q	2M	Q	n/a
Scottsdale/Visitor Info King St	SDW51W02	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

50.3. Summary of current and historic performance (2014–19)

Table 50.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100.0%	99.0%	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

50.4. Analysis of current health performance (2018–19)

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	2018–19
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 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	0.0117	0.0111	0.0124
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	0.0044	0.0029	0.0069
Lead	0.01	mg/L	4	0	100	0.0004	0.0002	0.0006
Manganese	0.5	mg/L	4	0	100	0.0029	0.0023	0.0036
Mercury	0.001	mg/L	4	0	100	0.00005	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	0.0001	<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	2	8
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	4	1	8
Total trihalomethanes	250	µg/L	4	0	100	19	14	28

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	0.97	0.02	1.54
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.03	6.17	7.66
Turbidity	NTU	1	0.30	0.08	1.87

50.5. Analysis of overall system performance (2018–19)

Table 50.5-a Summary of system issues/public health alerts

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

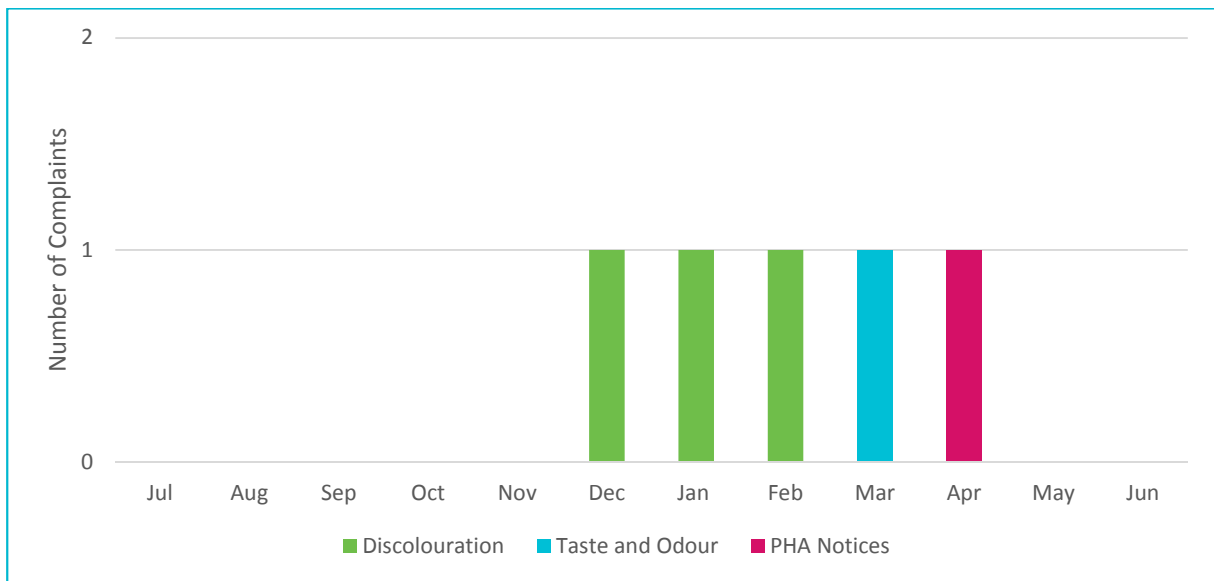


Figure 50.5-b Water quality customer complaints by month and type

51. South Esk drinking water system

51.1. System summary (2018–19)

South Esk drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	5,262
Population serviced	11,040
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	364	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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	1	Atrazine detected in raw water
Public health alerts issued	0	
Notifications made to DoH	1	Atrazine detected in raw water
Customer complaints	16	Discolouration, taste and odour, other (chlorine)

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

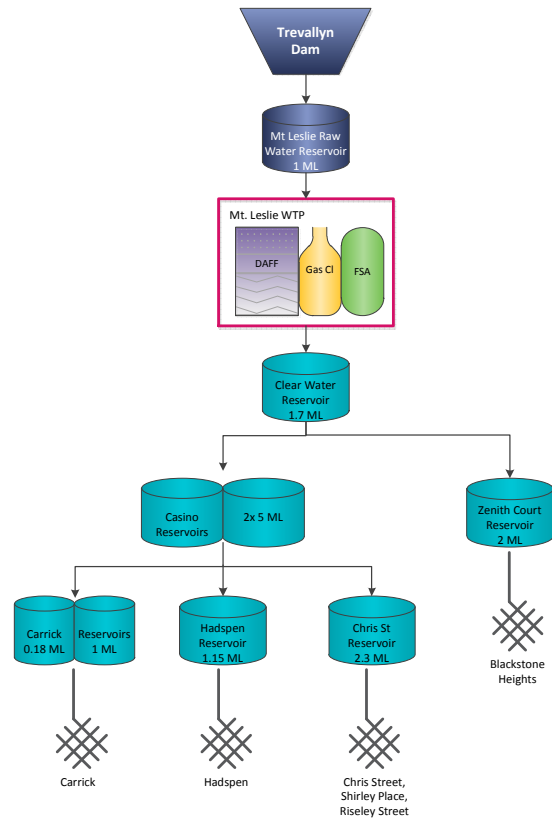


Figure 51.1-a South Esk system schematic

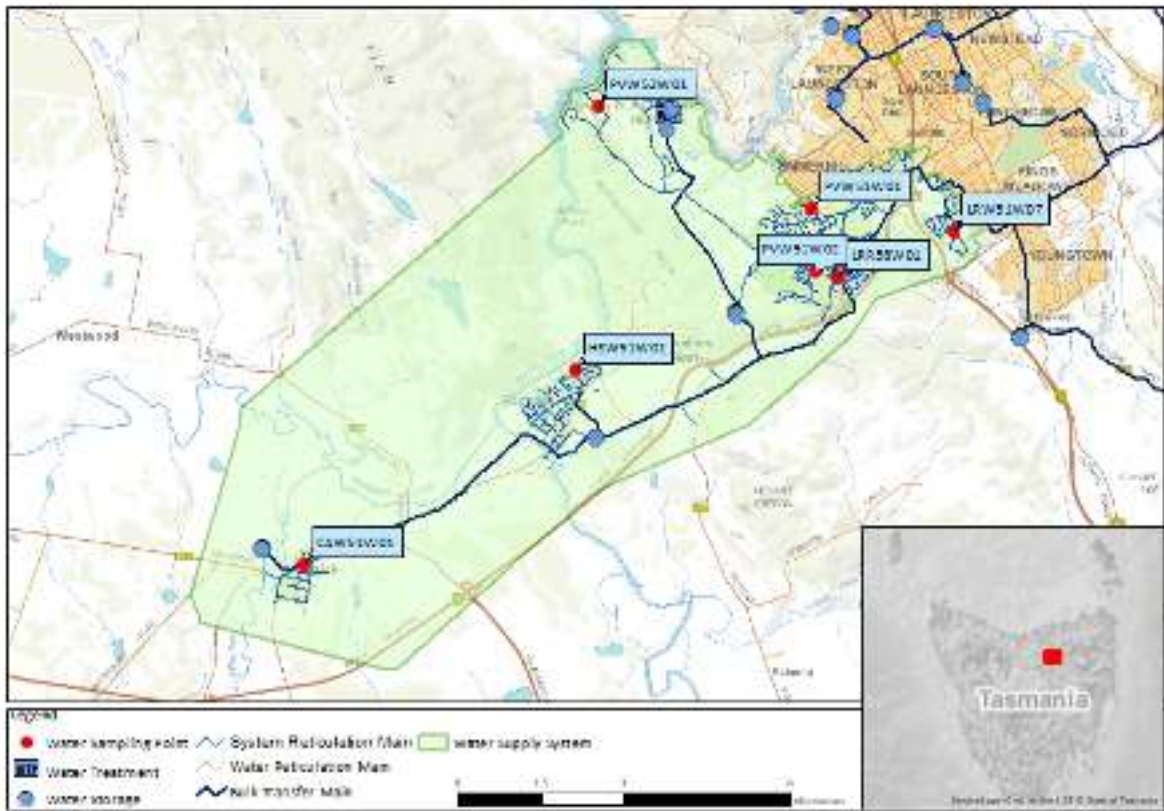


Figure 51.1-b Map of South Esk monitoring system

51.2. Summary of annual reticulation compliance (2018–19)

Table 51.2-a Sampling program

Planned sampling program (2018–19)							
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		364	4	4	48	4	12
Number Samples Tested		364	4	4	48	4	12

51.3. Summary of current and historic performance (2014–19)

Table 51.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

51.4. Analysis of current health performance (2018–19)

Table 51.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
Atrazine	08/08/2018	There was a detection of the pesticide atrazine (27 µg/L) above the ADWG health limit in the raw water at Lake Trevallyn. There have not been any detections of atrazine in samples since August 2018.	×

Table 51.4-b Fluoride distribution performance – South Esk

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 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	0.0150	0.0125	0.0170
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	0.0014	0.0041
Lead	0.01	mg/L	4	0	100	0.0004	0.0002	0.0006
Manganese	0.5	mg/L	4	0	100	0.0029	0.0024	0.0039
Mercury	0.001	mg/L	4	0	100	<0.00003	<0.00003	0.00010
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 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	8	5	14
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	9	5	16
Total trihalomethanes	250	µg/L	4	0	100	30	23	40

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	0.70	0.14	1.33
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.09	6.21	7.64
Turbidity	NTU	1	0.31	0.09	1.41

51.5. Analysis of overall system performance (2018–19)

Table 51.5-a Summary of system issues/public health alerts

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
08/08/2018	There was a detection of the pesticide atrazine (27 µg/L) above the ADWG health limit in the raw water at Lake Trevallyn. There have not been any detections of atrazine in samples since August 2018.	Y	Y

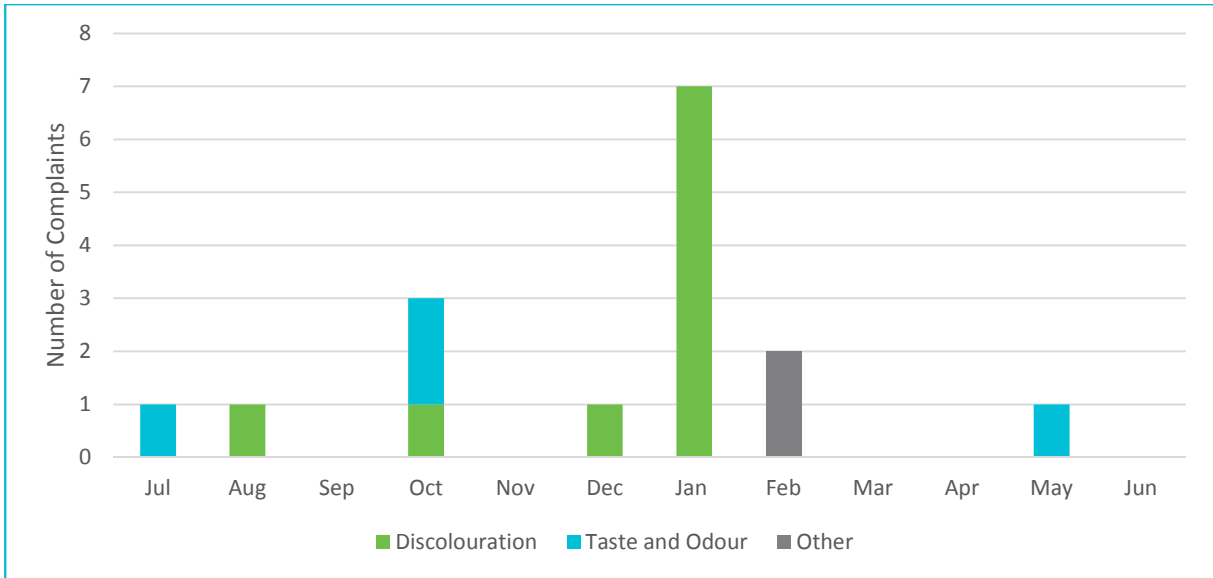


Figure 51.5-b Water quality customer complaints by month and type

52. St Helens drinking water system

52.1. System summary (2018–19)

St Helens drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	1868
Population serviced	2262
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	3	Taste and odour, other (chlorine)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	UV disinfection system	Not started	TBA	TBA

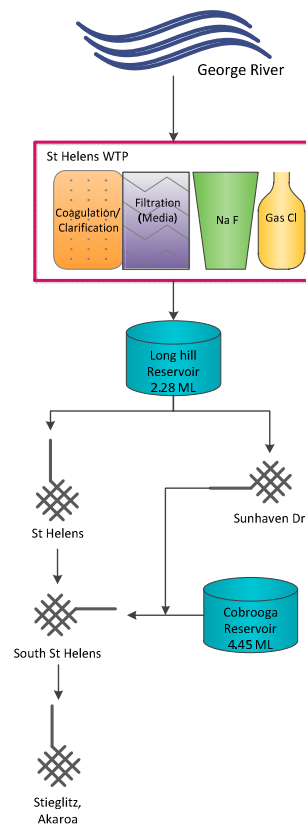


Figure 52.1-a St Helens system schematic

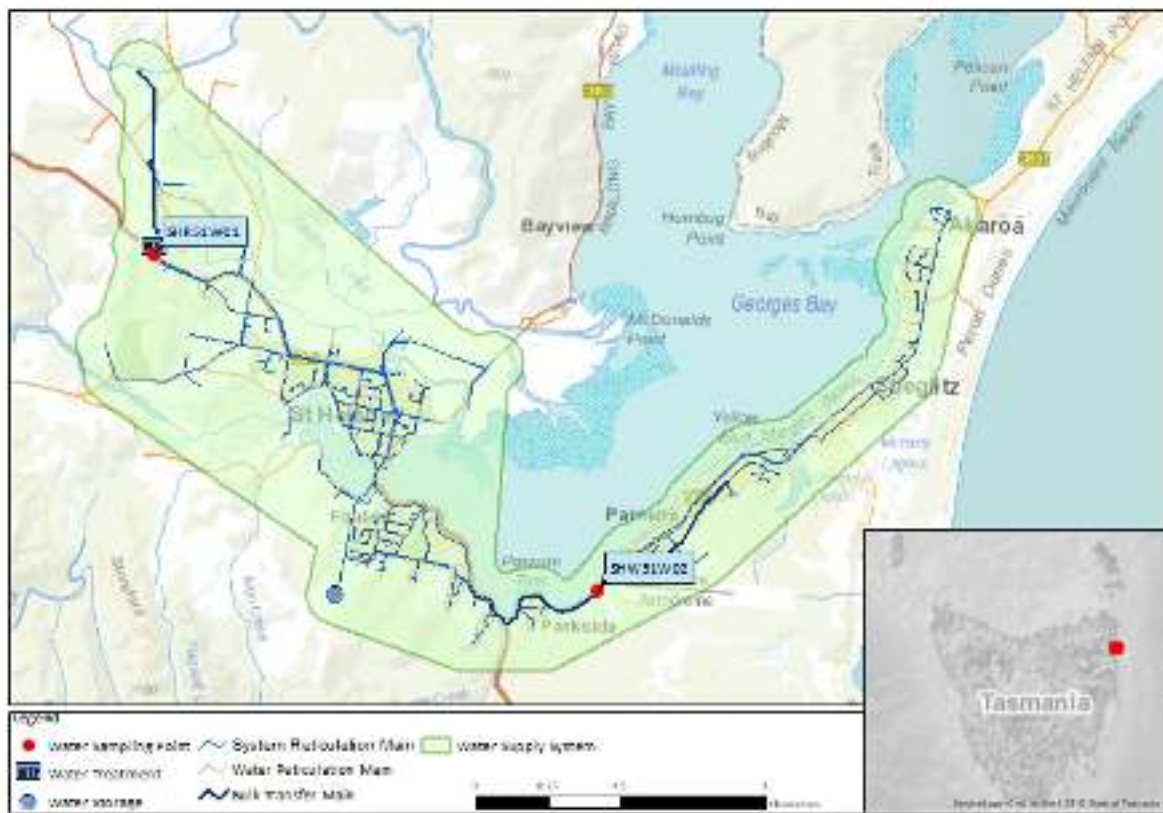


Figure 52.1-b Map of St Helens monitoring system

52.2. Summary of annual reticulation compliance (2018–19)

Table 52.2-a Sampling program

Planned sampling program (2018–19)							
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/Stieglitz Beach	SHW51W02	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

52.3. Summary of current and historic performance (2014–19)

Table 52.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

52.4. Analysis of current health performance (2018–19)

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 – St Helens

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)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

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	0.0081	0.0071	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	0.0025	0.0009	0.0052
Lead	0.01	mg/L	4	0	100	0.0002	<0.0001	0.0005
Manganese	0.5	mg/L	4	0	100	0.0040	0.0008	0.0105
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	0.0002
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	<0.0001

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	9	2	26
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	18	8	25
Total trihalomethanes	250	µg/L	4	0	100	46	24	63

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	0.90	0.31	1.44
Colour True	HU	15	<1	<1	2
pH	Units	6.5 – 8.5	7.10	6.21	7.65
Turbidity	NTU	1	0.26	0.03	0.86

52.5. Analysis of overall system performance (2018–19)

Table 52.5-a Summary of system issues/public health alerts

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

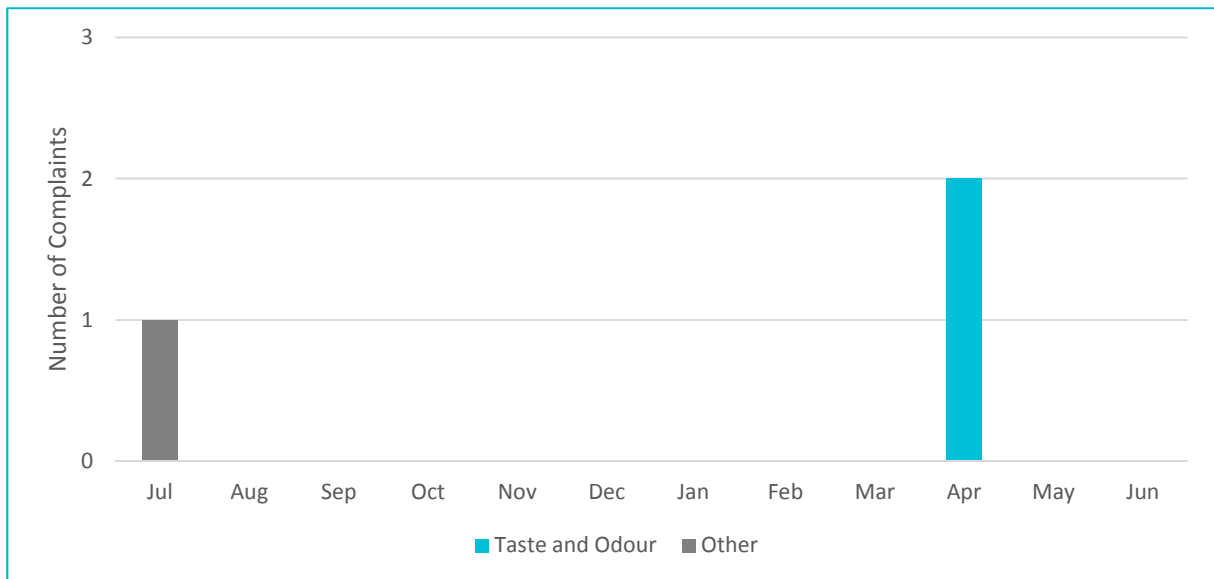


Figure 51.5-b Water quality customer complaints by month and type

53. St Marys drinking water system

53.1. System summary (2018–19)

St Marys drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	361
Population serviced	514
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	2	Other

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	Major upgrade to WTP	Not started	TBA	TBA

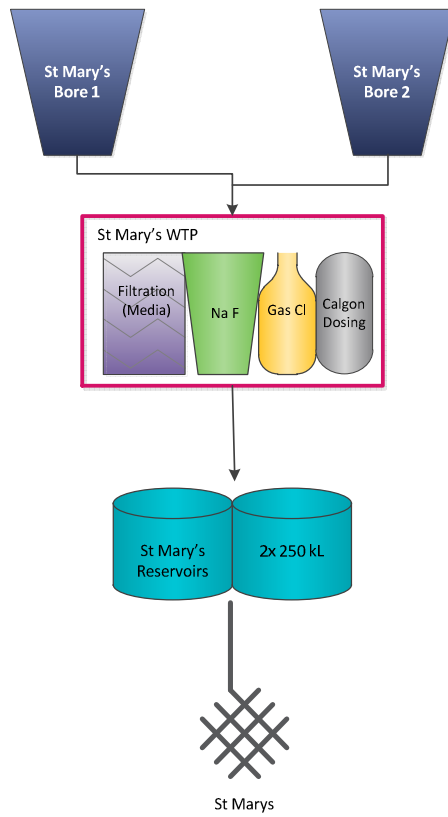


Figure 53.1-a St Marys system schematic

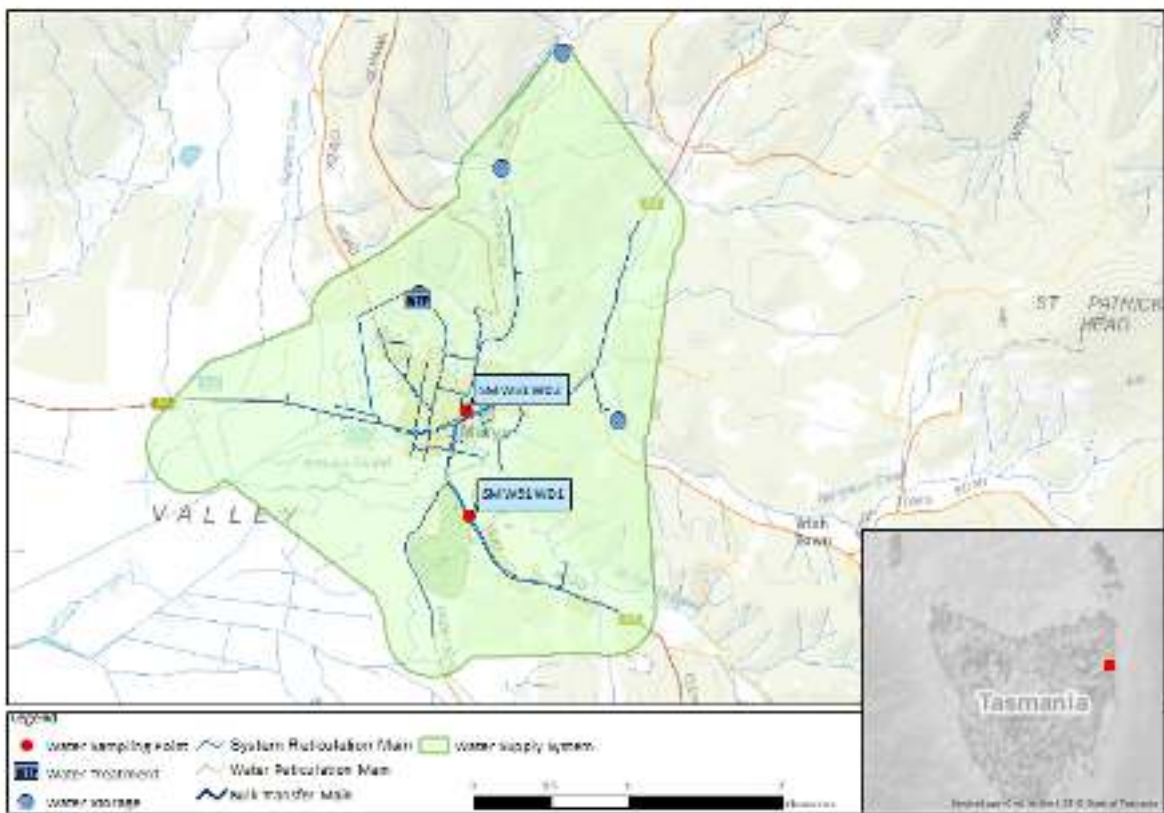


Figure 53.1-b Map of St Marys monitoring system

53.2. Summary of annual reticulation compliance (2018–19)

Table 53.2-a Sampling program

Planned sampling program (2018–19)							
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		52	4	4	48	4	n/a
Number Samples Tested		52	4	4	48	4	n/a

53.3. Summary of current and historic performance (2014–19)

Table 53.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

53.4. Analysis of current health performance (2018–19)

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	2018–19
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%

■ Compliant ■ Non-compliant

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	0.1485	0.1353	0.1654
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	0.0227	0.0188	0.0262
Lead	0.01	mg/L	4	0	100	0.0005	0.0004	0.0006
Manganese	0.5	mg/L	4	0	100	0.0062	0.0047	0.0082
Mercury	0.001	mg/L	4	0	100	0.00008	0.00005	0.00014
Molybdenum	0.05	mg/L	4	0	100	0.0001	<0.0001	0.0002
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 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	1	<1	2
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	15	12	16

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	0.68	0.35	1.07
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	6.87	6.35	7.60
Turbidity	NTU	1	0.72	0.25	1.82

53.5. Analysis of overall system performance (2018–19)

Table 53.5-a Summary of system issues/public health alerts

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

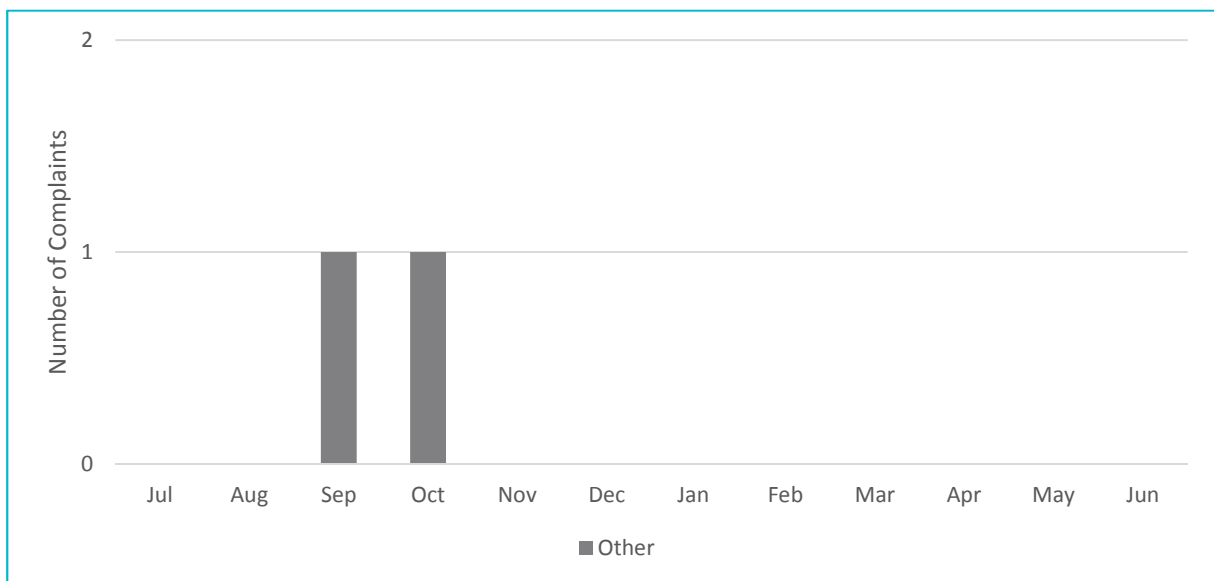


Figure 53.5-b Water quality customer complaints by month and type

54. Swansea drinking water system

54.1. System summary (2018–19)

Swansea drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	880
Population serviced	925
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	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

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	1	Discolouration

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Swansea Fluoride Project	Fluoride safety upgrade	Complete	Complete	\$195,000

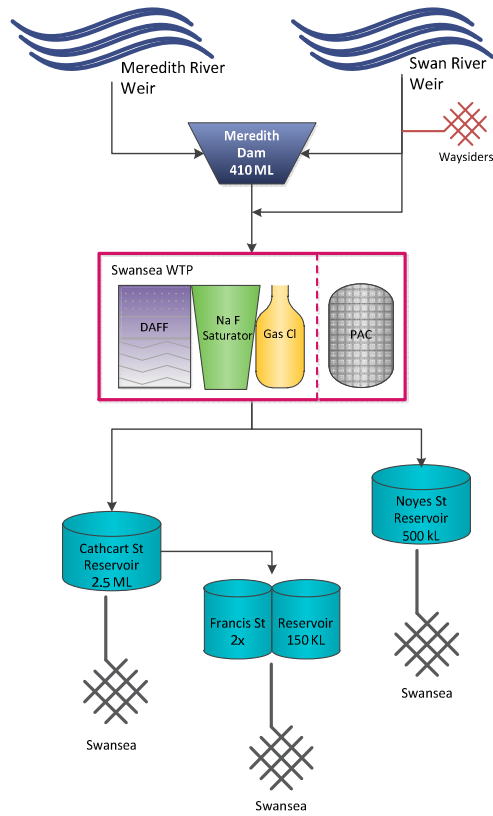


Figure 54.1-a Swansea system schematic

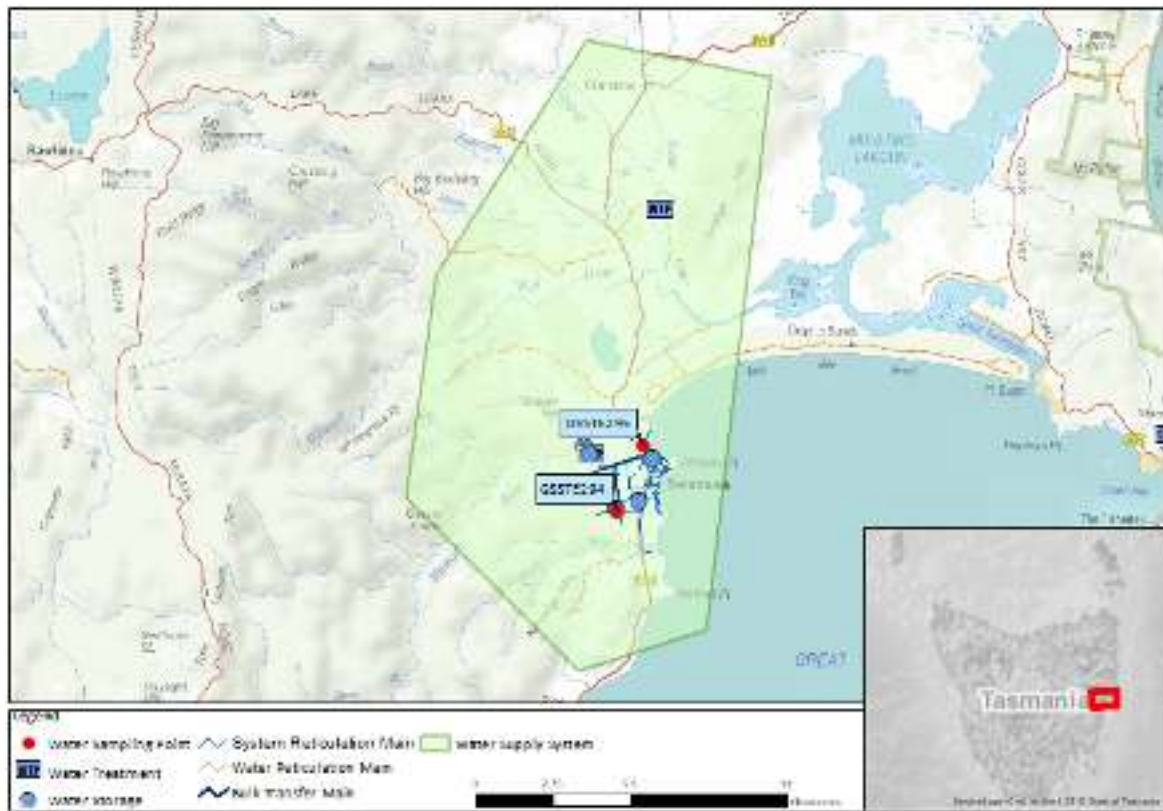


Figure 54.1-b Map of Swansea monitoring system

54.2. Summary of annual reticulation compliance (2018–19)

Table 54.2-a Sampling program

Planned sampling program (2018–19)							
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/Cathcart St Sampling Point	GSSTE294	W	Q	Q	2M	Q	n/a
Number Planned Samples		104	4	4	48	4	n/a
Number Samples Tested		104	4	4	48	8	n/a

54.3. Summary of current and historic performance (2014–19)

Table 54.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

54.4. Analysis of current health performance (2018–19)

Table 54.4-a Summary of health guideline exceedances

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

Table 54.4-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)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%

■ Compliant ■ Non-compliant

Table 54.4-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	0.0028	0.0024	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	0.0349	0.0285	0.0427
Lead	0.01	mg/L	4	0	100	0.0003	0.0002	0.0003
Manganese	0.5	mg/L	4	0	100	0.0002	0.0001	0.0003
Mercury	0.001	mg/L	4	0	100	0.00006	<0.00003	0.00012
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	0.0001
Nickel	0.02	mg/L	4	0	100	0.0003	<0.0001	0.0005
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 54.4-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	7	1	10
Total trihalomethanes	250	µg/L	4	0	100	47	12	64

Table 54.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.62	0.11	1.42
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.00	6.34	7.74
Turbidity	NTU	1	0.17	0.08	0.63

54.5. Analysis of overall system performance (2018–19)

Table 54.5-a Summary of system issues/public health alerts

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

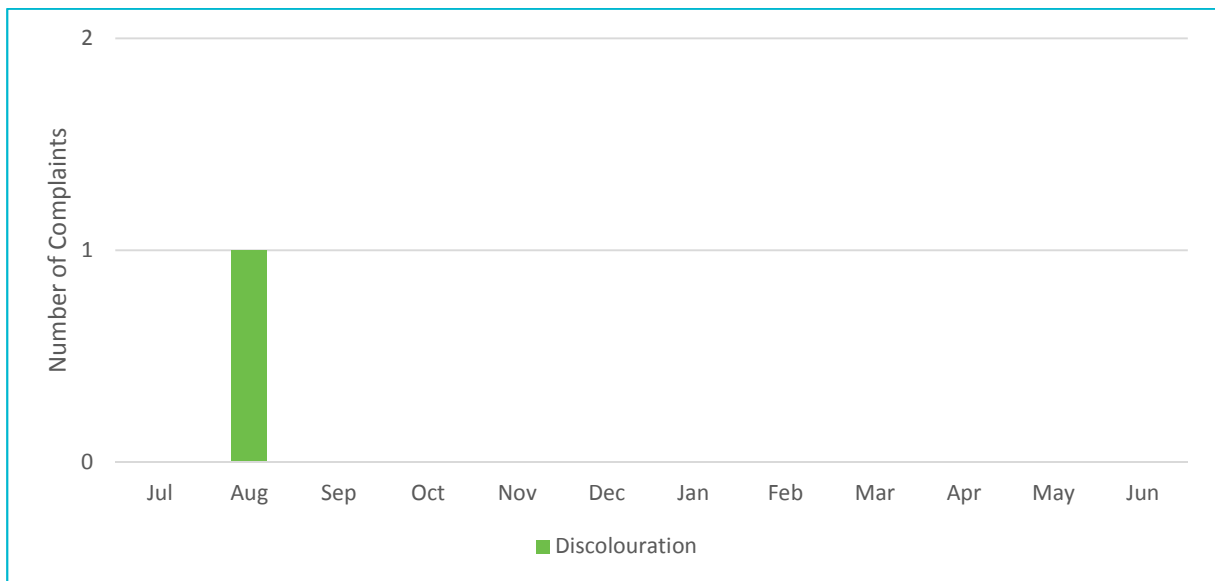


Figure 54.5-b Water quality customer complaints by month and type

55. Triabunna drinking water system

55.1. System summary (2018–19)

Triabunna drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	525
Population serviced	883
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
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

Compliant Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	7	Discolouration

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend
Triabunna WTP	Priority instruments and control	Complete	Complete	\$195,000
Triabunna WTP	Filter	In progress	August 2019	\$120,000

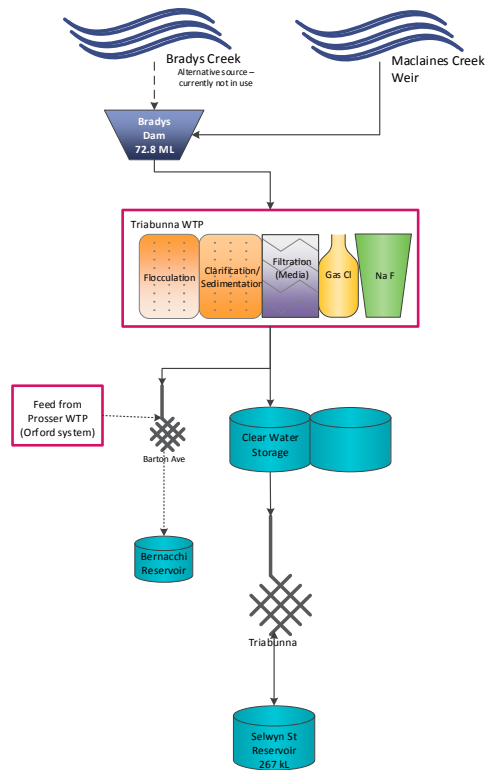


Figure 55.1-a Triabunna system schematic

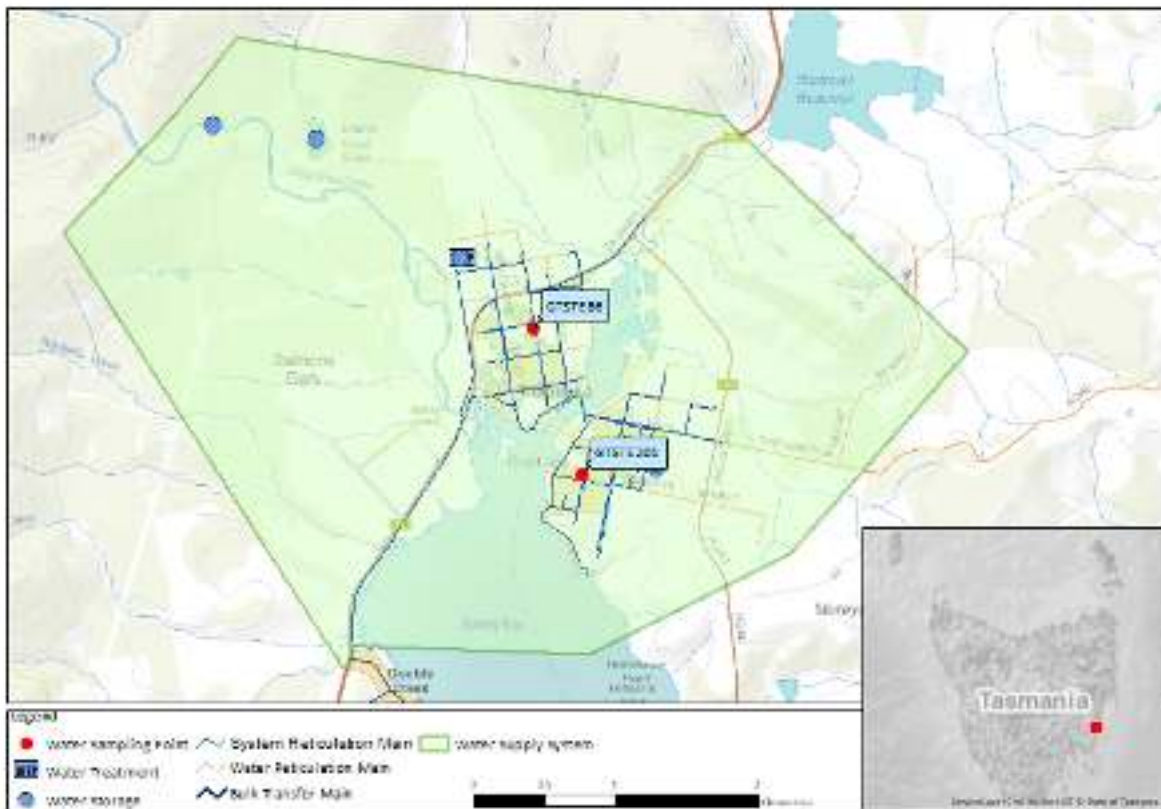


Figure 55.1-b Map of Triabunna monitoring system

55.2. Summary of annual reticulation compliance (2018–19)

Table 55.2-a Sampling program

Planned sampling program (2018–19)							
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		52	4	4	48	4	n/a
Number Samples Tested		52	4	4	48	4	n/a

55.3. Summary of current and historic performance (2014–19)

Table 55.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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%

■ Compliant ■ Non-compliant

55.4. Analysis of current health performance (2018–19)

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 Fluoride distribution performance - Triabunna

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)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 55.4-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	0.0113	0.0083	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	0.0041	0.0032	0.0056
Lead	0.01	mg/L	4	0	100	0.0004	0.0003	0.0006
Manganese	0.5	mg/L	4	0	100	0.0006	0.0003	0.0012
Mercury	0.001	mg/L	4	0	100	0.0001	<0.00003	0.0003
Molybdenum	0.05	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Nickel	0.02	mg/L	4	0	100	0.0012	<0.0001	0.0043
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 55.4-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	6	8
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	5	3	7
Total trihalomethanes	250	µg/L	4	0	100	82	72	96

Table 55.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.81	0.03	1.27
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.22	6.67	7.64
Turbidity	NTU	1	0.24	0.13	0.53

55.5. Analysis of overall system performance (2018–19)

Table 55.5-a Summary of system issues/public health alerts

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

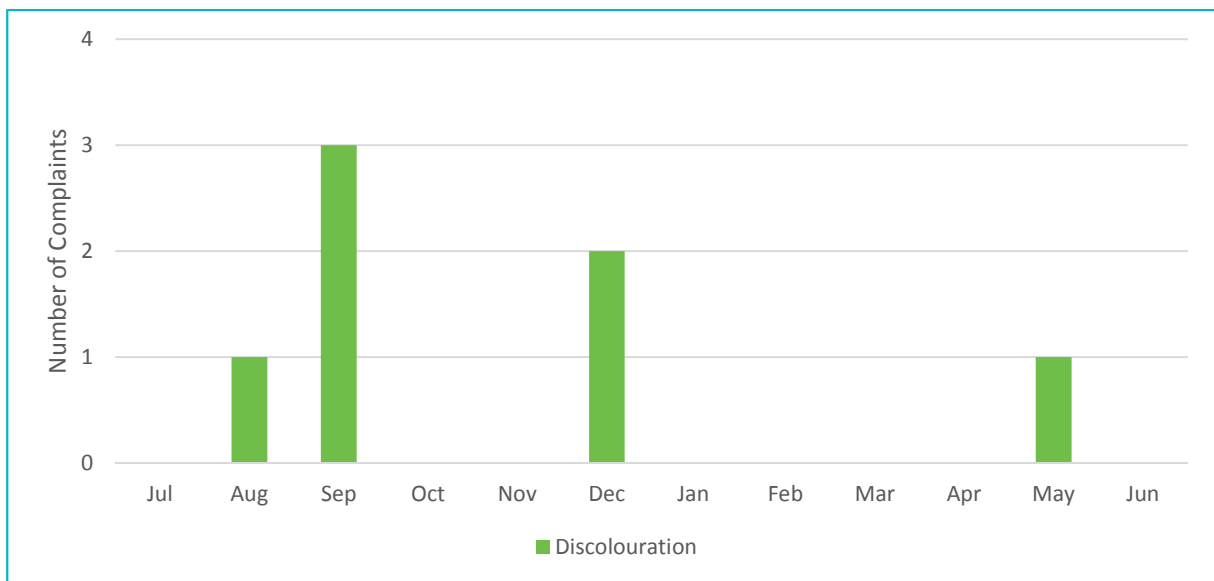


Figure 55.5-b Water quality customer complaints by month and type

56. Tullah drinking water system

56.1. System summary (2018–19)

Tullah drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	213
Population serviced	150
Fluoride	n/a

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health alerts issued	0	
Notifications made to DoH	0	
Customer complaints	0	

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

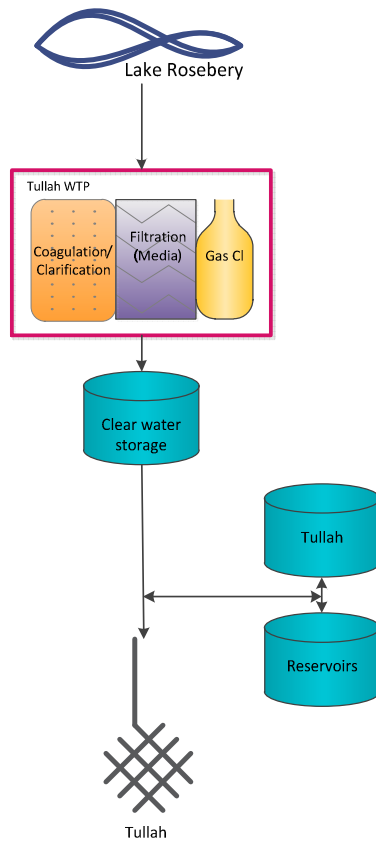


Figure 56.1-a Tullah system schematic

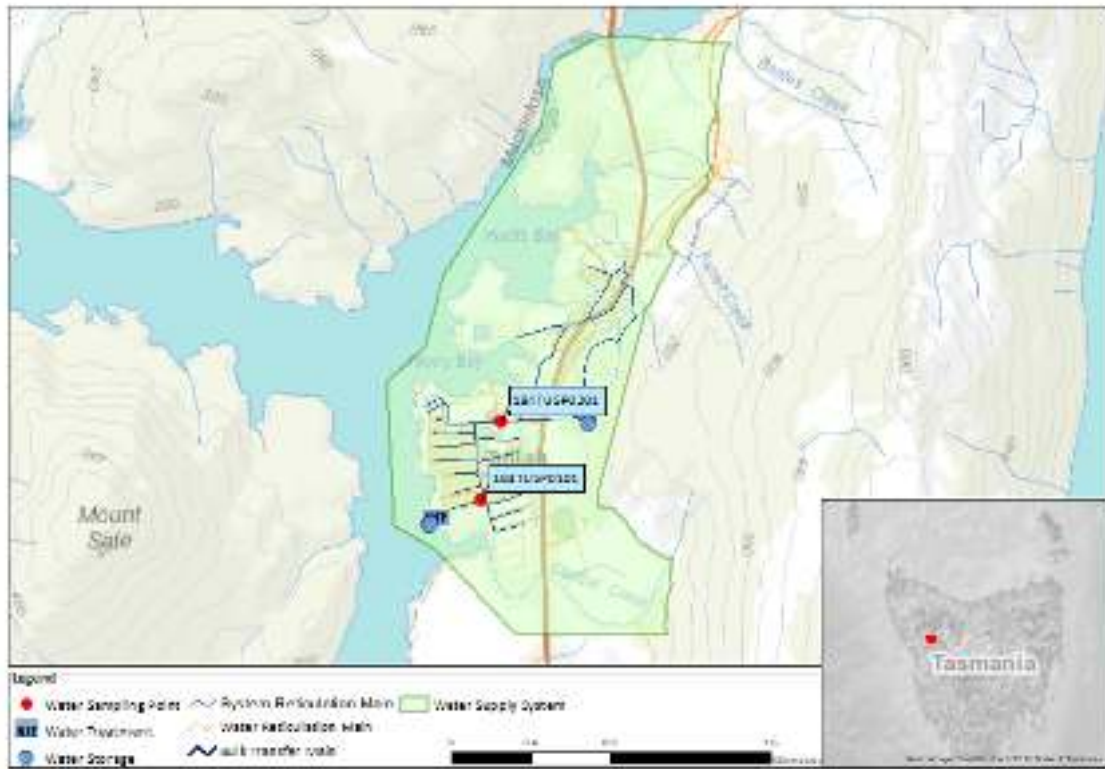


Figure 56.1-b Map of Tullah monitoring system

56.2. Summary of annual reticulation compliance (2018–19)

Table 56.2-a Sampling program

Planned sampling program (2018–19)							
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		104	4	12	n/a	4	n/a
Number Samples Tested		104	4	12	n/a	4	n/a

56.3. Summary of current and historic performance (2014–19)

Table 56.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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	99.2%	96.3%	100.0%	100.0% ⁷⁰	100.0%

■ Compliant ■ Non-compliant

56.4. Analysis of current health performance (2018–19)

Table 56.4-a Summary of health guideline exceedances

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

⁷⁰ Sampling requirements not met (sample missed in May 2018 for DBPs)

Table 56.4-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	0.0046	0.0038	0.0051
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	0.0006	0.0004	0.0007
Lead	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Manganese	0.5	mg/L	4	0	100	0.0075	0.0059	0.0110
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	0.0002	<0.0001	0.0003
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

Table 56.4-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	10	1	22
Monochloroacetic acid	150	µg/L	12	0	100	<3	<3	3
Trichloroacetic acid	100	µg/L	12	0	100	27	23	33
Total trihalomethanes	250	µg/L	12	0	100	76	56	98

Table 56.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.64	0.02	2.37
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.06	6.31	7.91
Turbidity	NTU	1	0.31	0.14	0.74

56.5. Analysis of overall system performance (2018–19)

Table 56.5-a Summary of system issues/public health alerts

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

57. Tunbridge drinking water system

57.1. System summary (2018–19)

Tunbridge drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	103
Population serviced	197
Fluoride	n/a

Performance overview against health targets (2018–19)					
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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	0	

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

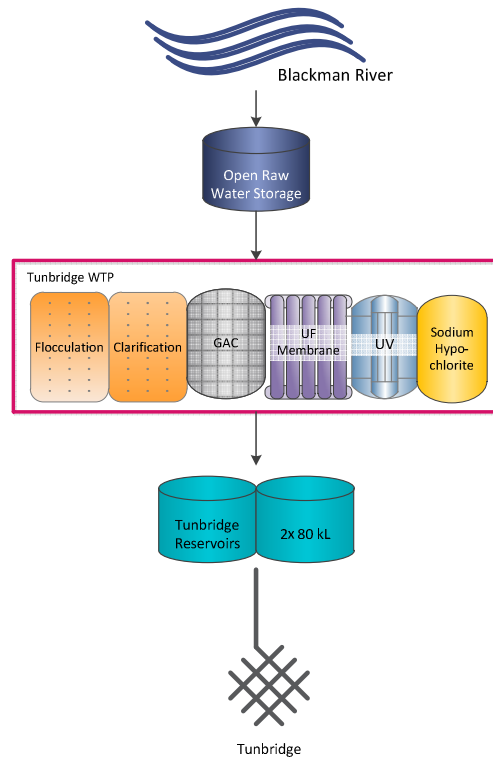


Figure 57.1-a Tunbridge system schematic

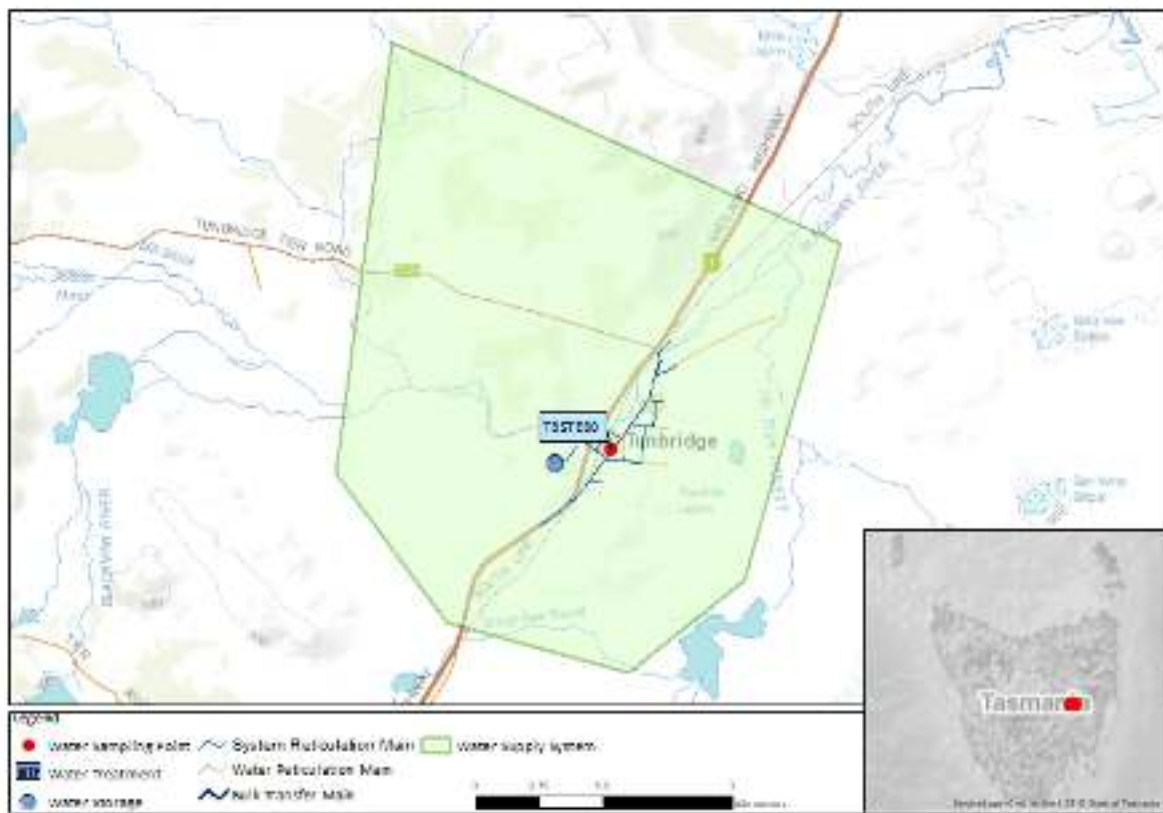


Figure 57.1-b Map of Tunbridge monitoring system

57.2. Summary of annual reticulation compliance (2018–19)

Table 57.2-a Sampling program

Planned sampling program (2018–19)							
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

57.3. Summary of current and historic performance (2014–19)

Table 57.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
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	98.0%	100.0%	100.0%	100.0%	100.0%

■ Compliant ■ Non-compliant

57.4. Analysis of current health performance (2018–19)

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	0.0157	0.0125	0.0214
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	0.0043	0.0063
Lead	0.01	mg/L	4	0	100	0.0003	0.0002	0.0003
Manganese	0.5	mg/L	4	0	100	0.0001	<0.0001	0.0002
Mercury	0.001	mg/L	4	0	100	0.00009	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	0.0004	0.0002	0.0007
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	4	0	100	2.25	1	4
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	77	40	113

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	0.58	0.13	0.99
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.64	6.94	8.2
Turbidity	NTU	1	0.19	0.08	0.56

57.5. Analysis of overall system performance (2018–19)

Table 57.5-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			

58. Waratah drinking water system

58.1. System summary (2018–19)

Waratah drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	146
Population serviced	116
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
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%	24	0
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	8	Discolouration, cloudy

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

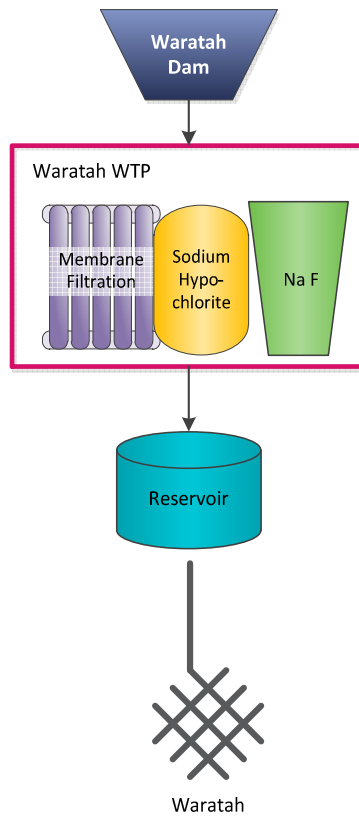


Figure 58.1-a Waratah system schematic

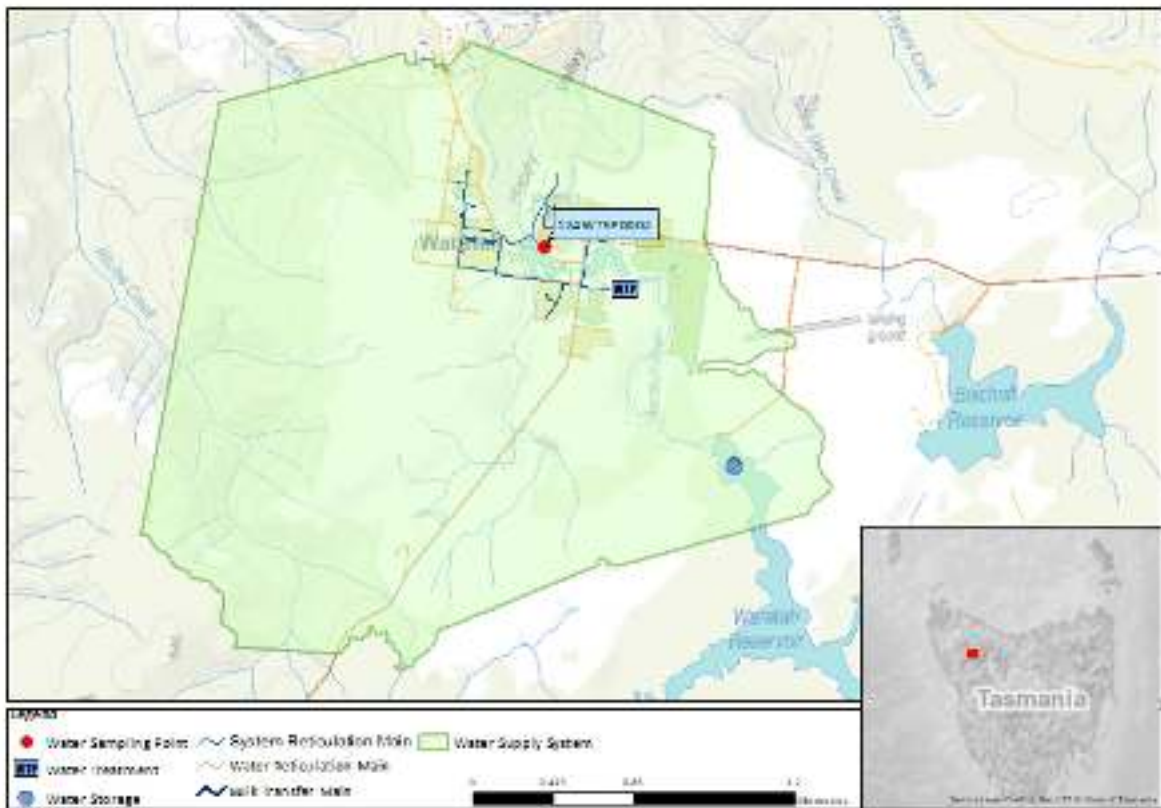


Figure 58.1-b Map of Waratah monitoring system

58.2. Summary of annual reticulation compliance (2018–19)

Table 58.2-a Sampling program

Planned sampling program (2018–19)							
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		52	4	4	24	4	n/a
Number Samples Tested		52	4	4	24	4	n/a

58.3. Summary of current and historic performance (2014–19)

Table 58.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	99.1%	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

58.4. Analysis of current health performance (2018–19)

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 - Waratah

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 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	0.0019	0.0018	0.0020
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0002	0.0001	0.0003
Copper	2	mg/L	4	0	100	0.0257	0.0199	0.0376
Lead	0.01	mg/L	4	0	100	0.0006	0.0005	0.0009
Manganese	0.5	mg/L	4	0	100	0.0121	0.0015	0.0357
Mercury	0.001	mg/L	4	0	100	0.00004	<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	0.0002
Selenium	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001

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	24	18	31
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	3
Trichloroacetic acid	100	µg/L	4	0	100	32	26	38
Total trihalomethanes	250	µg/L	4	0	100	62	45	78

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	0.03	0.74
Colour True	HU	15	1.13	<1	3
pH	Units	6.5 – 8.5	6.70	5.94	7.37
Turbidity	NTU	1	0.24	0.06	0.54

58.5. Analysis of overall system performance (2018–19)

Table 58.5-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			

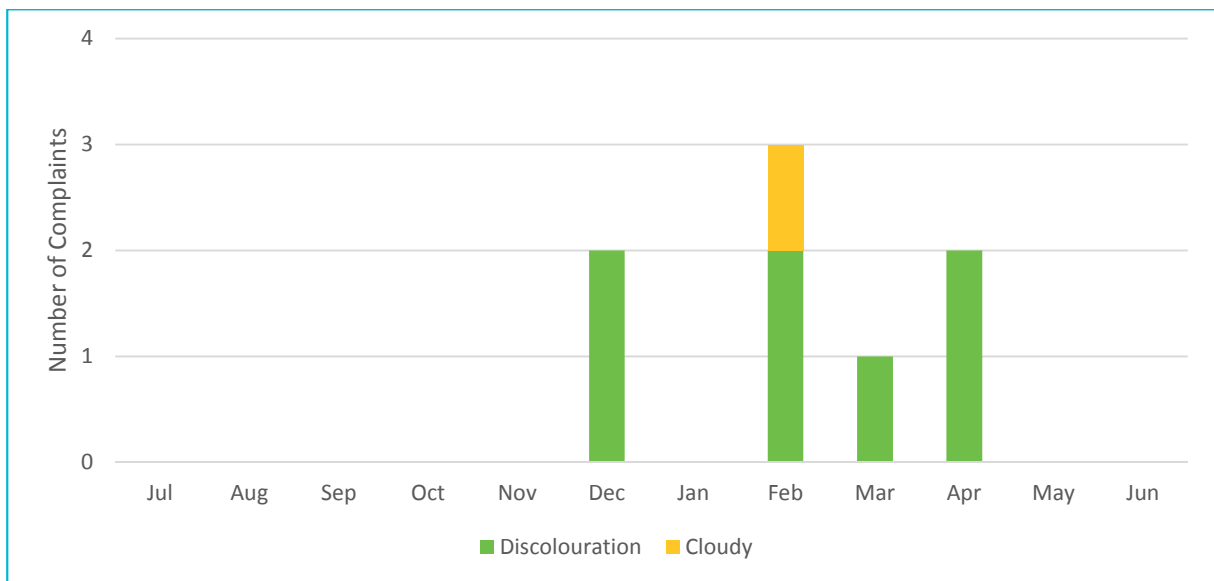


Figure 58.5-b Water quality customer complaints by month and type

59. Wayatinah drinking water system

59.1. System summary (2018–19)

Wayatinah drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	60
Population serviced	32
Fluoride	n/a

Performance overview against health targets (2018–19)					
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

■ Compliant ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	1	Subject to PHA until 25 June 2018
Notifications made to DoH	0	
Customer complaints	0	

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Program	WTP and associated infrastructure	Complete	June 2018	\$2,734,602
Regional Towns Program	Reticulation upgrade	Complete	June 2018	\$452,011

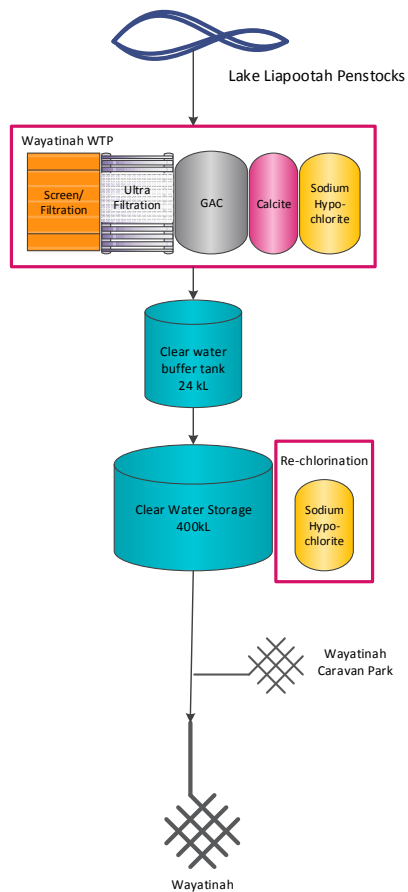


Figure 59.1-a Wayatinah system schematic



Figure 59.1-b Map of Wayatinah monitoring system

59.2. Summary of annual reticulation compliance (2018–19)

Table 59.2-a Sampling program

Planned compliance sampling program (2018–19)							
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		52	4	4	n/a	4	n/a
Number Samples Tested		52	4	4	n/a	4	n/a

59.3. Summary of current and historic performance (2014–19)

Table 59.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100.0%	100.0%	98.1%	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%	86.0%	95.8%	100.0%	100.0%

■ Compliant ■ Non-compliant

59.4. Analysis of current health performance (2018–19)

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 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	0.0022	0.0018	0.0028
Cadmium	0.002	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Chromium	0.05	mg/L	4	0	100	0.0001	<0.0001	0.0001
Copper	2	mg/L	4	0	100	0.0021	0.0017	0.0030
Lead	0.01	mg/L	4	0	100	0.0003	0.0002	0.0004
Manganese	0.5	mg/L	4	0	100	0.0031	0.0022	0.0038
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 59.4-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	39	33	43
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	3
Trichloroacetic acid	100	µg/L	4	0	100	45	30	70
Total trihalomethanes	250	µg/L	4	0	100	71	68	73

Table 59.4-d General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.62	0.21	1.12
Colour True	HU	15	1.13	<1	2
pH	Units	6.5 – 8.5	8.00	7.43	8.55
Turbidity	NTU	1	0.23	0.15	0.35

59.5. Analysis of overall system performance (2018–19)

Table 59.5-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			

60. West Tamar drinking water system

60.1. System summary (2018–19)

West Tamar drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	9,330
Population serviced	19,923
Fluoride	Fluorosilicic acid

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	572	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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	1	Atrazine detected in raw water
Public health warnings issued	0	
Notifications made to DoH	1	Atrazine detected in raw water
Customer complaints	79	Discolouration, taste and odour, cloudy

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

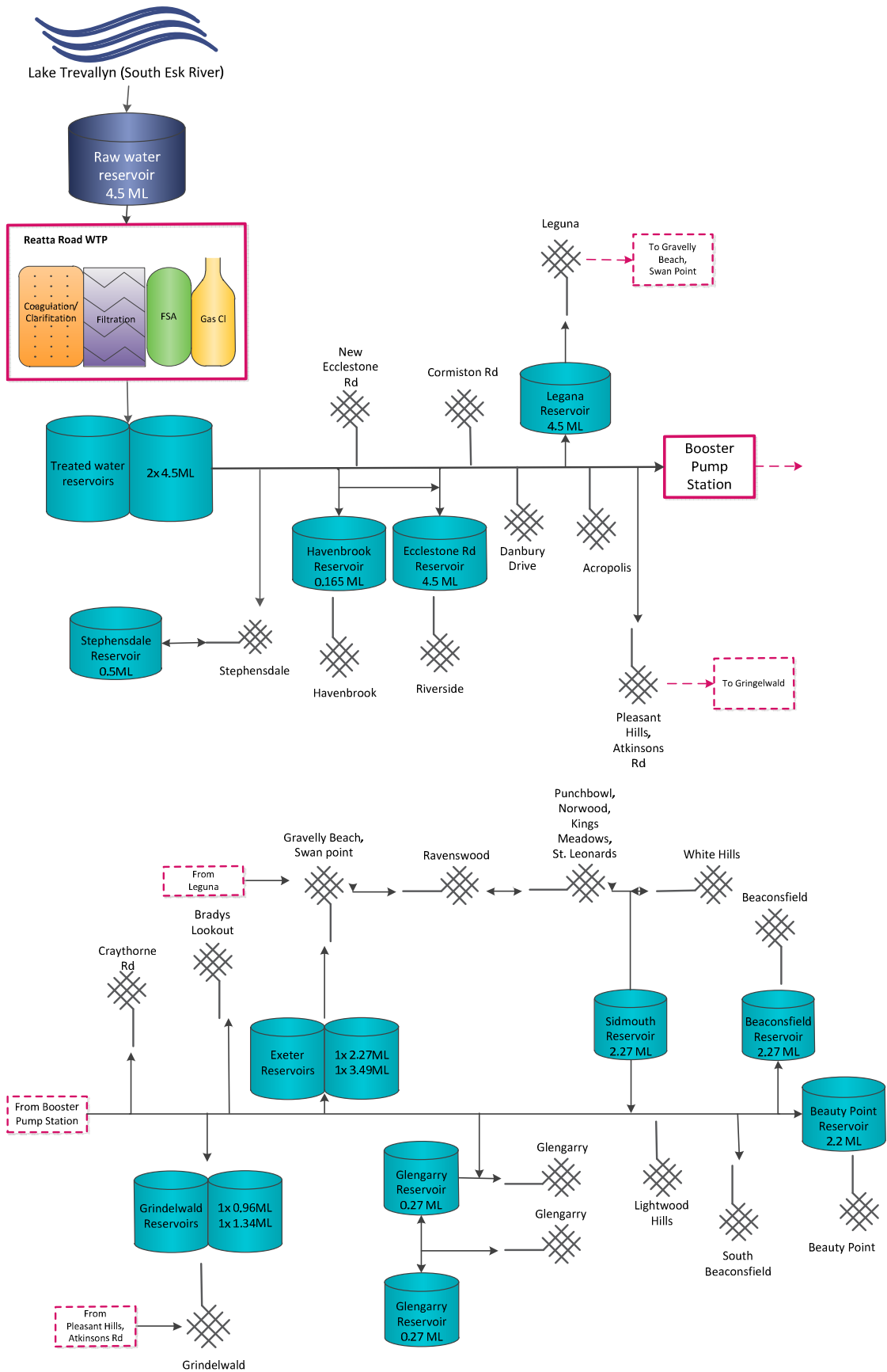


Figure 60.1-a West Tamar system schematic

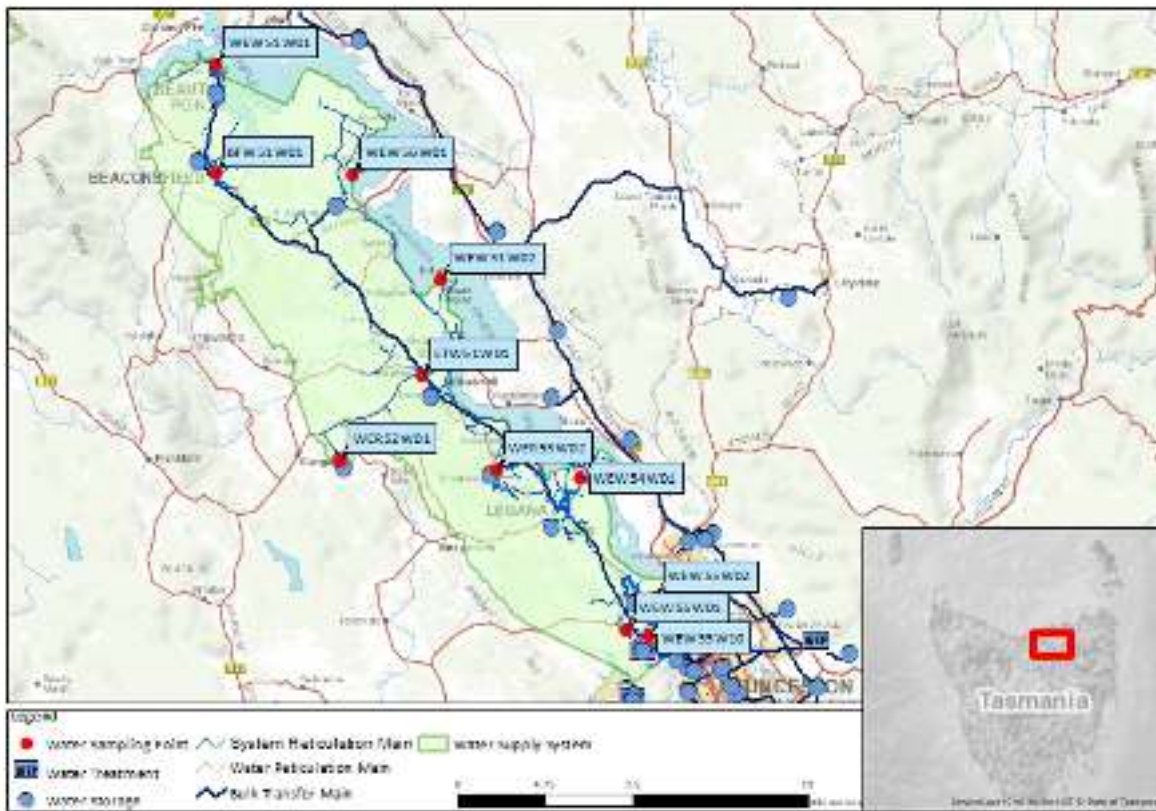


Figure 60.1-b Map of West Tamar monitoring system

60.2. Summary of annual reticulation compliance (2018–19)

Table 60.2-a Sampling program

Planned sampling program (2018–19)							
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
Swan Pt, Park	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		572	4	4	48	4	n/a
Number Samples Tested		572	4	4	48	4	n/a

60.3. Summary of current and historic performance (2014–19)

Table 60.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	99.0%	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%

■ Compliant ■ Non-compliant

60.4. Analysis of current health performance (2018–19)

Table 60.4-a Summary of health guideline exceedances

Summary of health guideline exceedances			
Parameter Exceeding	Date	Details	Resampled
Atrazine	08/08/2018	There was a detection of the pesticide atrazine (27 µg/L) above the ADWG health limit in the raw water at Lake Trevallyn. There have not been any detections of atrazine in samples since August 2018.	×

Table 60.4-b Fluoride distribution performance – West Tamar

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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%

■ Compliant ■ Non-compliant

Table 60.4-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	0.0071	0.0063	0.0076
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	0.0009	0.0007	0.0012
Lead	0.01	mg/L	4	0	100	0.0002	0.0001	0.0003
Manganese	0.5	mg/L	4	0	100	0.0037	0.0011	0.0071
Mercury	0.001	mg/L	4	0	100	0.00008	0.00004	0.00012
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 60.4-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	3	11
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	<3
Trichloroacetic acid	100	µg/L	4	0	100	7	3	13
Total trihalomethanes	250	µg/L	4	0	100	32	19	46

Table 60.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.52	0.01	8.28
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.33	6.06	8.71
Turbidity	NTU	1	0.34	0.09	1.70

60.5. Analysis of overall system performance (2018–19)

Table 60.5-a Summary of system issues/public health warnings

Summary of system issues			
Date	Description	DoH notification required	DoH notification complete
08/08/2018	There was a detection of the pesticide atrazine (27 µg/L) above the ADWG health limit in the raw water at Lake Trevallyn. There have not been any detections of atrazine in samples since August 2018.	Y	Y

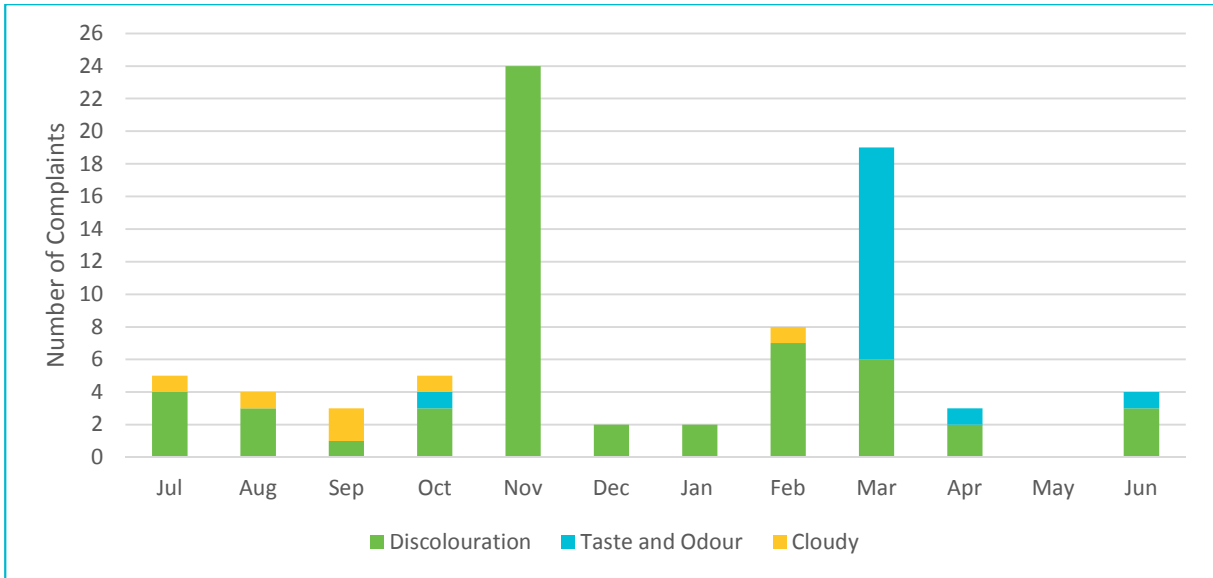


Figure 60.5-b Water quality customer complaints by month and type

61. Westbury drinking water system

61.1. System summary (2018–19)

Westbury drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	1112
Population serviced	2190
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
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 (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	13	Discolouration, taste and odour, other (stained washing)

Current and future planned capital investment				
Project	Overview	Progress	Est. Delivery	Est. Spend (\$'000)
Regional Towns Water Supply Program	UV disinfection system	Not started	TBA	TBA

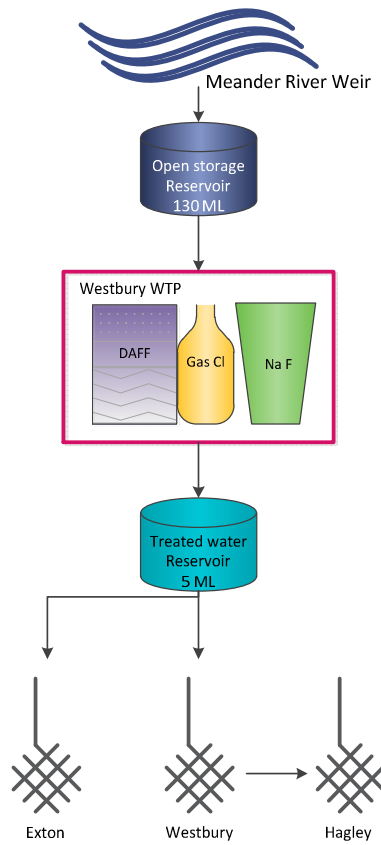


Figure 61.1-a Westbury system schematic

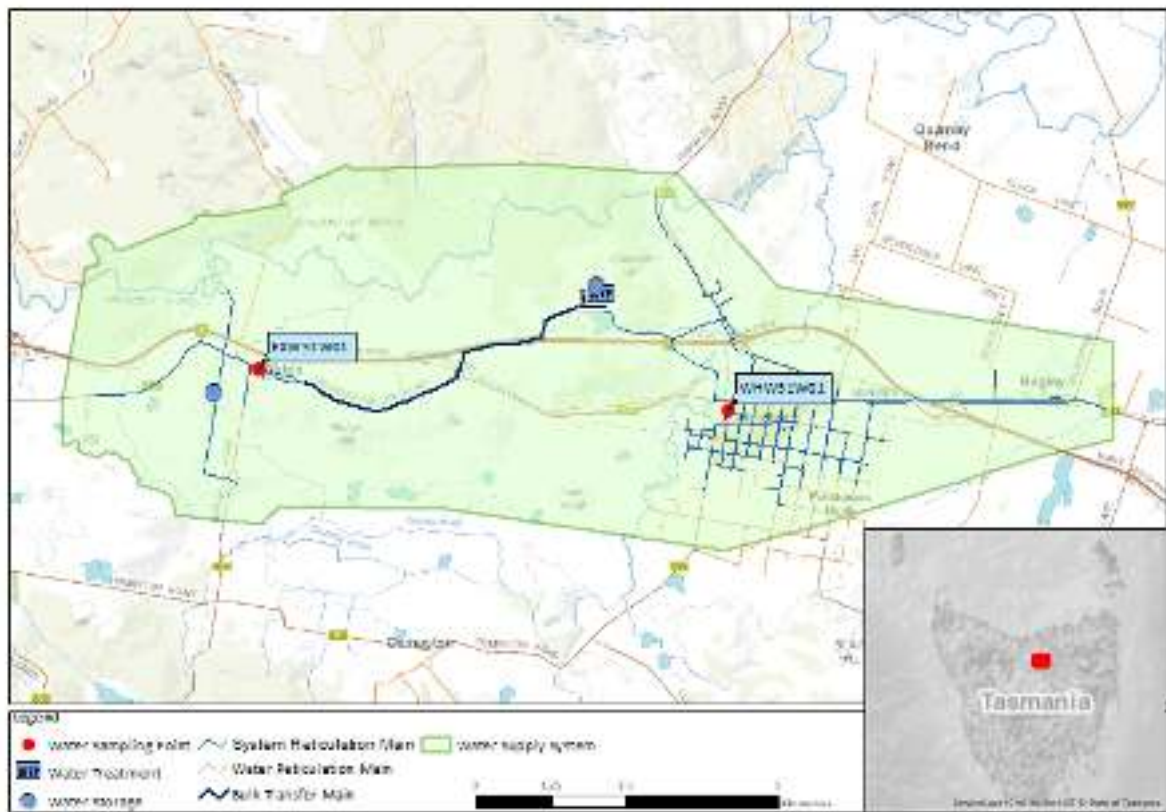


Figure 61.1-b Map of Westbury monitoring system

61.2. Summary of annual reticulation compliance (2018–19)

Table 61.2-a Sampling program

Planned sampling program (2018–19)							
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/Village Green	WHW51W01	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

61.3. Summary of current and historic performance (2014–19)

Table 61.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	100.0%	100.0%	100.0%	99.0%	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

61.4. Analysis of current health performance (2018–19)

Table 61.4-a Summary of health guideline exceedances

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

Table 61.4-b Fluoride distribution performance - Westbury

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)	0.9
90% of F results are equal to or less than 1.1 mg/L	100%

■ Compliant ■ Non-compliant

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	0.0075	0.0059	0.0097
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	0.0012	0.0007	0.0018
Lead	0.01	mg/L	4	0	100	<0.0001	<0.0001	<0.0001
Manganese	0.5	mg/L	4	0	100	0.0028	0.0015	0.0050
Mercury	0.001	mg/L	4	0	100	0.00005	<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	0.0001	<0.0001	0.0002
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	8	6	11
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	26	23	32

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	0.87	0.55	1.42
Colour True	HU	15	<1	<1	<1
pH	Units	6.5 – 8.5	7.24	6.65	8.00
Turbidity	NTU	1	0.29	0.10	0.61

61.5. Analysis of overall system performance (2018–19)

Table 61.5-a Summary of system issues/public health alerts with notification details

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

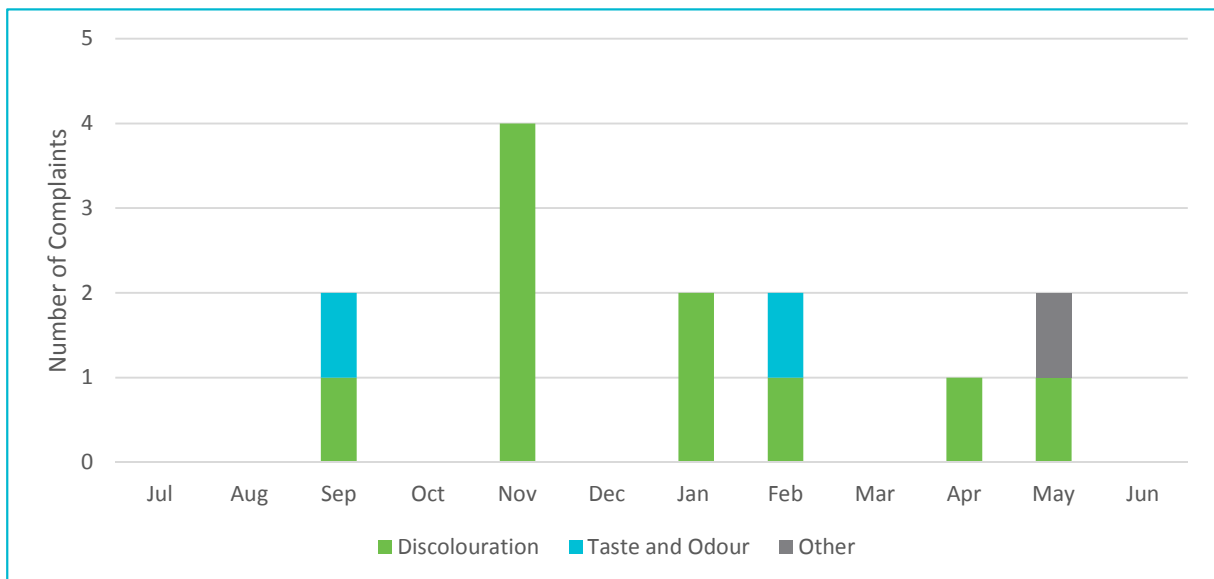


Figure 61.5-b Water quality customer complaints by month and type

62. Whitemark drinking water system

62.1. System summary (2018–19)

Whitemark drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	175
Population serviced	187
Fluoride	n/a

Performance overview against health targets (2018–19)					
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

■ Compliant
 ■ Non-compliant

Overall system performance (2018–19)		
Indicator	Occurrences	Details
System issues	0	
Public health warnings issued	0	
Notifications made to DoH	0	
Customer complaints	1	Cloudy

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

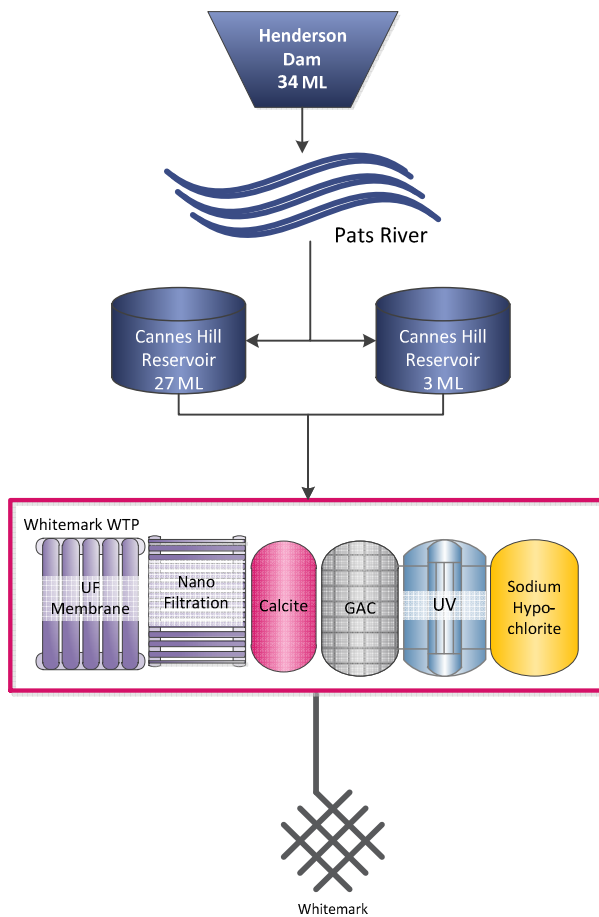


Figure 62.1-a Whitemark system schematic



Figure 62.1-b Map of Whitemark monitoring system

62.2. Summary of annual reticulation compliance (2018–19)

Table 62.2-a Sampling program

Planned sampling program (2018–19)							
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		52	4	4	n/a	4	n/a
Number Samples Tested		52	4	4	n/a	4	n/a

62.3. Summary of current and historic performance (2014–19)

Table 62.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	37.8%	50.0%	99.1%	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%	n/a	100.0%	100.0%	100.0%

■ Compliant ■ Non-compliant

62.4. Analysis of current health performance (2018–19)

Table 62.4-a Summary of health guideline exceedances

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

Table 62.4-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	0.0010	0.0019
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	0.0005	0.0004	0.0007
Lead	0.01	mg/L	4	0	100	0.0002	<0.0001	0.0004
Manganese	0.5	mg/L	4	0	100	0.0008	0.0007	0.0009
Mercury	0.001	mg/L	4	0	100	0.00006	<0.00003	0.00012
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 62.4-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	15	13	17

Table 62.4-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	1.08
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	8.03	6.66	9.26
Turbidity	NTU	1	0.43	0.14	1.16

62.5. Analysis of overall system performance (2018–19)

Table 62.5-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			

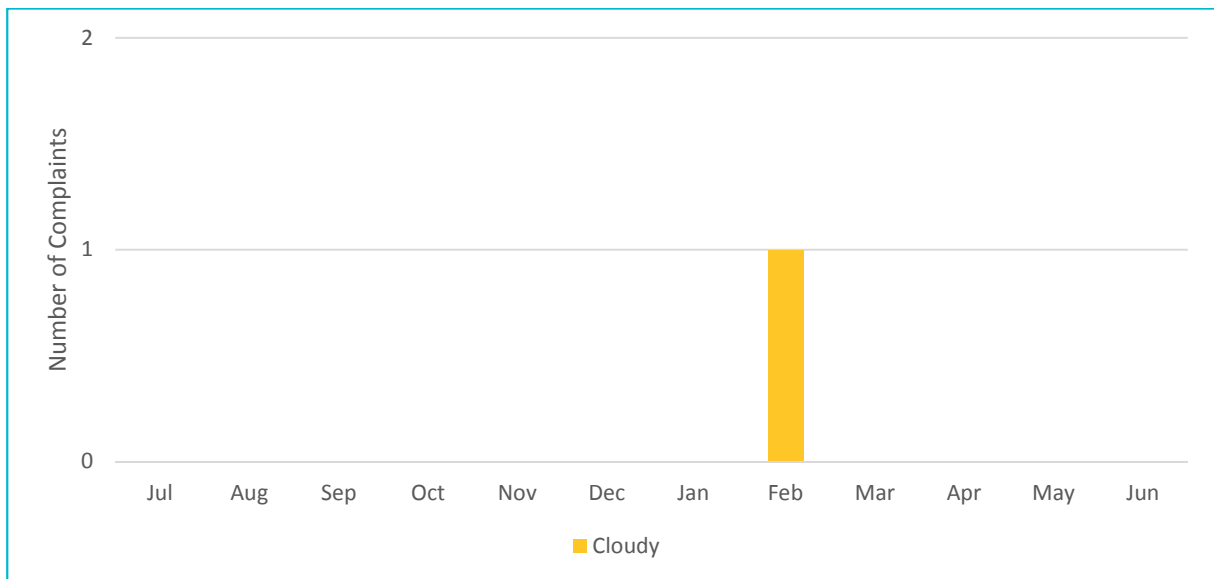


Figure 62.5-b Water quality customer complaints by month and type

63. Zeehan drinking water system

63.1. System summary (2018–19)

Zeehan drinking water system	
System status (as at 30 June 2019)	Potable
Total number of connections	597
Population serviced	702
Fluoride	Sodium fluoride

Performance overview against health targets (2018–19)					
Indicator	Outcome	Compliance	Target	Sampling Events	Exceedances
Microbiological	100.0%	<input checked="" type="checkbox"/>	98.0%	104	0
Fluoride	100.0%	<input checked="" type="checkbox"/>	100.0%	104	0
Metals	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0
DBPs	100.0%	<input checked="" type="checkbox"/>	100.0%	4	0

Compliant Non-compliant

Overall system performance (2018–19)		
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
No projected capital investment				

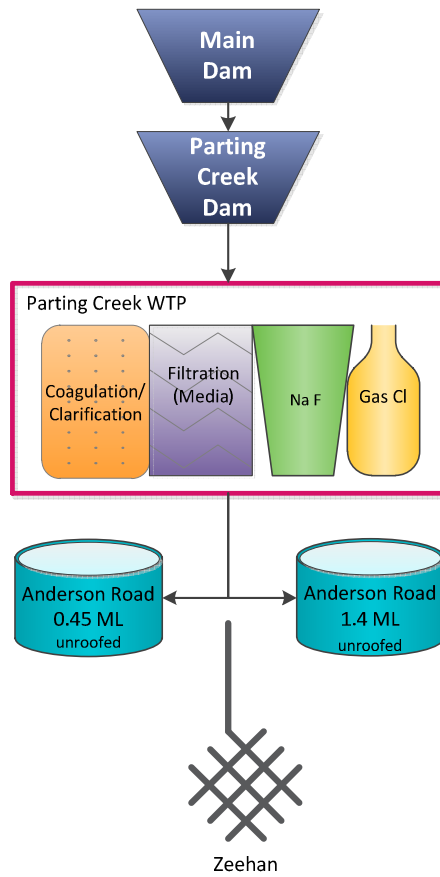


Figure 63.1-a Zeehan system schematic

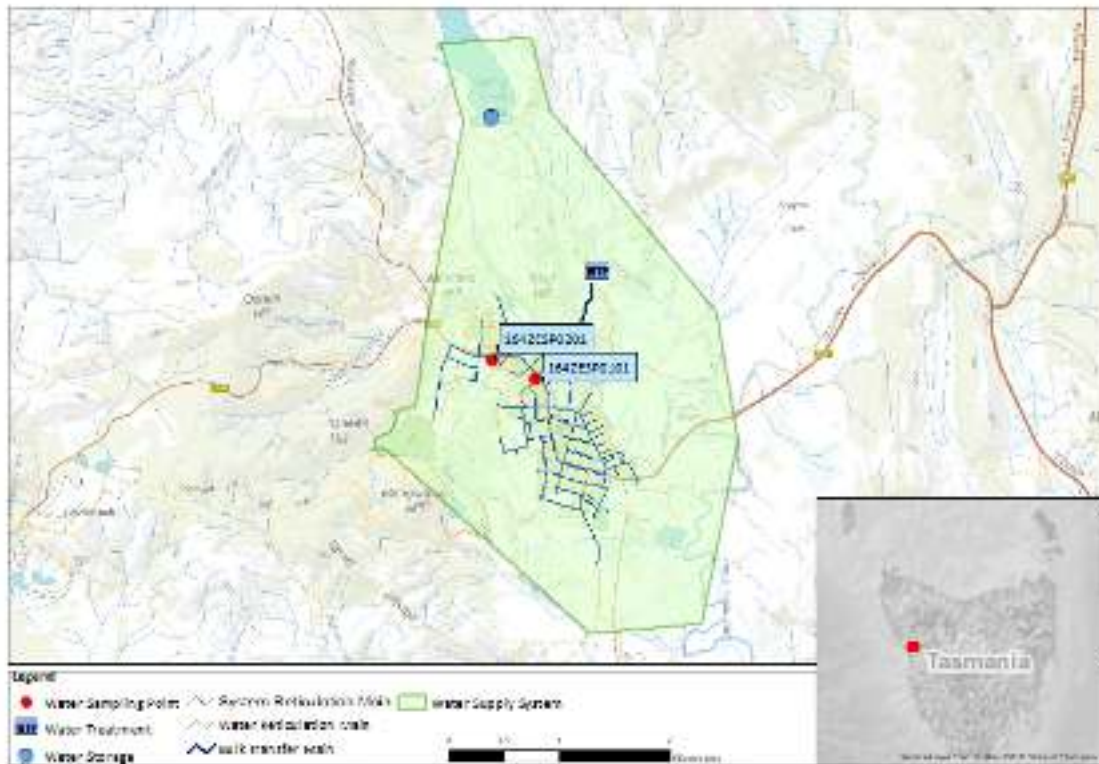


Figure 63.1-b Map of Zeehan monitoring system

63.2. Summary of annual reticulation compliance (2018–19)

Table 63.2-a Sampling program

Planned sampling program (2018–19)							
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		104	4	4	48	4	n/a
Number Samples Tested		104	4	4	48	4	n/a

63.3. Summary of current and historic performance (2014–19)

Table 63.3-a Historical health performance overview (5 year comparison)

Historical health performance overview (5 year comparison)					
Indicator	2014–15	2015–16	2016–17	2017–18	2018–19
Microbiological	99.4%	98.7%	100.0%	100.0%	100.0%
Fluoride	100.0%	100.0%	100.0%	100.0%	100.0%
Metals	100.0%	100.0%	100.0%	97.9% ⁷¹	100.0%
Disinfection by products	100.0%	100.0%	100.0%	100.0%	100.0%

■ Compliant ■ Non-compliant

63.4. Analysis of current health performance (2018–19)

Table 63.4-a Summary of health guideline exceedances

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

⁷¹ Retesting of metals showed no further issues

Table 63.4-b Fluoride distribution performance - Zeehan

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)	0.8
90% of F results are equal to or less than 1.1 mg/L	100%
■ Compliant ■ Non-compliant	

Table 63.4-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	0.0051	0.0039	0.0079
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	0.0016	0.0009	0.0028
Lead	0.01	mg/L	4	1	75	0.0001	<0.0001	0.0002
Manganese	0.5	mg/L	4	0	100	0.0158	0.0093	0.0229
Mercury	0.001	mg/L	4	0	100	0.00004	<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	0.0013	0.0009	0.0019
Selenium	0.01	mg/L	4	0	100	0.0001	<0.0001	0.0002

Table 63.4-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	6	25
Monochloroacetic acid	150	µg/L	4	0	100	<3	<3	4
Trichloroacetic acid	100	µg/L	4	0	100	27	22	38
Total trihalomethanes	250	µg/L	4	0	100	88	78	97

Table 63.4-e General physical performance

General physical parameters					
Parameter	Unit	Guideline Value	Mean	Min	Max
Chlorine residual	mg/L	0.1 – <0.8	0.88	0.24	1.75
Colour True	HU	15	<1	<1	1
pH	Units	6.5 – 8.5	7.35	6.73	7.85
Turbidity	NTU	1	0.40	0.15	4.05

63.5. Analysis of overall system performance (2018–19)

Table 63.5-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			

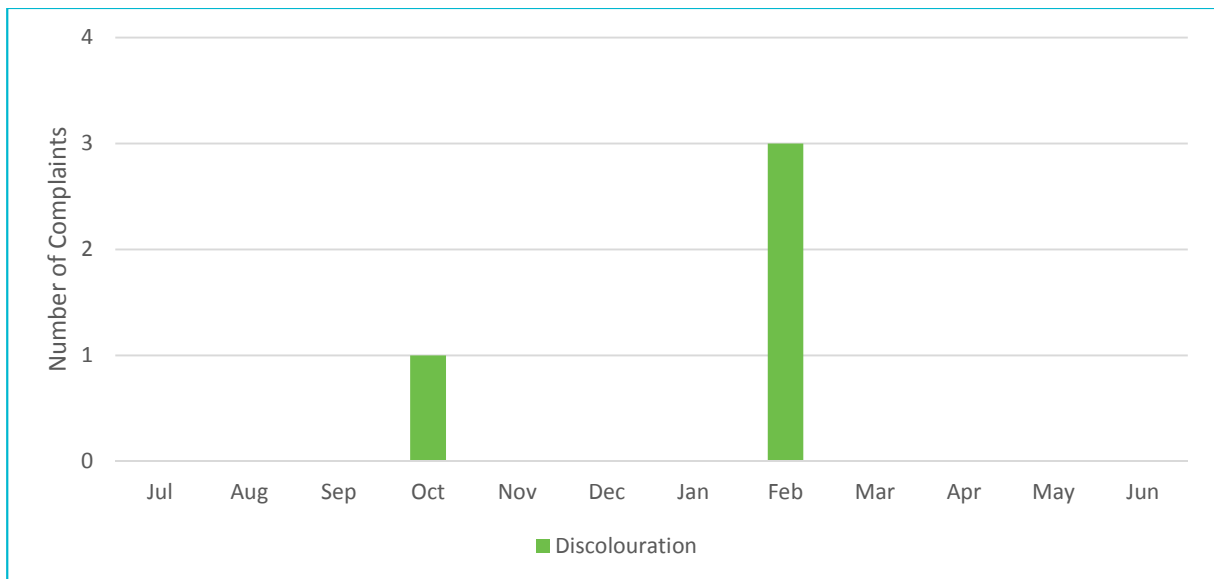


Figure 63.5-b Water quality customer complaints by month and type

