

# TASMANIAN WATER AND SEWERAGE STATE OF THE INDUSTRY REPORT 2017-18

APRIL 2019



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Cover image: Bridgewater sewage treatment plant (EPA Tasmania)

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## ACRONYMS

Term	Meaning within the context of this report
ADWF	Average dry weather flow
ADWG	Australian Drinking Water Guidelines 2011
AMT	Accepted Modern Technology
ANCOLD	Australian National Committee on Large Dams
ANZBP	Australian and New Zealand Biosolids Partnership
COAG	Council of Australian Governments
Code	Water and Sewerage Industry Customer Service Code
CSO	Community Service Obligation
DHHS	Department of Health and Human Services (Tas)
DPIPWE	Department of Primary Industries, Parks, Water and Environment (Tas)
DSMP	Dam Safety Management Plan
DWQG	Tasmanian <i>Drinking Water Quality Guidelines 2005</i>
EBIT	Earnings Before Interest and Tax
EMPCA	<i>Environmental Management and Pollution Control Act 1994 (Tas)</i>
EPA	Environment Protection Authority (Tas)
EPN	Environment Protection Notice
ERR	Economic Rate of Return
NDTE	Net Debt to Equity
NPAT	Net Profit After Tax
NPR	National Performance Report
STP	Sewage treatment plant or wastewater treatment plant
WDRC	Written down replacement cost
WTP	Water treatment plant

Basic measures:

kL kilolitre = 1 000 litres or 1 m<sup>3</sup> (cubic metre) and weighs 1 tonne

ML megalitre = 1 000 kL (or 1 000 m<sup>3</sup>)

GL gigalitre = 1 000 ML



## FOREWORD

Ten years ago, the water and sewerage industry in Tasmania underwent major reforms, including the introduction of a new regulatory framework. The Tasmanian Water and Sewerage Corporation, TasWater, was formed in July 2013 and has since been operating as the State's sole water and sewerage utility.

In 2017-18, TasWater had a renewed focus on service delivery and improving its performance in a range of areas. It increased its level of engagement with customers and stakeholders. For the third year in a row, TasWater reported the fastest call centre response time amongst similar sized utilities across Australia. TasWater is using this feedback to develop a plan for the next three years that represents the key priorities and actions needed to meet the expectations of the community and industry stakeholders.

TasWater has faced significant challenges in ensuring drinking water for all customers, including in regional areas, is clean and safe to drink. During 2017-18, TasWater's program of removing public health alerts from all regional towns across Tasmania saw public health alerts lifted in 14 of 28 towns during the period. Since the end of June 2018, the remaining 14 public health alerts have also been removed. There were three instances when temporary alerts were applied to drinking water supplies, including one affecting the inner city area of South Hobart. TasWater acted quickly to restore drinking water quality to the appropriate standards, with all three alerts lifted within a few days of the occurrence.

The scale of work required to lift Tasmania's water and sewerage network to the level expected by its customers and industry regulators is reflected in the significant increase in capital investment TasWater has made in the past year. In 2017-18, TasWater increased its infrastructure spending by around 40 per cent, with \$154 million invested in capital projects during the year: the highest investment of any major water utility across Australia in terms of spending per property.

TasWater is planning significant growth in its capital program over the coming decade. This will include work associated with replacing old or poor infrastructure that is currently underperforming. The establishment of its capital delivery office is designed to support TasWater's commitment to delivering on its capital works program over the next regulatory period. TasWater has also invested in further developing its asset management system to more efficiently manage its expanding water and sewerage infrastructure.

The Economic Regulator closely monitors TasWater's progress on the delivery of its capital works program to track how these projects have been delivered against the expected start and completion dates. The Economic Regulator has also requested quarterly reporting from TasWater on its capital works program to monitor how individual projects are progressing and identify instances where actual completion dates may differ from original plans.

A total of 21 major projects were completed during 2017-18, including construction of new water treatment plants and upgrades to improve drinking water quality in regional towns. A further 20 major projects began or were continued during the period while 23 projects were deferred or rescheduled from their original start dates.

TasWater achieved a reduction in operating costs in 2017-18 due to a large fall in wastewater-related costs which were very high in the previous year. TasWater also attributes part of the reduction in operating costs to its program of productivity savings and efficiencies. Overall, there was a two per cent decrease in operating costs per property, similar to trends observed on the mainland.

TasWater's financial position improved in 2017-18 with higher than expected revenue of \$336 million, an increase of 6.6 per cent compared to the previous year. There was significant growth in water supply to both residential and non-residential customers due to rainfall and temperature conditions during 2017-18, as well as strong tourism and population growth. This resulted in increased revenue from variable water charges.

TasWater's other financial indicators similarly reflect the improvement in its overall financial position, with TasWater's 2017-18 net profit after tax and profit ratio both well above the levels reported in previous years.

Prices for water and sewerage services rose by 3.6 per cent in 2017-18, with residential customers paying, on average, \$1 158 per annum. TasWater has continued to transition customers paying below target tariffs, though around 7 500 customers will continue to be charged below the target tariffs after 30 June 2018.

TasWater's sewage treatment plants collected and treated 51 318 ML of sewage during 2017-18, nine per cent less than in 2016-17. Some of this reported reduction is due to a change to meter readings which has reduced measured flow for some sewage treatment plants. Approximately 11 per cent of effluent was discharged to re-use, with several sewage treatment plants increasing their output to re-use during the year.

Environmental compliance of TasWater's sewage treatment plants against regulatory discharge to waters limits, as calculated by the EPA, has continued the upward trend in 2017-18, and at 89.2 per cent, is just below TasWater's target compliance level of 90 per cent. Some of this compliance gain has been the result of regulatory changes, though there has been an underlying upwards trend in overall flow-weighted compliance over the past three years. Despite this improvement, TasWater's environmental compliance levels remain relatively low and a significant number of sewage treatment plants still pose a high environmental risk.

Ageing infrastructure, network blockages and other factors have contributed to a high rate of sewer spills in 2017-18, with an average of 78 per 100 km of sewer main. Sewer spills were attended to as a priority, although five spills occurred in sensitive environments and ten spills took more than five hours to contain. Due to the potential impact on human health and sensitive environments, TasWater has increased its monitoring of the sewerage network and also developed analytical software which will help detect blockages and prevent sewage spills.

TasWater staff took an average of more than eight hours to fix and restore sewerage services when an interruption occurred during 2017-18 (the customer service standard is three hours). TasWater is planning to improve its performance in this regard with the recent implementation of a dedicated scheduling and dispatch team. The team will focus on TasWater's response to bursts and leaks in the water and sewerage networks, with particular attention to interruptions affecting customers with specific needs (ie shellfish leases) and priority interruptions.

TasWater has built up its capacity to deal with breaks and chokes in its water network, responding to unplanned water interruptions within the 180 minute standard. The average response time was 161 minutes. High priority bursts and leaks have also been promptly attended, with TasWater achieving the performance standard in relation to priority 1, 2 and 3 incidents.

However, the occurrence of unplanned water interruptions has increased significantly in 2017-18, with 216 interruptions per 1 000 properties against a performance standard of 100. This high rate of failure in the water network is indicative of the infrastructure's age and condition.

The rate of planned water interruptions was also high in 2017-18, as TasWater crews worked to repair and maintain the water network. Planned interruptions tended to last longer than the service standard, with outages reported to be an average of 5 ½ hours and the standard being met only 11 per cent of the time. However, this may reflect, in part, problems with TasWater's data collection, where the actual interruption may be shorter than the duration reported.

In 2017-18, TasWater's infrastructure leakage index (the ratio of actual losses to unavoidable losses) was 2.5, which indicates a significant volume of preventable water loss in the system. Comparable utilities on the mainland typically report leakage indexes of around 1.1. TasWater's water losses are much higher than for equivalent mainland utilities and represent a significant inefficiency in TasWater's water supply operations. Overall, around 20 per cent of potable water that TasWater produced was unaccounted for in 2017-18.

TasWater continues to face challenges in providing accurate performance data across all measures, including data required under Section 69 of the *Water and Sewerage Industry Act 2008* and the *Regulatory Reporting Guideline 2014* issued by the Tasmanian Economic Regulator. It is hoped that further progress will be made in coming years so that more complete assessments can be made of TasWater's performance, including against earlier years and in comparison with mainland providers.

Seasonal increases in taste and odour issues during 2017-18 led to a significant increase in water quality complaints, which represented almost half of all complaints received. Complaints increased by 29 per cent compared to the previous year, and the rate of complaints per 1 000 properties (16) continues to be much higher than reported for comparable utilities on the mainland (median of 3.4 per 1 000 properties for 2017-18).

During 2017-18, the Ombudsman received 59 complaints regarding TasWater. This is less than the previous year and, as noted by the Ombudsman, a significant decrease from five years ago when complaints were double this amount.

TasWater reported that the introduction of an SMS notification process has helped reduce the number of customers getting to the stage of requiring a payment plan, and as a result, the number of customers using flexible payment plans has also declined.

The number of customers on TasWater's hardship program has further fallen to 30 customers as at 30 June 2018, with 18 concession customers using the program. Customers using the hardship program have significant levels of debts, with the average debt at the time of starting hardship around \$3 388 which is more than two and a half times a typical annual bill for water and sewerage.

Overall, TasWater's performance continues to be impacted by the age and condition of its assets. This is evident across a range of measures for its water and sewerage networks. TasWater has invested a significant amount in repairing and maintaining its network, which is reflected in compliance gains in several areas. TasWater is well positioned to continue its proposed capital works and make further progress in achieving its compliance standards for the next regulatory period.

A handwritten signature in black ink, appearing to read 'Joe Dimasi', with a stylized, cursive script.

Joe Dimasi

**TASMANIAN ECONOMIC REGULATOR**

## OVERVIEW

The Tasmanian Water and Sewerage State of the Industry Report 2017-18 (this Report) is the latest in a series of reports published by the Tasmanian Economic Regulator that provide an independent review of the industry's performance.

It reports on the key areas of pricing, customer service, network reliability and efficiency, financial performance and TasWater's compliance with its drinking water quality, dam safety and environmental obligations. It also sets out key priorities for improved performance by TasWater.

### Key performance measures

	2016-17	2017-18
Water connected properties	204 949	207 051
Sewerage connected properties	176 677	181 342
Total urban water supplied	56 155 ML	65 991 ML
Average residential consumption (kL per property)	179 kL	193 kL
Water network reliability (water main breaks/100 km of main)	48	39
Real water losses (L/service connection/d)	182	277
Sewer network reliability (sewer breaks and chokes/100 km of main)	45	45
Average customer minutes off water supply, unplanned interruptions (minutes)	NR	159
Average sewerage interruption (minutes)	NR	493
Number of unplanned interruptions - water (per 1 000 properties)	NR	216
Treated wastewater discharge compliant with EPA requirements (flow-weighted compliance percentage)	85.9 %	89.2 %
Percentage of population receiving drinking water that complied with ADWG microbiological guidelines	99.4 %	99.8 %
Drinking water supplies on long term boil water alerts or public health alerts <sup>a</sup>	25 of 87	10 of 64
Customer complaints (number)	2 500	3 237
Calls answered within 30 seconds	89 %	87 %
Total revenue	\$315.5 m	\$336.3 m
Operating costs	\$187.6 m	\$185.5 m
Capital expenditure	\$103.7 m	\$154.2 m
Net debt to equity ratio	30 %	33 %

NR Not reported, data is considered to be inadequate or unreliable.

a Reporting basis changed from 87 monitoring zones to 64 supply systems.

## Water supply

### Sources of water

In 2017-18 the state-wide total volume of water sourced was 88 420 ML, seven per cent higher than the previous year: the total volume of urban water supplied increased by 18 per cent to 65 991 ML.

Across the State, around 94 per cent of sourced water came from surface water in 2017-18. The remaining water was sourced from recycled water (six per cent) and groundwater (less than one per cent).

### Residential water supply

Average annual residential water supplied has been relatively stable over the past five years, with 193 kL per property consumed on average in 2017-18. This is 16 per cent above the median residential consumption for major Australian water utilities, which was 163 kL.<sup>1</sup>

### Water network

Between 2016-17 and 2017-18, the total number of properties connected to water mains increased by one per cent to 207 051. The length of water mains across Tasmania increased slightly to 6 327 km.

There were 39 water main breaks, bursts and leaks per 100 km of water mains in 2017-18 which is significantly higher than the median rate for similar sized utilities on the mainland (19 per 100 km of water main).

TasWater estimates that real losses in its reticulation networks during 2017-18 were in the order of 277 litres per service connection per day, or 8.7 kL per kilometre of water main per day. These losses were more than three times the median real losses for major Australian water utilities per service connection, which were 76.4 litres per day, and more than twice the median real losses per kilometre of water main, which were 3.7 kL per day for major Australian water utilities.

### Water supply interruptions

Interruptions to water supply affected 44 737 customers in total during 2017-18, which means on average, up to 216 in 1 000 properties across Tasmania experienced an unplanned interruption to their water supply in 2017-18.

In 2017-18, the average duration of an unplanned water supply interruption was 159 minutes (over 2 ½ hours).

TasWater met the customer service target for planned interruptions 11 per cent of the time (against a target of 80 per cent) and only 38 per cent of interruptions were restored within five hours. An issue with TasWater's reporting processes has affected its reporting of

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<sup>1</sup> Bureau of Meteorology, *National performance report 2017-18: urban water utilities*, February 2019 (indicator W12).

performance against this measure, with some interruptions assumed to be a full day in the absence of more accurate data.

Ninety four per cent of 'priority 1' bursts and leaks were responded to within 60 minutes, which satisfies the service standard of 90 per cent. On average, TasWater took 36 minutes to attend 'priority 1' bursts and leaks, well within the service target of 60 minutes.

### Dam safety

During 2017-18 TasWater spent \$1.4 million on dam safety compliance activities and \$1.1 million on minor works to reduce the risk to a number of dams that are categorised as having 'high' consequences were they to fail.

During 2017-18 TasWater decommissioned two high risk dams at Queenstown and rehabilitated each dam site, removing public safety risks. It also progressed planned upgrades of Swansea Dam (scheduled for completion in 2018-19); and completed the upgrade works for the Conglomerate Dam. In addition, detailed design and investigation work is continuing for the Mikany, Isandula, Ridgeway and Pet Dams. TasWater is currently considering decommissioning high risk dams at Waratah, and the Grey Mountain No. 1 and No. 2 dams.

## Sewerage services

### Sewage collected and recycled

The volume of sewage collected by TasWater in 2017-18 was 51 318 ML, or 283 kL per property. Thirty three of TasWater's 79 sewage treatment plants recycled at least some proportion of the treated sewage effluent. The number of STPs associated with full reuse schemes increased to 13 in 2017-18. In 2017-18, 10.7 per cent of the sewage volume collected was reused as recycled water for agricultural and municipal use.

### Sewerage network

As at 30 June 2018 there were 181 342 properties connected to the sewerage network (up from 179 677 in 2016-17). The length of sewerage mains and channels was 4 747 km.

### Sewerage service interruptions

In 2017-18 there were, on average, 45 sewerage mains breaks and chokes per 100 km of sewer main. TasWater's preventative efforts as well as favourable weather conditions during the year, helped reduce the incidence of root growth into sewers causing blockages.

Eighty one per cent of sewer spills, breaks and chokes were attended to within the 60 minute standard, with the average response time around 52 minutes.

Interruptions to the sewerage service lasted, on average, 493 minutes (eight hours), with TasWater meeting the required 180 minutes service target on 71 per cent of occasions compared to the minimum standard of 80 per cent.

## Customer service

### Customer complaints

In 2017-18 TasWater received 3 237 complaints, up 29 per cent from 2 500 for the previous year. The rate of complaints, at 16 per 1 000 properties, was well above the maximum customer service target of nine. The largest group of complaints were in relation to water quality (47 per cent) and billing and accounts (20 per cent). Ninety three per cent of complaints were resolved within ten days (or within an agreed timeframe).

The Ombudsman received 59 complaints about TasWater in 2017-18, down from the previous year and significantly lower than the nearly 200 complaints received five years ago.

### Call centre performance

TasWater's call centre answered 87 per cent of calls within 30 seconds in 2017-18 against a target of 85 per cent. TasWater's call centre performance has been the best amongst similar sized mainland utilities for the last three financial years.

### Payment management

There has been a reduction in the number of customers repaying a debt, which is reflected in a decrease in the number of customers owing more than \$500 and also the number of customers on the hardship program.

The number of customers on the hardship program has reduced to 30 as at 30 June 2018. Customers using the hardship program have significant levels of debt, with the average debt at the time of starting hardship around \$3 388 which is more than two and a half times a typical annual bill for water and sewerage.

TasWater suspended some of its debt recovery processes during 2017-18 which resulted in fewer physical water restrictors being applied to customers' connections for non-payment of debt.

## Public health

### Drinking water quality

All of the 64 Tasmanian drinking water supplies were adequately monitored for bacteriological compliance while 61 were adequately monitored for chemical water quality during 2017-18.

Eight of the State's 64 drinking water supplies failed to achieve microbiological compliance, while seven water supplies had chemical contaminants detected above the ADWG health guideline values (two of which reported metal concentrations above safe health limits).

There were ten water supplies on long term boil water alert or public health alerts as at 30 June 2018. Nine systems were operated under a boil water alert (plus three under temporary alerts) while another system had a public health alert (do not consume) in place.

TasWater implemented its Regional Towns Water Supply Program during 2017-18 resulting in the removal of 11 Boil Water Alerts (BWA) and the removal of three Public Health Alerts (PHA – do not consume) from water supply systems.

As at 30 June 2018, Bronte Park, Colebrook, Conara, Epping, Gormanston, Herrick, Judbury, Mathinna and Rocky Creek systems were on a BWA, while the Rossarden system remained on a PHA.<sup>2</sup>

Microbiological compliance was achieved for 99.8 per cent of the population supplied with drinking water via the reticulated network. This is 0.2 per cent higher than in 2016-17.

## Environment

### Sewage treatment plant compliance

In 2017-18, TasWater's Level 2 STPs achieved 89.2 per cent compliance with regulatory discharge to waters limits (flow-weighted), continuing the upward trend observed in 2016-17 and only marginally below TasWater's target of 90 per cent.

Fourteen Tasmanian STPs were classified as substantially non-compliant (ie less than 75 per cent compliant), while the number of STPs with compliance above 90 per cent increased from 30 to 33 (out of 72), with one STP achieving full compliance. Four STPs with low compliance levels discharged all effluent to reuse, thereby diverting pollutant loads away from waterways towards beneficial uses.

TasWater received three Environmental Infringement Notices (EINs) for offences that occurred in 2017-18 relating to sewage spills at Taroona in November 2017, and Huonville in March 2018.

In 2017-18 TasWater reported 146 sewer overflows to the environmental regulator, the EPA. This equates to around 3.1 overflows per 100 km of sewer main which is a slight decline in performance compared to the previous year, although better than most historic performance levels.

## Pricing

### Typical residential bill

The typical annual bill for residential customers with average water consumption (193 kL per annum) was \$1 158 in 2017-18. The typical bill is based on \$526 for water and \$632 for sewerage. TasWater customers are paying, on average, around \$114 less per annum than their interstate counterparts for water and sewerage, with prices nine per cent below the national median. TasWater's relatively lower bills are due in part to the fact that TasWater is yet to reach the compliance levels of mainland utilities ie higher levels of compliance lead to higher costs and, in turn, higher customer bills.

The water usage component (based on measured volume) accounted for 17 per cent of the total bill. This reflects the fact that the fixed cost of providing the service to a property (such

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<sup>2</sup> All alerts were removed by August 2018, with the exception of Gormanston, which remained on a boil water alert until February 2019 when it transitioned to a public health alert following the detection of elevated levels of lead.

as the cost of maintaining dams, pipes, reservoirs and other essential infrastructure) is much higher than the variable cost of delivering water to a property.

In 2017-18, annual residential bills rose by 3.6 per cent, the same as earlier years in the second regulatory period from 1 July 2015 to 30 June 2018.

## Finance

### Revenue and profit

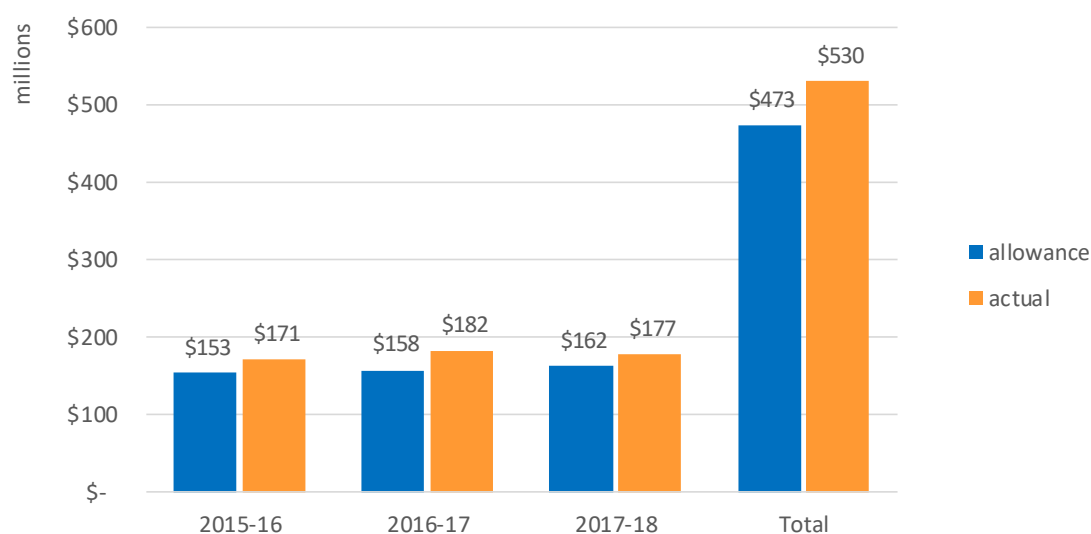
TasWater's total revenue in 2017-18 was \$336 million, up 6.6 per cent compared to 2016-17, partly reflecting increases in regulated target tariffs. Other factors contributing to the revenue result include increased water consumption by residential and non-residential customers and higher than average population growth.

### Operating expenditure

Total operating costs declined by one per cent to \$185.5 million. This is despite a significant increase in water-related operating costs compared to the previous year, with TasWater's Regional Towns Water Supply Program contributing to this increase following the commissioning of new WTPs and upgrades to existing plants.

Growth in connections and significantly lower sewerage-related spending helped reduce operating costs to \$896 per property in 2017-18, two per cent lower than the previous year.

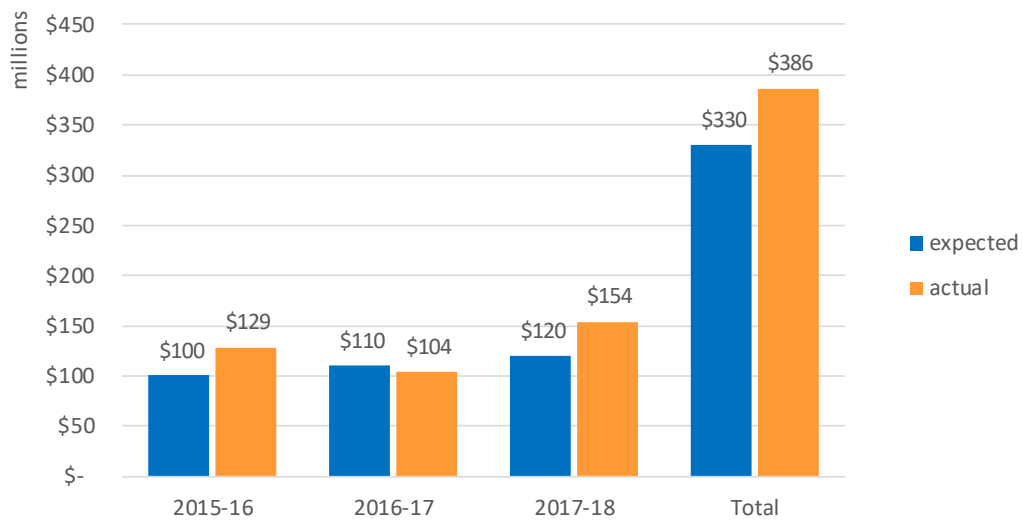
The following chart compares TasWater's actual operating expenditure with the allowances approved by the Economic Regulator for the second regulatory period (regulated Opex). In 2017-18, actual Opex for the delivery of regulated services was nine per cent above the Economic Regulator's allowance for that year.



## Capital expenditure

Capital expenditure was 40 per cent higher than in 2016-17, at over \$154 million. TasWater reported the largest percentage increase in its total capital expenditure amongst major Australian water utilities in 2017-18.

The following chart compares TasWater's actual capital expenditure with the Economic Regulator's expectations of TasWater's capital expenditure for the second regulatory period.



## Financial performance

In 2017-18, TasWater's net profit after tax rose to just under \$42.7 million, up 65 per cent compared to 2016-17 (\$25.8 million). TasWater returned \$18.5 million to its shareholders as dividends which represented 43 per cent of its profit after tax (not including income tax equivalents and guarantee fees which totalled \$11.5 million).

TasWater's net debt to equity ratio increased to 33 per cent in 2017-18 due to increased borrowings to fund TasWater's capital projects.



# I INTRODUCTION

The Tasmanian Economic Regulator (Economic Regulator) is responsible for the economic regulation of the Tasmanian water and sewerage industry. One of the Economic Regulator's regulatory functions is to monitor and report publicly on the performance of the State's single water business, the Tasmanian Water and Sewerage Corporation Pty Ltd (trading as TasWater).

In July 2018, the Economic Regulator was directed by the Treasurer and the Minister for Primary Industries and Water to prepare a state of the industry report for 2017-18.<sup>1</sup> No terms of reference were issued.

This Report covers the key performance indicators for TasWater for the 2017-18 financial year. The purpose of this Report is to make TasWater accountable for its performance by providing stakeholders with relevant information. Its main objectives are to:

- ❑ provide an overview of TasWater's performance; and
- ❑ identify key priorities for improved performance by TasWater.

The Economic Regulator has prepared this Report in consultation with the Director of Public Health, the Director of the Environment Protection Authority (EPA) and the Secretary of the Department of Primary Industries, Parks, Water and Environment (DPIPWE).

## I.1 Scope of this report

The structure and content of this Report is based on the Urban National Performance Framework (see section 1.6 of this Report), with some additional State-based measures.

This Report focuses on performance across a number of key areas, including:

- ❑ water supply – water sources, infrastructure, treatment, consumption and reliability;
- ❑ sewage services – infrastructure, collection, treatment and reliability;
- ❑ customers – customer complaints, call centre performance and payment management;
- ❑ public health – water quality compliance with bacteriological, chemical and fluoridation standards;
- ❑ environment – wastewater treatment, effluent discharge, impacts on waterways, effluent and biosolids reuse; and
- ❑ pricing and finance – tariff structures, revenue and expenditure, future capital expenditure and status of major projects.

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<sup>1</sup> Under section 70 of the *Water and Sewerage Industry Act 2008*, the Regulator is required to prepare a State of the Industry Report in the second last year of a regulatory period and in other years if required to do so by the Minister and Treasurer.

This Report does not include information on the collection and use of stormwater or the supply or use of water for irrigation purposes.

## 1.2 Information sources

This Report is based on two principal sources of information:

- ❑ performance data provided by TasWater against key performance measures, specified by the Economic Regulator in its Reporting Guideline; and
- ❑ performance data collected as part of regulatory reporting requirements by the Department of Health (DoH), DPIPWE and the EPA.

Where data has not passed the audit requirements for quality and reliability<sup>2</sup>, it has been excluded from this report or highlighted in the relevant section.

Numerous comparisons throughout this Report refer to the performance of similarly sized service providers in other Australian jurisdictions. The selection of similarly sized service providers in these comparisons is based on the number of connections and does not account for other factors that may differ between service providers such as the number of separate schemes and assets, geography and climate. Readers should consider this when making comparisons between TasWater's performance and the performance of mainland service providers.

## 1.3 Industry structure

Since 1 July 2013, TasWater has owned, controlled and operated water supply and sewerage systems in Tasmania. TasWater manages all aspects of the water supply chain from dams and reservoirs to customer property connections. TasWater also manages sewerage systems from customer sewer connections to wastewater treatment and disposal.

TasWater's services include:

- ❑ harvesting, storing and treating raw water supplies;
- ❑ transporting bulk water from dams and reservoirs to water treatment plants;
- ❑ operating the sewerage service and treating sewage for discharge;
- ❑ delivering retail services; and
- ❑ receiving and processing trade waste.

TasWater's principal objectives<sup>3</sup> are:

- ❑ to efficiently provide water and sewerage services;
- ❑ to encourage water conservation, demand management of water and the re-use of water on an economic and commercial basis; and

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<sup>2</sup> The Economic Regulator's *Regulatory Reporting Guideline Version 3* outlines audit requirements for licensees.

<sup>3</sup> From section 6 of the *Water and Sewerage Corporation Act 2012* (Tas).

- to be a successful business by operating its activities in accordance with good commercial practice, delivering sustainable returns to its council members and delivering services to customers in the most cost-efficient manner.

## 1.4 Regulatory framework

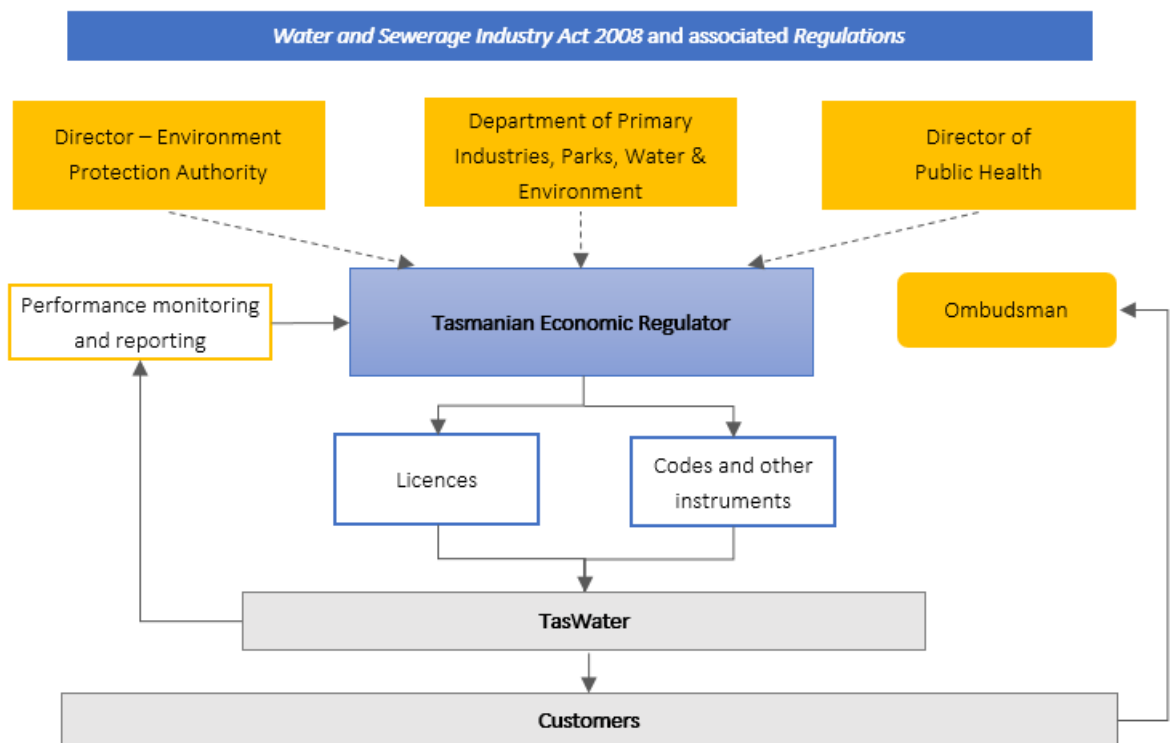
The key Tasmanian piece of legislation governing the water and sewerage industry is the *Water and Sewerage Industry Act 2008* (Industry Act). The Industry Act requires any persons or entities owning and/or operating water and/or sewerage infrastructure, or supplying water and/or sewerage services to others, to be licensed, unless exempted.

The licence places a number of regulatory obligations on licensees through reference to various regulatory instruments, such as codes and guidelines, as well as requiring the preparation of management plans in relation to matters such as asset and emergency management and compliance. Currently TasWater is the only licensed entity in Tasmania.

Industry regulators for the sector include the Tasmanian Economic Regulator, the Director, EPA, the Director of Public Health, and the Secretary, DPIPWE.

Compliance and regulatory obligations are imposed by legislation including the *Tasmanian Environmental Management and Pollution Control Act 1994*, *Public Health Act 1997*, *Fluoridation Act 1968*, *Water Management Act 1999* and the *Water Management (Safety of Dams) Regulations 2015*. A diagram setting out the economic regulatory framework for the Tasmanian water and sewerage industry is shown in Figure 1.1.

Figure 1.1 Tasmanian water and sewerage industry economic regulatory framework



The regulatory framework does not cover:

- ❑ water used for electricity generation purposes;
- ❑ private water supplies, including drinking water supplies at premises that do not receive water from a reticulated system managed by a licensed provider - namely, private bores and tanks and small privately owned water systems;
- ❑ on-site sewerage treatment (septic tanks) or small private sewerage treatment plants; and
- ❑ stormwater, irrigation water and water recycling and re-use. These activities are excluded from the regulation of the water and sewerage industry by section 3 of the *Water and Sewerage Industry Act 2008* (Industry Act) and clause 3 of the *Water and Sewerage Industry Declaration Order 2011* (Order) respectively.

While services in relation to recycling or re-use of water are not regulated activities, Chapter 3 of this Report provides commentary on these issues in the context of the treatment of wastewater.

## 1.5 Industry Regulators

The regulatory framework for the water and sewerage industry covers economic regulation, technical regulation, water planning and customer service.

### 1.5.1 Tasmanian Economic Regulator

The Economic Regulator's role includes industry licensing, consumer protection and retail pricing:<sup>4</sup>

- ❑ **Water and sewerage services prices** – the Economic Regulator's Price Determination sets out the services, revenue requirements and pricing structure for TasWater for each regulatory period.
- ❑ **Customer service standards** – the Customer Service Code, issued by the Economic Regulator, sets out TasWater's obligations for the delivery of services to customers across Tasmania including service standards and targets.
- ❑ **Performance monitoring and reporting** - a periodic state of the industry report (this Report) prepared by the Economic Regulator in consultation with the other industry regulators.

In carrying out its functions under the Industry Act, the Economic Regulator is required to promote the efficient pricing of regulated services, promote efficient long-term investment in infrastructure and ensure appropriate service standards are maintained.

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<sup>4</sup> For further details, refer to the Economic Regulator's previous State of the Industry Reports and its Final Report in relation to its 2018 Water and Sewerage Price Determination Investigation, released on 4 May 2018.

### 1.5.2 Director of Public Health

The Director of Public Health (and DoH) is responsible for regulating drinking water quality and ensuring safety through monitoring and enforcing compliance with drinking water guidelines and policies established under the *Public Health Act 1997* and the *Fluoridation Act 1968*. This includes monitoring and enforcing compliance with the standards and requirements prescribed by the:

- ❑ Public Health Act (and its associated Tasmanian Drinking Water Quality Guidelines 2015);
- ❑ Fluoridation Act;
- ❑ *Fluoridation (Interim) Regulations 2009* (as in force in 2017-18); and
- ❑ Australian Drinking Water Guidelines 2011 (which were updated in 2016).

The Director of Public Health is also responsible for developing and implementing strategies to protect, promote and improve public health. The Director is supported in discharging its functions and duties by Public Health Services, which is part of DoH.

During 2017-18, the Department of Health and Human Services (DHHS) was the responsible regulator for public health matters as outlined above. On 1 July 2018, the Department of Health (DoH) was created and undertakes the same role in drinking water quality as its predecessor. References in this report are to DoH.

### 1.5.3 Director, Environment Protection Authority

The Director of the Environment Protection Authority (EPA) and the EPA Board<sup>5</sup> are responsible for administering and enforcing the *Environmental Management and Pollution Control Act 1994* (EMPCA). The Director and EPA Board are supported in discharging their functions and duties by EPA Tasmania,<sup>6</sup> which is part of the DPIPWE.

The Director's responsibilities in regulating Level 2 sewage treatment plants (STPs)<sup>7</sup> and other aspects of TasWater's sewage management include:

- ❑ undertaking, as a member of the EPA Board, environmental impact assessments in relation to proposals for new STPs or significant changes to existing STPs;
- ❑ imposing legally binding environmental conditions upon the operation of STPs;
- ❑ applying the *Tasmanian State Policy on Water Quality Management 1997* as relevant to wastewater management activities;
- ❑ ensuring compliance with environmental conditions;
- ❑ investigating incidents involving STPs or the sewerage network; and

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<sup>5</sup> For further information on the EPA's functions, see [www.epa.tas.gov.au](http://www.epa.tas.gov.au).

<sup>6</sup> The former EPA Division of DPIPWE adopted the name 'EPA Tasmania' in 2016.

<sup>7</sup> Only Level 2 STPs, with a design flow capacity to treat more than 100 kL per day, are regulated by the EPA. Level 1 STPs are regulated by local government (Councils).

- applying enforcement provisions as warranted.

EPA Tasmania provides TasWater with advice on wastewater issues including those relevant to wastewater and biosolids reuse, trade waste, blue green algae management and environmental aspects of the operation of the sewerage system, including sewage pumping stations.

#### 1.5.4 Department of Primary Industries, Parks, Water and Environment

The Water Policy and Planning Branch in DPIPWE develops and coordinates policies relating to the regulation of the water and sewerage industry and supports the Minister for Primary Industries and Water in fulfilling the Minister's functions under the Industry Act.

The Water and Marine Resources Division within DPIPWE also plays an important water management, planning and regulatory role for the State's water resources, including the administration and enforcement of the *Water Management Act 1999*.

The Water Management Act is part of Tasmania's resource management and planning system and provides for the use and management of Tasmania's freshwater resources through licensing, water trading, water allocations and dam permits.

#### 1.5.5 Delegate for Dam Safety Regulation

The Minister for Primary Industries and Water also has regulatory oversight of dam safety. The Water Operations Branch, part of the Water and Marine Resources Division within DPIPWE, administers the Water Management Act and the *Water Management (Safety of Dams) Regulations 2015* to ensure that dam owners meet their dam safety responsibilities.<sup>8</sup>

The Minister's Delegate is the General Manager of the Water and Marine Resources Division. The Delegate's key functions relate to:

- developing prescribed standards required for the design, construction, maintenance, surveillance and decommissioning of dams, and ensuring compliance with those standards, which are largely based on the criteria and guidelines produced by the Australian National Committee on Large Dams (ANCOLD); and
- formulating measures to ensure the safety of dams and, in particular, plans to remove or minimise risks to persons, property or the natural environment arising from a dam safety incident.

#### 1.5.6 Tasmania Fire Service

The Tasmania Fire Service (TFS) is responsible for fire safety in Tasmania.

TasWater's obligations under the Industry Act, with respect to fire safety, relate to:

- installing fire hydrants in its water infrastructure at distances and locations as are necessary for the ready supply of water to control and extinguish fires; and

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<sup>8</sup> For further information on dam safety, see [www.dpipwe.tas.gov.au/water/dams/dam-safety](http://www.dpipwe.tas.gov.au/water/dams/dam-safety).

- ❑ keeping its water infrastructure charged with water where that infrastructure supplies water to a fire hydrant.

The Industry Act provides that TasWater may reduce or restrict the quantity of water it supplies on days declared by the TFS to be days of total fire ban. Such restrictions include specifying how water may be used<sup>9</sup>, such as prohibiting the use of water outdoors. Limiting non-essential water use such as garden watering or lawn sprinklers on days of total fire ban can help to help to ensure that the TFS and residents who may be facing a bushfire threat have water available for firefighting and prevention.

### 1.5.7 Ombudsman

A customer dissatisfied with the outcome of a complaint made under TasWater's customer complaints process may refer the complaint to the Tasmanian Ombudsman (the Ombudsman) under the *Ombudsman Act 1978*. Under section 77 of the Industry Act, it is a condition of its licence that TasWater complies with any recommendations made by the Ombudsman relating to a complaint.<sup>10</sup>

## 1.6 Performance and regulatory reporting

### 1.6.1 Performance reporting

The Industry Act requires the Regulator to prepare a State of the Industry Report (this Report) within three months before a regulated entity, namely TasWater, is required to submit a proposed price and service plan, and at any other time when directed to do so by the Minister and the Treasurer. The Report is to be published within a reasonable time of preparing it (usually in April) and tabled in the Parliament within seven sitting days of its finalisation.

The Industry Act provides that the Economic Regulator is to issue guidelines to regulated entities in relation to their annual performance and information reporting requirements.

The Economic Regulator's *Tasmanian Water and Sewerage Industry Performance and Information Reporting Guideline Version 1.4* sets out the data and contextual information that TasWater must provide to the Economic Regulator, so that its performance can be measured.

### 1.6.2 Regulatory reporting

TasWater is required to carry out regular audits to assess:

- ❑ compliance with and the adequacy of its management and compliance plans; and
- ❑ the quality, reliability, and conformity of regulatory information, including performance information.

The audits are an important element of the regulatory framework. They ensure that all stakeholders are provided with sufficient information to properly assess TasWater's

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<sup>9</sup> See Part 2 of the *Water and Sewerage Industry (General) Regulations 2009*.

<sup>10</sup> See [www.ombudsman.tas.gov.au](http://www.ombudsman.tas.gov.au) for further information.

performance in meeting its regulatory obligations, and provide a reliable basis for on-going performance assessment.

The approach to regulatory reporting is set out in the Economic Regulator's *Regulatory Reporting Guideline Version 3*. The Economic Regulator's approach to managing non-compliance is outlined in its *Compliance Enforcement Policy Version 2*.

TasWater's performance indicator data is subject to independent audit at least once every three years in accordance with the Urban National Performance Framework auditing requirements. Approximately one third of indicators are assessed each year.

If errors are identified in the data submitted under the Urban National Performance Framework, revised data is included in the Tasmanian water and sewerage state of the industry reports, resulting in possible discrepancies in the data across these reports.

Some of the data provided by TasWater up to 2015-16 had been assessed to be at a basic level. The reliability and accuracy of all data therefore, cannot be assured. Readers should consider this when interpreting the data and commentary presented in the Report.

TasWater has adjusted its processes and improved the quality of its data to ensure that independently audited and consistent data is available for its annual performance reporting requirements, the Urban National Performance Framework and the state of the industry reports.

## 1.7 National policies and obligations

Regulation of the water and sewerage industry is affected by national policies and obligations. These policies and regulatory obligations and responsibilities are outlined below.

### 1.7.1 National Water Initiative

In June 2005, Tasmania, together with the Australian Government and the other states and territories, became a signatory to the National Water Initiative (NWI) Agreement. Under the NWI Agreement, the signatories agreed to report independently, publicly and on an annual basis, and to benchmark data on the pricing and service quality of urban water delivery agencies.

### 1.7.2 National performance reporting framework

The National Urban Water Utility Performance Reporting Framework (the NPR Framework) is one outcome of the National Water Initiative, developed by the signatories of the NWI Agreement.

The performance data and benchmarking reports produced under the Framework are an important resource, used by governments and the urban water sector.

Following the abolition of the National Water Commission in 2013, the Bureau of Meteorology (the Bureau) has supported the Framework and its collection of performance data, as well as the production and publication of the set of Urban NPRs.

#### ① NPR framework guidelines

- The *2013-14 National Performance Framework: Urban performance reporting indicators and definitions handbook*; and
- The *2013-14 Urban National Performance Framework Urban Auditing Requirements*

TasWater provides annual performance data to the Bureau, with oversight of the data provided by the Office of the Tasmanian Economic Regulator.

The preparation of annual national performance reports that independently and publicly benchmark pricing and service quality, is an important commitment under the NWI. The reports align with a nationally consistent performance framework, built on reporting practices already in place in the urban water sector.

The performance data is subject to independent audit at least once every three years. Further information on the NWI Agreement and the NPR framework can be found on the Bureau's website at [www.bom.gov.au/water/npr/index.shtml](http://www.bom.gov.au/water/npr/index.shtml).

#### **1.7.2.1 NPR Framework Review**

On 19 July 2018, the Economic Regulator signed a new three-year Framework Agreement that includes the Commonwealth (Department of Agriculture and Water Resources, DAWR), the Water Services Association of Australia and the Bureau to conduct a major review of the Framework. The Agreement covers the collection of performance data and benchmark reporting for the 2017-18, 2018-19 and 2019-20 financial years.

In 2019, the Bureau will undertake the review and develop a set of recommendations that support the NPR framework into the future. The final review report, including recommendations, is due later in 2019.

## **1.8 Regulatory compliance**

For 2017-18 TasWater reported:

- ❑ three drinking water supplies exhibited public health non-compliances relating to elevated levels of microbial contaminants, resulting in the declaration of temporary Boil Water Alerts;
- ❑ one environmental infringement notice issued by the EPA in relation to a sewage spill at Flinders Esplanade, Taroona on 22-23 November 2017;
- ❑ no instances of non-compliance with the Dam Safety regulator; and
- ❑ no instances of non-compliance with economic regulation.

## **1.9 Other government bodies**

### **1.9.1.1 Department of Treasury and Finance**

The Department of Treasury and Finance is responsible for providing advice to the Treasurer on water and sewerage pricing regulation, as the Treasurer is responsible for this regulation under the Industry Act.

### **1.9.1.2 Local Government**

Prior to 2009-10, local government was responsible for providing most reticulated urban water and sewerage services (excluding some water and sewerage infrastructure located within private or Crown land). During 2017-18, TasWater was owned by local government; prior to TasWater's formation, local government owned the three regional corporations.

Local government is responsible for the regulation of smaller and on-site sewerage infrastructure (including sewage treatment plants with design capacity of up to 100 kL per day and septic tanks).

### Stormwater

Under the *Urban Drainage Act 2013*, local government is directly responsible for urban drainage. This includes providing public stormwater systems as are necessary to effectively drain urban areas, and maintaining those systems in good working order.

The Urban Drainage Act also requires local councils to develop Stormwater System Management Plans (SSMPs) for the urban areas within their municipalities. Initial SSMPs must be developed within six years from the commencement of the Act, ie by December 2019. A SSMP must specify:

- (a) plans for the management of any assets used for the delivery of a stormwater service;
- (b) the level of risk from flooding for each urban stormwater catchment in the public stormwater system; and
- (c) any other matters prescribed in the regulations or that the council considers appropriate.

#### 1.9.1.3 Tasmanian Government

In May 2018, a Memorandum of Understanding (MoU) was signed between the State Government, the Council Owner's Chief Representative and TasWater.<sup>11</sup> The MoU proposed new ownership arrangements for TasWater under which State Government will become a shareholder of TasWater and inject \$200 million in equity over ten years from 2019, at which time it would hold 10 per cent of TasWater's shares.

Councils would remain the majority owner of TasWater and continue to receive all returns from TasWater. The MoU included a range of other measures, including the parties working cooperatively to progress projects of special economic importance to Tasmania such as the works needed to allow the Macquarie Point site to be developed and to address the issues arising from the combined sewerage/stormwater system in Launceston.

At a Special General Meeting of councils on 27 September 2018, councils passed three resolutions that approved the measures arising from the MoU.

Legislation to implement the measures set out in the MoU was passed in 2018-19. In early January 2019, the State Government acquired its first tranche of shares (one per cent) in TasWater.

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<sup>11</sup> [http://www.premier.tas.gov.au/data/assets/pdf\\_file/0008/376622/TasWater\\_Media\\_Release\\_and\\_MOU.pdf](http://www.premier.tas.gov.au/data/assets/pdf_file/0008/376622/TasWater_Media_Release_and_MOU.pdf)

#### 1.9.1.4 Bureau of Meteorology

In 2008, the Bureau assumed a new role in relation to water accounting, as part of the then Australian Government's Water for the Future initiative. As mentioned in section 1.7.2 of this Report, in 2014, the Bureau also took over the administration of the Urban National Performance Framework for water performance reporting. The Bureau has produced the annual performance reports since 2013-14.<sup>12</sup>

The Bureau's water information functions are contained in the *Water Act 2007* (Cwlth), under Part 7 - Water Information. These functions are supported by the *Water Regulations 2008* (Cwlth) (the Water Regulations).

In Tasmania, the Water Regulations require a number of organisations, including TasWater, to submit a range of water accounting information to the Bureau.

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<sup>12</sup> The National Water Commission (NWC) was previously responsible for overseeing progress under the NWI Agreement including performance reporting. With its closure in 2015, the Bureau, with the agreement of all states and territories, took on the role of co-ordinating and producing annual national performance reports.



## 2 WATER SUPPLY

### 2.1 Sources of water

The average annual volume of surface water runoff in Tasmania is around 33 312 000 megalitres (ML).<sup>1</sup> Additionally, up to 2 500 000 ML of water is potentially available each year from groundwater.<sup>2</sup> Almost all urban water supplied in Tasmania is sourced from surface water, with only minor amounts extracted from groundwater.

#### ① Water volumes

kL kilolitres = 1 000 litres

ML megalitres = 1 000 000 litres

Total sourced water includes both freshwater and recycled water and supports the requirements of urban water supply, irrigation and the majority of the State's electricity requirements.

Drinking water sourced from surface water and consumed by domestic, commercial and industrial customers accounts for around 15 per cent of the estimated total use of surface water in the State (including water used for irrigation and industry).

Urban use of groundwater accounts for only a very small portion of the estimated total groundwater usage and less than 0.5 per cent of reticulated drinking water is sourced from groundwater.

During 2017-18, TasWater sourced 86 893 ML from surface water (99.7 per cent) and 273 ML from ground water (0.3 per cent) for urban use. Urban water in Tasmania was not sourced from desalination or recycled water, although TasWater did use recycled water for some non-drinking uses (see section 3.3 of this report).

Groundwater was extracted for use in reticulated supplies across the State. The 2017-18 groundwater total was 15 per cent higher than the volume extracted in 2016-17 (237 ML).

Rain water tanks represent another important source of water for many Tasmanian households. Around one fifth of Tasmanian households have rain water tanks as their primary source of drinking water.<sup>3</sup>

### 2.2 Water usage

The Australian Bureau of Statistics (ABS) has published a National Water Account for 2016-17<sup>4</sup> which details the volume of water extraction and consumption for each sector in each state and territory.

Water use for the main sectors of the Tasmanian economy for 2016-17 was as follows:

<sup>1</sup> Tasmanian Planning Commission 2009, *State of the Environment Tasmania* 2009.

<sup>2</sup> Department of Infrastructure, Energy and Resources, *A Review of Groundwater in Tasmania* - Background Report, 2001.

<sup>3</sup> ABS 4602.0.55.033, *Environmental Issues: Water Use and Conservation*, March 2013.

<sup>4</sup> ABS 4610.0 *Water Account, Australia 2016-17*, February 2019.

- ❑ Agriculture 250 265 ML;
- ❑ Aquaculture<sup>5</sup> 564 ML;
- ❑ Urban Water 57 585 ML;
- ❑ Commercial<sup>6</sup> 38 030 ML; and
- ❑ Mining<sup>7</sup> not reported.

For this Report, urban water supplied does not include irrigation water or water usage in private supply systems. It differs from the Australian Bureau of Statistics' estimated urban consumption, as total urban water supplied is TasWater's metered volume of water (both drinking water quality and non-drinking water quality) supplied to customers during 2017-18 plus estimated non-metered water supplied. The total water supplied comprises the sum of residential, commercial, municipal, industrial and other water supplied.

TasWater provided the following detailed breakdown of the 65 991 ML of water supplied to around 207 000 residential and non-residential customers<sup>8</sup> during 2017-18:

- ❑ residential customers were supplied with 35 317 ML of water (potable and non-potable); and
- ❑ commercial, municipal and industrial customers were supplied with 30 674 ML of water.

Water supply to residential customers increased by 8.5 per cent in 2017-18, accounting for 53.5 per cent of total urban water supplied. Water supplied to commercial, municipal and industrial customers increased by 6.1 per cent in 2017-18.

The average annual consumption per connection across the State in 2017-18 was 319 kilolitres (kL). This is 16 per cent higher than the average for 2016-17, which was 274 kL.

Average residential consumption has increased, with consumption rising from 179 kL per connection in 2016-17 to 193 kL in 2017-18 (Figure 2.1). Residential consumption has shown marginal variation over recent years with the lowest value reported in 2014-15 at 172 kL. The significant drop in average residential consumption between 2011-12 and 2012-13 likely reflects the following factors:

- ❑ the state-wide roll-out of water meters raising consumers' awareness of their consumption levels and introducing volumetric charging in many areas; and
- ❑ the improvement in the quality of the data collection relating to water consumption with the state-wide introduction of water meters.

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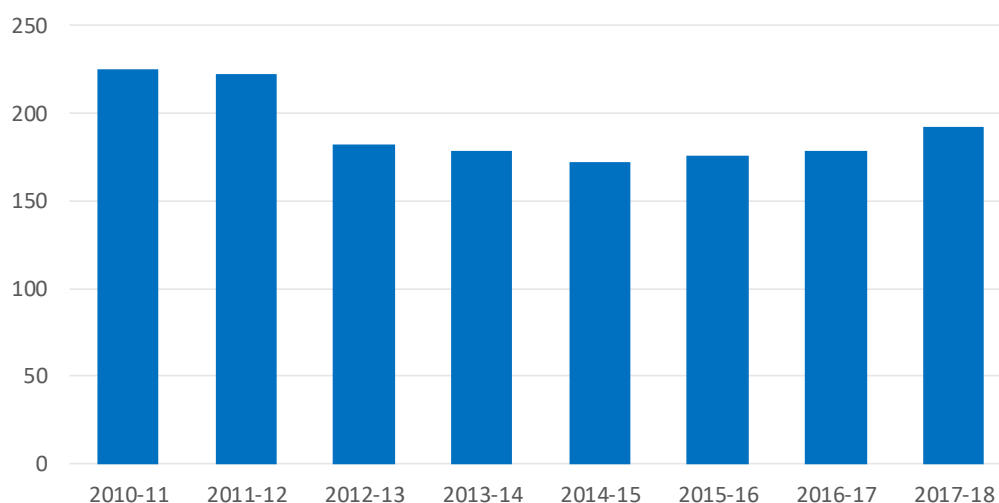
<sup>5</sup> The Tasmanian aquaculture industry accessed 662 021 ML but almost all of this water was used in-stream. The industry consumed only 556 ML of water during 2016-17.

<sup>6</sup> Commercial is made up of water usage figures for the manufacturing and "other" industry classifications from the *Water Account, Australia 2016-17*.

<sup>7</sup> Comparable extraction and consumption figures for the mining sector are not available.

<sup>8</sup> Non-residential customers include all commercial, industrial and municipal users.

Figure 2.1 Average annual residential water supplied (kL/property)

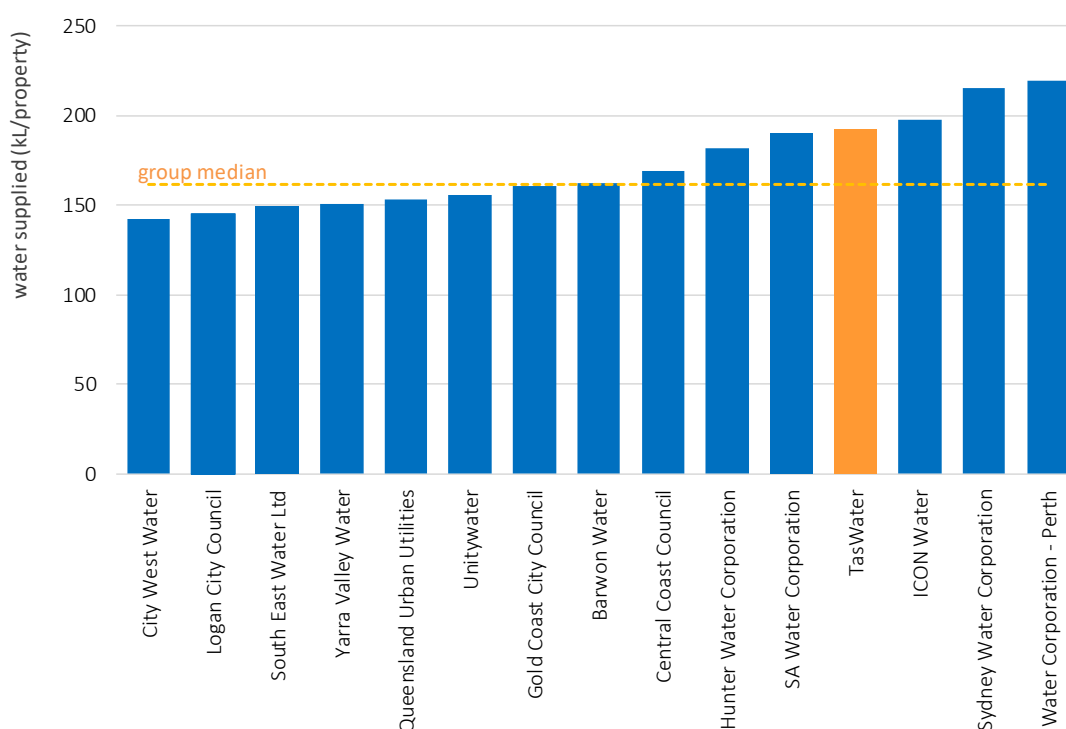


The increase in consumption by residential users in 2017-18 is likely due, in part, to a drier than normal summer period as well as an increase in connections, increased tourist numbers and increased economic activity.

Figure 2.2 shows the average annual volumes of residential water supplied by major utilities (100 000 or more connected properties) across Australia during 2017-18 together with the median volume of water supplied by providers in this category.

TasWater's average annual residential water supplied of 193 kL per residence was 16 per cent above the median for major water utilities in 2017-18, which was 163 kL.

Figure 2.2 Average annual residential water supplied (kL/property) – major utilities (large)



## 2.3 Water assets

Tasmania's hilly terrain poses a unique challenge for the redistribution of its fresh water resources, which are unevenly distributed across the State. Water is relatively abundant in the lightly populated western part of the state, and less abundant in the more heavily populated south-east and east coast regions.

Transferring water from the source of supply to the point of use can be difficult. The large distances and difficult terrain mean that, in some instances, pumping water from remote sources of supply to where it is needed incurs high costs.

The water assets that enable the treatment and transmission of water to customers include water treatment plants (WTPs), storage dams, reservoirs and the system of pipes and pumps.

### 2.3.1 Water supply systems and treatment plants

A WTP is an individual facility receiving raw or partially treated water for treatment and ultimate delivery to customers. A WTP does not include secondary or booster disinfection plants. There may be more than one WTP at a specific location and in some areas, individual systems are supplied from multiple WTP sites. TasWater is required to report the level and complexity of treatment provided to bring water quality to an acceptable level for the customer.

There are three broad categories of WTP:

- ❑ disinfection only – the treatment plant solely disinfects the water prior to supply to customers. This category also includes WTPs that provide fluoridation only;
- ❑ further treatment – the treatment plant provides additional processes to serve a particular purpose. It does not meet the requirements of full treatment, but may address some of those elements; and
- ❑ full treatment – a substantial structure involving multiple treatment steps to achieve high quality water. The plant includes processes that remove turbidity and/or colour via different types of filtration and varying filter types, as well as providing filtration and disinfection. Most full treatment plants also fluoridate the water. Other treatment processes can include removal of taste and/or odour, softening, pH correction and the targeted removal of elements and compounds such as iron, manganese, nitrates and pesticides.

During 2017-18, an estimated 421 866 Tasmanians received a reticulated drinking water supply provided by TasWater. Supply was provided by 64 drinking water supply systems<sup>9</sup> that were serviced by 62 water treatment plants. Table 2.1 provides details of the number and type of WTPs operated by TasWater during 2017-18.

Table 2.1 Drinking water plants in Tasmania, 2017-18

Disinfection only WTPs	Further treatment	Fully treated	Total WTPs
13	0	49	62

<sup>9</sup> A water supply system is a unique system for the extraction and preparation of water for distribution via the water supply network. One treatment plant may supply more than one system.

### 2.3.2 Storage dams

TasWater is responsible for the operation and maintenance of more than 300 water and wastewater dams, lagoons and weirs throughout Tasmania.

Owners of dams have a legal obligation to maintain and operate them so as not to cause danger to the public or significant environmental harm or present a danger to the public. Each dam is assessed under Australian National Committee on Large Dams (ANCOLD) guidelines.

The three major considerations under the guidelines are:

- ❑ the potential population placed at risk in the event of a dam failure;
- ❑ the potential impact on community and private infrastructure, such as bridges, roads, buildings, communication, energy and water and sewerage assets; and
- ❑ the impact on the environment.

Once assessed, each dam is assigned a consequence category. The consequence category of each dam can be assigned to one of seven levels (Table 2.2) through a structured process provided by ANCOLD. The terminology used in Dam Safety Assessments is set out in Appendix 3.

Table 2.2 ANCOLD Guidelines - consequence category for dams

Population at Risk	Severity of damage and loss			
	Minor	Medium	Major	Catastrophic
<1	Very Low	Low	Significant	High C
≥1 to <10	Significant (Note 2)	Significant (Note 2)	High C	High B
≥11 to <100	High C	High C	High B	High A
≥100 to <1 000	(Note 1)	High B	High A	Extreme
≥1 000	(Note 1)	(Note 1)	Extreme	Extreme

Source: Table 3 of the ANCOLD Guidelines on the Consequence Categories for Dams (2012).

Note 1: With a population at risk in excess of 100, it is unlikely that damage will be minor. Similarly with a population at risk in excess of 1 000 it is unlikely damage will be classified as medium.

Note 2: Change to "High C" where there is potential of one or more lives being lost.

All dams with a consequence category of "Significant" or higher require comprehensive surveillance inspections. For dams where there is the potential for loss of life in the event of dam failure, dam safety emergency plans are required.

These compliance requirements become more significant as the consequence category increases. Of the dams that TasWater is responsible for, 37 have been identified as having a consequence category of "Significant" or higher, due to their potential downstream impact (life, business, economic, damage) in the unlikely event of a complete dam failure. The remaining dams and storages have consequence categories of "Low" or "Very Low".

TasWater has a five year program to mitigate the risks for its dams where the severity of damage and loss is classed as "Significant" or higher. TasWater also has a five year program in place to assess the consequence category for its smaller, un-categorised dams. The consequence category for these dams is expected to be "Very Low", though some may be categorised up to "Significant".

Table 2.3 details TasWater's water supply and wastewater dams for "Significant" or higher consequence category as set out in TasWater's Dam Safety Management Plan (DSMP) 2017-18. Table 2.3 also includes TasWater's dams that have been assessed as either "Very Low" or "Low" consequence.

Table 2.3 TasWater's water supply and wastewater dams by consequence category (no.)

Very low	Low	Significant	High C	High B	High A	Extreme
40	73	14	9	3	7	4

In 2017-18, TasWater progressed its planned upgrades of Swansea Dam (scheduled for completion during 2018-19); and completed the upgrade works for the Conglomerate Dam.

Detailed design and investigation work is also continuing for the Mikany, Isandula, Ridgeway and Pet Dams. Decommissioning of the Waratah, Grey Mountain No. 1 and No. 2 dams (all high risk dams) is currently being considered. Lowering the risk at Tolosa Dam commenced in late 2016, with the reduction of the water level during 2017-18, in anticipation of the dam's decommissioning or divestment.

Interim risk reduction measures are in place for 11 high risk dams, ensuring immediate risk mitigation measures whilst further assessments are being undertaken, and business needs confirmed.

### 2.3.3 Other water assets

Other water assets utilised by TasWater in its water supply systems include fluoridation stations/equipment, water pumping stations, water mains and water distribution storage facilities.

Table 2.4 summarises the other water infrastructure assets in Tasmania. The total length of water mains includes all transfer, distribution, reticulation mains and recycled water distribution and reticulation mains delivering water for urban areas.

Table 2.4 Other water assets owned by TasWater as at 30 June 2017

Number of water pumping stations	Number of water distribution storage facilities	Length of water mains (km)
207	297	6 327

In 2017-18, the length of the water network increased only marginally and the average customer density of 33 properties per kilometre of main was the same as the previous year. Compared to other large mainland water utilities, TasWater's customer density is relatively low, owing to the regional nature of much of the network's service area.

A number of water pumping stations were decommissioned during 2017-18, with the total number of stations declining from 219 to 207.

## 2.5 Performance of water infrastructure

Information on the frequency and duration of water interruptions is useful in assessing the reliability of the water supply network and the effectiveness of its operation and management. Water loss and leakage figures (eg the volume of water that does not reach customers due to leaking pipes or other factors) also help to gauge the condition of the system.

Performance data for supply interruptions during 2012-13 and 2016-17 was affected by data collection issues, resulting in unreliable or incomplete data that is not considered to be representative of performance. Where reported, these indicators are identified with the # suffix.

Recent improvements to TasWater's asset management system and data collection practices are expected to improve data quality in the future.

### 2.5.1 Water main breaks

Water main breaks are the primary cause of supply interruptions for the reticulated water network. Factors affecting the frequency of breaks, bursts and leaks include soil type, rainfall, pipe material and the age and condition of the network.

Table 2.5 shows the number of water main breaks, bursts and leaks per 100 kilometres of water main reported by TasWater. In 2017-18, the average rate of bursts and leaks across the State was 39 per 100 kilometres of water main. While lower than the rate reported in 2016-17, in previous years, breaks, bursts and leaks in service connections were sometimes allocated to mains according to TasWater, resulting in a higher reported rate.

Table 2.5 Water main breaks, bursts and leaks

	Total number of water main breaks (breaks, bursts and leaks)	Water main breaks (per 100 km of water main)
2013-14	2 056	35
2014-15	1 753	28
2015-16	2 051	33
2016-17	3 021	48
2017-18	2 461	39

For comparative purposes, the median rate of water main breaks for mainland major water utilities was 19 per 100 kilometres of water main.<sup>10</sup> TasWater's rate of water main breaks has been much higher than the national median for this indicator over the past five years.

<sup>10</sup> Bureau of Meteorology, *National performance report 2017-18: urban water utilities*, February 2019 (indicator A8).

### 2.5.2 Water losses

Water losses in the distribution system can be either apparent losses (unauthorised consumption, metering errors) or real losses (leakage and overflows from mains, service reservoirs and service connections prior to customer meters).

Real losses per service connection per day provide a measure of the effectiveness of the management of the network. Water pressure, condition and age of the infrastructure, or a combination of these factors can all influence performance against this measure. Real losses represent a wasted resource, reduce the effective capacity of a water supply system and result in unnecessary operating costs.

TasWater estimates that real losses in its reticulation networks during 2017-18 were in the order of 277 litres per service connection per day, or 8.7 kL per kilometre of water main per day. This is more than 50 per cent above the real losses estimated for 2016-17.

These losses were the highest of all major Australian water utilities. Per service connection, TasWater's real losses were more than three times the median of major Australian water utilities, which were 76.4 litres per day in 2017-18. Expressed as real losses per kilometre of water main, TasWater's real losses were more than twice the national median, which were 3.7 kL per day.

In 2017-18, TasWater's infrastructure leakage index (the ratio of actual real losses to unavoidable real losses<sup>11</sup>) was 2.5, which provides further evidence of a significant volume of preventable water loss in TasWater's water supply systems. The increase in the reported losses is due, in part, to the availability of more accurate data.

Overall, TasWater estimates that around 20 per cent of the total volume of potable water produced by TasWater was unaccounted for in 2017-18, double the maximum service standard of 10 per cent.

### 2.5.3 Water supply interruptions

A water supply interruption is an event that causes a total loss of water supply to customers. Water supply interruptions may be unplanned, such as when a pipe bursts, or planned, such as scheduled repairs and maintenance. TasWater is required to notify customers of planned interruptions.

Infrastructure age, construction material, the condition of water mains and the type of soil surrounding pipes potentially influence the frequency of unplanned water supply interruptions.

Figure 2.3 shows the average frequency and duration of unplanned water supply interruptions over the past five years. For 2017-18, TasWater reported 216 unplanned interruptions per 1 000 properties.

#### ① Unplanned interruptions

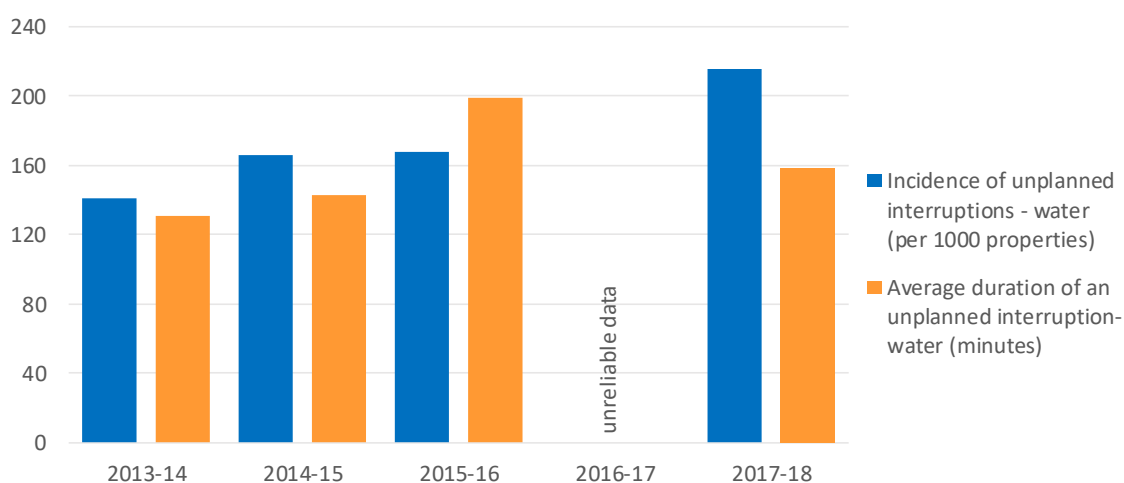
An interruption is classed as unplanned when a customer has not been given at least 24 hours' notification or when a planned interruption exceeds the original notified duration.

<sup>11</sup> Unavoidable real losses are the lowest technically achievable annual real losses in a water supply system for any combination of mains length, number of connections, customer meter location and average operating pressure.

The median rate reported by similar utilities on the mainland was typically around 146 unplanned interruptions per 1 000 properties.<sup>12</sup>

As shown in Figure 2.3, the duration of unplanned water interruptions reported by TasWater fluctuates from year to year, with a long term average of around 160 minutes. The incidence of reported interruptions has generally grown from year to year, due, in part, to improved reporting practices.

Figure 2.3 Incidence and duration of unplanned water supply interruptions



In 2017-18, TasWater reported an average of 159 customer minutes off supply, ie each water supply interruption lasted, on average, over 2½ hours). Similar utilities on the mainland reported a median of 122 customer minutes off supply during the year. In 2016-17, TasWater was unable to reliably report on either the duration of, or number of customers impacted by, water supply interruptions due to issues with data collection and reporting.

Depending on the location of the break or fault, an unplanned interruption may affect one or many customers. Interruptions to water supply affected around 44 737 customers in total during 2017-18.

Table 2.6 shows that the number of customers affected by unplanned interruptions increased somewhat in 2017-18 compared to the preceding two years (an unplanned interruption is often the result of a water main break).

<sup>12</sup> Bureau of Meteorology, *National Performance Report: Urban Water Utilities 2017-18 (indicator C17)*.

Table 2.6 Unplanned water interruptions

	Number of unplanned interruptions	Number of customers affected
2013-14	4 451	28 286
2014-15	6 007	33 352
2015-16	5 807	33 898
2016-17	Unreliable data	Unreliable data
2017-18	1 463	44 737

In relation to the number of unplanned interruptions, TasWater advised that the number of unplanned interruptions reported for 2016-17 represented only six months of data collected following the upgrade of its asset management information systems. This data has been excluded from this report. TasWater advised that the figure reported for 2017-18 is lower than previous years due to improvements in data collection that now excludes some incidents when the service to customers was not interrupted. Performance reported for earlier years may also include interruptions where no customers were affected.

Table 2.7 shows the average duration of interruptions and customer minutes off supply for both planned and unplanned water interruptions, together with the minimum customer service targets for 2017-18.

In relation to planned water interruptions, TasWater did not meet any of the minimum targets in 2017-18, and met the customer service standard for duration of planned outages only 11 per cent of the time (against a target of 80 per cent). This poor performance is also reflected in other measures, with only 38 per cent of planned interruptions restored within five hours (against a target of 90 per cent) and each planned interruption lasting an average of 336 minutes (just over 5 ½ hours).

TasWater reported that, in 2017-18, due to an issue with its reporting processes, the duration of planned outages in some cases, has been assumed to be a full day in the absence of accurate data. This has resulted in significant variance year on year amongst indicators reporting different parameters around planned and unplanned interruptions. TasWater advised that it is targeting improved performance reporting in the future.

Table 2.7 Water supply interruptions

	CSC standard <sup>13</sup>	2013-14	2014-15	2015-16	2016-17	2017-18
<b><i>Planned interruptions</i></b>						
Average duration (minutes)	180	244	292	130	NR	336 <sup>a</sup>
Average duration (% of time standard achieved)	80	-	-	94	NR	11 <sup>a</sup>
Average customer minutes off supply	15	11	9	2	NR	36 <sup>#</sup>
Interruptions restored within five hours (%)	90	81	95	97	99 <sup>#</sup>	38 <sup>a</sup>
Average frequency (number)	0.1	0.05	0.03	0.01	NR	0.11 <sup>a</sup>
<b><i>Unplanned interruptions</i></b>						
Interruptions (per 100 km of water main)	54	75	97	84	NR	23
Average duration (minutes)	180	131	143	199	NR	159
Average duration (% of time standard achieved)	80	-	NR	90	NR	86
Average customer minutes off supply	20	21	24	34	NR	34
Interruptions restored within five hours (%)	98	98	97	94	86 <sup>#</sup>	96
Average frequency (number)	0.1	0.14	0.17	0.17	0.15 <sup>#</sup>	0.22

# - Data contains errors or is unreliable

NR - Not reported due to incomplete or missing data

a - Process derived as required upon discovery that previous documentation not maintained into 2017-18. Deviation expected due to limited data that assumes worst case scenario in absence of exact figures.

TasWater met the minimum standards for three performance indicators relating to unplanned water interruptions during 2017-18.

The rate of unplanned water supply interruptions (ie the number of breaks that resulted in an unplanned interruption) was 23 per 100 km of water main, a significant improvement on previous years and well within the minimum service standard. However, the frequency of unplanned interruptions for customers fell below the minimum standard, with an average of 216 unplanned interruptions per 1 000 properties (0.22) reported for 2017-18. Across the entire customer base, including those who did not experience an interruption, the average duration of unplanned water interruptions was 34 minutes against a 2017-18 target of 20 minutes.

For those customers who experienced an unplanned interruption to their water supply in 2017-18, for 86 per cent of the time the average duration of the interruption met the target of 180 minutes, an improvement on the previous year. Ninety six per cent of unplanned interruptions were restored within five hours, just outside the minimum service standard for 2017-18 of 98 per cent.

<sup>13</sup> Minimum service standards for 2017-18, as per the Customer Service Code.

## 2.5.4 Bursts and leaks

Bursts and leaks are often attributable to the failure of a pipe, hydrant, valve, fitting or joint material. A burst or leak may not necessarily result in a loss of supply to customers.

Table 2.8 shows the percentage of bursts and leaks, categorised by interruption priority, which TasWater attended to within the minimum service standard times during 2017-18. In previous years, TasWater was required to report only its average response time (in minutes) for attending to bursts and leaks; therefore data is unavailable for the percentage of time the standard was achieved.

### ① Bursts and leaks – interruption priority categories

A burst or leak that causes, or has potential to cause:

Priority 1: substantial damage or harm to customers, water quality, flow rate, property or environment.

Priority 2: minor damage or harm to customers, water quality, flow rate, property or environment

Priority 3: no discernible impact on customers, property or the environment

In 2017-18, TasWater met the minimum service standards more than 90 per cent of the time for priority 1, priority 2 and priority 3 bursts and leaks. The average time to respond to priority 1 bursts and leaks increased slightly compared to the previous year, taking an average of 36 minutes, which is a much shorter response time than the standard of 60 minutes. TasWater has achieved consistent performance across these categories, with the reported response times within the CSC standards across these measures over the past five years.

Table 2.8 Average time to attend bursts and leaks (minutes/% of time standard achieved)

	CSC standard <sup>14</sup>	2013-14	2014-15	2015-16	2016-17	2017-18
Priority 1	60 min/90%	31/-	36 /-	35 / 87%	30 / 93%	36 / 94%
Priority 2	180 min/90%	95/-	70/-	69 / 98%	94 / 94%	100 / 96%
Priority 3	4 320 min/90%	1 930/-	673/-	1 861 / 91%	2 428 / 81%	2 197 / 90%

Priority 3 bursts and leaks represent a lower risk and have correspondingly less stringent attendance targets than priorities 1 and 2. TasWater met these standards 90 per cent of the time in 2017-18 with crews taking on average about one and a half days to respond (minimum standard is 3 days).

<sup>14</sup> Customer Service Code minimum standards, 2017-18.

### 3 SEWERAGE SERVICES

During 2017-18, TasWater operated 79 Level 2 sewage treatment plants (STPs) (with a design flow rate equal to or greater than 100 kL/day) and 33 Level 1 STPs (with a design flow rate less than 100 kL/day). DPIPW's Parks and Wildlife Service also operated two Level 2 STPs (Ben Lomond and Lake St Clair National Parks) and the Port Arthur Historical Site Management Authority operated one Level 2 STP.

In cases where the relevant information for Level 1 STPs is not available, this chapter relates only to the performance of TasWater's 79 Level 2 STPs.<sup>1,2</sup>

#### 3.1 Sewage collected

Sewage volumes discussed in this section are based on total inflows received by STPs.

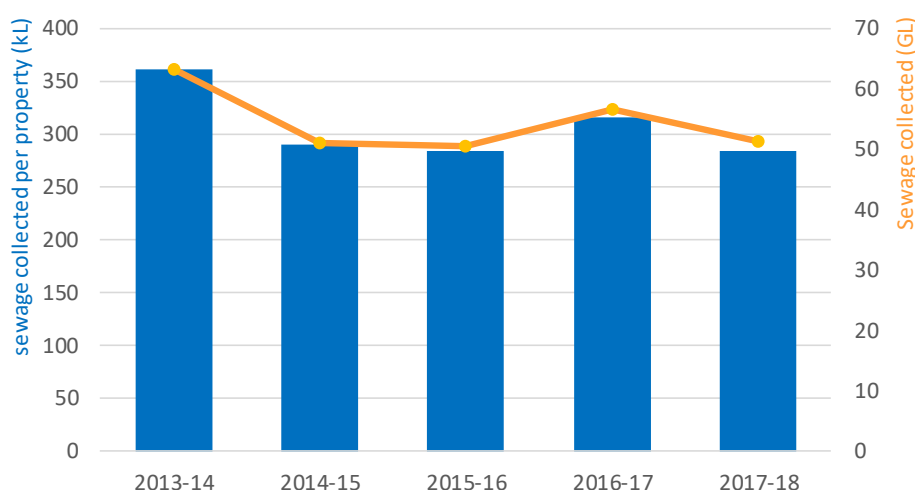
Table 3.1 Volume of sewage collected - TasWater STPs

	2013-14 <sup>a</sup>	2014-15 <sup>a</sup>	2015-16 <sup>a</sup>	2016-17	2017-18
Sewage collected (ML)	63 254	51 009	50 425	56 582	51 318
Per property (kL)	362	289	283	315	283

<sup>a</sup> The sewage volume collected reported for 2013-14, 2014-15 and 2016-17 is different from earlier reports as they include all inflows to TasWater level 1 and level 2 STPs, including tradewaste.

Figure 3.1 shows the volume of sewage received by TasWater's STPs over the past five years.

Figure 3.1 Volume of sewage received / treated (GL and per property)



In 2017-18, the total volume of sewage collected at Level 2 STPs across the State was 50 669 ML. TasWater's Level 2 STPs collected 99.9 per cent of this total (50 631 ML). TasWater

<sup>1</sup> Level 1 STPs are not regulated by the EPA and performance information is not required.

<sup>2</sup> Level 2 STPs operated by organisations other than TasWater are not included in the scope of this report.

STPs, including Level 1 STPs, collected a total of 51 318 ML of sewage in 2017-18. The average volume of sewage collected (residential and non-residential) was 283 kL per property.

Total annual flow volumes are generally affected to some degree by climatic patterns. Rainfall can increase inflow and infiltration of water into the sewer system, resulting in increased volumes being received by STPs. Rainfall has a particularly pronounced impact on flows to Launceston's Ti-Tree Bend STP, which includes significant areas of combined catchment carrying both sewage and stormwater.

### 3.1.1 Comparative sewage treatment levels

Sewage treatment is divided into three categories indicating the degree to which sewage is treated.

During 2017-18 approximately 37 460 ML or 74 per cent of all sewage was treated to secondary standard, including the majority of effluent discharged to reuse schemes. Tertiary treatment contributed 15.8 per cent of the total effluent volume (8 012 ML) and primary treatment accounted for the remaining 10.2 per cent (5 158 ML).

State-wide proportions of treatment levels have remained fairly constant since 1 July 2009.

The sewage treatment levels of TasWater's STPs are discussed further in section 3.2.1 below.

#### ① Sewage treatment levels

**Primary treatment** involves screening the solids from the water and allowing a proportion of the suspended solids and organic matter to settle from the sewage.

**Secondary treatment** takes primary treated effluent and, with the aid of biological processes, breaks down a further proportion of the dissolved or suspended organic matter to a form that reduces its environmental impact if discharged. Disinfection by means of chlorination, ozonation or UV radiation is generally also considered to be part of the secondary treatment step.

With **tertiary treatment**, the secondary treated effluent is further processed using various techniques including flocculation, coagulation, clarification and filtration.

## 3.2 Sewerage assets

Sewerage assets include STPs, pumping stations<sup>3</sup>, sewer mains and effluent outfalls.<sup>4</sup> Performance indicators for these assets relate to their number, density, length and operational performance.

### 3.2.1 Sewage treatment plants

Nearly every major township in Tasmania has reticulated sewerage and an associated STP. STPs discharge to waterways and to effluent recycling schemes. There were 181 342 properties connected to the sewerage network across Tasmania as at 30 June 2018.

<sup>3</sup> Sewage pumping stations pump sewage from low points in the reticulation system to facilitate the passage of sewage to the sewage treatment plant.

<sup>4</sup> An effluent outfall is the outlet of a drain or a sewer where it discharges into another body of water, usually a lake, river or the sea.

**Table 3.2 Sewerage assets operated by TasWater as at 30 June 2018**

Sewage pumping stations	Length of sewerage mains (km)	Level 1 STPs	Level 2 STPs	Total number of STPs
744	4 747	33	79	112

Table 3.2 summarises the sewerage assets operated by TasWater in 2017-18. A level 1 STP at Howden was decommissioned during the year, decreasing the number of Level 1 STPs from 34 to 33 as at 30 June 2018.

The number of properties serviced per kilometre of sewer main indicates the scale of TasWater's sewerage network and the spatial density and distribution of properties serviced. Table 6.1 in Chapter 6 provides a list of the largest STPs by inflow volume.

In 2017-18, there were, on average, 38 properties serviced per kilometre of sewer main. This is much lower than for most major mainland utilities, which would usually service around 64 properties per kilometre of sewer main.<sup>5</sup>

Table 3.3 provides a breakdown of Level 2 STPs by treatment level, which remains unchanged from 2016-17. The majority of Level 2 STPs operated by TasWater (67 of 79) fall into the secondary treatment category.

**Table 3.3 Number of Level 2 STPs operated by TasWater (by treatment level)**

Primary	Secondary	Tertiary
1	67	11

In 2017-18 Pardoe STP in Devonport continued to be the sole Level 2 STP in Tasmania providing primary treatment only. Effluent from this STP is discharged via a long ocean outfall. Long-term ambient monitoring has not indicated any significant environmental impacts outside the mixing zone.

### 3.3 Recycled water

Recycled water is sewage effluent that is treated to an appropriate standard and then reused. Recycled water can be used on-site at an STP or for off-site applications such as land irrigation or industrial processes.<sup>6</sup> As effluent reuse schemes in Tasmania predominantly involve land irrigation, annual fluctuations in the volume of effluent recycled are generally reflective of climatic factors driving the demand for irrigation in a given year.

Table 3.4 shows the volume of recycled water used per annum in Tasmania and the percentage of total treated effluent volume recycled each year compared to the preceding years.

In 2017-18, the total volume of effluent recycled from Level 2 STPs was 5 417 ML, equivalent to 10.7 per cent of the total effluent discharged from Level 2 STPs. The Clarence Recycled Water Scheme, which sources effluent from Richmond, Rokeby, Rosny and Cambridge STPs, remains the largest reuse scheme in the State (2 154 ML recycled), followed by the

<sup>5</sup> Bureau of Meteorology, *National Performance Report 2017-18: urban water utilities*, February 2019 (indicator A6).

<sup>6</sup> These uses require treated effluent to meet the 'Class B' quality standard as specified in the *Environmental guidelines for the use of recycled water in Tasmania* (EPA Tasmania 2002).

Brighton/Bridgewater combined scheme (999 ML recycled). As a result of these two schemes, 3 048 ML (approximately 75 per cent) of treated effluent generated at the associated STPs was beneficially re-used instead of being discharged to the Derwent Estuary (ie discharge from Rokeby, Rosny, Bridgewater and Brighton STPs).

Below average rainfall fell in winter and spring 2017, particularly in northern and eastern parts of the State. Above average mean temperatures across Tasmania during October 2017 continued through to the end of January 2018. Almost all of Tasmania experienced the warmest November on record with below average rainfall for that month. These conditions resulted in the reuse rate of 10.7 per cent, which is the highest uptake of effluent reuse achieved in both percentage and total volume terms since establishment of TasWater and its regional predecessor organisations in 2009.

Table 3.4 Volume of recycled water and percentage of total treated effluent reused

Year	Total volume of effluent recycled (ML)	Percentage of treated effluent recycled
2013-14	5 239	9.4 <sup>7</sup>
2014-15	4 814	9.4
2015-16	5 257	10.4
2016-17	4 691	8.4
2017-18	5 417	10.7

Table A-4.3 in Appendix 4 lists the proportion of effluent reused and reuse flow per year for each Level 2 STP between 2013-14 and 2017-18 inclusive.

### 3.3.1 Recycled water treatment plants

Of the 79 Level 2 STPs operated by TasWater in 2017-18, 33 plants discharged a proportion of their outflows to effluent reuse schemes.

Table 3.5 categorises the Level 2 STPs operated by TasWater according to whether full, partial or no reuse of treated effluent occurred over the last five financial years. Partial reuse schemes are further divided into those achieving less or greater than 50 per cent recycling. Schemes are classified each year based on actual recycling percentages achieved.

The table highlights that the total number of STPs associated with full reuse schemes in 2017-18 has increased compared to the previous financial year, while the total number of STPs which discharge to effluent reuse remained unchanged.

The *State Policy on Water Quality Management*<sup>8</sup> requires effluent reuse to be pursued to minimise the discharge of pollutants to water, unless there are valid reasons not to do so. Improvements in the uptake of effluent recycling such as full effluent reuse at a higher number of STPs, higher volumes of reused effluent or an increase in the total number of STPs where effluent recycling occurs, are largely driven by demand.

<sup>7</sup> Correction of typographical error from 2013-14 Report which erroneously reported 9.24.

<sup>8</sup> Policy available at [http://epa.tas.gov.au/Documents/State\\_Policy\\_on\\_Water\\_Quality\\_Management\\_1997.pdf](http://epa.tas.gov.au/Documents/State_Policy_on_Water_Quality_Management_1997.pdf)

Table 3.5 Classification of reuse schemes associated with Level 2 STPs

	Tasmanian reuse category			
	Full	Partial (>50% recycled)	Partial (<50% recycled)	None
2013-14	7	19	11	42
2014-15	10	18	7	43
2015-16	13	12	8	46
2016-17	8	13	12	46
2017-18	13	14	6	46

## 3.4 Performance data

The performance of the sewerage infrastructure is assessed against a range of measures relating to sewer blockages, breaks and chokes, at both the sewer main and property connection points.

### 3.4.1 Sewer main breaks and chokes

The number of breaks and chokes in sewer mains indicates both the level of service received by customers and the condition of the sewerage network. A break is a failure of a sewer main which results in an interruption to the sewerage service. A choke is a partial or total blockage that may or may not result in a spill from the sewer system to the external environment.

#### ① Sewer connection points

**Sewer mains and channels** include:

- all trunk, pressure, and reticulation mains
- wastewater mains

**Property connections** include:

- the short sewer that connects the sewer main to the customer sanitary drain
- the junction on the sewer main
- property connection fitting
- vertical riser and pipes

Across its sewerage system in 2017-18, TasWater reported 2 135 sewer main breaks and chokes, which is similar to the figure reported in 2016-17 (2 156).

Reliability of the sewerage network is measured by the frequency of service failure, as indicated by the rate of sewer breaks and chokes per 100 kilometres of sewer main (Table 3.6). This measure does not include sewer breaks and chokes that occur within property connections (ie within the property boundary).

TasWater's performance of 45 breaks and chokes per 100 kilometres in 2017-18 is the same as the previous year and is well within the 2017-18 service standard of 93. TasWater reported that, following a review of its response to sewer blocks and chokes, it has implemented a dedicated scheduling and dispatch team which is expected to improve its response to sewer interruptions in the future. TasWater's performance was behind its mainland counterparts, with the rate reported nationally for similarly sized utilities typically 26 breaks and chokes per 100 kilometres of sewer main.<sup>9</sup>

<sup>9</sup> Bureau of Meteorology, *National Performance Report 2017-18: urban water utilities*, February (indicator A14).

Table 3.6 Sewer main breaks and chokes

	Total number of breaks and chokes	Sewer mains breaks and chokes (per 100km sewer main)
2013-14	2 244	50
2014-15	2 710	57
2015-16	2 895	61
2016-17	2 156	45
2017-18	2 135	45

### 3.4.2 Property connection sewer breaks and chokes

The property connection is a short sewer owned and operated by TasWater which connects the sewer main to the customer's property at the inspection opening. TasWater measures and reports on breaks and chokes in property connections on a per 1 000 connected properties basis.

The rate of property connection sewer breaks and chokes reported for 2017-18 was ten per 1 000 property connections. Previous reporting against this indicator has been of poor reliability and increased data integrity now provides clear differentiation between mains and property connections, which has resulted in a large increase in the reported number of property connection breaks and chokes compared to previous years.

The national median for similarly sized urban water utilities around Australia was around four breaks per 1 000 properties.<sup>10</sup>

### 3.4.3 Sewer overflows

An overflow occurs when untreated sewage spills or discharges from the sewerage system (ie pumping stations, pipes, maintenance holes or designed overflow structures) escape into the external environment.

Stormwater ingress, particularly during periods of high rainfall, is a major factor affecting the frequency and impact of sewerage system overflows.

TasWater must notify the Director, EPA, of any release of sewage that causes or may cause serious or material environmental harm.<sup>11</sup> The threshold for reporting sewer overflows varies between environmental regulators in different jurisdictions. Because of this variation, sewer overflows are no longer included in national performance reporting.

The rate of sewer overflows is calculated with reference to the length of the sewer mains and channels to give the average frequency of sewer overflows for the system per 100 km of sewer main as shown in Table 3.7.

<sup>10</sup> Bureau of Meteorology, *National Performance Report 2017-18: urban water utilities*, February 2019 (indicator A15).

<sup>11</sup> The *Sewage Spill Notification Guidelines* issued by EPA Tasmania in October 2017 provide clarification as to what is considered a sewage spill that is notifiable to the Director, EPA. The guidelines are available on the EPA's website at <https://epa.tas.gov.au/regulation/wastewater/>.

In 2017-18, TasWater reported 146 sewer overflows to the EPA. This equates to 3.1 overflows per 100 km of sewer main. TasWater reported that five spills occurred in sensitive environments and that there were 55 dry weather sewage spills during the year.

Recognising the potential impact on environments of importance to its customers (such as swimming beaches and productive inshore coastal areas), TasWater noted that it has improved the monitoring of its sewage pumping stations and also developed analytical software for the detection of network blockages which will help detect and prevent sewage spills.

The rate of reportable sewer overflows across Tasmania is high compared to similar sized utilities on the mainland, which historically report an average of between 0.5 and 1.0 sewer overflows per 100 kilometres of sewer main.<sup>12</sup>

#### ① Sewer spills

For the purpose of performance reporting, a sewer spill is a failure to contain sewage within the sewerage system, excluding:

- spills to emergency relief structures (a manhole is not an emergency relief structure)
- pump stations spills; and
- spills due to house connection branch blockages

**Table 3.7 Sewer overflows and spills**

	Number of sewer overflows reported	Sewer overflow rate (per 100 km of sewer main)	Number of sewer spills (per 100km of sewer main)	Spills contained within five hours (%)
2013-14	645	14.3	59	98.5%
2014-15	209 <sup>a</sup>	4.4 <sup>a</sup>	38	98.2%
2015-16	201	4.3	57	99.1%
2016-17	134	2.8	NR	NR
2017-18	146	3.1	78	99.7%

Source: TasWater Annual Performance Report 2017-18.

a. Data for 2014-15 has been amended. TasWater previously reported 164 overflows/ 3.5 per 100 km of sewer main.

b. NR - Not reported due to incomplete or missing data

Over 99 per cent of sewage spills (from reticulation and branch sewers) were contained within five hours in accordance with the service target of 99 per cent, with ten spills taking more than five hours to contain. TasWater's reporting on sewer spills has improved for 2017-18 after previous concerns were identified with the quality and accuracy of field data.

During 2017-18, the rate of spills relative to the length of the sewerage network was 78 per 100 km of sewer main. The reporting of data in relation to spills in 2016-17 was affected by data collection issues, resulting in exclusion of this data in the 2016-17 version of this report. The rate of sewer spills has fluctuated year to year and can be affected by weather events and network blockages. TasWater reported that it is working on a solution to monitor network blockages and flow patterns that may lead to sewer spills.

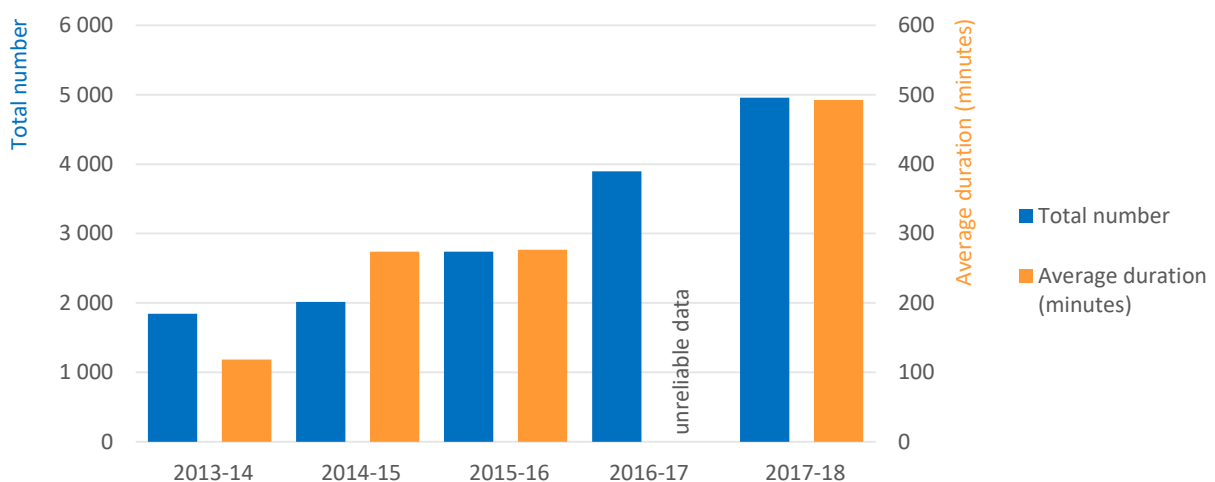
<sup>12</sup> Bureau of Meteorology, *National Performance Report 2016-17: urban water utilities*, March 2018 (indicator E13).

### 3.4.4 Sewerage service interruptions

A sewerage service interruption is any planned or unplanned event causing a loss of sewerage services. Timing of the duration of an interruption starts when TasWater is made aware that sewerage services are no longer available and ends when normal service is restored.

The total number and average duration of sewerage interruptions over the past five years is shown in Figure 3.2. During 2017-18, TasWater reported 4 958 sewer service interruptions, with each lasting an average of 493 minutes (8 hours).

**Figure 3.2 Sewerage service interruptions**



The rate and duration of reported interruptions to sewerage services have increased year on year. However, the collection of data on the frequency and duration of interruptions has improved since data issues were identified in 2016-17. For 2016-17, TasWater reported a problem with its data collection processes which resulted in incomplete data reported for the duration of its sewage service interruptions during 2016-17.

The duration of sewerage service interruptions during 2017-18 was much longer than the minimum service standard (180 minutes) and also much longer than the typical performance level reported by similar utilities on the mainland (210 minutes).<sup>13</sup>

Table 3.8 shows the average duration of interruptions and customer minutes off supply for sewerage interruptions, together with the minimum service targets which TasWater is required to meet.

<sup>13</sup> Bureau of Meteorology, *National Performance Report 2016-17: urban water utilities*, March 2018 (indicator C16). Indicator C16 was deleted from the NPR dataset from 2016-17.

**Table 3.8 Sewerage service interruptions**

	CSC standard <sup>14</sup>	2013-14	2014-15	2015-16	2016-17	2017-18
Average time to attend breaks and chokes (minutes)	60	61	51	55	NR	52
Average time to attend breaks and chokes (% of time standard achieved)	90%	N/A	N/A	74%	NR	81%
Average duration (minutes)	180	118	274	277	NR	493
Average duration (% of time standard achieved)	80%	N/A	N/A	78%	NR	71%

NR - Not reported due to incomplete or missing data.

N/A - Not applicable as the standard was set in July 2015

In 2017-18, TasWater met the attendance time standard specified in the Code for sewerage breaks and chokes for 81 per cent of the time with an average attendance time of 52 minutes. While this is an improvement on the 74 per cent reported in 2015-16, it is still below the required service standard of 90 per cent.

The duration of sewerage service interruptions met the customer service standard in 71 per cent of occasions during 2017-18. The average duration of sewerage service interruptions during 2017-18 was the highest reported to date. TasWater has failed to meet the minimum standard (180 minutes/achieved 80 per cent of the time) for the past three years. TasWater reported that it will aim to improve its performance in this regards with the implementation of a dedicated scheduling and dispatch team. The team will focus on TasWater's response to bursts and leaks in the water and sewerage networks, with particular attention to interruptions affecting customers with specific needs (ie shellfish leases) and priority interruptions.

<sup>14</sup> Minimum service standards for 2017-18, as per the *Customer Service Code*, version 4, 1 July 2015.



## 4 CUSTOMER SERVICE

This Chapter reports on TasWater's customer service performance with respect to the operation of its call centre and management of complaints as well as the treatment of customers with payment difficulties. Customer Service Code standards and targets are outlined in Appendix 4.

As at 30 June 2018, around 207 000 properties were connected to the water and sewerage network operated by TasWater, with residential customers making up around 89 per cent of those connections.

### 4.1 Call centre performance

TasWater's call centre provides an important link between customers and TasWater.

TasWater's call centre performance is measured in terms of the time it takes an operator to answer a customer's call. Since 2015-16, TasWater's service standard has been to ensure that 85 per cent of calls where the customer has selected a relevant operator option are answered within 30 seconds. The service standard had previously been 90 per cent, but following an assessment of service standards as part of the 2015 Water and Sewerage Price Determination Investigation, it was reduced to 85 per cent, which was considered to be more appropriate.

Table 4.1 shows call centre performance over the previous five years. The responsiveness of the call centre has been positive over this time, consistently above 85 per cent.

Table 4.1 Call centre performance

Category	2013-14	2014-15	2015-16	2016-17	2017-18
Total number of calls	134 479	126 152	134 127	149 170	174 579
Number of calls answered by an operator within 30 seconds	124 393	111 748	118 691	132 876	151 017
Performance/service standard (%)	92% / 90%	<b>89%</b> / 90%	88% / 85%	89% / 85%	87% / 85%

Results in **bold** indicate that the standard was not met.

Call volumes have grown year on year since 2014-15, with a 17 per cent increase in the number of calls received by TasWater between 2016-17 and 2017-18. TasWater reported that the increase in calls was partly due to the need to revalidate concession cards.

TasWater's call centre average response time was much better than the national median for similar sized water utilities, which was 72 per cent of calls answered within 30 seconds in 2017-18.<sup>1</sup> TasWater has been the highest performing against this measure amongst similar sized utilities on the mainland for the past three financial years.

<sup>1</sup> Bureau of Meteorology, *National Performance Report 2017-18: urban water utilities*, February 2019 (indicator C14).

## 4.2 Complaints

The numbers of, and categories of, customer complaints received by TasWater provides a general indication of overall customer satisfaction and is also a useful way of identifying issues of concern to customers.

During 2017-18, TasWater received 3 237 complaints. The rate of 16 complaints per 1 000 properties did not meet the service standard of nine complaints per 1 000 properties. The total number of complaints increased by 29 per cent compared with the previous year.

### ① TasWater defines a complaint as:

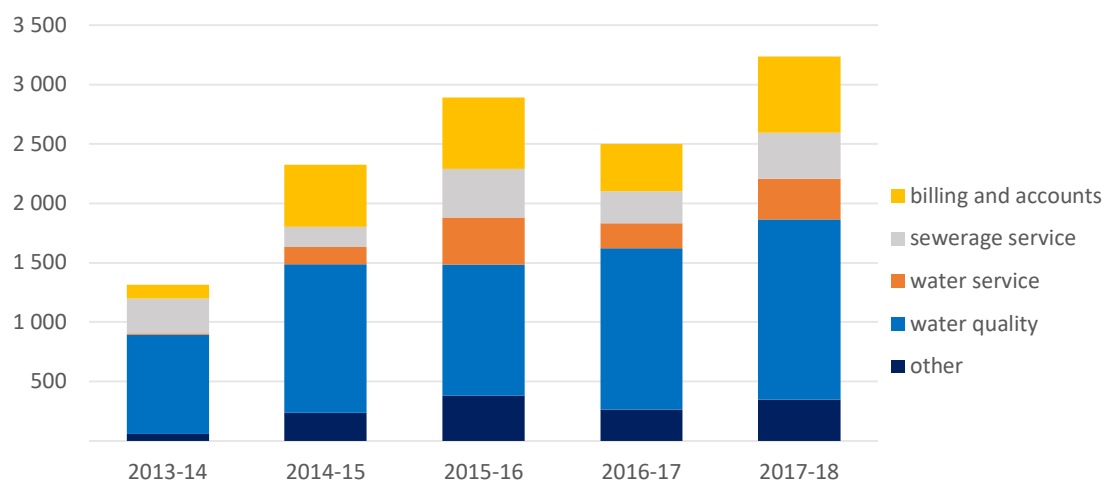
“...an expression of dissatisfaction made to an organisation, related to its products, or the complaints-process itself, where a response or resolution is explicitly or implicitly expected.”

The rate of complaints per 1 000 properties (16) continues to be higher than the service standard of nine in 1 000 properties and higher than the rate reported for comparable utilities on the mainland (median of 3.4 per 1 000 properties for 2017-18).<sup>2</sup>

Figure 4.1 summarises the complaints received by category over the previous five years. The majority (47 per cent) of complaints received in 2017-18 related to water quality (ie taste, colour and odour), which was also the case for the four years prior. The number of complaints about water service increased by 65 per cent from 2016-17, which was also reflected in the reliability of the water network, which fell short against a number of minimum service standards in 2017-18.

For all other complaint categories, the number of complaints received also increased in 2017-18, including billing and account complaints which grew by 62 per cent from 2016-17 to 2017-18.

Figure 4.1 Summary of complaints received by category



Discoloured water, taste and odour were the largest sub-categories of water quality complaints in 2017-18. TasWater reported that the high number of water quality complaints was due, in part, to the implementation of flushing programs designed to address sediment in

<sup>2</sup> Bureau of Meteorology, *National Performance Report 2017-18: urban water utilities*, February 2019 (indicator C13).

drinking water systems. It also reported that there has been a continued seasonal increase in taste and odour issues across Tasmania.

TasWater has established a taskforce to identify and address the water quality issues that have caused the increased number of complaints. Projects initiated by the taskforce will aim to improve the detection of taste and odour compounds, develop targeted water mains cleaning programs and improved communication with customers using multiple media platforms.

TasWater had also developed an algae management plan categorising its systems in relation to algal risk (a main cause of taste and odour compounds), with a sampling program of laboratory and taste testing to act as an early warning system and reduce customer complaints.

TasWater advised that, overall, 93 per cent of complaints were resolved within 10 days in 2017-18 against a target of 90 per cent, which is the same result achieved the previous year.

Customers whose complaints are not resolved through TasWater's customer complaints process may refer their complaint to the Ombudsman. TasWater is bound by recommendations made by the Ombudsman in relation to a complaint. The service standard that applies to TasWater for complaints to the Ombudsman is 0.5 per 1 000 customers.

During 2017-18, the Ombudsman received 59 complaints<sup>3</sup> regarding TasWater which was a reduction compared with the previous year and, as noted by the Ombudsman, a significant decrease from five years ago when complaints were double this amount. This equates to 0.28 complaints per 1 000 properties and therefore meets the service standard. The Ombudsman noted that it continues to work collaboratively with TasWater staff and to have regular meetings to discuss any issues that arise.

### 4.3 Payment management

TasWater is obliged under the Customer Service Code to provide customers with flexible payment options and to offer a hardship program to customers who are experiencing difficulty paying their bill.

In certain circumstances, TasWater may restrict or disconnect the water supply to residential customers for non-payment. Water restrictions are only applied after other arrangements such as flexible payment plans have not resulted in the customer either paying or agreeing to pay their outstanding debt.

After all reasonable steps have been taken to allow a customer to pay an outstanding debt, TasWater may commence legal action to recover the debt.

Table 4.2 shows data for residential customers who had difficulty paying their accounts during 2016-17 and 2017-18. Data for concession customers is shown in brackets.

As at 30 June 2018, 3 722 residential customers were repaying a debt, around two per cent of residential connected properties. This is the second year in a row when there has been a reduction in the number of customers repaying a debt, which is also reflected in decreases in the number of customers owing more than \$500 and a large decline in the number of customers on the hardship program.

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<sup>3</sup> Ombudsman Tasmania, *Annual Report 2017-18*, November 2018.

As at 30 June 2018, 651 non-residential customers were also repaying a debt, which is a small reduction compared with the previous year (741).

Table 4.2 Residential customers with payment difficulties

Category	2016-17	2017-18
Customers repaying a debt	4 617	3 722
Average debt	\$1 150	\$1 253
Customers owing more than \$500 (percentage)	2 583 (56)	2 184 (59)
Customers on hardship program (concession customers)	70 (29)	30 (18)
Average debt of customers on hardship program (upon entry)	\$2 943	\$3 388
Restrictions applied for non-payment (concession customers)	112 (0)	62 (0)
Restrictions removed within seven days of being applied (concession customers)	73 (0)	36 (0)
Customers to which legal action applied for non-payment of water bill	149	50

The average amount of debt has increased by around nine per cent compared to 2016-17, with residential customers owing, on average, \$1 253. The average debt approximates a typical annual bill for water and sewerage, assuming water consumption of around 200 kL per year.

TasWater reported that the introduction of a SMS notification process has helped reduce the number of customers reaching the stage of requiring a payment plan and as a result, the number of customers using flexible payment plans has also reduced.

The number of customers on the hardship program has also declined further to 30 customers as at 30 June 2018, with 18 concession customers using the program. Customers using the hardship program have significant levels of debts, with the average debt at the time of entering the hardship program around \$3 388 which is more than two and a half times a typical annual bill for water and sewerage.

In 2017-18, 62 customers had their water supply restricted for non-payment. TasWater reported that the reduction in the use of restrictions and legal action during 2017-18 was due to an internal review of debt recovery processes that started in November 2017. While the review was being undertaken, a number of processes had been suspended, one of which was restrictions. The review was completed in 2018 so numbers may return to higher levels in the 2018-19 reporting period.

In 2017-18, 14 residential customers had restrictions applied more than once at the same premises (in the same name) within a rolling 24 month period. This outcome is similar to the result reported for 2016-17.

## 5 PUBLIC HEALTH

This Chapter assesses TasWater's compliance with respect to drinking water quality against bacteriological, chemical and fluoridation standards.

### 5.1 Drinking water systems and zones

While TasWater undertakes compliance testing across the State, the requirement to take samples is determined by both the risk and the geographical layout of a supply system; known as a monitoring zone. Several systems comprise numerous monitoring zones to ensure that the water supplied to customers does not pose a threat to public health. Where this is the case, an aggregation of all the available data from these monitoring zones has been undertaken prior to the assessment of compliance of that system.

#### ① Drinking water systems and zones

A public drinking water supply system consists of the entire water supply network, from the treatment to the customer's connection.

In some instances, a supply system can service multiple communities or geographic locations; largely originating from a series of pipelines to facilitate the movement and delivery of treated water around the networks.

One water supply system can be split into a number of discrete monitoring zones, also referred to as water supplies.

This is a different approach to previous years, when each monitoring zone was assessed with the available data. This approach has resulted in a reduction in the number of supply systems that have been assessed for compliance (ie from 87 systems in 2016-17 to 64 in 2017-18).

For example, the Ringarooma supply system consists of five discrete monitoring zones relating to the towns of Ringarooma, Legerwood, Branxholm, Derby and Winnaleah. The aggregation of the data set results in one assessment of compliance for the entire population serviced by this supply system, which this year is reported as one system and not five zones (or water supplies) as in previous years. This change to reporting against overall systems has also attempted to resolve some inconsistencies in how previous assessments were made during the periods when water supplies were managed by councils or the regional water corporations.

Whilst compliance is assessed for a public drinking water supply system, it is sometimes appropriate to refer in context to a public water supply (or water supplies). Where this term is used, it generically refers to the water supplied to a customer at the point of consumption, irrespective of the supply system.

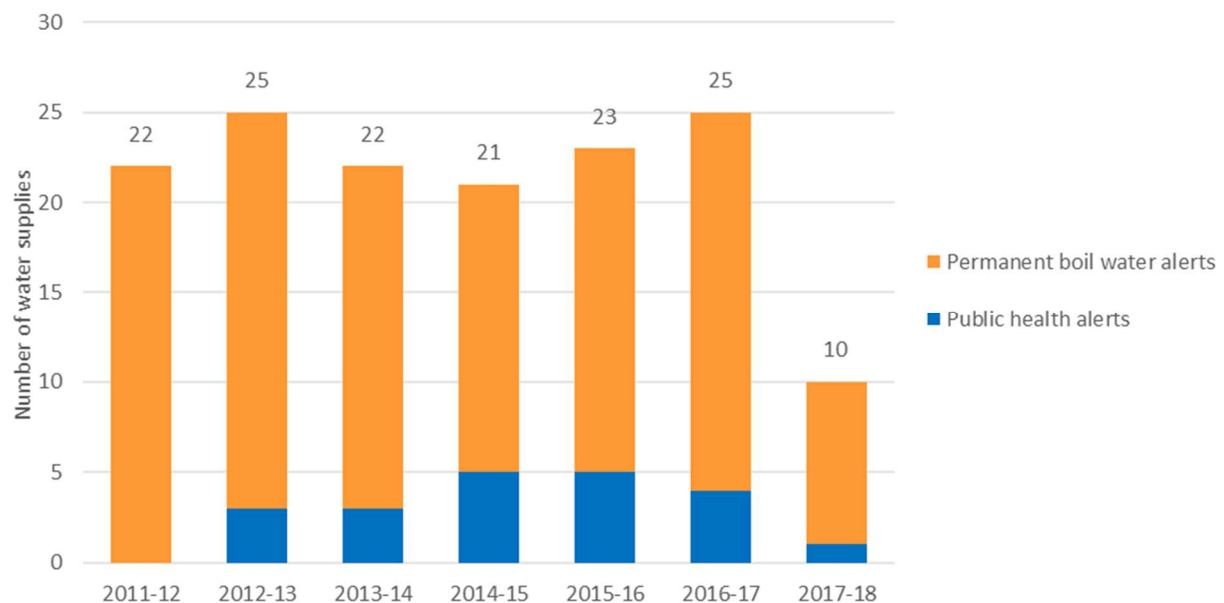
### 5.2 Drinking water quality

As at 30 June 2018, ten of TasWater's 64 water supplies operated under either a long-term boil water alert (BWA) or a public health alert (PHA - do not consume) compared to 25 in the previous year. Figure 5.1 shows the number of water supplies with a public health warning applied over the past six years.

During 2017-18, TasWater implemented its Regional Towns Water Supply Program resulting in the removal of 11 boil water alerts and three public health alerts from water supply systems. As at 30 June 2018, the Bronte Park, Colebrook, Conara, Epping, Gormanston, Herrick,

Judbury, Mathinna and Rocky Creek systems were on boil water alerts, while the Rossarden system remained on a public health alert. Boil water alerts are detailed in Section 5.4 (bacteriological compliance) while chemical compliance and public health alerts are discussed in Section 5.5.

Figure 5.1 Total number of water supplies with a public health warning (BWA or PHA)



### 5.3 Drinking water treatment

Further to the three categories of water treatment discussed in Section 2.3.1, some water supply systems have no treatment processes prior to delivery to customers.

During 2017-18, five water supply systems supplied raw water (no treatment) with four of these supplies operating on a permanent boil water alert. One operated under a public health alert (see Section 5.5.1).

Eight water supply systems provided disinfection only, with a single treatment barrier such as chlorination or ultra violet light. Five of these water supplies operated on a permanent boil water alert, with the other three classified as supplying water of drinking water quality. Chlorination can become ineffective if the source water becomes turbid, which commonly affects raw water during heavy rain and/or drought conditions. When chlorination may become ineffective a temporary boil water alert may be issued.

The remaining 51 water supply systems (80 per cent) had multiple water treatment processes to address public health risks posed by the source water quality. These require effective operation and ongoing maintenance to ensure the water treatment processes are appropriate and adequate. These systems are effective against most bacteriological hazards that may be present in the source water.

## 5.4 Bacteriological compliance of water supply systems

Bacteriological compliance monitoring is one way of measuring the effectiveness of the management of drinking water supply systems. Bacteriological monitoring of the water assesses whether the microbiological risk associated with the supplied water has been adequately managed.

The determination of the bacteriological compliance of a drinking water supply system depends on collecting sufficient appropriate microbiological samples and assessment of the results. For a water supply system to be assessed as compliant, greater than 98 per cent of tested samples should be free of

*E. coli* as prescribed in the DWQG. Water suppliers must sample and test drinking water from their drinking water supplies in accordance with the sampling requirements prescribed in the ADWG and the DWQG. Sufficient samples and appropriate frequency of sampling demonstrate that monitoring is representative of the water provided to consumers throughout the year.<sup>1</sup>

### ① Drinking water guidelines

The Australian Drinking Water Guidelines (ADWG) and the Tasmanian Drinking Water Quality Guidelines 2015 (DWQG)

During 2017-18, the DoH found that TasWater had adequately monitored all 64 of its water supply systems in compliance with the required sampling frequency specified in the ADWG and DWQG.

The DoH considered 56 of TasWater's 64 public drinking water supply systems to be bacteriologically compliant (88 per cent). The eight remaining water supply systems (12 per cent) that were non-compliant were: Bronte Park (25 people), Cornwall (83), Gladstone (147), Gormanston (31), Gretna (136), Herrick (47), Judbury (265) and Mathinna (154).

Table 5.1 compares the level of compliance, non-compliance and unknown compliance (due to insufficient sampling) from 2013-14 to 2017-18. The highest level of compliance during this period was achieved in 2017-18.

Comparisons of years prior to 2015-16 should be undertaken with caution due to the changed methodology for determining bacteriological compliance in water supply systems that have not met their required sampling frequency. Prior to 2015-16, any water supply system that was not sufficiently sampled was classified as of unknown compliance. From 2015-16 onwards, by assuming that all missing samples were non-compliant (ie a worst-case scenario) most of these supply systems would be assessed as compliant, rather than of unknown compliance. However, this alternative assessment was not required in 2017-18 as TasWater took the required number of samples across all supply systems.

The 2017-18 data was for a smaller number of water supply systems and therefore Table 5.1 has been modified from previous reports to give a percentage of the total number of systems to aid in comparison with previous years.

<sup>1</sup> Information about the quality of each drinking water supply can be obtained from the DoH Annual Drinking Water Quality Report or from water quality reports published by TasWater.

Table 5.1 Bacteriological compliance of drinking water supply systems

Bacteriological compliance	2013-14	2014-15	2015-16	2016-17	2017-18
Compliant (no. / percentage)	67 (76)	63 (72)	66 (76)	71 (82)	56 (88)
Non-compliant (no. / percentage)	20 (23)	15 (17)	20 (23)	16 (18)	8 (12)
Unknown compliance (no. / percentage)	1 (1)	10 (11)	1 (1)	0	0

TasWater uses bacteriological compliance data to identify and manage risks of water supply systems. These risks are intended to be addressed by TasWater commissioning the capital projects required to provide permanent improvements to the bacteriological quality of these water supply systems.

Key projects under the Regional Towns Water Supply Program aim to address many of the issues with non-compliant water supply systems and to improve the overall level of compliance across the State. TasWater progressed this work during 2017-18, and by the end of the first quarter of the next reporting period (2018-19) only one boil water alert remained (Gormanston).

#### 5.4.1 Incidence of boil water alerts

In accordance with the DWQG issued under the *Public Health Act 1997*, when water samples indicate non-compliance (eg *E.coli* are detected), TasWater must undertake immediate corrective actions to minimise the public health risk. Most commonly, the source of the contamination is quickly identified, and the contamination removed or treated. At other times a more extensive investigation is required, and a temporary boil water alert is issued to protect the public from the risk of water contamination in the meantime.

##### ① Boil water alerts (BWAs)

When a boil water alert is issued, water should be brought to a rolling boil and then cooled to room temperature or below before drinking or use in food preparation. Boiling the water kills pathogenic bacteria, viruses and protozoa.

Permanent boil water alerts are issued for water supply systems that are subject to contamination from various environmental sources and where there is inadequate or no water treatment process in place. In these instances, consumers need to act to protect themselves from the hazards of potentially contaminated water.

Temporary boil water alerts are used to manage well defined time-limited (usually short term) events. If the source of contamination or risk cannot be addressed within three months, the status is changed to a permanent boil water alert, and additional criteria must be met before the alert can be lifted.

Of the Tasmanian water supply systems which operated under a permanent boil water alert in 2017-18, most had no water treatment processes (such as disinfection by chlorination) in place to reliably protect the public from risks posed by any episodic contamination.

At the end of 2017-18, nine of TasWater's public drinking water supply systems operated under a permanent boil water alert because they did not receive any water treatment or significant public health risks were identified that could not be mitigated by their respective treatment barriers. These water supply systems collectively supplied water to around

0.4 per cent of the Tasmanian population receiving a reticulated supply<sup>2</sup>. Of these nine water supply systems, four were raw water supplies where no treatment was provided and five were treated with disinfection only.

Three water supply systems operated on a temporary boil water alert owing to varied compliance with the microbiological standards or the identification of potential risks to public health. A summary of the three instances of temporary boil water alerts is presented in Table 5.2 below.

Table 5.2 Summary of drinking water non-compliances, 2017-18

Date	Water supply affected	Action	Status
31/10/2017	Risdon Vale	A temporary BWA was issued. Remedial actions included flushing and scouring the affected system, isolating the Risdon Brook Reservoir for inspection and cleaning.	BWA removed on 2/11/2018
28/12/2017	Mole Creek	A temporary BWA was issued.	BWA removed on 1/1/2018
25/4/2018	South Hobart	A temporary BWA was issued for the Arthur Street water system which supplies south, west and north Hobart. An open valve allowed unchlorinated water to flow from the Upper Reservoir to the reticulated system. Flushing and dosing of the system was carried out.	BWA removed on 27/4/2018

These three water supplies affected approximately one per cent of the Tasmanian population receiving a reticulated water supply. All were fully treated supplies. All these temporary boil water alerts were removed within one week after TasWater demonstrated that appropriate intervention had occurred, and the water was safe for consumption. None of these temporary boil water alerts remained in place at the end of the reporting period.

Table 5.3 compares the number of water supply systems which operated with permanent or temporary boil water alerts between 1 July 2013 and 30 June 2018. As at 30 June 2018, there were only nine drinking water supplies with a permanent boil water alert in place.<sup>3</sup> This is a large decrease in the number reported in 2016-17 due to the implementation of the Regional Towns Water Supply Program.

Table 5.3 Boil water alerts (number of water supply systems)

Alert type	2013-14	2014-15	2015-16	2016-17	2017-18
Temporary boil water alerts	6	5	7	3	3
Permanent boil water alerts	19	16	18	21	9

<sup>2</sup> Throughout this chapter, 'reticulated water supply' refers to reticulated water supply systems operated by TasWater. There are a small number of private reticulated water supply systems in Tasmania that are not operated by TasWater and are not subject of this report.

<sup>3</sup> All boil water alerts were removed by 14 August 2018, with the exception of Gormanston, which remained on a boil water alert until February 2019 when it transitioned to a public health alert following the detection of elevated levels of lead.

### 5.4.2 Population receiving bacteriologically compliant reticulated water

Approximately 91 per cent of Tasmanians<sup>4</sup> receive their drinking water from a public drinking water supply system.

During 2017-18, 0.2 per cent of the Tasmanian population supplied with water from a reticulated water supply received drinking water that was bacteriologically non-compliant. This affected 888 people out of the estimated serviced population of 476 505.<sup>5</sup>

## 5.5 Chemical compliance of water supply systems

During 2017-18, TasWater adequately monitored 61 of 64 water supply systems for chemical contaminants. The exceptions were Lake Barrington (2 490 people), Tullah (226) and Ringarooma (1 209). The required number of chemical samples were not taken for these three water supply systems and therefore have been classified as of unknown compliance. In the samples that were taken within these three supply systems, contaminants did not exceed the health related guideline values.

Health related guideline values are conservative and incorporate a range of safety factors that err on the side of caution to protect public health. Guideline values represent the maximum allowable concentration of a chemical that would not result in any significant risk to the health of the consumer over the consumer's lifetime. For most parameters, intermittent exceedances of guideline limits do not harm health.

Seven of TasWater's water supply systems had chemical contaminants detected above the ADWG health guideline during 2017-18.

Table 5.4 shows the number of water supply systems that had chemical contaminants detected above the ADWG health guideline values between 1 July 2013 and 30 June 2018.

Table 5.4 Number of water supply systems exhibiting chemical non-compliances

	2013-14	2014-15	2015-16	2016-17	2017-18
Chemical non-compliances	14	14	13	10	7

During 2017-18, temporarily elevated levels of lead were detected in one water supply system (Zeehan (1 008 people)). One water supply system (Rosebery (811)) had temporarily elevated levels of mercury detected. Five water supply systems Colebrook (208), Coles Bay (204), Conara (133), Ellendale (169) and Epping (54) were detected with temporarily elevated levels of disinfection by-products. In all cases, remedial action was taken by TasWater and re-sampling of the water supply showed that contaminants had returned to acceptable levels.

<sup>4</sup> Connection data provided by TasWater is normalised through the estimated occupancy rate for each water supply area as sourced from the ABS website through population data.

<sup>5</sup> These estimates exclude visitors to the State. In 2017-18, there were 1.3 million visitors to Tasmania, a very large percentage of whom would have consumed water supplied by TasWater.

### 5.5.1 Incidence of Public Health Alerts

Public health alerts (do not consume notices) are put in place when non-compliant water is detected that cannot be rendered safe by boiling. One water supply system operated under a public health alert at the end of 2017-18 (Rossarden).<sup>6</sup> This alert affected 104 people.

Table 5.5 shows the number of water supply systems operating under a public health alert between 1 July 2013 and 30 June 2018. There were no new public health alerts issued during 2017-18, and the public health alert on the Avoca and Winnaleah supplies were lifted after changes in supply arrangements that provided compliant drinking water to customers. The Pioneer water supply system was removed from the serviced land layer following a service replacement program, and is no longer a water supply system.

Table 5.5 Number of water supply systems operating under a public health alert

	2013-14	2014-15	2015-16	2016-17	2017-18
Public health alerts	3	5	5	4	1

### 5.5.2 Population receiving chemically compliant reticulated water

In 2017-18, 98 per cent of the Tasmanian population serviced by a reticulated water supply system received drinking water that was chemically compliant throughout the year. The two per cent of the Tasmanian population receiving drinking water that was chemically non-compliant was a significant decrease from the 12 per cent reported in 2016-17. This decrease is largely due to improvements in treatment and supply processes and more comprehensive monitoring programs.

## 5.6 Fluoridation of public drinking water supply systems

Natural fluoridation of water occurs when fluoride compounds dissolve in water as it passes through rocks and soil. Tasmania's natural water supplies are comparatively low in fluoride, so fluoridation of drinking water is used to adjust the level of fluoride in the water to a level considered safe and effective in reducing tooth decay.

The widespread fluoridation of water in Tasmania is conducted in accordance with the *Australian National Oral Health Plan 2015-2024* which advocates water fluoridation of public water supplies for communities across Australia with populations of 1 000 or more. In Tasmania, fluoridation of public water supplies has been achieved in all communities of greater than 1 000 that currently receive a reticulated public water supply. Only Tasmania, the Australian Capital Territory and the Northern Territory have achieved this significant outcome.

Tasmania was the first jurisdiction to fluoridate a public drinking water supply (Beaconsfield in 1953). Under the *Fluoridation Act 1968*, the Minister for Health directs TasWater (based on recommendations from the Fluoridation Committee) to fluoridate specific public water supplies in a prescribed manner. TasWater must monitor the level of fluoride in drinking water daily.

<sup>6</sup> This public health alert was lifted in August 2018.

### 5.6.1 Fluoridation compliance

Of the Tasmanian population receiving a reticulated water supply, 98 per cent receive fluoridated water.<sup>7</sup>

Under the *Fluoridation (Interim) Regulations 2009* in place in 2017-18, the fluoride concentration range required in the drinking water supply (to achieve optimum tooth decay prevention) was 0.8 to 1.2 milligrams per litre (mg/L) whilst the maximum level of fluoride allowed in the water (the maximum level specified in the ADWG) is 1.5 mg/L. The *Tasmanian Code of Practice for Fluoridation of Public Water Supplies (2007-10)* prescribes a compliance level of 90 per cent (ie 90 per cent of all daily readings must fall within the required concentration range). Compliance is assessed against each fluoridation system (dosing station where the fluoride is added to the drinking water) rather than as an overall water supply system configuration, as is done for the microbiological and chemical compliance assessments.

In 2017-18, there were 38 fluoridation systems in operation throughout the State servicing 36 of the 64 water supply systems. Thirty seven of the 38 fluoridation systems maintained an average fluoride level within the required fluoride concentration range.<sup>8</sup> This was an increase on the compliance reported in 2016-17. The non-compliant fluoridation system, including its average fluoride concentration, was Swansea (0.18 mg/L), which was providing less than the required annual average fluoride level.

Table 5.6 shows fluoridation compliance between 1 July 2013 and 30 June 2018. In 2017-18, 99.8 per cent of Tasmanians receiving a fluoridated reticulated water supply received water with an average fluoridation concentration within the prescribed range of 0.8 to 1.2 mg/L.

Table 5.6 Fluoridation compliance (per cent of serviced population)

	2013-14	2014-15	2015-16	2016-17	2017-18
Fluoridation compliance	99	97	100	82	100 <sup>9</sup>

Of the 38 fluoridated systems, 33 achieved compliant fluoride concentrations for at least 90 per cent of the time in 2017-18. These systems provided fluoridated water to approximately 98.3 per cent of the Tasmanian population who receive reticulated water. This is a very large improvement from 2016-17 when only 64 per cent of the serviced population received compliant fluoridated water. The non-compliant fluoridation systems, together with the percentage of samples within the range, were Bicheno (89.6%), Greater Hobart – National Park (81.6%), Scamander (85.1%), Swansea (3.2%) and Leven River (88.6%).

During 2017-18, there were no instances where a fluoride concentration exceeded the ADWG health-related guideline value of 1.5 mg/L.

<sup>7</sup> TasWater is wholly responsible for the operation and maintenance of fluoridation systems and is obliged under the Fluoridation Act to fluoridate the drinking water when directed to do so.

<sup>8</sup> All daily fluoride samples (both treated and distribution) are averaged over a 12 month period to result in a yearly fluoride average against which compliance is assessed.

<sup>9</sup> Determined to be 99.8 per cent, rounded to the nearest whole number and reported as 100 per cent.

## 6 ENVIRONMENT

This Chapter reports on the performance of TasWater's sewage treatment plants (STPs) including effluent and biosolids re-use and their environmental impact on waterways.

### 6.1 Sewerage schemes

For the purposes of this Chapter, only the performance of the 79 Level 2 STPs operated by TasWater is assessed.

The EPA's analysis of the performance of individual STPs operated by TasWater during 2017-18 can be found in Appendix 2.

As shown in Table 6.1, 13 of TasWater's Level 2 STPs received annual inflows of more than 1 000 ML for 2017-18. These STPs accounted for approximately 70 per cent of total inflow to level 2 STPs. Most of these service major urban areas and/or accept large volumes of industrial sewage. In 2017-18, Ti-Tree Bend was the largest STP by inflow volume in the State.

#### ① Sewage treatment plants (STPs)

The information in this section does not extend to Level 1 STPs, which have a design capacity of less than 100 kilolitres per day and continue to be regulated by local government (councils), or STPs operated by bodies other than TasWater.

Table 6.1 Tasmanian STPs with annual inflows exceeding 1 000 ML/year

Premises name	Catchment area	Total flow 2016-17 ML/year	Total flow 2017-18 ML/year
Ti-Tree Bend	Launceston	5 805	5 540
Pardoe	Devonport	5 922	5 158
Macquarie Point	Hobart	4 016	3 952
Selfs Point	Hobart	3 756	3 586
Prince of Wales Bay	Glenorchy	3 035	2 827
Ulverstone	Ulverstone	3 793	2 689
Round Hill	Burnie	2 662	2 299
Rosny	Clarence	2 302	2 268
Cameron Bay	Glenorchy	1 854	1 803
Wynyard	Wynyard	1 734	1 519
Blackmans Bay	Kingston	1 507	1 470
Smithton	Smithton	1 558	1 271
Newnham Drive	Launceston	1 170	1 092

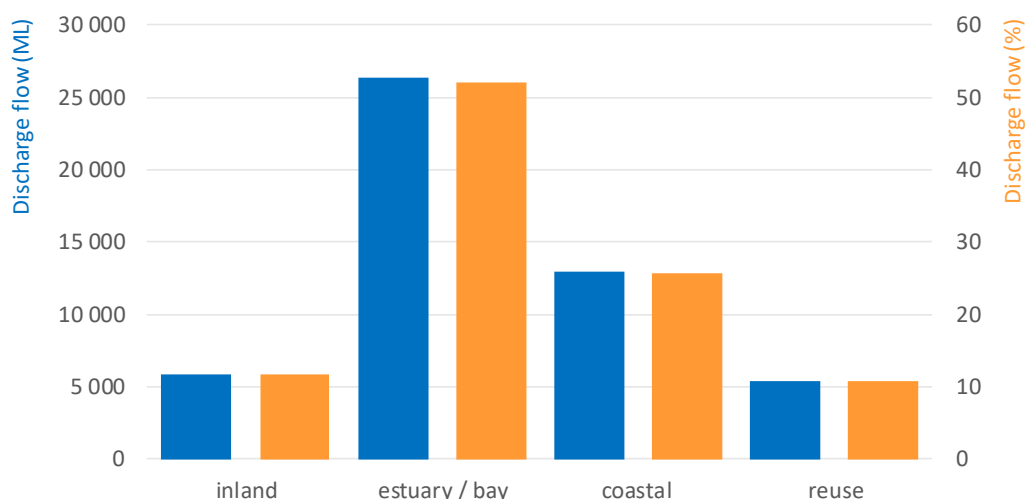
## 6.2 Outfalls to the environment

Sewage treatment plants discharge to inland, estuarine and marine (coastal) environments. The type of receiving environment provides an initial indication of environmental sensitivity and capacity to cope with pollutants.

Of the 79 Level 2 STPs operated by TasWater during 2017-18, 13 were classified as marine discharge, 31 as estuarine or bay discharge and 35 as inland waters discharge. Not all of these STPs actually discharged to water in 2017-18. Thirteen plants achieved full re-use of effluent and did not discharge any treated effluent to receiving waters.

Figure 6.1 shows the volume and percentage of treated effluent discharged by Level 2 STPs during 2017-18, categorised by receiving environment. This has remained relatively unchanged over recent reporting periods.

Figure 6.1 Sewage discharge by receiving environment 2017-18 (ML/year; percentage of flow)



Of the total volume of effluent discharged to waterways, most was discharged to estuarine waters (26 329 ML or 52.0 per cent), followed by discharge to coastal waters (12 998 ML or 25.7 per cent) and inland waters (5 870 ML or 11.6 per cent). 5 418 ML (or 10.7 per cent) of effluent was re-used.

There are significant regional differences in the receiving environment, reflecting population settlement differences. Discharges in the southern and northern regions of the State are predominantly to the Derwent and Tamar estuaries respectively, with smaller volumes to inland watercourses. In the north-western region, discharges are predominantly to coastal environments. The majority of treated effluent re-use occurs in the south of Tasmania. The Clarence, Brighton and Penna effluent re-use schemes together accounted for 65 per cent of the total volume of effluent re-used in 2017-18.

## 6.3 Sewage treatment plant compliance

The level of compliance with discharge limits stipulated by the EPA for STPs is an important measure of environmental performance.

In Tasmania, regulatory discharge limits for Level 2 STPs are specified in the environmental conditions issued for each facility by the EPA. Discharge limits vary depending on the sensitivity of the receiving environment and the volume of discharge.

STP performance is also evaluated against Accepted Modern Technology (AMT) limits. AMT limits represent a theoretical but stable benchmark. While AMT limits are not binding, the degree to which they are met is an indicator of performance over time.

Section 6.3.1 examines compliance against current regulatory limits, while performance against theoretical AMT limits is examined in section 6.3.2.

### ① Discharge limits

Environmental conditions for many STPs have been updated over the past years via the issue of new Environment Protection Notices (EPNs) - a process that is continuing. While the majority of these EPNs contain interim discharge limits based on the 90<sup>th</sup> percentile of recent performance, the next phase of EPNs will introduce limits that reflect the assimilative capacity of the receiving environment and are commensurate with contemporary standards. This process will ultimately provide a more consistent and relevant benchmark for STP compliance.

Compliance has been calculated for TasWater as a single entity since its formation in July 2013. Previously, compliance was calculated separately for the three regional water and sewerage corporations. Back calculations of compliance on a state-wide level for the period prior to July 2013 provide a baseline against which TasWater's compliance can be compared.

Calculations and charts in this section are based on analysis of effluent quality monitoring data held by the EPA.

Compliance is assessed for each parameter for which a limit is specified by determining the number of scheduled samples that complied with the specified limit as a percentage of the total number of scheduled samples analysed in the reporting period. Compliance percentages for all parameters are combined to provide one overall compliance figure for each STP. To account for STPs of varying hydraulic capacities, the flow-weighted average of individual STP compliance is used to calculate TasWater's overall compliance.

If both land-based and water-based discharge limits exist for a STP, compliance is assessed separately against each limit, provided an adequate monitoring data set is available. To calculate the overall compliance, only flows directed to the respective receiving environments (ie waters vs re-use) are taken into account.

The discharge to waters compliance figure for STPs with full re-use has relevance as an indicator of the likely discharge quality for potential future discharge events. For this reason, discharge to waters compliance for full re-use STPs with authorised discharge points to water is presented in the compliance assessment for individual STPs in Appendix 2, despite the fact that discharge may not have occurred in the reporting period.

### 6.3.1 Compliance with current discharge to waters limits

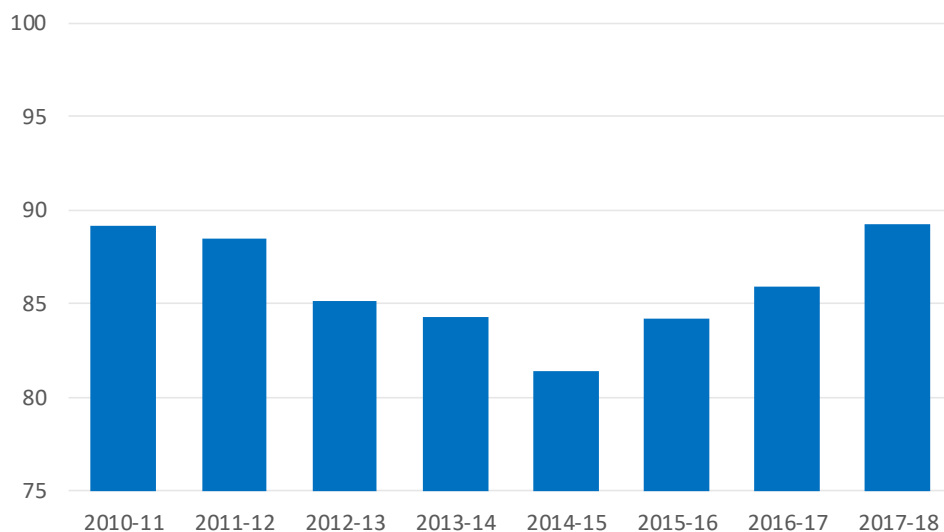
This section assesses compliance with regulatory discharge to waters limits. STPs with insufficient datasets or those without regulatory discharge to waters limits are excluded. In 2017-18, only full re-use STPs without discharge to water authorisation were excluded. 66 out of TasWater's 79 Level 2 STPs contributed to the flow-weighted discharge to waters compliance measure for 2017-18.

Figure 6.2 shows compliance against discharge to waters limits over time. In 2017-18, TasWater achieved 89.2 per cent compliance with regulatory discharge to waters limits, continuing the upward trend since 2014-15. The 2017-18 level of regulatory compliance exceeded the compliance level of 85.2 per cent recorded for 2012-13, prior to TasWater's formation.

#### ① Compliance Calculations

Effluent compliance can be calculated in a number of ways. The EPA uses an independent limits calculation where each testing parameter is assessed for compliance and the results aggregated. This approach allows a more detailed analysis of non-compliant parameters within a monitoring program. Up to 2016-17, TasWater used a linked limits calculation where all parameters must be compliant before the sample is considered compliant. The linked limits approach is more stringent and leads to lower state-wide compliance results. From 2017-18 onwards, TasWater also uses the independent limits calculation, making the results of this report and TasWater's reporting directly comparable.

Figure 6.2 Compliance against discharge to waters regulatory limits (per cent)



Compliance levels are further illustrated in Table 6.2. In 2017-18, 14 of TasWater STPs were classified as substantially non-compliant (ie 75 per cent or less compliant), up from 12 STPs in this category in 2016-17. Of these 14 STPs, ten STPs actually discharged treated effluent to water. The other four STPs with low compliance levels discharged all effluent to re-use, thereby diverting pollutant loads away from waterways towards beneficial uses.

Compared with 2016-17, compliance performance against regulatory discharge to water limits improved for 35 STPs, amongst these nine of the 13 largest STPs. Seven of the 'Big 13'<sup>1</sup> plants achieved compliance of more than 90 per cent in 2017-18, compared to four in 2016-17. This improvement is only partly due to improvements in treatment performance. Changes to

<sup>1</sup> Refers to the 'Big 13' strategy targeting performance improvements for TasWater's largest STPs by volume, discussed in Chapter 8.

regulatory discharge limits occur as part of progressive updating of permits and EPNs towards contemporary standards and can occasionally result in increased regulatory limits compliance. During 2017-18, Ulverstone STP was issued with new, contemporary permit conditions. The new conditions reflect a more appropriate monitoring location and more stringent limits. This resulted in an increase in flow weighted compliance level of around two per cent. The performance of Smithton STP, another 'Big 13', dropped significantly but is expected to recover following major desludging operations that commenced during 2017-18.

Table 6.2 Number of STPs by compliance category (regulatory limits)

	2013-14	2014-15	2015-16	2016-17	2017-18
>90% compliance	25	22	24	30	33
>75 - 90% compliance	30	29	31	30	27
>50 - 75% compliance	15	15	12	8	11
≤50 % compliance	5	5	5	4	3

Table 6.3 shows the three STPs with 50 per cent or less compliance against regulatory discharge to water limits in 2017-18. Bridport and Port Sorell are lagoon systems. As in past reporting periods, Bridport STP struggles to achieve compliance with its stringent AMT discharge limits and is subject to high seasonal loading due to summer visitation. Sludge surveys in past years confirmed significant sludge accumulations within treatment lagoons at Port Sorell STP, which may be impacting on performance. Desludging operations at Port Sorell reported for 2016-17 did not result in sufficient sludge removal to restore treatment capacity. Further planned desludging may lead to improved performance outcomes in the future for this STP. Sorell STP also demonstrated low compliance with newly issued, stricter discharge limits to water. However, the actual volume discharged to water was minor as in excess of 99 per cent of treated effluent was discharge to beneficial re-use on land.

Table 6.3 STPs with 50 per cent or less compliance against discharge to waters limits

STP	Limit type	Number of limits assessed	Compliance (%)
Bridport <sup>1</sup>	Max/Min	9	43.5
Port Sorell <sup>1</sup>	Max	4	37.5
Sorell	Max/Min	12	47.3

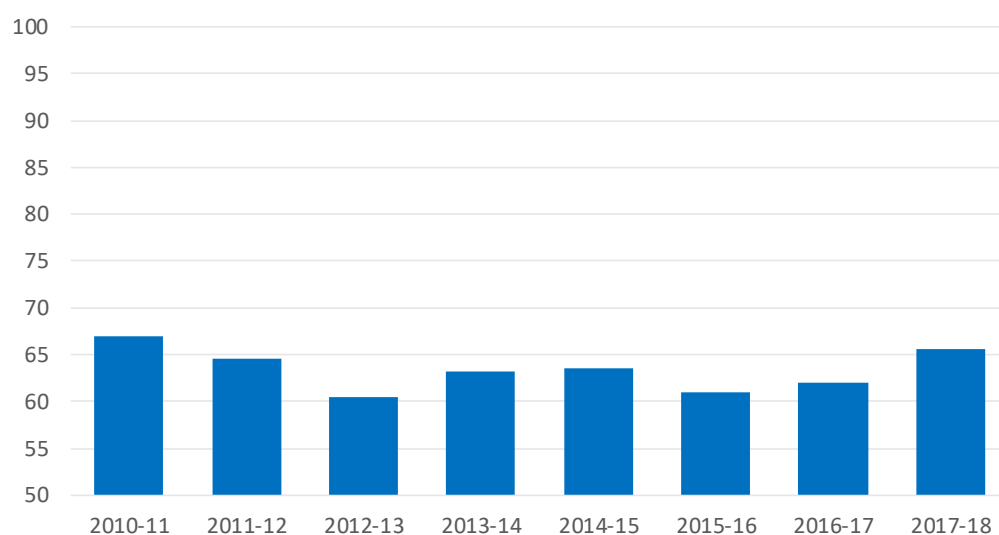
Notes: 1. Indicates consecutive years of 50 per cent or less compliance.

### 6.3.2 Performance against AMT discharge to waters limits

The limits adopted for the analysis in this section represent AMT standards contained in the *Emission Limit Guidelines for Sewage Treatment Plants* (DPIPWE, 2001). AMT limits, which differentiate between fresh water and marine receiving environments, incorporate stringent nutrient reduction standards. While AMT limits generally reflect expected performance at a tertiary treatment level, most sewage in Tasmania is currently treated to a secondary level only.

Figure 6.3 shows performance of TasWater's Level 2 STPs against AMT limits as a time series.

Figure 6.3 Performance against AMT discharge to waters limits (per cent)



Performance against the AMT limits benchmark has been relatively stable over time. The 2017-18 performance level of 65.5 per cent of flow-weighted sample compliance reflects a continuation of the upwards performance trend of recent years and is the highest flow weighted compliance level against AMT limits since the formation of TasWater in July 2013.

The AMT category distribution in Table 6.4 below shows improvement in the highest compliance category when compared with past reporting periods, with twelve STPs represented in the greater than 90 per cent category in 2017-18. One of the two additional plants achieving more than 90 per cent compliance with the AMT performance benchmark is the 'Big 13' Round Hill STP in Burnie.

Table 6.4 Number of STPs by performance category (AMT limits)

	2013-14	2014-15	2015-16	2016-17	2017-18
>90% compliance	7	9	9	10	12
>75 - 90% compliance	13	8	9	15	14
>50 - 75% compliance	38	39	33	34	30
≤50 % compliance	19	17	23	15	19

TasWater's overall flow weighted performance against AMT limits of 65.5 per cent increased notably compared with the 2016-17 figure of 62.0 per cent. Similar considerations to those explained above related to regulatory compliance also apply to AMT limits compliance. An estimated 1.8 percentage points of the increase can be attributed to regulatory changes for Ulverstone STP. Even allowing for this effect, the 2017-18 flow weighted performance against AMT benchmark limits is the highest achieved since 2010-11.

### 6.3.3 Summary of discharge to waters limits compliance

TasWater's flow-weighted compliance against regulatory discharge to waters limits continued its upwards trend with a lift from 85.9 per cent in 2016-17 to 89.2 per cent in 2017-18. Flow-weighted performance against AMT limits improved from 62.0 per cent in 2016-17 to 65.5 per cent. Despite some compliance gain being the result of regulatory changes, there is an underlying upwards trend in overall flow-weighted compliance for both the regulatory discharge limits and AMT benchmark measures over the past three reporting periods.

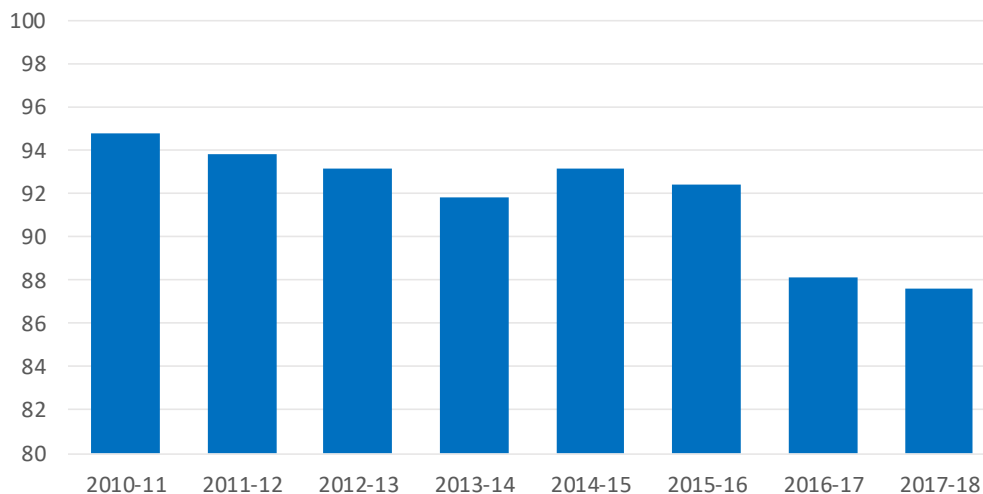
Table A2.1 and Figures A2.1 to A2.2 in Appendix 2 show compliance with regulatory limits and AMT limits for each individual STP.

### 6.3.4 Compliance with discharge to land limits

This section assesses the levels of compliance reported for discharge to effluent recycling schemes which utilise treated effluent generated by Level 2 STPs. Effluent recycling schemes operated during the reporting period were generally required to comply with 'Class B'<sup>2</sup> quality standards (as outlined in the *Environmental Guidelines for the Use of Recycled Water in Tasmania* (DPIWE, 2002)).

TasWater's flow-weighted performance against 'Class B' re-use limits was 87.7 per cent in 2017-18, a drop from 88.1 per cent compliance recorded for 2016-17.

Figure 6.4 Compliance with 'Class B' discharge to land limits (per cent)



Lower overall flow weighted compliance performance is influenced by ongoing low biochemical oxygen demand sample compliance at Rosny STP. TasWater and EPA have been working together to resolve this issue, which continued from the 2016-17 period. Rosny STP provides the largest single volume contribution (24 per cent in 2017-18) to the effluent re-used from Level 2 STPs in Tasmania.

<sup>2</sup> The EPA's assessment is against 'Class B' Recycled Water quality with an adjusted pH range of 5.5 – 8.5 and an additional upper limit of 10 000 cfu/100mL thermotolerant coliforms.

Irrigation of treated effluent to land commenced at Smithton STP in 2017-18 and compliance against Class B re-use limits for Smithton is included in the flow weighted compliance assessment for 2017-18. Effluent compliance for Smithton against re-use limit expectations was low (60 per cent) and further reduced overall compliance. Sludge removal from the Smithton sewage lagoons started in late 2017, and is expected to result in improved effluent quality and improved compliance results in the future.

One STP (St Marys) achieved less than 50 per cent compliance with Class B re-use limits in 2017-18, continuing a trend of declining compliance for this STP over recent years. Five STPs reported up to 75 per cent compliance and eleven STPs reported up to 90 per cent compliance with Class B re-use limits. Fourteen STPs achieved compliance above 90 per cent in 2017-18.

Table 6.5 provides an overview of the distribution of STP compliance against discharge to land limits over recent periods. Despite a reduction in the number of plants in the higher categories in the last three periods, most STPs remain in the two highest categories of compliance with discharge to land limits.

Table 6.5 Number of STPs by performance category (Class B re-use limits)

	2013-14	2014-15	2015-16	2016-17	2017-18
>90% compliance	13	15	10	15	14
>75 - 90% compliance	16	14	15	8	11
>50 - 75% compliance	3	3	7	7	5
≤50 % compliance	0	0	0	1	1

Table A2.2 and A2.3 in Appendix 2 show compliance with 'Class B' re-use limits and re-use proportion for each STP.

### 6.3.5 Public disclosure of sewage treatment plant performance

TasWater is required to submit Annual Environmental Review (AER) reports to the Director, EPA and make these publically available. TasWater provided a single state-wide AER report to the EPA in 2017-18. The report considers all Level 2 STPs and TasWater has therefore satisfied this requirement.

The EPA makes AERs available to the public upon request. Publication of STP performance information in this report is another means of public disclosure, supporting transparency and making TasWater accountable to the community, government and regulators for its environmental performance.

Monitoring data for STPs discharging to estuarine and marine environments is also available from the National Outfalls Database<sup>3</sup>. TasWater makes discharge monitoring results for individual STPs available to the public on request.

<sup>3</sup> Refer to [www.outfalls.info](http://www.outfalls.info) for further details

### 6.3.6 Compliance with EPA requirements

Sections 6.3.1 and 6.3.4 above discuss the level of compliance with regulatory discharge limits to water and Class B re-use limits achieved by TasWater's level 2 STPs. Effluent compliance is one of a number of relevant measures of TasWater's environmental performance. Other measures include the degree of compliance with conditions of permits and EPNs for individual STPs, occurrence of nuisance odours and incident management. Section 8.1 provides further information on the EPA's priorities for improving TasWater's environmental performance.

Incidents with the potential to cause environmental harm originating from STPs or associated sewerage infrastructure can trigger an enforcement response under the provisions of the *Environmental Management and Pollution Control Act 1994*, or the associated regulations.

TasWater received three Environmental Infringement Notices (EINs) for offences that occurred in 2017-18 as follows:

- ❑ depositing a controlled waste as result of a sewage spill at Taroona in November 2017;
- ❑ depositing a controlled waste at Huonville in March 2018; and
- ❑ failure to notify the Director of the Huonville sewage spill incident.

The EPA increased its focus on STP compliance audits during 2017-18. During 2017-18, the EPA undertook 14 audits of compliance with permit and EPN conditions at TasWater STPs. Areas identified for corrective action included:

- ❑ flow meter validation;
- ❑ signage at monitoring locations;
- ❑ maintenance of controlled waste registers; and
- ❑ late submission of monitoring results, reports and plans.

## 6.4 Biosolids re-use

This section reports on the level of re-use of biosolids, which are stabilised organic solids that result from sewage treatment processes.

Re-use involves managing biosolids safely and sustainably to beneficially utilise their nutrient, energy or other values for agriculture (as fertiliser), soil conditioning, mine rehabilitation and other applications.

The re-use proportion can be calculated on the basis of:

$$\frac{\text{Total dry weight (tonnes) of biosolids re-used during the reporting period}}{\text{Total dry weight (tonnes) of biosolids produced during the reporting period}}$$

TasWater reported to the EPA that approximately 14 000 dry solid tonnes (DSTs) of biosolids were produced at Level 2 STPs across Tasmania in 2017-18. Approximately 2 800 DSTs remained stored on STP sites at the end of the reporting period while approximately 13 500 DSTs were beneficially re-used during 2017-18. A minor amount of about 6 DSTs was taken to landfill.

The proportion of the biosolids material beneficially re-used in 2017-18 was 96.7 per cent of the volume generated. Significant biosolids stockpiles at the end of 2017-18 were located at the STPs at Ti-Tree Bend (1 200 DSTs), Smithton (874 DSTs), Stanley (343 DSTs) and Georgetown (300 DSTs).

There was a major increase in the quantity of biosolids produced compared to previous years. This is predominantly due to the desludging of the Smithton lagoons. Over 5 000 DSTs were removed from these lagoons in 2017-18. Desludging at Smithton was completed in September 2018.

Significant sludge accumulations at levels likely to impact on the treatment capacity continue to be evident in a number of lagoon systems. Desludging of lagoons with a high percentage of accumulated sludge is likely to enhance the treatment capacity of a lagoon system.

Section 8.1 provides further information on the EPA's priorities for improvements to TasWater's biosolids management.

An overview of the STPs generating the greatest volumes of biosolids in 2017-18 and associated re-use/management practices is provided in Table 6.6 below.

Table 6.6 Biosolids – major volumes generated and re-use percentage in 2017-18

STP Name	Biosolids generated (dry solid tonnes / year)	Biosolids beneficially re-used (dry solid tonnes / year)	End use / purpose	Biosolids re-used (%)
Ti-Tree Bend	3 831	4 331	Ti-Tree Bend STP generates significant volumes of biosolids at the premises as well as receiving additional material from other STPs.  1 200 DSTs of sewage sludge remained stockpiled at the STP premises at the end of 2017-18, down from 1700 DST at the end of 2016-17. The remainder was beneficially re-used on agricultural land. The reduction in stockpiled biosolids results in a re-use percentage in excess of 100% for 2017-18 for this site.	113%
Smithton	5 076	4 202	Biosolids removed from the Smithton lagoon STP were beneficially re-used on agricultural land. A stockpile remained at the end of 2017-18 reporting period. This is expected to be re-used during 2018-19.	83%
Selfs Point	723	723	Biosolids generated at Selfs Point STP were beneficially re-used on agricultural land.	100%
Prince of Wales Bay	470	470	Biosolids generated at Prince of Wales Bay STP were composted prior to beneficial re-use.	100%
Rosny	409	409	Biosolids generated at Rosny STP were beneficially re-used on agricultural land. A small percentage of biosolids were composted prior to beneficial re-use.	100%
State-wide (TasWater) total	13 978	13 518	Material removed from the treatment system which remains stockpiled at the premises is counted as generated but not re-used. 2790 DST of biosolids remained stored at STP sites at the end of 2017-18, up from 2336 DSTs at the end of 2016-17.  Composted sewage sludge is counted as beneficially re-used if the end product is used in accordance with the relevant definition in the <i>Tasmanian Biosolids Re-use Guidelines</i> (1999). Stockpiles from previous reporting periods are not counted in biosolids generated.	96.7%

## 6.5 Net greenhouse gas emissions

This section reports on the impact of water and sewerage activities on greenhouse gas emissions. It is important not to consider a single indicator in isolation, but rather to look at the total environmental footprint arising from water and sewerage activities. For example, increased sewage treatment levels can provide water quality benefits but will also consume additional energy, resulting in greater net greenhouse gas emissions.

In 2017-18, TasWater's total net greenhouse gas emissions were estimated around 37 088 tonnes CO<sub>2</sub>-equivalents (CO<sub>2</sub>e) or an average of 179 tonnes produced per 1 000 properties. Greenhouse gas emissions categorised into water and sewerage related operations are provided in Table 6.7.

The quality and accuracy of the data reported to date is low. It is known that, on a per 1000 properties basis, sewerage-related operations produce a higher volume of CO<sub>2</sub>e compared to water treatment operations due to the nature of STPs and the production of nitrous oxide and methane through sewage processing.

**Table 6.7 Volume of greenhouse gases produced by TasWater (CO<sub>2</sub>-equivalent)**

	Water-related operations		Sewerage-related operations	
	CO <sub>2</sub> e (tonnes)	CO <sub>2</sub> e (per 1 000 properties)	CO <sub>2</sub> e (tonnes)	CO <sub>2</sub> e (per 1 000 properties)
2013-14	8 888	44.3	25 433	145.4
2014-15	9 786	48.8	21 697	123.0
2015-16	9 873	48.8	22 646	127.3
2016-17	9 129	44.5	21 856	121.6
2017-18	11 438	55.2	24 535	135.3

TasWater's net greenhouse gas emissions were significantly below those reported by similar utilities on the mainland, which typically average around 240 tonnes CO<sub>2</sub>e produced per 1 000 properties.<sup>4</sup>

TasWater did not trigger the 50 000 tonnes CO<sub>2</sub>-equivalent per facility reporting threshold under the *National Greenhouse and Energy Reporting Act 2007* (Cwlth).

TasWater is not required to report greenhouse gas emissions directly to the EPA under the stipulated environmental conditions for STPs.

<sup>4</sup> Bureau of Meteorology, *National performance report: urban water utilities* (indicator E12).

## 7 PRICING AND FINANCE

This Chapter looks at factors affecting the cost of water and sewerage services for households. It also provides an overview of TasWater's financial performance for 2017-18.

For 2017-18, TasWater's prices must comply with the Economic Regulator's *Tasmanian Water and Sewerage Corporation Pty Ltd, Water and Sewerage Services Price Determination, 1 July 2015 – 30 June 2018* and the decisions in the Economic Regulator's *2015 Price Determination Investigation – Regulated water and sewerage services in Tasmania – Final Report*, May 2015.

### 7.1 Pricing

State-wide pricing applies for water and sewerage services in Tasmania. Residential tariffs and tariffs for smaller businesses are generally made up of:

- ❑ a fixed water service charge based on the size of the water connection to the property;
- ❑ a variable water usage charge based on the metered water usage; and
- ❑ a sewerage service charge based on the number of equivalent tenements (ETs) assessed for each property.

#### ① Equivalent tenements (ETs)

An ET is a classification used in the Water Services Association of Australia Sewer Code to measure the demand a property is expected to place on infrastructure.

#### 7.1.1 Typical residential bills

Table 7.1 shows the components of a residential customer's typical water and sewerage bill based on average consumption and the applicable tariffs.

Annual bills for individual customers may differ from these figures depending on the price each customer is paying relative to the target tariff and the volume of water used.

#### ① Target tariffs

'Target tariffs' are the published prices TasWater charges for water and sewerage services, to which all customers will transition over time.

Table 7.1 Components of typical annual residential customer bill

Component	Charges (2017-18)
Water fixed charge	\$329.48
Water usage charge	102.02c/kL
Average annual residential water use	193 kL
Typical residential bill - water	\$525.92 <sup>a</sup>
Sewerage fixed charge	\$632.24
Typical residential bill - water and sewerage	\$1 158.16 <sup>a</sup>

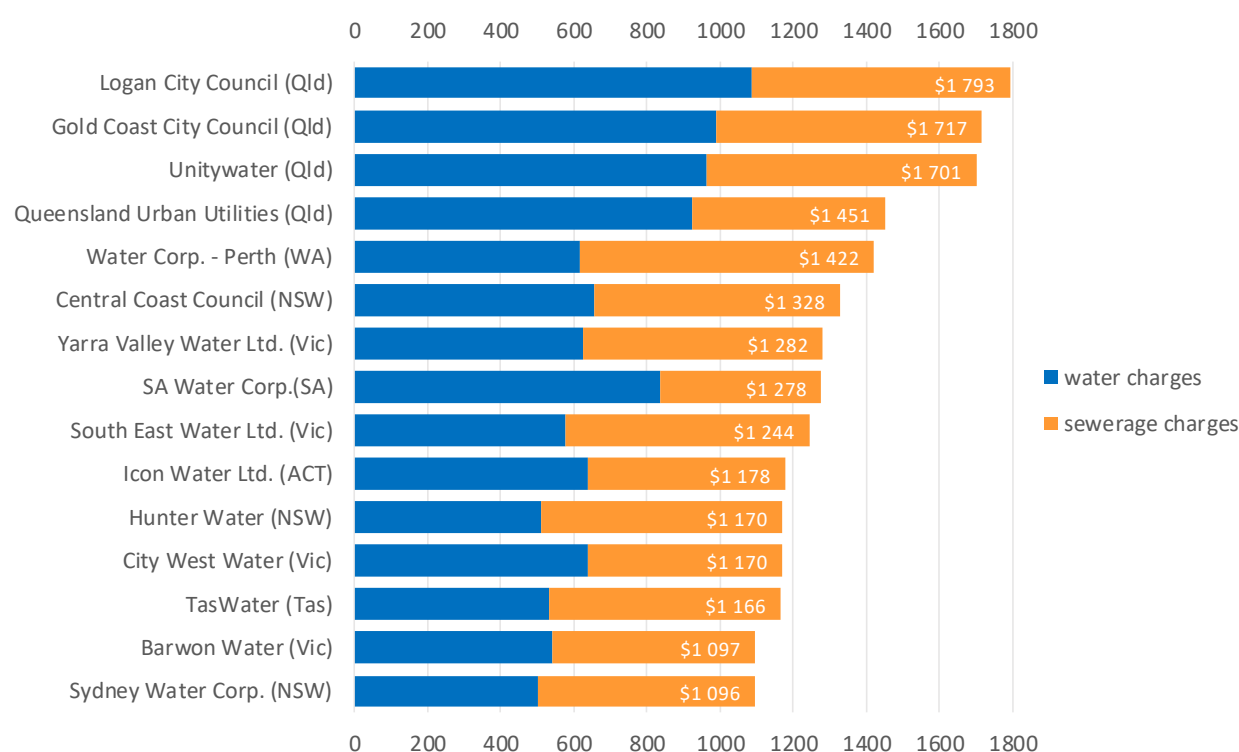
<sup>a</sup> Based on Tasmanian residential average annual consumption of 193kL.

Due to past pricing structures, not all customers are paying the same price for the same service. TasWater has reported that, in the year to 30 June 2018, 9.5 per cent of customers were paying below target tariff for water and 14.5 per cent of customers were paying below target tariff for sewerage services. Based on the current number of connected properties, around 19 670 water customers and 26 300 sewerage customers were paying below target tariffs during 2017-18. Many customers pay below the target tariff for both services.

TasWater estimates that around 7 500 customers would still not be at target tariffs in 2018-19. These customers will continue to transition to regulated target tariffs. Under the Industry Act, the transition of customers to target tariffs is required to be completed by 1 July 2020).<sup>1</sup>

Figure 7.1 provides a comparison of water and sewerage bills for customers of major water utilities (with 100 000 or more customers) across Australia, including TasWater (target tariffs), for a residential customer using 200 kL per annum during 2017-18.<sup>2</sup> The national median residential bill for water and sewerage services was around \$1 280 while a TasWater customer's bill based on the same consumption was the third lowest in this group at \$1 166, or around nine per cent below the national median.

Figure 7.1 Annual bills based on 200kL/pa (water and sewerage), \$ 2017-18



Within this group, Queensland's water utilities are the most expensive. Overall, TasWater customers would be paying around \$114 less per annum than their interstate counterparts, on average, for water and sewerage based on this consumption level. This reflects, in part, the

<sup>1</sup> Under Clause 27.1 of the *Shareholders' Letter of Expectation* TasWater has committed to ensuring that transitioning customers who are currently significantly below target tariffs will reach the target tariffs within the legislated timeframe without facing significant price shocks.

<sup>2</sup> Bureau of Meteorology, *National Performance Report - urban water utilities, 2017-18* (indicator P7).

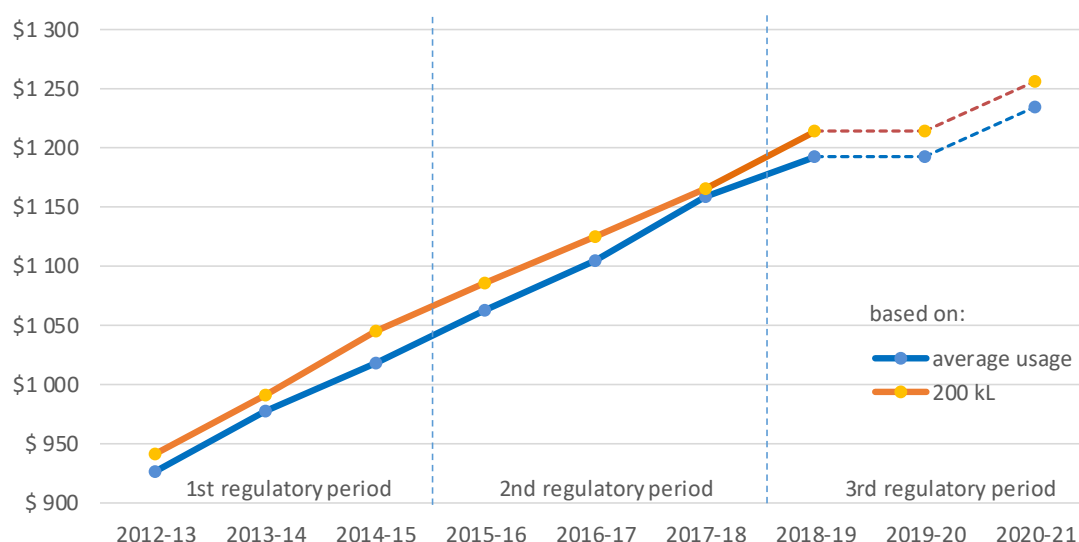
fact that TasWater prices are moving towards full cost recovery and have been constrained by limits on price increases.

Figure 7.2 shows the calculated annual residential bill for TasWater customers based on the target tariffs, average annual usage and 200 kL per annum. Higher household water usage during 2017-18 compared to 2016-17 had little impact on the typical residential bill in 2017-18 while fixed sewerage charges (for 1 ET) rose by six per cent.

From 2016-17 to 2017-18, for a household using 200 kL per year the bill would have risen by 3.6 per cent, to \$1 166. This is consistent with the price increase from 2015-16 to 2016-17.

Over the third regulatory period from July 2018 to June 2021, TasWater decided to apply an increase of 4.1 per cent for 2018-19. Under Clauses 21.5 and 27.1 of the *Shareholders' Letter of Expectations*,<sup>3</sup> TasWater has committed to freeze prices in 2019-20 and cap price increases at 3.5 per cent in 2020-21.

Figure 7.2 Annual residential bill (\$nominal)



Compared to other large utilities nationally, TasWater's fixed water charges are notably high, with the mainland charge typically around \$200 per property.<sup>4</sup> As a percentage of total water and sewerage bills, TasWater's fixed water charges (\$329.48) represent 28 per cent of the total bill while the fixed water charges of mainland providers are typically around 15 per cent of the total.

Conversely, TasWater's usage charges are significantly less than those charged by mainland utilities, whose higher usage charges (around \$2.50 per kL compared to TasWater's \$1.02 per kL) reflect higher variable costs and the consequential priority to encourage efficient water use. For example, many mainland utilities have inclining block tariff structures for water, with usage charges rising to over \$3.00 per kL. This difference in pricing reflects the fact that Tasmania does not typically experience water shortages or require very high cost water treatment plants to ensure water supply water for urban use.

<sup>3</sup> Under the *Water and Sewerage Corporation Act 2012*, a copy of which can be found at <https://www.taswater.com.au/About-Us/Governance-and-Policies>

<sup>4</sup> Bureau of Meteorology, *National Performance Report - urban water utilities, 2017-18* (indicator P1.2)

### 7.1.2 Concession customers

Eligible customers were entitled to an annual water and sewerage concession of up to \$188 (\$94 each for water and sewerage) during 2017-18. The concession increases each year in line with movements in the consumer price index (CPI) for Hobart. In 2017-18, 56 225 customers received the benefit of a concession (approximately 31 per cent of residential customers).

To be eligible for a concession, the applicant must be legally responsible for the account and occupy the property as their principal place of residence as well as holding either a:

- ❑ Department of Human Services Health Care Card;
- ❑ Department of Human Services or Department of Veterans' Affairs Pensioner Concession Card; or
- ❑ Department of Veterans' Affairs Health Card - All Conditions ("Gold Card").

These concession arrangements are funded by the State Government and administered by TasWater. A community service obligation (CSO) payment is a subsidy provided by the State Government to allow for the provision of a good and/or service at less than total cost. In 2017-18, TasWater received a total of \$8.3 million in CSO payments to cover the cost of providing these concessions.

## 7.2 Financial performance

This section presents details of TasWater's financial performance against a range of indicators. Analysis of these indicators provides a guide as to TasWater's financial efficiency, viability and longer term sustainability.

### 7.2.1 Revenue

Table 7.2 shows TasWater's total income, together with the revenue from regulated water and sewerage services, for the period 1 July 2013 to 30 June 2018 inclusive. Total income includes revenue from other sources including unregulated revenue, revenue from third parties (ie CSOs) and investments.

Table 7.2 Revenue (\$'000s, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Water	129 071	150 070	142 665	143 471	153 147
Sewerage	121 519	146 389	150 450	157 197	172 564
Total income	268 617	300 314	309 331	315 484	336 267

Total income in 2017-18 increased by 6.6 per cent compared to the previous year, reflecting underlying increases in regulated target tariffs and the continuation of arrangements to transition customers to these tariffs. Residential revenue from water usage represented around 37 per cent of water revenue in 2017-18, which was higher than the previous year (34 per cent). The large increase in water revenue from 2016-17 to 2017-18 is consistent with an increase in the volume of urban water treated and supplied to customers. This was due, in part, to a drier than normal summer period, increased tourist numbers and higher than average population growth.

Trade waste income represented around 6.2 per cent of sewerage income during 2017-18 and grew by 6.1 per cent compared to 2016-17. Contributed assets and headworks charges (included in the total income figure) contributed just under \$24.5 million of TasWater's total income during 2017-18, a large increase from \$18.8 million in 2016-17.

## 7.2.2 Asset values

The written down replacement cost (WDRC) of TasWater's water and sewerage infrastructure assets is shown in Table 7.3. For regulatory purposes, TasWater is required to report on a WDRC basis rather than on the fair value basis required for its financial statements.<sup>5</sup>

Table 7.3 Fixed Asset values (\$'000s, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Water assets	1 383 105	1 378 227	1 308 099	1 269 045 <sup>a</sup>	1 273 448
Sewerage assets	1 307 119	1 316 010	1 320 226	1 286 529 <sup>a</sup>	1 270 873

<sup>a</sup> 2016-17 asset values were amended in TasWater's 2017-18 Annual Report to correct an error.

As at 30 June 2018, TasWater held water and sewerage assets with a WDRC of just over \$2.5 billion. In recent years, depreciation, on a WDRC basis, has offset capital expenditure and resulted in decreases in fixed asset values.

## 7.2.3 Operating costs

Operating costs (Opex) include any costs associated with the operation and maintenance of the infrastructure assets to provide water and sewerage services plus the associated administration costs. Opex includes salaries and wages, chemicals and raw materials and energy costs. Table 7.4 shows TasWater's Opex and the breakdown between water and sewerage operations.

Table 7.4 Total operating costs (\$'000s, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Water	71 061	80 655	88 951	84 184	93 683
Sewerage	82 559	85 796	88 812	103 414	91 826
Total	153 620	166 451	177 763	187 598	185 509

The large increase in water-related operating costs relates to TasWater's '24 glasses' regional towns water supply program, the additional costs associated with operating the upgraded and new WTPs and increased volumes of water supplied to residential and non-residential customers. Sewerage-related Opex declined in 2017-18 from the exceptionally high level reported for 2016-17.

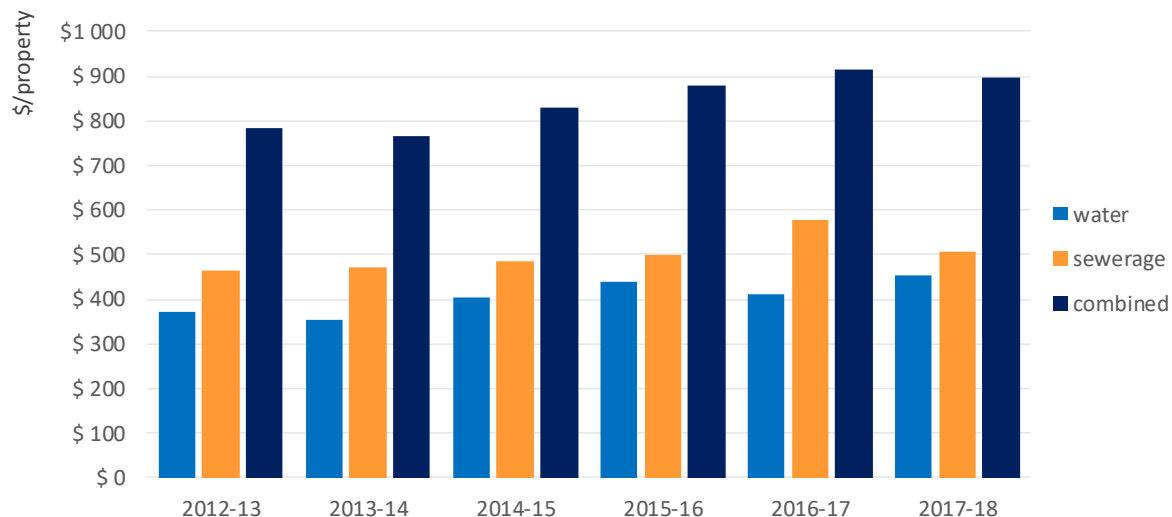
TasWater's average Opex per property, shown in Figure 7.3, was \$896 in 2017-18, around two per cent lower than the previous year. This reduction is due, in part, to an increase in the number of connected properties, as well as a reduction in sewerage operating costs that TasWater has attributed to productivity savings. TasWater's operating costs per property were

<sup>5</sup> See Note 10 of TasWater's 2017-18 Financial Statements (attachment to *TasWater's 2017-18 Annual Report*).

higher compared to the costs reported by mainland service providers<sup>6</sup> which were typically around \$850 per property in 2017-18.<sup>7</sup> Across the nation, median operating costs decreased by one per cent in 2017-18, a change from historical annual increases.

The volume of residential water supplied per property was 18 per cent higher in Tasmania than the national median, which also impacts on operating costs.

Figure 7.3 Operating costs - water, sewerage and combined (\$/property)



note: The estimates of combined operating costs per property are based on the number of connected properties for water supply.

In comparing TasWater's Opex with that of mainland providers it is important to note that mainland providers generally have higher levels of regulatory compliance, which generally requires higher operating costs. TasWater's Opex also reflects its relatively larger number of dispersed and separate water and sewerage assets.

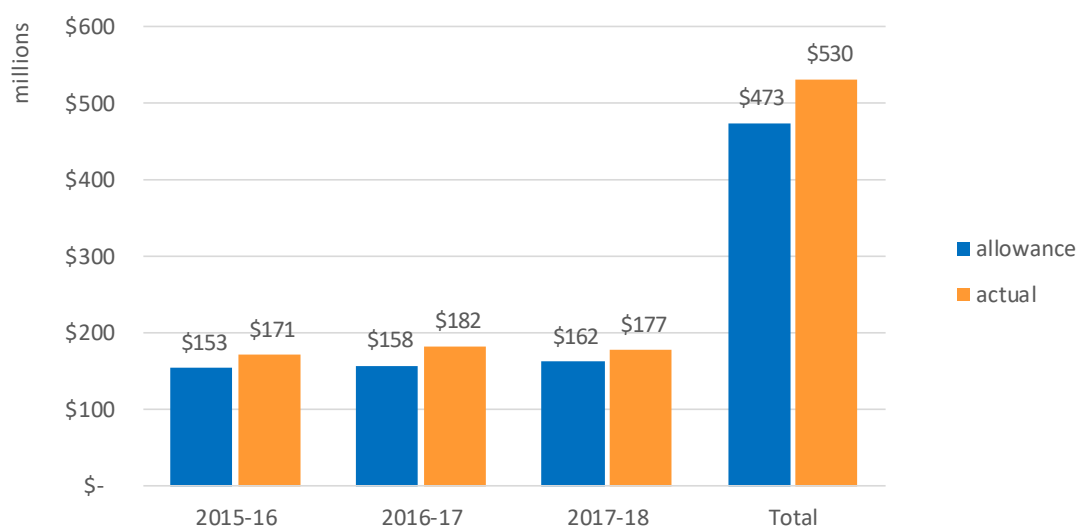
TasWater reported that it expects operating costs to rise as it builds new infrastructure and upgrades existing non-compliant infrastructure. It is expecting to offset most of these cost increases with efficiency gains.

Figure 7.4 compares TasWater's actual regulated Opex for the second regulatory period with the allowances approved by the Economic Regulator for the period. For 2017-18, actual regulated Opex was over 9 per cent above the allowance approved by the Economic Regulator. Over the second regulatory period, TasWater's actual Opex exceeded the approved allowances by \$57 million (around 12 per cent).

<sup>6</sup> Major utilities (large) with 100 000 or more customers.

<sup>7</sup> Bureau of Meteorology, *National Performance Report - urban water utilities, 2017-18* (indicator F13).

Figure 7.4 Operating costs for regulated services - 1 July 2015 to 30 June 2018



Sources:

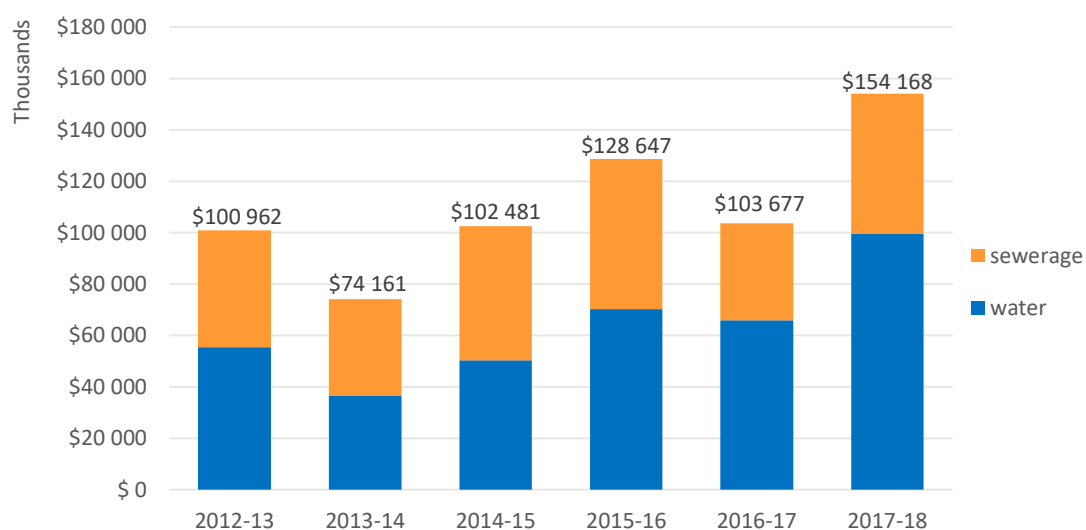
1. Opex allowances set by the TER for the second regulatory period (\$2014-15 figures adjusted using a cost indexation rate of 2.5 per cent per year).
2. Actual Opex from on TasWater's regulatory financial statements.

## 7.2.4 Capital expenditure

Capital expenditure (Capex) is investment in new assets including expenditure on new works, renewals or replacements and any other expenditure that would otherwise be referred to as capital.

Figure 7.5 shows TasWater's Capex for water and sewerage over the previous six years including 2017-18 when over \$154 million in Capex was spent. Gifted assets and developer charges have been excluded from these totals.

Figure 7.5 Capital expenditure (\$'000s, nominal)



TasWater's Capex during 2017-18 increased by almost 50 per cent compared to the previous year, with almost \$100 million invested in water infrastructure and over \$54 million in sewerage infrastructure.

TasWater reported the largest increase in total capital expenditure amongst major Australian water utilities in 2017-18. Average capital expenditure is expected to remain at this level over the next few years as TasWater seeks to deliver an extensive capital works program. TasWater's corporate plan also notes that spending on sewerage projects will increase significantly from 2018 to 2020, with capital investment targeted at improving compliance.

Capex per property was \$481 for water and \$301 for sewerage, a total of \$782 which was the highest compared to similar utilities on the mainland, with a median Capex per property of around \$151 for water and \$216 for sewerage in 2017-18.<sup>8</sup> This is indicative of the scale of Capex required to bring the water and sewerage network up to the required standards, including the work associated with replacing old or poor infrastructure that is currently underperforming. Despite this, prices for Tasmanian customers are comparatively lower than for their mainland counterparts due to customers continuing to transition to target tariffs and the relatively lower water usage prices.

Table 7.5 shows Capex categorised between new works, renewals or replacements and other capital expenditure for both water and sewerage infrastructure.

Table 7.5 Water and Sewerage Capex by category (\$'000s, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
<b>Water:</b>					
New works	4 798	6 399	4 764	3 887	23 580
Renewals or replacements	16 683	17 272	19 402	15 449	19 916
Other	15 090	26 613	46 191	46 588	56 033
Subtotal for water	36 571	50 284	70 357	65 924	99 530
<b>Sewerage:</b>					
New works	4 932	6 284	5 559	10 351	12 945
Renewals or replacements	17 148	16 071	20 610	12 095	10 933
Other	15 510	29 842	32 121	15 308	30 760
Subtotal for sewerage	37 590	52 197	58 290	37 753	54 638
<b>Total</b>	<b>74 161</b>	<b>102 481</b>	<b>128 647</b>	<b>103 677</b>	<b>154 168</b>

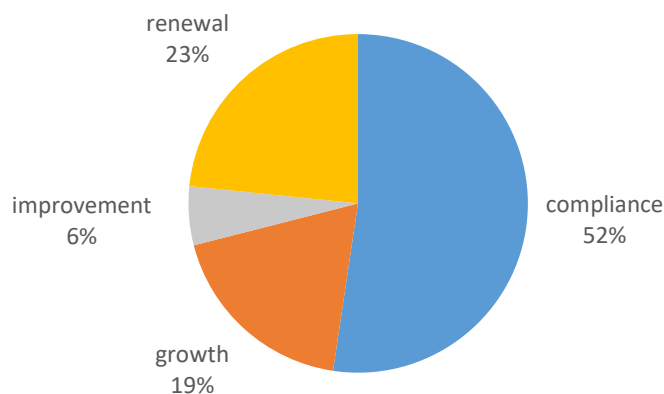
The key drivers for capital expenditure in 2017-18 were compliance and renewals, with expenditure on improvements and new works (growth) for water outstripping historic Capex spending in this area over the past four years. This significant shift in water Capex can be attributed to TasWater's focus on prioritising its regional towns water projects which has involved the construction of 13 new WTPs across the State. Capex categorised by key driver is shown in Figure 7.6.

<sup>8</sup> Bureau of Meteorology, *National Performance Report - urban water utilities, 2017-18*, February 2019 (indicators F28 & F29)

Close to \$93 million was spent on dedicated water assets and \$51 million on dedicated sewerage assets, with the balance relating to both water and sewerage assets. During the year approximately \$6.5 million was spent on non-network business information systems, office relocation, fencing, fleet and facilities.

The amount spent on 'other' Capex, which includes compliance and improvements, has increased significantly over the five years. Expenditure in this category included an ongoing program to renew water meters state-wide, an electrical program to reduce safety risk at specific sites and renewal of high priority water main networks.

Figure 7.6 Capex by driver, 2017-18

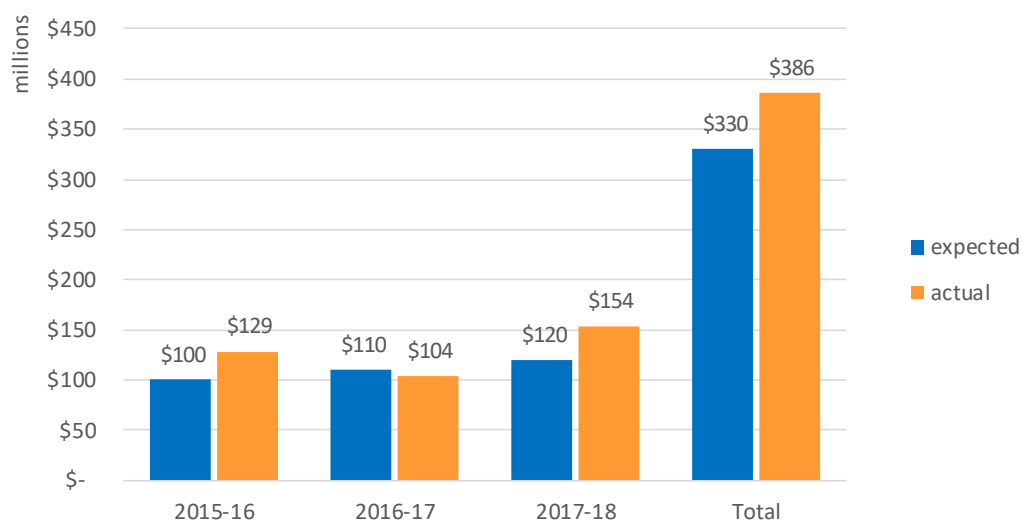


In 2017-18 TasWater did not receive any capital works grants from State or Commonwealth Governments to undertake specific capital works. Further details on capital projects completed or commenced during 2017-18 are outlined in section 7.3 below.

TasWater is planning to invest \$203 million on further improvements to drinking water quality in the three years from 2018-19 to 2020-21, through measures such as treatment plant upgrades, system optimisation, risk assessments and increasing treatment barriers.

Figure 7.7 compares TasWater's actual Capex expenditure for the second regulatory period with the expected expenditure for the period. The chart shows that, over the second regulatory period, TasWater's actual Capex exceeded the expected expenditure by more than 17 per cent. TasWater's actual Capex for 2017-18 exceeded the expected Capex as set out in its approved price and service plan for the second regulatory period by 28 per cent. This highlights the acceleration of TasWater's capital program during 2017-18 relative to the first two years of the second regulatory period.

Figure 7.7 Capital expenditure for regulated services - 1 July 2015 to 30 June 2018



Sources:

1. Expected Capex based on TasWater's Price and Service Plan for PSP2, June 2015.
2. Actual Capex from TasWater's annual performance reports.

## 7.2.5 Other financial performance information

Table 7.6 provides a summary of other financial performance information used to determine how efficiently a business is using its financial resources, its financial sustainability and viability.

Table 7.6 Financial performance measures<sup>a</sup>

	2013-14 <sup>a</sup>	2014-15 <sup>a</sup>	2015-16 <sup>a</sup>	2016-17 <sup>a</sup>	2017-18
Net profit after tax (\$'000s)	27 236	33 155	25 310	25 804 <sup>b</sup>	42 685
EBIT (\$'000s)	17 385	19 185	12 626	10 932	33 278
Profit ratio (%)	10.0	11.0	8.2	8.2	12.7
Economic rate of return (%)	0.66	0.74	0.48	0.43	1.31
Dividends (\$'000s)	18 647	22 120	20 332	19 457	18 499
Dividend payout ratio (%)	68.5	66.7	80.3	68.0	43.3
Net debt to equity (%)	21.5	22.8	27.2	29.9	33.4
Interest cover (times)	0.93	1.11	0.70	0.60	1.74

Notes:

- Financial performance measures have been calculated on the basis of the information presented in TasWater's Annual Report financial statements and from the information presented in TasWater's annual performance reports. Asset values are measured at depreciated replacement cost. Where relevant, TasWater's financial performance in prior years has been recalculated adopting this approach.
- TasWater's 2017-18 Annual Report included a correction of a prior period error which, among other things, reduced NPAT for 2016-17 from the previously reported \$28.592 m to \$25.804 m (Note 2.4, page 77).

#### Key observations:

- ❑ Net profit after tax (NPAT) increased by 65 per cent on the previous year and was well above amounts observed over the past five years.
- ❑ Earnings before interest and tax (EBIT) was more than three times higher in 2017-18 than in 2016-17 due to higher revenue and lower expenses.
- ❑ TasWater's profit ratio increased by 55 per cent from 2016-17 as a result of increased total revenue and lower operating costs, reaching its highest ratio of 12.7 per cent. TasWater's profit ratio remained lower than the median reported by major utilities interstate, which was 15.1 per cent in 2017-18.<sup>9</sup>
- ❑ TasWater's higher EBIT for 2017-18 resulted in its economic rate of return being significantly higher in 2017-18 than in previous years.
- ❑ TasWater's net debt to equity (NDTE) ratio has continued to steadily increase, in line with increased borrowings to fund capital projects. However, TasWater's NDTE ratio is still substantially lower than the ratios of major interstate utilities, which reported a median NDTE ratio of 66.5 per cent in 2017-18.<sup>10</sup>
- ❑ The higher EBIT for 2017-18 and a largely unchanged interest expense (despite increased borrowings) resulted in a higher interest cover ratio than in previous years.
- ❑ Dividends to owner councils have trended down since 2014-15 and TasWater's dividend payout ratio (the proportion of dividends to net profit after tax) fell significantly in 2017-18 due to the much higher NPAT for that year.<sup>11</sup>

### 7.3 Status of major projects

This section provides an overview of the major projects completed or progressed by TasWater during 2017-18. Major projects are those that are high priority and/or involve expenditure of over \$2 million.

TasWater's 2015-18 Price and Service Plan<sup>12</sup> included its proposed major capital investment projects that were to be progressed or completed during the third regulatory period.

The Economic Regulator's assessment of the Capex TasWater requires for each year of the regulatory period is a key input into the calculation of TasWater's annual Maximum Allowed Revenue Requirement (MARR). The MARR is, in turn, used to determine the maximum regulated prices TasWater can charge customers.<sup>13</sup> It is, therefore, appropriate and important that TasWater explain delays or changes to its capital expenditure program.

<sup>9</sup> Bureau of Meteorology, *National Performance Report - urban water utilities, 2017-18*, February 2019 (indicator F30).

<sup>10</sup> Bureau of Meteorology, *National Performance Report - urban water utilities, 2017-18*, February 2019 (indicator F22)

<sup>11</sup> TasWater and its council owners have agreed that distributions to owners (including dividends) will be reduced to \$20 m per annum commencing in 2018-19.

<sup>12</sup> TasWater's 2015-18 PSP is available at: <https://www.economicregulator.tas.gov.au/water/pricing/price-determination-investigations/2015-water-and-sewerage-price-determination-investigationn>

<sup>13</sup> Tasmanian Economic Regulator, *2018 Water and Sewerage Price Determination Investigation, Final Report*, May 2018, Chapters 6 and 11.

A range of major projects that continued or commenced during 2017-18, including expenditure for 2017-18 and the project budget, is set out in Table 7.7 below.

In 2017-18, TasWater completed 21 major projects including construction of new water treatment plants and upgrades to existing plants to remove the occurrence of public health alerts (PHAs) and boil water alerts (BWAs) in regional towns. Several major projects to improve drinking water compliance are still under construction and are scheduled to be completed in the current regulatory period.

#### ① Abbreviations

BWA - boil water alert
PHA - public health alert
HBT - health based targets
PAC - powdered activated carbon
DAFF - dissolved air flotation-filtration
NMSIP - Northern Midlands Sewerage Improvement Plan

A further 20 major projects have been reported as being under 'construction' in 2017-18, with some of these projects continuing from the previous year. TasWater has advised that a project to improve the handling of sludge and biosolids at the Ti Tree Bend STP which commenced in 2016-17 is on track for completion in 2018-19, with works in 2017-18 including the construction of a centrifuge and sludge drying facilities to improve sludge handling at the STP.

The \$51 million Kingborough Sewerage Strategy project has also continued into 2017-18, with \$25.7 million spent in this financial year. The project, which will improve effluent compliance by combining four STPs into one, is scheduled for completion in 2019-20.

The King Island Treated Water Supply project, which had its timeline extended in 2016-17, has now begun construction, with the project expected to be completed by June 2021.

A project to improve safety at Ridgeway Dam has also been rescheduled, with design work beginning in 2017-18 that will mark the start of a project costing about \$22 million to ensure the dam meets the ANCOLD limit of tolerability.

Construction of the Margate water main upgrade also began in 2017-18, with the expected completed date extended to 2018-19.

TasWater's Northern Midlands sewerage improvement plan continued in 2017-18, with the planning work to upgrade STPs at Perth, Western Junction and Evandale progressing during the year. This project, to improve environmental compliance, will continue into 2019-20.

Twenty three of TasWater's major projects have been deferred or rescheduled from their original start date.

Upgrades to the STP at Legana have again been put on hold, despite significant growth in the area and previous instances of high volumetric loading which has caused discharge into the Tamar River. A planned upgrade to the Forth WTP has also been deferred and will now begin in 2019-20.

Table 7.7 Major capital projects continued or commenced in 2017-18

Project	Driver	Project value (\$ '000)	Project description	2017-18 Expenditure (\$ '000)	Status
<b>Water treatment</b>					
Regional Water Supply Improvement Project	Compliance	65 147	Project identified to remove all remaining 15 towns from PHAs	50 471	Construction
King Island Treated Water Supply	Compliance	17 312	Construction of a new water treatment plant and a connecting pipeline between Grassy and Currie. Project initiated to remove PHA assigned by DHHS. Part of the 24 glasses project.	3 194	Construction
Ringarooma Valley Treated Water Supply	Compliance	16 050	Provide a water quality in compliance with WSAA standards to the towns of Ringarooma, Branhholm, Legerwood and Derby.	680	Complete
Rosebery WTP and Reticulation	Compliance	11 416	Existing WTP required to be relocated. Additionally will improve water compliance.	2 128	Extended Construction
Flinders Island Water Supply	Compliance	8 819	Remove Lady Barron and Whitemark from PHA's assigned by DHHS.	428	Complete
Gretna, Glenora and Bushy Park Water Supply Upgrade	Compliance	5 260	Remove BWA from the systems of Gretna, Glenora and Bushy Park.	3 035	Construction
Mole Creek - New WTP	Renewal	4 881	Project initiated to remove PHA assigned by DHHS. Part of the 24 glasses project.	55	Complete
Avoca Full Treated Water Supply	Compliance	4 730	Project initiated to remove PHA assigned by DHHS. Part of the 24 glasses project.	58	Complete
Forth WTP Upgrade - (Includes 2nd Clarifier)	Growth	4 495	Significant upgrade at Forth WTP. This will affect multiple towns and provide compliance with HBT.	-	Deferred
Winnaleah Treated Water Supply	Renewal	3 906	Project initiated to remove PHA assigned by DHHS. Part of the 24 glasses project.	683	Complete
Bryn Estyn PAC dosing plant	Improvement	1 900	Upgrade WTP to treat the largest supply of drinking water.	88	Complete
Bothwell WTP upgrades	Renewals	1 071	Minor upgrades to certain assets to maintain compliance of the WTP and in some instances improve.	-	Deferred

Project	Driver	Project value (\$ '000)	Project description	2017-18 Expenditure (\$ '000)	Status
National Park Fluoride & Chlorine Building Rebuild	Compliance	900	Critical asset in extreme category and due for renewal.	-	Deferred
Replacement of Minor Chlorine Facilities within Bulk Water System	Compliance	900	Works will periodically upgrade chlorine facilities that are due for renewals based on a priority listing.	-	
Scamander WTP redundancy improvement	Compliance	731	WTP upgrades to improve plant redundancy and network upgrades to improve residual disinfection	48	Complete
National Park, Westerway, Fentonbury Water Supply	Compliance	700	Project initiated to remove PHA assigned by DHHS. Part of the 24 glasses project.	-	Deferred
Deloraine WTP - DAFF Structure Upgrade	Renewal	615	Relining of existing DAFF. Work to be undertaken to prevent critical failure.	5	Complete
Orford WTP upgrade	Compliance	539	To ensure a reliable and compliant drinking water supply for the communities of Orford and Triabunna through refurbishment/replacement of Orford's Prosser River ageing WTP	77	Construction
<b>Sewage treatment</b>					
Kingborough Sewerage Strategy	Growth	51 624	Improve effluent compliance and decommission 4 STP's into one.	25 765	Construction
NMSIP - Perth, Western Junction & Evandale STP Upgrades	Improvement	28 000	Stage two of NMSIP which will improve compliance at Perth, Evandale and Western Junction. Potential for rationalisation.	-	Planning
NMSIP - Longford STP Upgrade	Compliance	25 100	Phase 1 of Northern Midlands Sewer Improvement Plan. Work will improve effluent compliance.	263	Extended
Ti Tree Bend STP Biosolids Reduction	Compliance	12 375	Construction of a centrifuge and sludge drying facilities to improve sludge handling at the STP. Project will improve compliance, provide a more effective process when treating sewerage and reduce odour outputs.	4 399	Construction
Brighton STP Rationalisation	Compliance	8 870	Investigate potential into rationalising the existing Brighton STP.	-	Deferred
Legana - Reuse Upgrade	Compliance	8 686	Increase the size of the Legana STP to allow for significant growth in the area.	-	Deferred

Project	Driver	Project value (\$ '000)	Project description	2017-18 Expenditure (\$ '000)	Status
Rosebery STP - New Plant	Compliance	7 688	Construction of new STP due to needing to relocate.	2	Complete
Sewerage Treatment Plant Inlet Works Program	Improvement	5 870	Program of works which identified multiple STP's in the south of the state. The works will improve compliance by screening sewerage before it enters the treatment plants.	17	Complete
Burnie Lion Trade Waste - WWTP upgrade	Renewal	5 160	Improvement of effluent discharge quality at Burnie STP. Increase compliance.	1 537	Construction
Cambridge STP Wet Weather Overflow Abatement Project	Compliance	4 570	Improvement of effluent discharge quality at Cambridge STP. Increase compliance.	28	Design
Prince of Wales Bay STP Digester Roof Replacement/Repairs	Renewal	3 500	Renewal of the existing digester roof due to potential of failure. Rescheduled to 2019-20	151	Deferred
Launceston Sewer Improvement Plan - Concept	Improvement	2 380	Works will rationalise multiple sites to the Ti-Tree bend site where a new STP is proposed.	172	Design
Digester Vacuum Break - Pressure Relief Valve Upgrade Program	Improvement	1 450	Safety based project a various STP's around the state to install pressure relief valves.		Design
Prince of Wales Belt Press replacement	Renewal	1 335	Belt press has failed. Currently requiring a different process to maintain compliance.	30	Complete
Cradle Valley Membrane Renewal	Renewal	900	Renew of the existing membranes to maintain compliance end prevent environmental harm.	-	Deferred
Wynyard STP - Electrical and Control System renewal and upgrade	Renewal	500	Upgrade Wynyard STP electrical to allow for future works to improve compliance.	142	Delayed Construction
Wynyard - STP Sludge concentrator system (Fan press/ Building and tanks)	Improvement	497	The installation of a sludge drying facility to de-water the sludge as it is produced at the plant will provide an ongoing method of sludge disposal.	231	Delayed Construction
Cameron Bay Belt Press Replacement (consider replacing with centrifuge)	Growth	395	Replacement of failed Belt Press. Currently being operated with a temporary belt press.	17	Tender

Project	Driver	Project value (\$ '000)	Project description	2017-18 Expenditure (\$ '000)	Status
<b>Distribution</b>					
Margate Water Main Upgrade	Growth	8 224	Project identified due to growth in the Kingborough area. Will ensure the supply of water to targeted system.	1 922	Extended Construction
Port Sorell Reservoir and Network Upgrade Project (Stage 1)	Compliance	6 000	Growth based project, works will cater for significant development in the Port Sorell system.	24	Tender
Triabunna, Reservoir and Pump Station		4 030	Construct reservoir and high pressure booster pump zone	-	Deferred
Longford to MacKinnons Hill Reservoir Rising Main (Stage 2)	Improvement	3 359	Construction of a new pipeline between Longford and Mackinnons Hill Reservoir. This will a dedicated distribution and rising main.	716	Extended Construction
3MI Concrete Reservoir at Girdlestone - Forth	Renewal	2 843	Replacement reservoir for existing reservoir which has failed.	891	Construction
TW NW Burnie Cam Pipeline	Improvement	2 837	New bulk water main from Burnie to Cam. Improving water quality at Cam and allowing decommissioning of the existing Water Treatment Plant.	643	Construction
Unplanned State Wide Meter Renewals	Improvement	500	Various water meters which have failed and require urgent replacement	64	Complete
Mole Creek Water Network Improvements	Compliance	435	Minor works in the network to guarantee removal of the BWA.	27	Complete
Installation of Water Meters at Bronte Park	Renewal	80	In Late July 2016, the privately owned water and sewerage services in Bronte Park transferred to TasWater. Install meters to all properties.	31	Complete
<b>Collection - Sewer</b>					
Sorell, Midway Point Strategy		10 550	Development of a strategy for Sorell, Midway Point STPs (eg rationalisation to Penna and expansion of reuse).	-	Deferred
Old Beach Sewage Pump Stations and Network Upgrade		5 799	Improve compliance in the Old Beach Sewer System by reducing sewerage over flows in the system.	-	Deferred

Project	Driver	Project value (\$ '000)	Project description	2017-18 Expenditure (\$ '000)	Status
Davis Street Smithton Sewerage Pump Station	Renewal	5 392	Project initiated to prevent critical failure of SPS. Size increased to prevent overflows into shellfish waterway.	21	Planning
Huonville Main Road SPS & Rising Main Replacement	Improvement	5 367	To ensure that there are no safety or compliance issues with on-property installation in the overall LPSS (297 installations).	3 628	Construction
Orford Sewage Pump Stations and Network Upgrade	Improvement	4 563	This project involves the upgrade of the sewer pump stations to modern standards (dual pumps, emergency storage and upgraded switchboards) and reconfiguration of the system from "in series" to two (or more) discrete sewage catchments.	9	Deferred
Wynyard Reticulation Upgrade - Fonterra Flow Diversion	Renewal	3 000	A new pipeline directly from Fonterra to the Wynyard STP, removing constraints placed on the network and odour issues.	2 350	Construction
St Helens Esplanade SPS Upgrade	Renewal	2 099	Due to overflows to shellfish sensitive water a strategy was incorporated to prevent this from reoccurring.	1 265	Construction
Torrens Street Richmond Sewer Pump Station Upgrade	Renewal	1 650	Upgrade the Torrens Street SPS including wet well, emergency storage and rising main. Will prevent shut downs of the downstream oyster industry.	246	Complete
Coles Beach SPS Upgrade		1 575	Upgrades including installation of emergency storage, pump upgrade, emergency generator, safe access and gantry	-	Deferred
Smithton reticulation Odour Control		1 046	Improve reticulation odour issues. This work will be dependent on investigation work still to be undertaken	-	Deferred
Windsor Park SPS Rising Main Replacement and Pump Upgrade		1 000	Upgrade rising main and SPS pumps to enable pumping of design PWWF.	-	Deferred
Kangaroo Bay Rising Main	Renewal	955	Replacement of the existing Kangaroo Bay rising main. Preventing any further failures in a sensitive receiving environment.	105	Tender
SPS Renewals - Jetty Road SPS (Bicheno)	Compliance	885	The upgrade of Jetty Road SPS requires the installation of a TW compliant storage at Jetty Road and upgrade of the current pump capacity in order to meet the PWWF requirements defined for the catchment and subsequent upstream catchments.	363	Defects Liability

Project	Driver	Project value (\$ '000)	Project description	2017-18 Expenditure (\$ '000)	Status
Sewer Pipeline Upgrade - Cox Avenue, New Norfolk	Improvement	639	Prevent overflows during storm events in backyards of properties.	0	Design
Southbridge SPS, Ferrous Dosing Station & Acquisition of Land (Odour Control)		614	Install Ferrous Dosing Station at Southbridge SPS to reduce odour throughout the network including the Huonville Main SPS.	57	
Lauderdale Pressure Sewage Scheme (LPSS) - On-Site Audits (Electrical Inspections)		425		4	Complete
Lauderdale Sewerage Scheme - Stage 2		200		-	Complete
Backflow Prevention Installation at various STP's and SPS's		200	Install backflow prevention devices at various sites to prevent contamination of the potable water supply.	-	Deferred
Kingston SPS E Rising Main		-	Combined as part of Kingborough project.	-	Deferred

### Disposal - reuse

Bridport STP Improvement Program		5 970	Project will improve compliance when discharging. Further investigation required before scope can be confirmed	-	Deferred
Westbury - Reuse Implementation		3 795	Implement a reuse scheme which will improve the compliance of the STP.	- 9	Deferred
Carrick WWTP (New Outfall & Reuse)	Renewal	440	Project will divert discharges to a better location and allow better control over re-use scheme.	20	Tender

### Catchment

Tolosa Dam Replacement Infrastructure	Compliance	21 946	Ensure Dam meets the ANCOLD limit of tolerability	1 333	Complete
Pet Dam - Safety Upgrade	Compliance	7 710	Ensure Dam meets the ANCOLD limit of tolerability	-	Design
Mikany Dam Upgrade	Compliance	7 320	Ensure Dam meets the ANCOLD limit of tolerability	345	Design

Project	Driver	Project value (\$ '000)	Project description	2017-18 Expenditure (\$ '000)	Status
Conglomerate Dam upgrade for dam wall	Renewal	5 676	Ensure Dam meets the ANCOLD limit of tolerability	3 518	Construction
Flagstaff Gully - Dam Safety Upgrade		5 200	Ensure Dam meets the ANCOLD limit of tolerability	-	Deferred
Swansea Dam – Rectification & Improvement Project (Stage 1 & 2)	Compliance	4 202	Dam has a significant leak and poses potential to fail. Works identified will prevent these outcomes from occurring.	2 055	Construction
Major risk reduction works at Upper Reservoir Dam at Waterworks Reserve, Ridgeway		4 150	Ensure Dam meets the ANCOLD limit of tolerability	12	
Ridgeway Dam Safety - Anchor Replacements	Compliance	2 340	Ensure Dam meets the ANCOLD limit of tolerability	4	Design
Orford Lower Prosser Dam Storage Works		2 000	Ensure Dam meets the ANCOLD limit of tolerability	-	Deferred
Lake Isandula - Increase spillway capacity		1 900	Ensure Dam meets the ANCOLD limit of tolerability	182	
Whitemark raw water storage upgrade - Hendersons Dam Rising.	Compliance		As part of the Flinders Island Water supply upgrade it was identified that the the raw water - surety will require increasing to prevent water restrictions.	-	
<b>Other</b>					
Northwest Regional Office Relocation		3 015	Relocation of North-West officer location from the existing Forth WTP.	511	Complete
Charles Street Office Development		2 100	Upgrade of the existing northern offices to contemporary standards	4	Complete
Safety Shower Rectification - Statewide	Compliance	953	Multiple showers identified for an upgrade in alignment with relevant standards.	786	Construction
Rocherlea Depot Refurbishment Stage 1	Growth	225	Improve facility at the Rocherlea site	83	Deferred

Project	Driver	Project value (\$ '000)	Project description	2017-18 Expenditure (\$ '000)	Status
<b>Business systems</b>					
Asset Data Quality Improvement Program	Improvement	404	Project to improve data quality	384	Business Case
Asset Data improvement program	Improvement	324	Survey & Condition Assessment Project FY16-17 - State wide. Physical project required to improve data quality.	41	Complete
<b>Programs</b>					
System Optimisation Sewer	Compliance	10 000	Improve effluent discharge compliance at various sites.	581	Ongoing
System Optimisation Water	Compliance	10 000	Increase compliance of water supply to Health Based Targets to various systems. Improve visibility of sites.	567	Ongoing
Metering Program	Renewal	7 140	Ongoing program to renew meters state-wide	8 014	Ongoing
Minor Projects Program	Compliance	5 440	Program to address minor projects,	4 459	Ongoing
Non-Network Other	Renewal	4 100	Replacement of fleet, fencing improvements and general overheads by the business	4 490	Ongoing
Water Main Renewals	Renewal	3 770	Renewal of the highest priority water main networks. Align with customer promises.	2 416	Ongoing
Sewer Main Renewals	Renewal	3 400	Renewal of prioritised list of sewer main networks	1 289	Ongoing
Electrical Program	Renewal	3 330	Reduce safety risk at specific sites created by non-conforming electrical assets.	2 547	Ongoing
SCADA	Improvement	2 800	Bring all TasWater sites onto one viewing platform.	1 266	Ongoing
CCTV Program	Renewal	2 480	Inspection program to assist in determining the	554	Ongoing
Dam Compliance	Compliance	2 260	Program of work to meet compliance requirements.	1 375	Ongoing
Non-Network IT	Improvement	2 000	Renewal of IT fleet including mobiles and computers.	1 004	Ongoing

Project	Driver	Project value (\$ '000)	Project description	2017-18 Expenditure (\$ '000)	Status
STP Renewals	Renewal	1 890	Renewal of minor assets within STPs.	1 834	Ongoing
Dam Minor Works	Compliance	1 510	Program of work to meet compliance requirements.	1 062	Ongoing
SPS Renewals	Renewal	1 410	Prioritised activity list of assets at various SPS sites.	918	Ongoing
WTP Renewals	Renewal	1 200	Renewal of minor assets at WTP sites to prevent failure and subsequent non-compliance.	1 327	Ongoing
Combined System	Renewal	1 080	Work required in alignment with the LCC agreement improving the combined system	71	Ongoing
Reservoir Renewals	Renewal	710	Prioritised activity list of assets at various reservoir sites.	364	Ongoing
Ambient Monitoring	Compliance	650	Monitor effluent discharge from various STP's and identify improvement works as required.	372	Ongoing
Fluoride Program	Renewal	600	Upgrade of a prioritised list of sites containing fluoride.	4	Ongoing
Inflow and Infiltration Rectification	Improvement	500	Works to identify and reduce inflow and infiltration in TasWater sewer networks.	122	Ongoing

### 7.3.1 Future capital projects

TasWater's 2018-19 capital works program includes projects and programs with a total budget in excess of \$145 million for the year.<sup>14</sup>

Major capital works projects that will continue or commence in 2018-19, including forecast expenditure in the year and the project budget, are shown in Table 7.8 below.

Table 7.8 Capital projects to continue or commence in 2018-19

Project	Project budget (\$ millions)	Project description	Scheduled completion
Kingborough Sewerage Strategy	\$64.5	Improve effluent compliance and rationalise four STPs into one.	2020-21
King Island Water Supply	\$18.2	New WTP at Currie with connecting pipeline to Grassy. Improve water quality.	2020-21
Ti Tree Bend STP Biosolids Upgrade	\$12.4	Remove biosolids, which will improve the effluent discharge and odour issues.	2018-19
Davis St, Smithton SPS upgrade	\$4.5	Replace deteriorated asset and prevent overflows into shellfish leases.	2019-20
Lake Mikany Dam safety upgrade	\$7.3	Upgrades to remove the dam from above the ANCOLD level of tolerability.	2019-20
Prince of Wales Primary Sewer Digester Roof Replacement	\$3.5	Renewal of existing digester roof due to potential of failure	2019-20
Longford STP upgrade	\$2.1	Part of the NMSIP to improve environmental compliance.	2019-20
Swansea Dam - rectification and improvement project stage 1 and 2	\$3.4	Restore dam and reduce risk of failure	2018-19
Port Sorell Reservoir and Network Upgrades	\$6.3	Growth based project, works will cater for significant development in the Port Sorell area.	2019-20
Wynyard reticulation upgrade - Fonterra Flow Diversion	\$2.6	A new pipeline directly from Fonterra to the Wynyard STP, removing constraints placed on the network and addressing odour issues	2020-21
Rosebery WTP and reticulation	\$11.8	Required as existing WTP to be relocated. Will also improve water compliance	2018-19
Regional towns Water Supply Project	\$49.8	Program to continue to remove PHAs	2018-19

Projects that are considered by industry regulators to be high priority for improving performance in the future are discussed further in Chapter 8. TasWater's price and service plan for the third regulatory period sets out its planned capital expenditure over the period 2018-19 to 2020-21.<sup>15</sup>

<sup>14</sup> TasWater Corporate Plan FY2019-2023, page 29.

<sup>15</sup> TasWater's price and service plan is available at: <https://www.taswater.com.au/Your-Account/Price---Service-Plan>

## 8 PRIORITIES FOR IMPROVING PERFORMANCE

In accordance with section 70(2) of the Industry Act, this Chapter sets out the key priorities for improved performance by TasWater as identified by each of the industry regulators and TasWater itself.

### 8.1 Environment Protection Authority

In December 2016, the EPA and TasWater signed a Memorandum of Understanding on Public Wastewater Management (MoU) to adopt key management and regulatory strategies aimed at accelerating improvements in environmental compliance and performance.

Wastewater management improvements under the MoU target a priority list of STPs in the form of the 'Big 13' STPs, which account for 70 per cent of all treated wastewater, and the 'Top 20' STPs that pose the highest pathogen, toxicant, nutrient and odour risks.

The key areas identified by the EPA for TasWater to focus on are embedded in the MoU. In the short to medium term, these priorities are:

- ❑ completing planned major upgrades to STPs, including the Blackmans Bay STP upgrade and associated closure of Margate, Electrona and Howden STPs, resolving environmental impacts of the Longford STP and commencing implementation of the Launceston Sewerage Improvement Strategy;
- ❑ determining future sustainable treated effluent discharge limits based on sound scientific evidence for all priority sites and achieving EPA approval for future discharge management options for STPs, prioritised according to risk;
- ❑ increasing the number of effluent reuse schemes and the proportion of treated effluent diverted to sustainable beneficial reuse, particularly for STPs discharging to inland waters;
- ❑ achieving significant improvements to availability and quality of critical data used for process control and infrastructure planning, including improved flow metering and process monitoring capabilities;
- ❑ integrating regular STP optimisation assessments into the business cycle, resulting in improved effluent compliance; and
- ❑ attaining sustainable state-wide biosolids management practices. This includes addressing legacy sludge accumulations and reliably meeting an ongoing pre-emptive desludging roster for lagoon systems.

## 8.2 Public health

The Department of Health (DoH) works closely with TasWater to maintain and improve compliance with its legislative requirements, which ultimately protects public health.

During 2017-18, TasWater continued to address the priority capital works list agreed with DoH as part of its operating licence. DoH is keen to ensure that emerging public health issues and associated risks are incorporated in TasWater's decision-making processes when prioritising capital works. In this regard, DoH issued a revised priority listing to TasWater in early 2014. In March 2017, DoH issued a further revised priority listing for inclusion in TasWater's third Price and Service Plan (from 1 July 2018 to 30 June 2021).

DoH has identified the following key areas for TasWater to focus on in the medium to longer term:

- ❑ considering service introduction in some areas currently not serviced by reticulation networks, subject to changes in populations and community needs;
- ❑ evaluating drinking water infrastructure, risk review, and asset maintenance and upgrades on an ongoing basis;
- ❑ when benchmarked, achieving comparable compliance outcomes as other similarly-sized water corporations; and
- ❑ achieving sustained and improved drinking water quality compliance.

TasWater's Regional Towns Water Supply Program was implemented during 2017-18. This program resulted in all boil water alerts and public health alerts being lifted by August 2018, except at Gormanston. TasWater is now focussing on integrating this new infrastructure into its operations through its management systems to ensure that safe and reliable operations and efficiencies are standardised across its water supply systems.

TasWater's Drinking Water Quality Management Plan was externally audited in November and December 2017 as required under the *Public Health Act 1997*. While no significant public health issues were identified, the audit highlighted a number of opportunities for improvement in TasWater's practices. TasWater has been working on addressing, documenting and reporting to DoH in relation to these opportunities.

## 8.3 Water allocations/licences and dam safety

DPIPWE is responsible for the sustainable management and development of the State's freshwater resources through the *Water Management Act 1999*.

Before water can be taken directly from a stream or stored in a dam for supply to urban water systems, an allocation licence must be obtained from DPIPWE. A water allocation specifies conditions pertaining to the taking of water, including the volume that can be taken within a specified period.

DPIPWE considers that it remains a priority for TasWater to continue to work with the agency to secure adequate water supplies to meet expected future demand, as allocated supplies in a small number of systems are considered unlikely to continue to meet demand in the medium-term.

All applications to undertake dam works must include a range of information, including engineering designs, for review by departmental staff who advise the Minister or delegate.<sup>1</sup> The Minister then decides whether or not to grant approval for an application and to issue the terms and conditions of this approval. This is to ensure that all dam works are undertaken in a manner that ensures they avoid environmental harm and do not present a risk to the Tasmanian population (as required under the *Water Management Act 1999* and the *Water Management (Safety of Dams) Regulations 2015*).<sup>2</sup>

DPIPWE is responsible for ensuring that owners of existing dams meet their safety responsibilities through mandatory ongoing surveillance and maintenance of dams and, where necessary, ensuring dams meet contemporary safety standards. TasWater has been required to undertake a portfolio risk assessment (PRA) of all dams to ensure the risk that these dams may present are mitigated to within modern tolerable risk standards as outlined in the various Australian National Committee on Large Dams Incorporated (ANCOLD) guidelines and other acceptable risk standards and legislation. DPIPWE's role as dam safety regulator is to ensure that:

- ❑ these risk mitigation plans are developed;
- ❑ that they are to an acceptable standard as outlined by ANCOLD; and
- ❑ that they are implemented to an agreed schedule as outlined in their respective PRAs.

The Delegate for Dam Safety Regulation monitors and reviews annual management plans for dams to ensure that the required maintenance and risk mitigation tasks are being carried out in accordance with assessed PRA priorities and the identified high risk dams are being managed to reduce their risk to a tolerable level.

A priority for TasWater is to complete its five year program on dam improvements, which largely relates to where the severity of damage and loss has been classed as "Significant" or higher.

## 8.4 Economic regulation

The Tasmanian Economic Regulator completed its pricing investigation for the third regulatory period in May 2018. TasWater's approved third Price and Service Plan (PSP). The Tasmanian Economic Regulator's Final Report from its 2018 Investigation highlighted issues that TasWater will need to address in the future. These include:

- ❑ further improving its ability to deliver its planned capital expenditure program; and
- ❑ more clearly setting out its longer term plans to achieve compliance and operational efficiencies to avoid investing in redundant or stranded assets.

The Tasmanian Economic Regulator relies on information provided to it to assess the performance of TasWater in meeting its performance monitoring and reporting obligations.

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<sup>1</sup> As of 1 January 2016, the approval Committee (Assessment Committee for Dam Construction) requirements under the *Water Management Act 1999* have been rescinded.

<sup>2</sup> The *Water Management (Dam Safety) Regulations 2011* were rescinded and remade with an effective date of 1 January 2016.

A recent independent audit revealed that, overall, the level of data reliability and accuracy had improved. However, there remained a number of performance indicators, mostly relating to service standards under the Customer Service Code that were still not reliably captured by TasWater's business systems and hence, were not of a suitable quality to be relied on. In some other areas, TasWater's performance data has been inaccurate or incomplete. The Tasmanian Economic Regulator expects that further progress will be made in coming years so that more complete assessments can be made of TasWater's performance, including against earlier years and in comparison with mainland providers.

TasWater's water losses remain very high in comparison with equivalent mainland utilities. This represents a significant inefficiency in TasWater's water supply operations and is an area where there is significant opportunity for improvement.

## 8.5 TasWater

In August 2017, TasWater released its *Long Term Strategic Plan 2018-2037* (LTSP).<sup>3</sup> Developed in consultation with industry regulators, the plan aims to provide a path to improved outcomes while balancing competing priorities for expenditure and impacts on customer prices.

TasWater has assigned quantitative measures to link each project in its capital program to the customer outcomes in its LTSP. Capital projects have been prioritised by comparing relative costs and benefits (that is, their contribution to achieving measures of success for each customer outcome). TasWater's LTSP also uses a weighting to emphasise the outcomes that customers and stakeholders consider most important.

Industry regulators have provided general support for the compliance outcomes in TasWater's LTSP. Significant investment is required to improve compliance levels and, while marked improvement in compliance is expected, the necessary investment needs to be spread out over time to avoid price shocks on customer bills.

Over the first four years of the LTSP, which includes the third regulatory period, TasWater aims to achieve the following outcomes to customers:

- ❑ microbiological compliance of 100 per cent, removal of all boil water and public health alerts and a progressive reduction of public health risk in our water systems;
- ❑ effluent compliance of 90 per cent by volume measured against EPA standards and mitigation of environmental risks for 90 per cent of the EPA's top 20 sites;
- ❑ risk reduction of all but one dam to within tolerable levels, with the remaining dam managed through interim measures to reduce its risk appropriately;
- ❑ maintain current service reliability standards by focusing investment on assets that, if they failed, would cause substantial service interruption or environmental impact; and
- ❑ limiting price increases to less than full cost recovery to achieve the above outcomes while managing impacts to customer bills and maintaining prudent debt levels as it transitions to cost-reflective pricing over time.

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<sup>3</sup> TasWater's *Long Term Strategic Plan 2018 - 2037* is available at: <https://www.taswater.com.au/About-Us/Long-Term-Strategic-Plan-2018---2037>

In its LTSP, TasWater stated that:

“...given the ongoing challenges with data reliability, particularly relating to our underground assets, our initial aim for the first 10 years of the LTSP is to maintain current service standards while focusing on upgrades and repairs to critical assets. Over the course of PSP3 we intend to improve the reliability of our data and continue research into potential innovative practises to increase the life of our assets. By taking this approach we avoid over investing in potentially unwarranted upgrades during PSP3 and position ourselves to develop a more informed strategy for PSP4 and beyond.”



## APPENDIX I PERFORMANCE INDICATORS

Performance indicators used in this report are subsets of those defined in the *2013-14 National Performance Framework: Urban performance reporting indicators and definitions handbook*, July 2014, and the *Tasmanian Water and Sewerage Industry Performance and Information Reporting Guideline*, November 2016. Key performance indicators are shown below.

Indicator	NPR reference
<b>WATER RESOURCES</b>	
<b>Sources of water</b>	
Volume of water sourced from surface water (ML)	W1
Volume of water sourced from groundwater (ML)	W2
Volume of water sourced from desalination of marine water (ML)	W3.1
Volume of water sourced from recycling (ML)	W4
Volume of water received from bulk supplier (ML)	W5
Volume of bulk recycled water purchased (ML)	W6
Total sourced water (ML)	W7
<b>Uses of water supplied</b>	
Volume of water supplied - residential (ML)	W8
Volume of water supplied - commercial, municipal and industrial (ML)	W9
Volume of water supplied - other (ML)	W10
Total urban water supplied (ML)	W11
Average annual residential water supplied (kL per property)	W12
Volume of water supplied - environmental (ML)	W13
Volume of bulk water exports (ML)	W14
Volume of bulk recycled water exports (ML)	W15
<b>Sewage collected</b>	
Volume of waste collected - residential sewage, non-residential sewage and non-trade waste (ML)	W16
Volume of waste collected -trade waste (ML)	W17
Total sewage collected (ML)	W18
Sewage collected per property (kL per property)	W19
<b>Uses of recycled water and stormwater</b>	
Volume of recycled water supplied - residential (ML)	W20
Volume of recycled water supplied - commercial, municipal and industrial (ML)	W21
Volume of recycled water supplied - agricultural (ML)	W22

Indicator	NPR reference
Volume of recycled water supplied - environmental (ML)	W23
Volume of recycled water supplied - on-site (ML)	W24
Volume of recycled water supplied - other (ML)	W25
Total recycled water supplied (ML)	W26
Recycled water (percent of effluent recycled)	W27
Volume of urban stormwater supplied to other infrastructure operators (ML)	W28.1
Volume of urban stormwater used (ML)	W28.4
Total volume of treated and untreated sewage discharges from a sewage discharge point	W29
<b>ASSET</b>	
<b>Water treatment plants</b>	
Number of water treatment plants providing disinfection only	
Number of water treatment plants providing further treatment	
Number of water treatment plants providing full treatment	A1
<b>Other water assets</b>	
Number of water pumping stations	
Length of water mains (km)	A2
Properties served per km of water main (no. per km)	A3
Number of water distribution storage facilities	
<b>Sewerage assets</b>	
Number of sewage treatment plants	A4
Number of sewage pumping stations	
Length of sewerage mains and channels (km)	A5
Properties served per km of sewer main (no. per km)	A6
<b>Water main breaks</b>	
Water main breaks (no. per 100 km of water main)	A8
<b>Water losses</b>	
Infrastructure leakage index (ILI)	A9
Real losses (L per service connection per day)	A10
Real losses (kL per km of water main per day)	A11
<b>Sewerage breaks and chokes</b>	
Sewerage mains breaks and chokes (no. per 100 km sewer main)	A14
Property connection sewer breaks and chokes (no. per 1 000 properties)	A15
<b>CUSTOMERS</b>	
<b>Connected properties and population</b>	
Population receiving water supply services (000s)	C1
Connected residential properties - water supply (000s)	C2
Connected non-residential properties - water supply (000s)	C3

Indicator	NPR reference
Total connected properties - water supply (000s)	C4
Population receiving sewage services (000s)	C5
Connected residential properties - sewerage (000s)	C6
Connected non-residential properties - sewerage (000s)	C7
Total connected properties - sewerage (000s)	C8
<b>Complaints, call wait time, service interruptions, customer restrictions and legal actions</b>	
Water quality complaints (no. per 1 000 properties)	C9
Complaints meaningfully responded to within ten days (%)	
Water service complaints (no. per 1 000 properties)	C10
Sewerage service complaints (no. per 1 000 properties)	C11
Billing and account complaints - water and sewerage (no. per 1 000 properties)	C12
Total water and sewerage complaints (no. per 1 000 properties)	C13
Percent of calls answered by an operator within 30 seconds (%)	C14
Average duration of an unplanned interruption - water (minutes)	C15
Average sewerage interruption (minutes)	C16
Number of sewer spills	
Time to attend sewer spills, breaks and chokes (minutes)	
Incidence of unplanned interruptions - water (no. per 1 000 properties)	C17
Customers to which restrictions applied for non-payment of water bill (no. per 1 000 properties)	C18
Customers to which legal actions applied for non-payment of water bill (no. per 1 000 properties)	C19
<b>ENVIRONMENT</b>	
Percent of sewage treated to a primary level (%)	E1
Percent of sewage treated to a secondary level (%)	E2
Percent of sewage treated to a tertiary or advanced level (%)	E3
Percent of biosolids reused (%)	E8
Greenhouse gas emissions - water (tonnes CO <sub>2</sub> -equivalents per 1 000 properties)	E9
Greenhouse gas emissions - sewerage (tonnes CO <sub>2</sub> -equivalents per 1 000 properties)	E10
Net greenhouse gas emissions - other (net tonnes CO <sub>2</sub> -equivalents per 1 000 properties)	E11
Total net greenhouse gas emissions (net tonnes CO <sub>2</sub> -equivalents per 1 000 properties)	E12
Sewer overflows reported to the environmental regulator (no. per 100 km of main)	E13
<b>FINANCE</b>	
<b>Revenue</b>	
Total revenue - water (\$000)	F1
Total revenue - sewerage (\$000)	F2
Total income for whole of utility (\$000)	F3
Residential revenue from usage charges - water (%)	F4
Revenue per property for water supply services (\$ per property)	F5

Indicator	NPR reference
Revenue per property for sewerage services (\$ per property)	F6
Income per property for whole of utility (\$ per property)	F7
Revenue from community service obligations (%)	F8
<b>Written down replacement costs of fixed assets</b>	
Nominal written down replacement cost of fixed water supply assets (\$000)	F9
Nominal written down replacement cost of fixed sewerage assets (000\$)	F10
<b>Costs</b>	
Operating cost - water (\$ per property)	F11
Operating cost - sewerage (\$ per property)	F12
Combined operating cost - water and sewerage (\$ per property)	F13
<b>Capital expenditure</b>	
Total water supply capital expenditure (\$000)	F14
Total sewerage capital expenditure (\$000)	F15
Total capital expenditure for water and sewerage (\$000)	F16
Water supply capital expenditure (\$ per property)	F28
Sewerage capital expenditure (\$ per property)	F29
<b>Economic real rate of return</b>	
Economic real rate of return - water	F17
Economic real rate of return - sewerage	F18
Economic real rate of return - water and sewerage	F19
<b>Dividends</b>	
Dividend (\$000)	F20
Dividend payout ratio (%)	F21
<b>Net debt to equity, interest cover, net profit after tax and community service obligations</b>	
Net debt to equity (%)	F22
Interest cover	F23
Net profit after tax (NPAT) (\$000)	F24
NPAT ratio (%)	F30
Community service obligations (\$000)	F25
<b>Capital works grants</b>	
Capital works grants - water (\$000)	F26
Capital works grants - sewerage (\$000)	F27
<b>HEALTH</b>	
Water quality guidelines	H1
% of population where microbiological compliance was achieved	H3
Number of zones where chemical compliance was achieved (eg 23 / 24)	H4
Risk-based drinking water management plan externally assessed? (yes/no)	H5

Indicator	NPR reference
<b>PRICING</b>	
<b>Water</b>	
Tariff structure - water (text)	P1
Free water allowance (kL per property) - water	P1.1
Fixed charge (\$ per property) - water	P1.2
Usage charge 1 <sup>st</sup> step (\$ per kL)	P1.3
Special levies (\$ per property) - water	P1.12
Income from special levies retained by utility? (yes/no) - water	P1.13
Annual bill based on 200kL per annum - water	P2
Average annual residential water supplied (kL per property)	P2.1
Typical residential bill - water	P3
<b>Sewerage</b>	
Tariff structure - sewerage (text)	P4
Fixed charge (\$ per property) - sewerage	P4.1
Usage charge - sewerage (\$ per kL)	P4.2
Special levies (\$ per property) - sewerage	P4.3
Income from special levies retained by utility? (yes/no) - sewerage	P4.4
Annual bill based on 200kL per annum - sewerage	P5
Typical residential bill - sewerage	P6
<b>Water and sewerage</b>	
Annual bill based on 200kL per annum (water and sewerage)	P7
Typical residential bill (water and sewerage)	P8



## APPENDIX 2 SEWAGE TREATMENT PLANT (STP) PERFORMANCE SUMMARY

Chapter 6 reports on TasWater's compliance results on a state-wide level. As it may also be important to understand how the performance of individual STPs contributes to TasWater's performance, more detailed compliance information is provided in this Appendix.

Table A2.1 and Figures A2.1 to A2.2 show TasWater's compliance with regulatory discharge limits and AMT limits for effluent discharges to water for all Level 2 STPs assessed. Where STPs report compliance with AMT limits that exceeds compliance with regulatory limits, this generally means that the regulatory limits, which are site-specific, are more stringent than AMT limits.

Table A2.2 lists the compliance reported for each recycling scheme which utilises treated effluent generated by Level 2 STPs. Compliance is measured against 'Class B' quality expectations (as outlined in the *Environmental Guidelines for the Use of Recycled Water in Tasmania, DPIWE 2002*) for each of the 2013-14 to 2017-18 financial years.

Table A2.3 lists the proportion of effluent re-used and re-use flow per year for each Level 2 STP with associated effluent re-use for each of the 2013-14 to 2017-18 financial years.

Table A2.4 provides the licensed average dry weather flow limit and the actual average annual inflow in 2017-18 for each Level 2 STP.

Table A2.1 Summary of STP discharge to waters Regulatory Limits and AMT Limits compliance results, 2013-14 to 2017-18

Premises name	2017-18		2016-17		2015-16		2014-15		2013-14	
	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)
Beaconsfield	84.3	49.1	80.6	57.4	83.6	60.7	93.4	55.7	83.6	57.4
Beauty Point	(94.8)	(66.7)	94.7	66.0	88.5	48.2	93.1	64.4	91.7	63.0
Bicheno	77.1	60.2	87.5	76.9	89.6	68.5	89.6	68.9	68.8	57.4
Blackmans Bay	75.8	54.3	70.4	55.8	73.3	53.7	90.0	58.3	86.0	58.5
Boat Harbour	76.9	75.9	85.9	83.8	74.1	71.3	55.6	51.5	66.4	69.1
Bothwell	88.0	72.2	(91.7)	(76.9)	(75.9)	(69.4)	(85.9)	(74.5)	88.9	75.0
Bridgewater	87.0	58.3	90.7	61.1	87.6	62.3	86.0	61.7	76.4	54.6
Bridport	43.5	43.5	49.1	49.1	45.4	45.4	50.8	50.8	54.5	54.5
Brighton	(-) <sup>1</sup>	(-) <sup>1</sup>	(-) <sup>1</sup>	(-) <sup>1</sup>	(-) <sup>1</sup>	(-) <sup>1</sup>	(-) <sup>1</sup>	(-) <sup>1</sup>	(77.5)	(33.3)
Cambridge	96.3	98.1	88.9	92.6	83.3	88.0	83.3	90.4	81.5	88.0
Cameron Bay	98.7	81.2	93.3	80.2	92.5	74.1	89.1	74.8	82.2	66.7
Campania	(70.3)	(54.6)	58.3	51.9	37.5	38.0	(39.6)	(41.5)	(35.4)	(45.4)
Campbell Town	83.3	53.7	(72.0)	(44.4)	(80.2)	(50.0)	(80.2)	(56.9)	86.3	54.2
Carrick	78.7	50.9	82.5	63.1	75.2	54.3	82.8	60.6	80.2	54.7
Cradle Mountain	99.6	100.0	99.6	99.8	98.8	99.2	98.7	99.0	94.7	96.5
Cressy	(87.5)	(44.4)	93.8	55.6	(83.3)	(40.7)	(91.6)	(51.4)	91.6	47.7
Currie	91.7	52.8	96.7	57.1	90.1	66.0	90.3	72.4	97.6	72.3
Cygnets	80.8	76.9	89.6	83.3	100	85.9	97.9	77.6	100	85.2
Deloraine	70.4	70.4	71.7	71.7	57.4	54.6	66.0	66.0	66.0	52.4
Dover	100.0	93.5	97.2	89.8	96.3	88.9	96.3	88.0	89.8	82.4
East Strahan	91.5	70.8	83.0	65.0	91.4	70.2	90.5	69.1	90.1	72.5
Electrona	89.2	67.6	89.2	55.6	90.0	36.1	85.6	27.4	31.3	37.0

Premises name	2017-18		2016-17		2015-16		2014-15		2013-14	
	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)
Evandale	(70.5)	(36.4)	76.8	33.3	(71.9)	(33.3)	72.9	34.3	72.2	29.4 <sup>1</sup>
Exeter	93.8	44.4	90.6	42.6	80.2	32.4	87.1	36.6	93.6	51.2
Fingal	74.1	45.4	93.5	63.0	83.3	53.1	73.9	46.4	79.4	47.7
Geeveston	86.7	78.7	82.5	75.0	73.3	67.6	74.2	73.2	83.9	77.8
George Town	92.5	63.0	89.5	68.5	83.3	63.0	83.3	62.5	88.7	74.1
Hobblers Bridge	92.5	82.4	93.7	80.5	90.2	68.8	86.2	64.6	97.5	72.2
Kempton	54.7	41.7	(27.1)	(39.8)	(39.6)	(41.5)	(33.3)	(32.1)	(45.8)	(46.3)
Latrobe	61.9	37.3	64.6	47.2	81.3	48.2	80.4	54.7	73.9	58.5
Legana	84.3	43.5	83.0	40.9	75.9	34.3	84.0	34.9	85.1	45.5
Lilydale	88.9	81.5	91.7	84.3	89.4	85.2	92.0	67.0	90.8	70.4
Longford	63.8	50.0	70.2	56.6	64.6	46.3	54.4	35.0	44.1	28.6
Macquarie Point	94.6	56.2	94.0	54.2	88.3	54.6	78.9	50.9	87.8	50.5
Margate	85.8	50.0	81.7	53.7	79.5	48.2	73.3	52.8	70.3	49.1
Midway Point	(80.4)	(69.4)	91.7	75.0	95.8	72.2	97.9	69.8	100	78.3
New Norfolk	86.7	54.6	87.5	54.6	91.7	56.5	85.8	57.4	85.5	56.5
Newnham	82.3	54.7	82.8	52.6	71.7	50.0	85.9	58.5	84.8	56.5
Norwood	97.5	83.3	91.7	73.1	94.5	72.6	96.4	82.0	94.1	78.7
Oatlands	(71.9)	(54.6)	(37.5)	(45.4)	(53.2)	(50.5)	50.0	44.3	(39.6)	(41.7)
Orford	89.8	66.7	84.9	62.3	88.0	63.9	86.8	59.4	93.5	66.7
Pardoe	86.9	19.0	89.7	23.7	84.4	19.6	58.7	14.3	70.0	15.7
Perth	(65.6)	(31.5)	64.6	29.6	(73.5)	(35.5)	76.0	35.2	84.9	35.2
Port Sorell	37.5	29.0	39.6	32.4	27.1	25.9	35.4	28.9	52.1	36.3
Prince of Wales	89.5	59.7	87.9	59.7	79.2	52.8	83.0	55.1	89.6	62.0
Prospect Vale	90.4	77.2	82.0	71.2	85.9	67.7	89.9	71.7	82.4	69.5

Premises name	2017-18		2016-17		2015-16		2014-15		2013-14	
	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)
Queenstown	98.9	78.3	96.4	75.0	91.5	68.2	70.2	72.6 <sup>2</sup>	62.5	59.7 <sup>2</sup>
Railton	93.8	66.7	- <sup>2</sup>	- <sup>2</sup>	(-)	(-)	(-)	(-)	89.0	65.8
Ranelagh	95.8	98.1	97.5	100	93.3	95.4	95.0	100	86.0	93.6
Richmond	(-) <sup>1</sup>	(40.7)	(-) <sup>1</sup>	(47.5)	- <sup>1</sup>	44.4	- <sup>1</sup>	44.3	- <sup>1</sup>	42.6
Ridgley	88.0	88.9	86.9	89.9	80.2	80.0	90.9	90.7	87.7	88.1
Risdon Vale	93.9	93.5	100	94.4	97.9	90.7	96.1	93.0	97.9	89.8
Riverside	91.7	56.5	93.5	52.8	93.5	52.8	97.0	58.4	100	63.9
Rokeby	(92.6)	(92.6)	93.6	93.6	(95.3)	(95.3)	82.2	81.4	99.1	99.1
Rosebery	99.1	99.1	94.2	94.2	79.3	79.3	-	-	-	-
Rosny	81.1	59.0	85.0	58.3	89.6	58.3	85.9	65.	88.3	67.6
Round Hill	91.4	91.4	81.1	81.3	95.4	95.4	90.6	90.6	85.6	85.6
Scamander	(-) <sup>1</sup>	(77.8)	- <sup>1</sup>	82.4	- <sup>1</sup>	64.3	(-) <sup>1</sup>	(64.7)	(-) <sup>1</sup>	(69.4)
Scottsdale	96.9	61.1	97.9	60.2	96.8	57.0	94.3	64.3	91.7	65.7
Selfs Point	96.7	98.7	93.3	96.4	90.3	96.2	87.4	93.8	94.2	97.8
Sheffield	96.0	96.0	99.1	99.1	95.4	95.4	98.0	98.0	97.2	97.2
Sisters Beach	90.7	90.7	97.0	97.0	96.3	97.2	88.0	88.0	95.7	95.7
Smithton	59.0	35.7	85.0	42.7	89.7	46.0	88.2	56.8	57.6	36.6 <sup>2</sup>
Somerset	93.8	78.7	93.2	75.8	88.8	66.7	100.0	58.5	100	67.9
Sorell	47.3	50.9	89.6	61.1	91.7	68.5	89.6	78.7	97.9	78.8
St Helens	99.1	100.0	100	100	96.3	100	96.0	100	96.2	98.1
St Marys	86.1	40.5	- <sup>2</sup>	- <sup>2</sup>	- <sup>2</sup>	- <sup>2</sup>	- <sup>2</sup>	- <sup>2</sup>	83.3	47.2
Stanley	92.7	48.1	94.4	54.0 <sup>1</sup>	86.1	37.2	75.0	43.1	69.0	50.7
Stieglitz	(-) <sup>1</sup>	(-) <sup>1</sup>	(-) <sup>1</sup>	(-) <sup>1</sup>	(-) <sup>1</sup>	(-) <sup>1</sup>	(-) <sup>1</sup>	(-) <sup>1</sup>	(100)	(73.2)
Swansea	77.8	47.2	75.9	45.4 <sup>1</sup>	83.3	48.2	81.1	44.3	83.3	52.8

Premises name	2017-18		2016-17		2015-16		2014-15		2013-14	
	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)
Ti-Tree Bend	96.3	87.3	95.1	84.7	94.3	81.8	96.5	89.6	95.8	83.3 <sup>1</sup>
Triabunna	79.6	53.7	87.0	63.0	75.0	51.9	73.6	52.8	79.6	50.9
Tullah	92.7	72.2	95.6	69.6	87.5	65.2	93.9	68.8 <sup>2</sup>	93.3	75.4 <sup>2</sup>
Turners Beach	76.9	51.9	80.9	60.0	68.5	42.6	74.0	43.3	78.4	55.7
Ulverstone	90.8	59.0	56.0	28.5	41.7	18.2	33.3	11.1 <sup>3</sup>	— <sup>2</sup>	— <sup>2</sup>
Westbury	69.9	69.9	75.1	75.1	51.9	51.9	72.8	72.8	58.5	58.5
Wynyard	90.4	69.9	88.0	69.0	92.4	75.9	79.7	63.6	84.8	46.5
Zeehan	91.3	80.6	80.9	78.2	81.6	82.6	68.2	75.3 <sup>2</sup>	71.9	76.82

AMT dataset completeness:

- ( ) Values in brackets: full re-use, no discharge to water
- <sup>1</sup> cannot be assessed (no relevant limits or no discharge to this location)
- <sup>2</sup> dataset incomplete

Figure A2.1 STP compliance with regulatory discharge to waters limits and re-use proportion, 2017-18 (per cent)

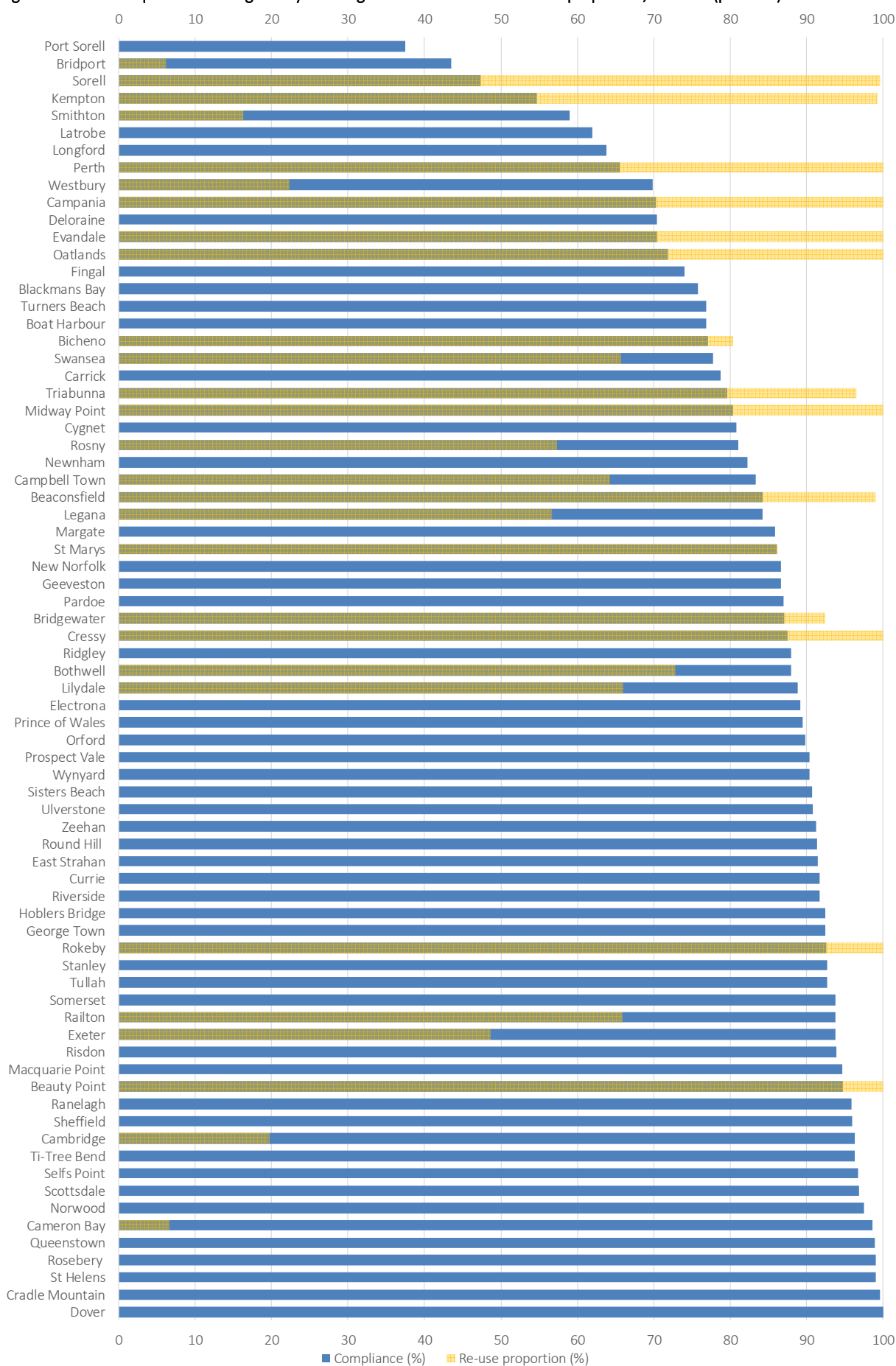


Figure A2.2 STP compliance with AMT discharge to waters limits and re-use proportion, 2017-18 (per cent)

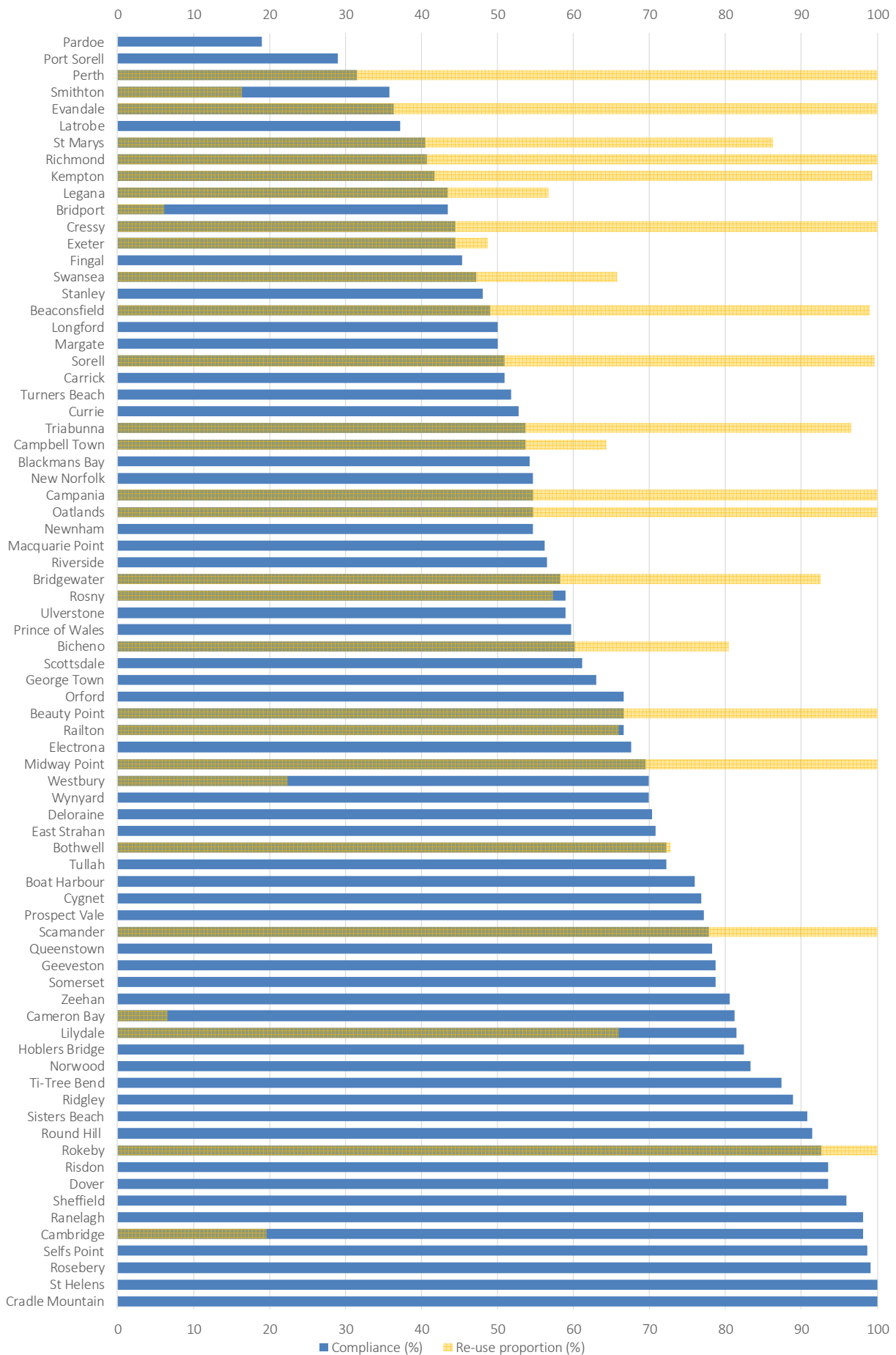


Table A2.2 STP compliance with modified 'Class B' re-use limits<sup>1</sup>

STP	2017-18	2016-17	2015-16	2014-15	2013-14	2012-13
Beaconsfield	96.0	-*	93.3	*	*	88.9
Beauty Point	95.0	94.8	86.7	92.1	93.3	91.7
Bicheno	90.0	93.3	96.7	94.8	83.3	93.3
Bothwell	88.3	93.3	85.0	93.1	90.0	94.6
Bridgewater	98.3	98.3	98.3	96.6	75.0	96.7
Bridport	78.3	83.3	80.0	87.9	100	91.7
Brighton	86.7	83.9	79.3	86.4	83.1	81.7
Cambridge/Airport	100.0	100	98.3	100	95.0	100
Cameron Bay	100.0	98.5	98.3	98.3	98.3	100
Campania	91.7	83.3	90.0	77.6	80.0	85.5
Campbell Town	91.7	70.0	80.0	87.1	90.0	95.0
Carrick	-	96.6	-	87.3	80.0	91.4
Cressy	86.7	91.7	85.0	91.5	90.0	81.7
Evandale	70.9	66.7	68.3	61.7	59.0	65.0
Exeter	93.3	71.7	78.3	87.3	94.1	96.6
Kempton	65.0	45.0	53.5	51.7	71.7	61.7
Latrobe	-	53.3	-	87.9	75.9	65.5
Legana	85.0	86.3	80.0	88.8	89.7	93.5
Lilydale	91.7	91.7	93.6	92.9	94.3	93.3
Macquarie Point	-	95.0	-	98.3	89.7	94.3
Oatlands	93.3	80.0	77.6	79.3	81.7	75.0
Orford	-	89.7	-	89.7	100	96.7
Penna	87.3	86.7	90.0	95.0	91.4	85.7
Perth	68.3	68.3	83.9	86.4	87.9	80.0
Railton	88.0	93.3	73.4	81.5	78.8	88.9
Richmond	80.0	74.5	80.0	87.9	76.7	80.0
Riverside	-	90.0	90.0	100	100	100
Rokeby	98.3	100	100	98.4	100	100
Rosny	82.4	82.7	100	98.4	100	100
Scamander	85.0	93.3	91.9	95.0	96.7	93.3
Selfs Point	-	99.6	-	99.7	100	100
Smithton	60.0					
St Marys	48.3	68.3	72.4	71.4	83.3	86.0
Stieglitz	100.0	95.0	95.0	88.7	98.2	96.7
Swansea	75.0	75.0	85.0	82.8	88.3	79.0
Triabunna	91.7	91.7	75.0	77.6	85.0	83.9
Westbury	92.4	93.4	70.2	-	-	-

\* Insufficient number of samples provided

<sup>1</sup> EPA assessment is against 'Class B' Recycled Water quality with an adjusted pH range of 5.5 – 8.5 and an additional upper limit of 10 000 cfu/100mL thermotolerant coliforms.

Table A2.3 Re-use proportion per STP (per cent proportion and ML/year) 2013-14 to 2017-18

Premises name	2017-18		2016-17		2015-16		2014-15		2013-14	
	Re-use proportion (%)	Re-use flow ML/year	Re-use proportion (%)	Re-use flow ML/year	Re-use proportion (%)	Re-use flow ML/year	Re-use proportion (%)	Re-use flow ML/year	Re-use proportion (%)	Re-use flow ML/year
Beaconsfield	99	104	60	84	89	101	87	62	79	100
Beauty Point	100	146	39	81	75	120	68	108	62	125
Bicheno	80	80	58	66	37	46	88	89	52	64
Bothwell	73	25	100	48	100	39	100	42	77	33
Bridgewater	92	785	67	550	81	644	56	499	64	539
Bridport	6	7	10	10	13	9	16	13	9	8
Brighton	100	214	100	221	100	203	100	208	100	281
Cambridge	20	34	15	24	4	6	7	10	5	6
Cameron Bay	7	119	3	50	3	45	2	43	3	47
Campania	100	35	97	33	91	29	100	17	100	30
Campbell Town	64	42	100	119	100	72	100	69	98	74
Carrick	-	-	-	-	-	-	23	40	14	28
Cressy	100	69	32	23	100	57	100	61	80	59
Evandale	100	81	83	65	100	76	100	93	64	59
Exeter	49	25	36	24	41	26	53	29	44	32
Kempton	99	29	100	21	100	23	100	26	100	44
Legana	57	209	41	172	63	232	63	222	53	188
Lilydale	66	22	58	42	86	31	86	34	64	21
Macquarie Point	-	-	-	-	-	-	-	-	3	102
Midway Point	100	165	73	105	83	133	70	119	68	117
Oatlands	100	68	100	103	100	73	100	50	100	62
Penna	-	-	100	266	100	270	100	246	100	238
Perth	100	209	83	154	100	199	85	175	74	144
Railton	66	105	42	180	100	152	100	149	43	112
Richmond	100	71	100	60	100	63	91	60	88	63

Premises name	2017-18		2016-17		2015-16		2014-15		2013-14	
	Re-use proportion (%)	Re-use flow ML/year	Re-use proportion (%)	Re-use flow ML/year	Re-use proportion (%)	Re-use flow ML/year	Re-use proportion (%)	Re-use flow ML/year	Re-use proportion (%)	Re-use flow ML/year
Riverside	-	-	3	18	2	9	11	59	14	90
Rokeby	100	749	99	723	100	682	99	700	98	620
Rosny	57	1300	55	1265	76	1673	56	1252	75	1685
Scamander	-	-	92	45	85	46	100	44	100	51
Selfs Point	-	-	-	-	-	-	3	116	0	15
Smithton	16	207	-	-	-	-	-	-	-	-
Sorell	100	226	72	165	82	166	77	158	66	135
St Marys	86	40	40	19	80	36	85	34	93	52
Stieglitz	100	54	100	102	100	66	100	65	100	82
Swansea	66	48	19	17	48	45	87	66	78	64
Taroona	-	-	-	-	-	-	-	-	4	5
Triabunna	97	55	91	69	94	60	100	60	98	63
Westbury	22	47	10	33	42	97	19	43	12	42

Table A2.4 2017-18 Licensed flow limit and actual average annual inflow per STP (kL/day and per cent proportion)

Premises name	Catchment area	Licensed flow limit (kL/day)	2017-18 average annual inflow (kL/day)	Actual inflow (per cent of licensed limit)
Beaconsfield	West Tamar	400	288	72
Beauty Point	West Tamar	540	401	74
Bicheno	Glamorgan/Spring Bay	450	272	61
Blackmans Bay	Kingborough	4 125	4 028	98
Boat Harbour	Waratah/Wynyard	170	30	18
Bothwell	Central Highlands	155	95	61
Bridgewater	Brighton	3 500	2 370	68
Bridport	Dorset	1 400	294	21
Brighton	Brighton	650	587	90
Cambridge/Airport	Clarence	800	467	58
Cameron Bay	Glenorchy	6 000	4 939	82
Campania	Southern Midlands	136	95	69
Campbell Town	Northern Midlands	325	180	55
Carrick	Meander Valley	624	539	86
Cradle Mountain	Kentish	500	222	44
Cressy	Northern Midlands	240	188	78
Currie	King Island	290	318	110
Cygnet	Huon Valley	400	359	90
Deloraine	Meander Valley	850	879	103
Dover	Huon Valley	360	198	55
East Strahan	West Coast	1 056	460	44
Electrona	Kingborough	450	357	79
Evandale	Northern Midlands	375	221	59
Exeter	West Tamar	150	143	95
Fingal	Break O' Day	125	38	31
Geeveston	Huon Valley	300	374	125
George Town	George Town	3 600	1 947	54
Hoblers Bridge	Launceston	4 500	2 712	60
Kempton	Southern Midlands	135	81	60
Latrobe	Latrobe	1 000	1 345	135
Legana	West Tamar	540	1011	187
Lilydale	Launceston	135	93	69
Longford	Northern Midlands	2 700	1 844	68
Macquarie Point	Hobart	18 000	10 827	60
Margate	Kingborough	681	557	82
Midway Point	Sorell	810	451	56
Turiff Lodge	Derwent Valley	4 100	1 734	42
Newnham Drive	Launceston	3 920	2 991	76
Norwood	Launceston	4 050	2 166	53
Oatlands	Southern Midlands	136	186	137
Orford	Glamorgan/ Spring Bay	473	185	39

Premises name	Catchment area	Licensed flow limit (kL/day)	2017-18 average annual inflow (kL/day)	Actual inflow (per cent of licensed limit)
Pardoe	Devonport	14 000	14 133	101
Penna#	Sorell	1 400	1 067	76
Perth	Northern Midlands	450	573	127
Port Sorell	Latrobe	961	968	101
Prince of Wales	Glenorchy	9 900	7 745	78
Prospect Vale	Meander Valley	1 720	1 569	91
Queenstown	West Coast	1 100	1 541	140
Railton	Kentish	600	438	73
Ranelagh	Huon Valley	1200	1 133	94
Richmond	Clarence	236	195	83
Ridgley	Burnie	110	146	133
Risdon	Clarence	1 000	887	89
Riverside	West Tamar	2 800	1 563	56
Rokeby	Clarence	4 000	2 052	51
Rosebery	West Coast	242	919	380
Rosny	Clarence	7 500	6 213	83
Round Hill	Burnie	9 000	6 297	70
Scamander	Break O' Day	240	130	54
Scottsdale	Dorset	3 200	449	14
Selfs Point	Hobart	13 000	9 825	76
Sheffield	Kentish	350	510	146
Sisters Beach	Waratah/Wynyard	585	83	14
Smithton	Circular Head	5 200	3 482	67
Somerset	Waratah/Wynyard	1 200	1 045	87
Sorell	Sorell	810	621	77
St Helens	Break O' Day	1 500	413	28
St Marys	Break O' Day	190	126	66
Stanley	Circular Head	276	170	61
Stieglitz	Break O' Day	110	148	135
Swansea	Glamorgan/ Spring Bay	430	199	46
Ti-Tree Bend	Launceston	25 000	15 178	61
Triabunna	Glamorgan/ Spring Bay	253	157	62
Tullah	West Coast	243	117	48
Turners Beach	Central Coast	600	529	88
Ulverstone	Central Coast	7 500	7 367	98
Westbury	Meander Valley	600	571	95
Wynyard	Waratah/Wynyard	2 900	4162	144
Zeehan	West Coast	214	589	275

Source: EPA Tasmania database

# The Penna STP acts as a “polishing plant” for treated effluent from the Midway Point and Sorell STPs, with effluent receiving further treatment prior to being made available for recycled water use

## APPENDIX 3 DAM SAFETY

### Dam safety assessment terminology

#### Consequence category

This refers to the classification scale that details the consequences resulting from a catastrophic dam failure. There are seven consequence categories in a graded scale ranging from “Very Low” (the consequences of a dam failure are negligible) through to “Extreme” (the consequences of a dam failure are severe in terms of loss of life and infrastructure impacts). Table A3.1 below lists TasWater’s ‘significant’ or higher consequence category dams in Tasmania.

#### Consequence of Dam Failure

The result of a dam failure in terms of loss of life and damage to infrastructure, services and the environment.

#### Dam

An artificial barrier together with any works that is constructed for the storage, control or diversion of water and other liquids, silt, debris of liquid borne debris.

#### Dam Safety Management Plans

TasWater is required to develop five year dam safety works programs. These works programs are required to be submitted to, and agreed to by, the Dam Safety Regulator. The overall objective of each five year program is that all dams which have a “Significant” or higher consequence category are within the Limit of Tolerability in terms of societal risk and reduced to As Low As Reasonably Practicable, as defined in the Australian National Committee on Large Dams (ANCOLD) guidelines. Dams that do not currently meet these criteria require a program of works to bring them within acceptable criteria.

#### Dam Safety Emergency Plans (DSEP)

A DSEP is prepared for use in a situation where there is a dam safety emergency; it is the Department of Primary Industries, Parks, Water and Environment’s (DPIPWE’s) policy that all dams where there is the potential for loss of life in the event of dam failure, require a DSEP. As a minimum a DSEP is required to include general information about the dam, emergency contact details, flood inundation maps, dam specifications, a plan of the dam and emergency procedure information.

#### Comprehensive Surveillance Inspections and Reports

TasWater is required to undertake a comprehensive surveillance inspection every five years for each of its dams that have a “Significant” or higher consequence category, and report, to the Dam Safety Regulator (DPIPWE) in its annual Dam Safety Management Plan, on the condition of each dam inspected, outlining any planned remedial works required to maintain or upgrade the inspected dam.

Table A3.1 TasWater's Significant or higher consequence category dams in Tasmania, 2017-18

Dam name	Consequence category
Flagstaff Gully	Extreme
Knights Creek	Extreme
Limekiln Gully	Extreme
Tolosa Reservoir	Extreme
Curries Dam	High A
Lower Reservoir	High A
Swansea (Meredith) Reservoir	High A
Mooreville Road Reservoir	High A
Ridgeway Reservoir	High A
Upper Burnie Reservoir	High A
Upper Reservoir	High A
Lake Isandula	High B
Lake Mikany	High B
Risdon Brook	High B
Conglomerate Dam	High C
Duckhole Rivulet	High C
Girdlestones Reservoir	High C
Illabrook Dam	High C
Lower Prosser	High C
Margaret Street Detention Basin	High C
Pet Dam	High C
Westbury Dam	High C
Williams Reservoir	High C
Barwick Effluent Lagoons	Significant
Bicheno Dam	Significant
Blackmans #1	Significant
Blackmans #2	Significant
Coles Bay	Significant
Fenton	Significant
Grey Mountain No.1	Significant
Grey Mountain No.2	Significant
Guide Dam	Significant
Midway Point Sludge Lagoon	Significant
Sorell Sludge Lagoons	Significant
Stiglitz Wastewater & Reuse Dams	Significant
Waratah Dam	Significant
Georges River Weir	Significant

## APPENDIX 4 CUSTOMER SERVICE STANDARDS

Table A4.1 Customer Service Code service standards (2017-18) and performance

Indicator	CSC minimum standard 2017-18	2016-17	2017-18
<b>Water:</b>			
Unplanned water supply interruptions (per 100 km of water main)	54	NR	23.1
Time taken to attend bursts and leaks:			
– priority 1 (minutes)	60 / 90%	30 / 93.3%	36 / 93.8%
– priority 2 (minutes)	180 / 90%	94 / 93.8%	100 / 96.0%
– priority 3 (minutes)	4 320 / 90%	2 428 / <b>81.1%</b>	2 197 / 90.0%
Average frequency of unplanned water supply interruptions (number per customer)	0.10	<b>0.15<sup>#</sup></b>	<b>0.22</b>
Average frequency of planned water supply interruptions (number per customer)	0.10	NR	<b>0.11</b>
Average unplanned customer minutes off water supply (minutes)	20	NR	<b>34.3</b>
Average planned customer minutes off water supply (minutes)	15	NR	<b>36.4</b>
Duration of unplanned water supply interruption (minutes)	180 / 80%	NR	159 / 85.8%
Duration of planned water supply interruption (minutes)	180 / 80%	NR	<b>336 / 10.6%</b>
Unplanned water supply interruptions restored within five hours (per cent)	98%	<b>86.1%<sup>#</sup></b>	<b>95.8%</b>
Planned water supply interruptions restored within five hours (per cent)	90%	98.8% <sup>#</sup>	<b>37.9%</b>
Number of customers receiving more than five unplanned water supply interruptions in a financial year (number) <sup>^</sup>	0 / 90%	NR	NR
Unaccounted for water (per cent)	10	<b>23.1</b>	<b>19.8</b>
<b>Sewerage:</b>			
Sewer breaks and chokes (and spills) (per 100 km of sewer main)	93	45.4	45
Time to attend sewer spills, breaks and chokes (minutes)	60 / 90%	<b>84.1%<sup>#</sup></b>	<b>81%</b>
Sewerage service interruption (minutes)	180 / 80%	NR	<b>71.1%</b>
Sewerage spills contained within five hours (per cent)	99%	<b>98.9%<sup>#</sup></b>	99.7%
Customers receiving more than three sewerage service interruptions per year <sup>^</sup>	0 / 90%	NR	NR
<b>Customers:</b>			
Total water and sewerage complaints (per 1 000 properties)	9	<b>12.2</b>	<b>15.6</b>
Water and sewerage complaints to Ombudsman (per 1 000 customers)	0.50	0.31	0.28
Percentage of calls answered by an operator within 30 seconds	85%	89.1%	86.5%

Results in **bold** and underlined indicate standard was not met

<sup>^</sup> Indicator not measurable

<sup>#</sup> Data of low reliability due to incomplete data

NR Not reported. In 2016-17, TasWater and its independent auditor advised that some data was unreliable and was therefore not included in this Report (problems were encountered when two databases were amalgamated). This matter was subsequently addressed and the data will be available for future years.

The most recent version of the Customer Service Code (1 July 2018) can be found at:

<https://www.economicregulator.tas.gov.au/water/regulatory-framework/customer-service-code>

