REPORT ON THE STATE OF THE TASMANIAN WATER AND SEWERAGE INDUSTRY 2019-20

MAY 2021

ISSUED BY THE TASMANIAN ECONOMIC REGULATOR

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Cover image: Pumps at Grassy Water Treatment Plant, King Island (supplied by TasWater)

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ACRONYMS

Term	Meaning within the context of this Report
ADWG	Australian Drinking Water Guidelines 2011 (updated in 2018)
AMT	Accepted Modern Technology
ANCOLD	Australian National Committee on Large Dams
Code	Tasmanian Water and Sewerage Industry Customer Service Code
CSO	Community Service Obligation
DoH	Department of Health (Tas)
DPIPWE	Department of Primary Industries, Parks, Water and Environment (Tas)
DWQG	Tasmanian *Drinking Water Quality Guidelines 2015*
EBIT	Earnings Before Interest and Tax
EPA	Environment Protection Authority (Tas)
EPN	Environment Protection Notice
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^3 (cubic metre)

ML megalitre = 1 000 kL (or 1 000 m^3)

GL gigalitre = 1 000 ML

EXECUTIVE SUMMARY

In accordance with the requirements set out in the *Water and Sewerage Industry Act 2008* (Industry Act), the Tasmanian Economic Regulator (the Economic Regulator) has prepared a state of the industry report for the Tasmanian water and sewerage industry for the period 1 July 2019 to 30 June 2020. This Report has been prepared after consultation with other industry regulators. It summarises the Tasmanian Water and Sewerage Corporation Pty Ltd's (TasWater's) performance across the key areas of pricing, customer service, network reliability and efficiency, financial performance and its compliance with drinking water quality, dam safety and environmental obligations. It also sets out key priorities for improved performance by TasWater.

Tasmania (along with South Australia) differs from other states and territories in Australia in that its drinking water and wastewater services are provided by a single state-wide utility. During 2019-20, TasWater provided water supply services to approximately 431 500 Tasmanians.

TasWater has continued, in the reporting year, to achieve improved performance outcomes across the industry. This has been despite the unexpected and numerous challenges presented by the outbreak of the coronavirus (COVID-19) pandemic from early 2020. COVID-19 resulted in a major disruption to the way TasWater worked and delivered its services. This included the closure of TasWater shopfronts, suspension of its meter reading, deferral of its training programs and the requirement for many TasWater employees to work from home.

Prior to COVID-19 emerging, TasWater put in place water restrictions across Tasmania to ensure water security over summer months. This was in part due to low rainfall, above average temperatures and water capacity constraints in some major dams.

Despite these challenges, TasWater had some major achievements in 2019-20 that have, amongst other things, improved services for customers and reduced TasWater's environmental impact.

With respect to Tasmanians having access to safe drinking water, in 2019-20, and for the second consecutive year, TasWater achieved 100 per cent microbiological compliance across its network of reticulated water supply. In addition, no system operated under long term boil water alerts or had a public health alert (do not consume) in place during the reporting period. This remains a significant feat given that three years earlier there were 25 permanent boil water and public health alerts in place across the State.[1]

Compliance of treated effluent with regulated limits for discharge to the environment (both to water and land) continued the upward trend of recent years. Improved performance at the largest sewage treatment plants has resulted in corresponding flow-weighted compliance gains for discharge to water, while both regulatory changes and significant underlying performance improvements contributed to flow-weighted compliance gains with discharge to land (effluent reuse) limits. Both the percentage and the total volume of effluent recycled were higher in 2019-20 than in previous years. Low rainfall conditions over the summer months in the south-eastern corner of the State, where the largest reuse schemes are located,

[1] From 2012-13 to 2016-17, there were 25 permanent boil water and public health alerts applied to water supplies across Tasmania.

supported this upward trend. The proportion of biosolids reused remained high at 99.2 per cent (as calculated by the Environment Protection Authority).

As in previous years, unaccounted for water continues to be a concern. The volume of TasWater's unaccounted for water was very high in 2019-20, with around 28 per cent of treated water being unaccounted for. TasWater's rate of water loss (measured in kilolitres per kilometre of water main per day), at 11.3 kL per day, was almost four times the median rate reported by equivalent mainland utilities of 2.9 kL per day. While the overall volume of unaccounted for water is within the current service standard target, this reflects inefficiencies in the water systems that ultimately result in a poorer financial performance for TasWater, reduced capacity for TasWater to upgrade its infrastructure and an increased likelihood of restrictions being imposed.

Tasmanian bills for water and sewerage services are typically lower than those on the mainland. The bill in 2019-20 for a household using 200 kL per year was unchanged at $1 214. TasWater's *Shareholders Letter of Expectations*[2] required that prices be frozen, including any transition target pricing, for water and sewerage customers from 1 July 2019 to 30 June 2020. The TasWater Board subsequently determined that the price freeze would also apply for 2020-21 to provide financial relief for customers to assist in dealing with the impacts COVID-19.

From a financial perspective, TasWater's underlying profitability was lower than expected due to the financial impact of COVID-19, with TasWater providing a 100 per cent rebate on fourth quarter bills to qualifying small business customers and due to an increase in the provision for bad and doubtful debts. TasWater also reported an increased depreciation expense from the upward asset revaluation undertaken in 2018-19.

Overall, TasWater's operating costs rose by 3.8 per cent in 2019-20. Operating costs for sewerage-related activities increased slightly more than those for water-related activities.

TasWater's total water and sewerage capital expenditure was $128.8 million, an increase from the $110 million in 2018-19 but well below the target of $143.5 million as documented in TasWater's 2020-24 Corporate Plan. TasWater reported that the delivery of some projects was delayed due to the impacts of COVID-19 and to the slower than expected integration of the Capital Delivery Office, combined with a large proportion of its projects not being ready for delivery and requiring further planning and investigation before progressing into the delivery phase.

The Economic Regulator will continue to closely monitor the delivery of TasWater's planned capital projects and TasWater's progress in achieving its compliance standards for the current regulatory period.

For 2020-21, TasWater has identified a number of initiatives that are aimed at further improving its performance. This includes a new complaints management system, several health and safety initiatives and activities aimed at reducing the percentage of non-revenue water. More broadly, increased productivity benefits are expected to result from the further roll-out of TasWater's recently released H2Go[3] application, which was paused during 2020 as

[2] 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

[3] H2Go is TasWater's new field management system aimed at improving data capture of the frequency and duration of interruptions.

a result of the restrictions arising from the COVID-19 pandemic.

It is expected that TasWater will continue to face ongoing impacts from COVID-19 as it transitions its workforce back to site and adapts to social distancing requirements. The financial impact of TasWater's customer support measures will also affect the pace that the entity is able to deliver on its goals.

Networks

Sources of water

During 2019-20, TasWater sourced a total of 91 247ML for urban use, comprising 91 073 ML from surface water (99.8 per cent) and 174 ML from groundwater (0.2 per cent). The total volume of water sourced decreased by 0.3 per cent during the year (down from 91 511 ML in 2018-19) and for the past three years has been above the 5 year annual average of 85 087 ML.

The total volume of urban water supplied decreased by 2.2 per cent to 65 537 ML in 2019-20 though this remains above the 5 year annual average of 61 413 ML.

Residential water supply

The total water supply to residential customers increased by 2.4 per cent in 2019-20, to 36 234 ML, despite the restrictions in place in several areas of the State. Average annual residential water supplied in 2019-20 was marginally higher than that reported in 2018-19, at 193 kL per property. Tasmanian residential consumption has been reasonably consistent over the past three years and remains well above the median of average annual water supply per property for similar sized utilities on the mainland of 159 kL in 2019-20[4].

Water supply to non-residential customers

Water supply to non-residential customers decreased by 7.4 per cent in 2019-20 to 29 250 ML. This included around 6 093 ML of recycled water, of which 6 023 ML or almost 99 per cent was from Level 2 sewage treatment plants. The volume of recycled water was 5.9 per cent more than in 2018-19.

Water supply outside the urban water supply system

The volume of water supplied to customers outside the urban water supply system (ie irrigators) was 3 655 ML in 2019-20, an increase of 21.1 per cent from 2018-19 and accounting for around four per cent of the total volume of potable water produced by TasWater in 2019-20.

Water network

The total length of water mains across Tasmania was 6 459 km as at 30 June 2020. Between 2018-19 and 2019-20, the total number of properties connected to water supply increased by 1.2 per cent to 212 064.

The number of water main breaks, bursts and leaks per 100 km of water main reported in 2019-20 dropped significantly from that reported in 2018-19; from 41 in 2018-19 to 33 in

[4] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator W12).

2019-20. Notwithstanding, the 2019-20 result remains significantly higher than the median rate for similar sized utilities on the mainland of 19 per 100 km of water main.

Sewerage network

As at 30 June 2020 there were 185 181 properties connected to the sewerage network and 4 813 km of sewerage mains and channels. The network has a relatively low property density of 39 properties per kilometre of sewer main, much lower than similar sized mainland utilities, which would usually service, on average, around 65 properties per kilometre of sewer main.

Sewage collected and recycled

The volume of sewage collected by TasWater in 2019-20 was 52 493 ML, or 284 kL per property, slightly higher than in 2018-19 (280 kL per property). Thirty-six of TasWater's 77 Level 2 sewage treatment plants recycled at least some proportion of their treated sewage effluent. The number of sewage treatment plants achieving full reuse of all treated effluent produced decreased to 10 in 2019-20 (from 14 in 2018-19).

TasWater recycled over 11.7 per cent, of treated effluent in 2019-20, which was provided to non-residential customers, principally to farm properties. This was the highest uptake of effluent reuse reported since the establishment of TasWater and its regional predecessors in 2009.

Dam safety

There were no reported incidents in 2019-20 that affected the safety of TasWater's water and wastewater dams, lagoons and weirs, of which there are over 300, and TasWater reported no instances of non-compliance with the Dam Safety Regulator.

During 2019-20, TasWater completed the Swansea Dam upgrade to improve its safety compliance and provide water surety to the community of Swansea.

TasWater also completed the design and investigation works for the Henderson Dam upgrade on Flinders Island that will provide Whitemark residents with improved drinking water security. In addition, TasWater completed the implementation of measures to bring the Grey Mountain No. 1 and No. 2 Dams in the Huon Valley to an acceptable level of risk. Remediation and other finalisation works are planned for these sites.

Service reliability and performance

Water supply interruptions

Unplanned interruptions to water supply affected 46 710 customers in total during 2019-20. On average, there were around 220 unplanned interruptions per 1 000 properties across Tasmania, or 22 per cent, during the period. Unplanned water supply interruptions lasted, on average, 152 minutes (approximately 2.5 hours).

There were around 61 planned interruptions per 1 000 properties and only 13.5 per cent of planned interruptions met the duration standard target of up to three hours. TasWater reported that the ability to resolve planned water supply interruptions within the three hour target was impacted, in part, by COVID-19. However, significant improvement occurred in the number of planned interruptions that were restored within five hours.

Over 90 per cent of 'priority 1', 'priority 2' and 'priority 3' bursts and leaks were responded to within the required timeframes. Whilst the target for response times to Priority 1 bursts and leaks was met, performance declined marginally compared to 2018-19, which TasWater attributes to the COVID-19 pandemic. Response times and outage durations are operational priorities for TasWater and further improvements are expected over the course of the next two to three years.

TasWater was able to respond to unplanned incidents within the standard of up to three hours in 87 per cent of cases.

Unaccounted for water

TasWater estimates that around 28 per cent of the total volume of potable water it produced was unaccounted for in 2019-20. This provides continued evidence of a significant volume of water that is potentially available to be supplied and billed to customers from TasWater's water supply systems.

TasWater estimates that real losses in its reticulation networks during 2019-20 were in the order of 361 litres per service connection per day, or 11.3 kL per kilometre of water main per day. These losses represented over five and a half times the median real losses per service connection for similar sized utilities on the mainland, which were 63 litres per day, and over four times the median real losses per kilometre of water main, which were 2.7 kL per day for major mainland water utilities.

The Economic Regulator is concerned at the continued high volume of unaccounted for water and notes that TasWater has a program of work to address this issue. The Economic Regulator expects that properly accounting for all potable water produced for use would improve TasWater's financial performance and be beneficial for all consumers.

Sewerage service interruptions

In 2019-20 there were, on average, 41 sewerage mains breaks and chokes per 100 km of sewer main. TasWater's performance for 2019-20 was worse than its mainland counterparts, with the median rate reported for similarly sized mainland utilities being 29 breaks and chokes per 100 kilometres of sewer main.

TasWater met the minimum service standard for all three sewerage performance metrics in 2019-20. TasWater reported that this was largely due to a continued focus through the year on resource sharing across teams to ensure satisfactory performance, as well as a greater understanding of reasons for variance. Notwithstanding, the rate of breaks and chokes in property connections remained high compared with mainland counterparts (12.6 sewerage main breaks and chokes per 1 000 properties).

Measuring performance

The accuracy and completeness of TasWater's performance data has continued to improve in 2019-20.

A key area of focus for TasWater in 2019-20 was to address the findings of the 2018-19 TasWater Annual Performance Report audit conducted by independent auditor BDO Australia. Work undertaken by TasWater during the financial year included; the development of data integrity reports that enable better cross-checking of results, a review of metadata documents

for currency and accuracy and the development of a prototype data capture tool that was used to capture results for TasWater's 2019-20 Annual Performance Report.

Whilst improvements in TasWater's data capture and accuracy for the 2019-20 reporting process were anticipated through the introduction of the H2Go application, the roll-out of the application by TasWater was delayed as a result of COVID-19 restrictions.

Customers

Typical residential bill

There were no price increases imposed for water and sewerage services in 2019-20. The typical annual bill for residential customers with average water consumption (193 kL per annum) was $1 207 in 2019-20. The typical bill is based on $549 for water and $658 for sewerage.

Comparing annual bills nationally, residential customers in Tasmania, on average, were paying around $47 less per year than their interstate counterparts. This is based on consumption of 200 kL per annum, marginally higher than a typical Tasmania customer's usage.

The structure of TasWater bills reflects the relatively high fixed cost of water and sewerage services in the State, with fixed water charges representing 28 per cent of the bill compared to around 13 per cent nationally. Against this, TasWater's volumetric charge is comparatively low, at $1.06 per kL compared to a median rate of $2.55 per kL charged by mainland utilities.

The water usage component accounted for 17 per cent of the typical annual bill for residential customers. This reflects the fact that the fixed cost of providing the service to a property (such 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 2019-20, a very small percentage of Tasmanian customers were still not paying the target tariffs that most customers pay.

Approximately 28.5 per cent of residential customers receive a concession, funded by the Tasmanian Government, which was $197 over 2019-20 for customers receiving water services ($98.50) and sewerage services (also $98.50).

Customer complaints

In 2019-20, TasWater received 1 138 complaints, down 57 per cent from 2 648 for the previous year. The rate of complaints, at 5.4 per 1 000 properties, was below the maximum customer service target of 11. As was the case for 2018-19, the largest group of complaints were in relation to water quality (33 per cent) and sewerage services (21 per cent). The number of complaints against all complaint categories (water quality, billing and accounts, water service etc) decreased significantly compared to the previous year. Almost 98 per cent of complaints were resolved within ten days (or within an agreed timeframe).

The Ombudsman received 29 complaints against TasWater in 2019-20, a significant decrease from the previous year (64). Of these, only four were referred to TasWater for investigation and response.

Call centre performance

TasWater's Customer Service Centre (call centre) performance for 2019-20, in terms of response times, was third best by comparison to similar sized utilities nationwide.

In 2019-20, there was a 9 per cent increase in the volume of calls received by TasWater's call centre. For customers calling in, 83 per cent of calls were answered within 30 seconds, against a target of 85 per cent. While falling short of achieving the customer service target, TasWater's call centre average response time remained much better than the median for similarly sized water utilities on mainland Australia, which was 73 per cent of calls answered within 30 seconds.

Payment management

The number of residential and business customers on the hardship program increased significantly from 226 customers in 2018-19 to 603 customers in 2019-20. Of the 603 customers using the program, 173 were concession customers. Customers using the hardship program had significant levels of debts, with the average debt at the time of entering the hardship program around $1 806 which is around one and a half times a typical annual bill for water and sewerage.

As at 30 June 2020, 728 non-residential customers were repaying a debt, an increase compared with the previous year (664).

In 2019-20, no customers had their water supply restricted for non-payment, compared to the one restriction for non-payment applied in 2018-19.

Drinking water

All 61 Tasmanian drinking water supplies were adequately monitored for both microbiological water quality and chemical water quality during 2019-20. All 61 drinking water supplies achieved microbiological compliance. Two water supplies had chemical contaminants detected above the ADWG (Australian Drinking Water Guidelines) health guideline values, of which one had reported metal concentrations above safe health limits).

There were no water supplies on long term boil water alerts or public health alerts as at 30 June 2020. One system operated under a temporary boil water alert during 2019-20.

Microbiological compliance was achieved for 100 per cent of the population supplied with drinking water via the reticulated network. This is the second consecutive year that TasWater has achieved this outcome.

Environment

Sewage treatment plant compliance

In 2019-20, TasWater's Level 2 STPs achieved 90.8 per cent compliance with regulatory discharge to waters limits (flow-weighted), passing the 90 per cent mark for the second time since 2009-10. Thirteen Tasmanian STPs were classified as substantially non-compliant (less than 75 per cent compliance with regulatory discharge to water limits).

Compliance with discharge to land limits for recycled water was 96.8 per cent, a significant improvement on the 2018-19 result of 88.9 per cent. Ten STPs discharged all effluent to reuse, thereby diverting treated effluent away from waterways towards beneficial uses.

Compliance with EPA requirements

TasWater received four Environmental Infringement Notices for offences that occurred in 2019-20 as follows:

- depositing a controlled waste in a manner likely to adversely affect the use or value of receiving waters, as a result of a sewage spill at Sandy Bay in July 2019;
- failing to develop an operational procedures manual sufficient to ensure compliance with effluent quality limits, as a result of a significant discharge of untreated sewage from Macquarie Point wastewater treatment plant in August 2019;
- depositing a controlled waste as a result of a significant discharge of untreated sewage from Macquarie Point wastewater treatment plant in August 2019; and
- failing to develop an operational procedures manual sufficient to ensure compliance with effluent quality limits, as a result of a significant discharge of non-disinfected effluent from the Selfs Point STP in September 2019.

During 2019-20, the EPA undertook five audits of compliance with permit and environment protection notice conditions. Areas identified for corrective action were consistent with those identified in previous audits.

Finance and capital projects

Revenue and profit

TasWater's revenue decreased by 2.2 per cent to $351 million in 2019-20. TasWater's overall income was constrained by loss of revenue associated with COVID-19 rebates for eligible small business customers and a pause in the transition of customers to target pricing tariffs due to COVID-19.

As at 30 June 2020, TasWater's water and sewerage assets were valued at just over $2.7 billion (written down replacement cost), a $100 million (3.8 per cent) increase from 30 June 2019.

Operating expenditure

TasWater's operating costs rose in 2019-20, increasing by $7.9 million (3.8 per cent) to $212.7 million. The increase was mainly driven by the impact of COVID-19, including a $5.6 million increase in provisioning for bad and doubtful debts expense and $0.7 million in costs to manage the pandemic. This increase reflects a $7.7 million increase in administration expenses and a $1.4 million increase in employee-related expenses. TasWater's operating costs were higher than many of its interstate counterparts for which the median cost was $881 per property. TasWater's average operating cost per property in 2019-20 was $1 003.

Capital expenditure

During 2019-20, TasWater's total water and sewerage capital expenditure was $128.8 million, an increase of 17 per cent from the $110 million expended in 2018-19.

Amongst major Australian water utilities, TasWater was one of many utilities that reported an increase in total capital expenditure between 2018-19 and 2019-20, the median percentage change in this group being 16 per cent.

In 2019-20, around $72 million was spent on dedicated water assets and $55.9 million on dedicated sewerage assets. TasWater's average capital expenditure per property was $341 for water and $302 for sewerage in 2019-20, a total of $643 per property. This is higher than most similar utilities on the mainland, which reported a median capital expenditure per property for 2019-20 of around $176 for water and $277 for sewerage (total of $453). This is indicative of the scale of capital expenditure required to bring the Tasmanian water and sewerage network up to the required standards, including the work associated with replacing old or poor infrastructure that is currently underperforming.

Financial performance

Inclusive of contributed asset revenue, TasWater's adjusted net profit after tax was $15 million, a decrease of around $26 million from the previous year. TasWater returned $8.4 million to its council shareholders as dividends. Councils also received $1.6 million in income tax equivalents payments.

TasWater's net debt to equity ratio increased to 40 per cent in 2019-20. This remains low relative to the net debt to equity ratio of equivalent utilities in mainland Australia, where the median ratio was 65.3 per cent in 2019-20. TasWater's adjusted net profit after tax as a percentage of revenue (NPAT ratio) of 4.3 per cent in 2019-20 was the lowest amongst major utilities nationwide, while the group's median NPAT ratio was 15 per cent.

TasWater's interest cover ratio was 0 for 2019-20. This is because EBIT was negative in that year with depreciation calculated on a written down replacement cost basis. The median interest cover ratio was 2.3 for major Australian water utilities for 2019-20, estimated using the same approach.

Major projects

During 2019-20, TasWater completed nine major projects, with a further eight major projects reported as being under construction. Ten of TasWater's major projects were deferred or rescheduled from their original start dates. These delays were typically due to a shift in the project scope, further analysis being conducted or due to interruptions caused by COVID-19.

TasWater's 2020-21 capital works program includes projects and programs with a total of $193.3 million. The majority of TasWater's expenditure is targeted towards projects to improve the safety of drinking water within various systems.

Key performance priorities

Key priorities for industry regulators in the short to medium term include working with TasWater to achieve higher levels of compliance relating to environmental requirements, which requires a focus on upgrading or replacing assets that pose the greatest environmental and public health risks. This includes sustaining drinking water quality compliance and identifying opportunities for improvement in TasWater's practices and processes.

TasWater will face significant financial challenges in future years as a result of its very substantial investment program, rising operating costs and constrained revenue as a result of a further year of no price increases for regulated water and sewerage services. TasWater will, therefore, have to apply very strict financial management policies to achieve its investment program.

As discussed above, the volume of treated water for which there is no metered consumption, including water losses, continues to be substantially higher than for equivalent entities in mainland Australia. This continues to result in high financial costs to TasWater, may also result in water restrictions being imposed earlier than otherwise, or at a higher level, and may have some adverse environmental outcomes in some parts of the State. The volume of treated water for which there is no metered consumption, including water losses, continues to be an issue for TasWater.

More generally, TasWater needs to continue to ensure there are adequate water supplies to meet expected future demand across Tasmania.

TasWater will be better placed to address these priorities as Australia moves out of the restrictions imposed in response to the COVID-19 pandemic are removed.

Key performance measures

		2018-19	2019-20
C4	Water connected properties	209 571	212 064
C8	Sewerage connected properties	183 115	185 181
W11	Total urban water supplied (ML)	67 000	65 537
W12	Average residential consumption (kL per property)	191	193
A8	Water network reliability (water main breaks/100 km of main)	41	33
A10	Real water losses (L/service connection/d)	313	361
A14	Sewer network reliability (sewer breaks and chokes/100 km of main)	37	41
C15	Average customer minutes off water supply, unplanned interruptions (minutes)	171	152
C17	Number of unplanned interruptions - water (per 1 000 properties)	215	220
	Treated wastewater discharge compliant with EPA requirements (flow-weighted compliance percentage)	90.2%	90.8%
H3	Percentage of population receiving drinking water that complied with ADWG microbiological guidelines	100%	100%
	Drinking water supplies on long term boil water alerts or public health alerts	0 of 62	0 of 61
IC13	Customer complaints (number)	2 648	1 138
C14	Percentage of calls answered within 30 seconds	87%	83%
F3	Total income for whole of utility	$359.0 m	$351.0 m
IF13	Operating costs	$204.8 m	$212.7 m
F16	Capital expenditure for water and sewerage	$109.8 m	$128.2 m
F22	Net debt to equity ratio	35 %	40 %

1 INTRODUCTION

1.1 The Economic Regulator's role

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).

The Economic Regulator is also responsible for regulating service standards and conditions of supply. Although this Report covers water management, dam safety, environment and water quality, the Economic Regulator does not regulate TasWater's activities in these areas.

The Director of the Environment Protection Authority (EPA) is responsible for regulating environmental standards. The Director of Public Health is responsible for drinking water quality standards, and the Secretary of the Department of Primary Industries, Parks, Water and Environment (DPIPWE) is responsible for water management and dam safety.

Appendix 1 provides further information on the water and sewerage regulatory framework.

1.2 Scope of this report

Under the Industry Act, the Economic Regulator must prepare and report on the state of the water and sewerage industry, either at the request of the responsible Minister or in the lead up to a price determination investigation. This Report is required as a price determination investigation will commence in July 2021.

TasWater, through the performance reporting framework (Figure 1.1), has a range of reporting requirements relating to its performance against standards and limits set by its licence, codes and guidelines[5], and the Economic Regulator's price determination.

The publication of performance information supports the objectives of the Industry Act, namely to protect the long-term interests of customers and to provide for the safe, environmentally responsible, efficient and sustainable provision of reliable and secure water and sewerage services to the Tasmanian community.

Figure 1.1 Performance reporting framework

[5] These include statutory requirements and guidelines issued by other industry regulators.

The purpose of this Report is to make TasWater accountable for its performance by providing stakeholders with relevant information. The main objectives of this Report are to:

- provide an overview of the performance of the Tasmanian water and sewerage industry; and
- identify key priorities for improved performance by TasWater.

This Report covers the key performance indicators for TasWater for the 2019-20 financial year. Most of the performance measures covered in this Report are according to the Urban National Performance Framework, with some additional State-based measures. Appendix 1 provides an outline of performance reporting arrangements. A list of key performance measures is provided at Appendix 2.

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

- water and sewerage network – water sources, infrastructure assets, including its networks, and treatment;
- customers – water usage, pricing, customer complaints, call centre performance, payment management and the delivery of key customer outcomes;
- service reliability and performance – breaks, interruptions to service and water losses;
- drinking water – compliance with bacteriological, chemical and fluoridation standards;
- environment – wastewater discharge and compliance, impacts on waterways, effluent and biosolids reuse; and
- finance – revenue and expenditure, future capital expenditure and status of major projects.

This Report does not include information on the collection and use of stormwater and does not examine in detail the supply or use of water for irrigation purposes, as these are services not subject to regulation.

In preparing this Report, the Economic Regulator has consulted with the Director of Public Health, the Director of the EPA and the Secretary of DPIPWE.

1.3 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 *Regulatory Reporting Guideline, Version 4, February 2021* which includes the requirement to report on measures set out under the Urban National Performance Reporting Framework[6]; and
- performance data collected as part of regulatory reporting requirements by the Department of Health, DPIPWE and the EPA.

[6] *National Urban Water Utility Performance Reporting Framework: Indicators and Definitions Handbook,* January 2018.

Data that have not met the audit requirements for quality and reliability[7] have been generally excluded from this Report or, where included, has been done so with commentary. This is consistent with the requirements as set out in the Urban National Performance Framework Urban Auditing Requirements Handbook.

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. Many of these service providers differ from TasWater in the number of their separate schemes and assets and the density of their customers, and face different geographical and climatic conditions. Readers should consider this when making comparisons between TasWater's performance and the performance of major utilities operating in mainland Australia.

[7] The Economic Regulator's *Regulatory Reporting Guideline, Version 4, February 2021*, outlines audit requirements for licensees.

2 WATER AND SEWERAGE NETWORK

2.1 Sources of water

The average annual volume of surface water runoff in Tasmania is around 33 312 000 megalitres (ML).[8] Additionally, up to 2 500 000 ML of water is potentially available each year from groundwater.[9]

ⓘ Water volumes

kL kilolitres = 1 000 litres

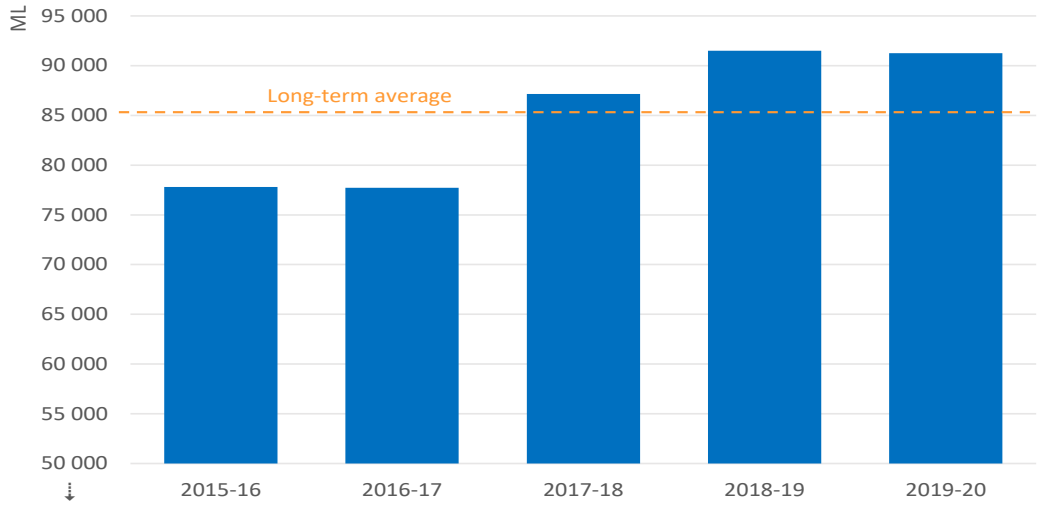
ML megalitres = 1 000 000 litres

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.[10]

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). Groundwater plays a very minor role in urban supply in Tasmania, with urban supply needs being met almost entirely from surface water sources.

During 2019-20, TasWater sourced a total of 91 247 ML for urban use, comprising 91 073 ML from surface water (99.8 per cent) and 174 ML[11] from groundwater (0.2 per cent). The total volume of water sourced decreased marginally by 0.3 per cent during the year (from 91 511 ML in 2018-19) but remains well above volumes in 2015-16, 2016-17 and 2017-18 (Figure 2.1).

Figure 2.1 Total sourced water in Tasmania (ML)



[8] Tasmanian Planning Commission 2009, *State of the Environment Tasmania* 2009.

[9] Department of Infrastructure, Energy and Resources, *A Review of Groundwater in Tasmania* - Background Report, 2001

[10] There is some crossover between water stored for hydro-electric generation purposes and water subsequently stored for use by TasWater for water services.

[11] A decrease over the 278 ML of water sourced from groundwater during 2018-19.

As in past years, no urban water in Tasmania was sourced from recycled water in 2019-20, although TasWater did use recycled water for some non-drinking uses (see section 2.6 of this Report). There are no desalination plants in Tasmania.

Rainwater tanks represent another important source of water for many Tasmanian households. Almost one fifth of Tasmanian households have rainwater tanks as their primary source of drinking water.[12]

Chapter 3 of this Report further discusses urban water supply and water usage by customers.

2.1.1 Water supply

Long-term reduction in rainfall and increasing temperatures across southern Australia has led to reduced streamflow resulting in reduced availability of water.[13] Additionally, the population receiving water supply services from TasWater has increased significantly each year (increasing from 426 514 people in the 2018-19 period to 431 513 people in the 2019-20 period). Both of these factors have influenced the supply of, and demand for, TasWater's water.

COVID-19 impacted on TasWater's operations during the second-half of 2019-20. H2Go, TasWater's new field management system that aims to improve data capture of the frequency and duration of water supply interruptions, had to be put on hold due to the outbreak of COVID-19. However, in spite of this disruption, service delivery staff responded promptly to bursts and leaks in TasWater infrastructure, meeting TasWater's performance targets for 'priority 1', 'priority 2' and 'priority 3' bursts and leaks.

Failures caused by ageing infrastructure resulted in some significant disruptions to water supply that were not resolved as quickly as desired, but asset renewal remains a significant focus of TasWater's expenditure in future years.

2.2 Water assets

As noted in previous performance reports, Tasmania's hilly terrain poses a unique challenge for water supply to customers as its fresh water resources 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 distances and difficult terrain mean that, in some instances, high costs are incurred in pumping water from remote sources of supply to customers.

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.

2.2.1 Water supply systems and treatment plants

A WTP receives raw or partially treated water for treatment and ultimate delivery to customers.

[12] ABS 4602.0.55.033, Environmental Issues: Water Use and Conservation, March 2013.

[13] CSIRO & Bureau of Meteorology, *State of the Climate 2020*.

WTPs provide three different levels of treatment to bring water quality to an acceptable level:

- 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;
- 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 requirements; and
- disinfection only – the treatment plant disinfects the water prior to supply to customers. This category also includes WTPs that provide fluoridation only.

An estimated 431 513 Tasmanians receive a reticulated drinking water supply provided by TasWater. Supply was provided by 61 drinking water supply systems[14] that were serviced by 66 water treatment plants. Table 2.1 provides details of the number and type of WTPs operated by TasWater during 2019-20.

Table 2.1 Water treatment plants in Tasmania, 2019-20

Disinfection only WTPs	Further treatment	Fully treated	Total WTPs
6	0	60	66

2.2.2 Storage dams

TasWater is responsible for the operation and maintenance of over 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 present a danger to the public or cause significant environmental harm. The risks associated with each dam are assessed in accordance with the 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 one of seven a consequence categories (Table 2.2) through a structured process provided by ANCOLD. The terminology used in these Dam Safety Assessments is set out in Appendix 4 to this Report.

[14] A water supply system is a system for the extraction and preparation of water for distribution via the water supply network. A system may be supplied with water from more than one treatment plant and in some cases water is transferred between systems.

Table 2.2 ANCOLD Guidelines - consequence categories for dams

Population at Risk	Consequences - 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: Where there is potential of one or more lives being lost, the dam is classed as 'High C'.

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, 35 have been identified as having a consequence category of 'Significant' or higher due to their potential downstream impact (ie in terms of loss of life or business or economic loss) in the unlikely event of a complete dam failure. The remaining dams and storages have consequence categories of 'Low' or 'Very Low'.

During 2019-20, the number of dams plotting above the ANCOLD Level of Tolerability (LoT) for societal risk was reduced from seven to four.

Major dam safety management initiatives undertaken by TasWater in 2019-20 are listed below.

- Improvements to the flood warning systems at the Isandula and Blackmans No.2 Dams, which enabled both dams to be reduced below the LoT.
- A maintenance program at the Upper Reservoir Dam to enhance its future safe performance, improve stormwater management and upgrade water outlet facilities.
- Completion of the Swansea Dam upgrade, ensuring a reliable water source for the Swansea community and visitors to the area.
- Safety works at the Waratah Dam to clear out and widen the spillway to ensure that inflows into the dam can be safely managed.
- Commencement of upgrades at the Mikany Dam to guarantee water supply into the future and improve its flood capacity.
- Completion of design and investigation works for the Henderson Dam upgrade on Flinders Island that will provide Whitemark residents with improved drinking water security.

- Implementation of measures to bring the Grey Mountain No. 1 and No. 2 Dams in the Huon Valley to an acceptable level of risk have been completed.

Dam safety governance has been strengthened through improvements and updates to TasWater's Dam Safety Management Strategy, Dam Safety Improvement Program and Dam Safety Management Plan.

Table 2.3 sets out TasWater's water supply and wastewater dams by consequence category. Courses of action in relation to dams in the 'Significant' or higher consequence categories are also set out in TasWater's Dam Safety Management Plan 2019-20.

Table 2.3 TasWater's water supply and wastewater dams by consequence category (no.) as at 30 June 2020

Very low	Low	Significant	High C	High B	High A	Extreme
34	38	15	8	2	8	**2**

During 2019-20, all of TasWater's dams have retained their consequence category from the previous year with the exception of Grey Mountain No. 1 Dam, Grey Mountain No. 2 Dam, and Girdlestone Inground Reservoir, all of which have been decommissioned therefore the risk associated with these dams has been eliminated. Rehabilitation works remain at all three sites. The consequence category for all of TasWater's dams classified as 'Significant' or higher are listed in Appendix 4 to this Report (Table A4.1).

TasWater made significant progress in 2019-20 on raising the Mikany Dam and Upper Reservoir Dam above the ANCOLD LoT.

2.2.3 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. These are summarised in Table 2.4.

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 2020

Number of water pumping stations	Number of water distribution storage facilities	Length of water mains (km)
214	293	6 459

Compared to other large mainland water utilities (with, on average, 63 properties per kilometre of water main), TasWater's customer density is relatively low at 33 properties per kilometre of water main, owing to the regional nature of much of the network's service area.

2.3 Sewerage assets

Sewerage assets include sewage treatment plants (STPs), pumping stations[15], sewer mains and effluent outfalls.[16] Performance indicators for these assets relate to their number, density, length and operational performance.

Most major townships in Tasmania have reticulated sewerage systems and an associated STP. STPs discharge to waterways and to effluent recycling schemes. There were 185 181 properties connected to the sewerage network across Tasmania as at 30 June 2020.

Table 2.5 summarises the sewerage assets operated by TasWater in 2019-20. During 2019-20, TasWater reduced the number of Level 2 STPs by rationalising the Margate and Electrona STPs to Blackmans Bay. The upgrade of the Longford STP also commenced. This new facility is due for completion in late 2021.

Table 2.5 Sewerage assets operated by TasWater as at 30 June 2020

Sewage pumping stations	Length of sewerage mains (km)	Level 1 STPs	Level 2 STPs	Total number of STPs
742	4 813	33	77	110

Table 6.1 in Chapter 6 provides a list of the largest STPs by inflow volume.

In 2019-20, there were, on average, 39 properties serviced per kilometre of sewer main. As for the water supply network, the property density in TasWater's service area is lower than other similar sized mainland utilities which would usually service, on average, around 65 properties per kilometre of sewer main.[17]

2.3.1 Sewage treatment plants

There are two categories of STP. Level 1 STPs have a design capacity of treating less than 100 kL of sewage per day and are regulated by councils. Level 2 STPs have a design flow capacity rate equal to or greater than 100 kL/day and are regulated by the EPA.

During 2019-20, TasWater operated 77 Level 2 STPs and 33 Level 1 STPs. DPIPWE's Parks and Wildlife Service also operated two Level 2 STPs (at Ben Lomond and Lake St Clair National Parks). The Port Arthur Historical Site Management Authority operated one Level 2 STP.

Table 2.6 provides a breakdown of TasWater's Level 2 STPs by treatment level. Two Level 2 STPs (Margate and Electrona) ceased operation during 2019. Sewage flows formerly treated at these STPs are diverted to receive treatment at the upgraded Blackmans Bay STP, which formally commenced operations in August 2019. The majority of Level 2 STPs operated by TasWater provide secondary treatment.

[15] Sewage pumping stations pump sewage from low points in the reticulation system to facilitate the passage of sewage to the sewage treatment plant.

[16] 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.

[17] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator A6).

Table 2.6 Number of Level 2 STPs operated by TasWater (by treatment level)

Primary	Secondary	Tertiary
1	65	11[18]

In 2019-20, Pardoe STP in Devonport continued to be the only Level 2 STP that treats sewage to a primary level. 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.

Sewage treatment plants discharge to inland, estuarine and marine (coastal) environments. Chapter 6 of this Report discusses outfall volumes in more detail.

2.4 Sewage collected

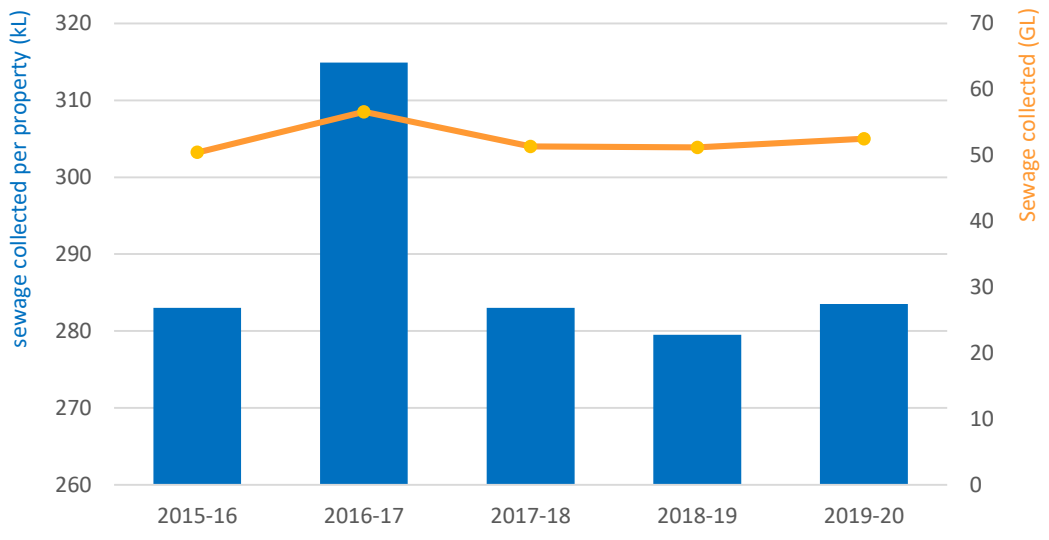
Sewage volumes discussed in this section are based on total inflows received by TasWater's STPs.

Table 2.7 Volume of sewage collected - TasWater (Level 1 and 2 STPs)

	2015-16	2016-17	2017-18	2018-19	2019-20
Sewage collected (ML)	50 356	56 582	51 318	51 173	52 493
Per property (kL)	283	315	283	280	284

Figure 2.2 shows the volume of sewage received by TasWater's STPs over the past five years.

Figure 2.2 Volume of sewage received / treated (kL per property and volume GL)



[18] Following a treatment upgrade, Blackmans Bay STP was reclassified from secondary to achieving tertiary effluent treatment for 2019-20. Boat Harbour Beach STP was reclassified from a tertiary to secondary treatment, based on treatment outcomes achieved. As a result, the total number of Level 2 STPs achieving tertiary treatment remains unchanged compared to 2018-19.

In 2019-20, the total volume of sewage collected at TasWater's STPs was 52 493 ML. TasWater's Level 2 STPs collected 98.9 per cent of this total (51 906 ML). The average volume of sewage collected (residential and non-residential) was 284 kL per property.

Total annual flow volumes are affected to some degree by climatic patterns. Rainfall can increase inflow and infiltration of water into the sewer system, resulting in STPs receiving increased volumes of sewage.

2.5 Comparative sewage treatment levels

As set out in section 2.3.1, based on the degree to which sewage is treated, there are three categories of sewage treatment.

During 2019-20, of the 51 402 ML of treated effluent discharged from TasWater's Level 2 STPs, approximately 37 371 ML or 72.7 per cent was treated to secondary standard, including the majority of effluent discharged to reuse schemes. Tertiary treatment was applied to 17.8 per cent (9 165 ML) of the total volume and primary treatment accounted for the remaining 9.5 per cent (4 865 ML).

Commissioning of the Blackmans Bay STP upgrade in August 2019 resulted in an increase in effluent treated to a tertiary, or advanced, standard for both volume (from 7 699 ML in 2018-19) and proportion (from 15.2 per cent in 2018-19).

ⓘ 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.

2.6 Recycled water

Recycled water is sewage effluent 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.[19] The effluent reuse schemes associated with TasWater's Level 2 STPs all involve land irrigation. As a result, annual fluctuations in volume are generally reflective of climatic factors driving demand for irrigation water in a given year.

2.6.1 Recycled water treatment plants

Thirty-six of TasWater's 77 Level 2 STPs discharged a proportion of their outflows to effluent reuse or land irrigation schemes in 2019-20. This number remains unchanged from 2018-19.

Table 2.8 categorises the Level 2 STPs operated by TasWater according to whether full, partial or no reuse of treated effluent occurred over the last five 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.

[19] These uses require treated effluent to meet as a minimum the 'Class B' quality standard as specified in the E*nvironmental guidelines for the use of recycled water in Tasmania (EPA Tasmania 2002).*

Ten STPs achieved full reuse in 2019-20, and an additional eight STPs succeeded in discharging 95 per cent or more of their total discharged flow to reuse. Infrastructure improvements at the Cambridge STP resulted in a significant boost to the volume of treated effluent from this treatment plant able to be reused. Effluent recycling at the Cambridge STP increased from 136.7 ML (68 per cent) in 2018-19 to 188 ML (92 per cent) in 2019-20. The installation of new irrigation infrastructure at the St Marys STP is expected to maintain the high percentage of reuse achieved at this site (92 per cent in 2019-20).

The *State Policy on Water Quality Management*[20] requires effluent reuse to be considered in order to minimise discharge of pollutants to water, unless there are valid reasons not to do so.

Establishing and expanding effluent reuse schemes can avoid the need for costly wastewater treatment upgrades to achieve the advanced treatment capability suitable for discharge to sensitive waterways. Improvements in the uptake of effluent for recycling can take the form of full effluent reuse at a higher number of STPs, higher total volumes of reused effluent or an increase in the number of STPs where effluent recycling occurs. To date, consumer demand has been the primary driver of increased uptake of effluent recycling.

Table 2.8 Classification of reuse schemes associated with Level 2 STPs[21]

	Tasmanian reuse category			
	Full	Partial (>50% recycled)	Partial (<50% recycled)	None
2015-16	13	12	8	46
2016-17	8	13	12	46
2017-18	13	14	6	46
2018-19	14	15	7	43
2019-20	10	18	8	41

2.6.2 Recycled water volume

In 2019-20, the total volume of effluent recycled was 6 023 ML, or 11.7 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, continues to be the largest reuse scheme in the state with 2 576 ML recycled during 2019-20, followed by the Brighton/Bridgewater scheme which recycled 1 074 ML of treated effluent. The Penna scheme (408 ML recycled), which is fed by Midway Point and Sorell STPs, is the third largest recycled water scheme in the south of Tasmania. Together, these three southern schemes represent around two thirds (67 per cent) of the total volume of effluent recycled in the state.

Table 2.9 shows the volume of recycled water supplied and the percentage of total treated effluent volume recycled each year in Tasmania, compared to preceding years.

Both the total volume of recycled water and the percentage of recycled water as part of total volume discharged increased in 2019-20 when compared to 2018-19. The upwards trend was supported by low rainfall conditions over the summer months in the south eastern corner of

[20] Policy available at http://epa.tas.gov.au/Documents/State_Policy_on_Water_Quality_Management_1997.pdf

[21] Numbers include Penna STP, which is a polishing lagoon providing further treatment for effluent from Midway Point and Sorell STPs.

the State, where the largest reuse schemes are located. A further increase on the 2018-19 figures (which were the highest achieved to date) resulted in the 2019-20 recycled water volumes representing the highest uptake of effluent reuse in percentage and total volume terms since establishment of TasWater and its regional predecessor organisations in 2009.

Table 2.9 **Volume of recycled water and percentage of total treated effluent reused**

Year	Total volume of effluent recycled (ML)	Percentage of treated effluent recycled
2015-16	5 257	**10.4**
2016-17	4 691	**8.4**
2017-18	5 417	**10.7**
2018-19	5 700	**11.5**
2019-20	6 023	**11.7**

The proportion of effluent reused is set out in Figure 2.3. It demonstrates the yearly fluctuation in the reuse proportion, and the general upwards trend in the volume of recycled water that was reused.

Figure 2.3 Volume and percentage of total treated effluent reused state-wide over time (ML/year, %)

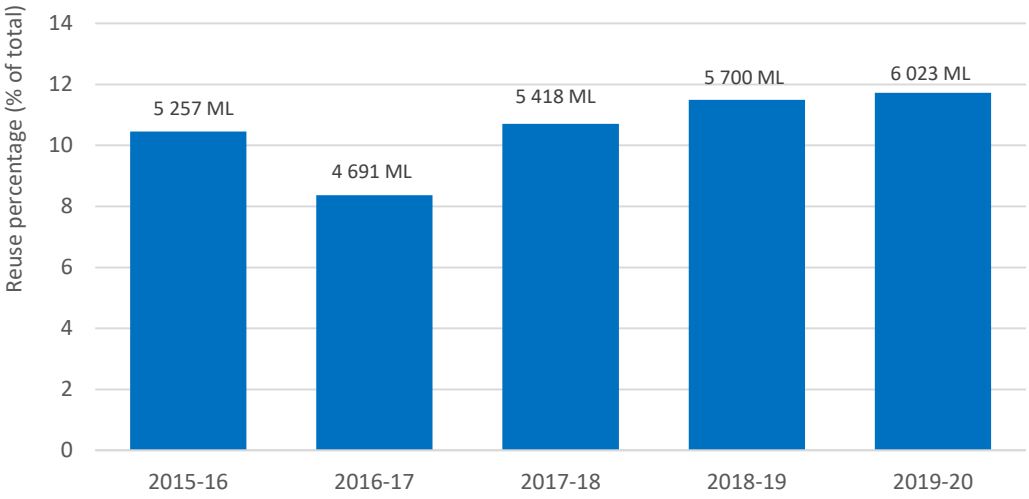


Table A3.4 in Appendix 3 lists the proportion of effluent reused and reuse flow per year for each Level 2 STP from 2015-16 and 2019-20.

3 CUSTOMERS

This Chapter looks at how much households use and pay for water and sewerage services. It also reports on how some customers are paying their bills and the assistance programs available when customers are experiencing payment difficulties. The Chapter then reports on how TasWater responds to its customers and looks at the most common areas for complaints made by its customers.

As at 30 June 2020, 212 064 properties were connected to TasWater's water supply network, with residential customers making up around 88.5 per cent of those connections. There were 185 181 properties connected to TasWater's sewerage network.

3.1 Water usage

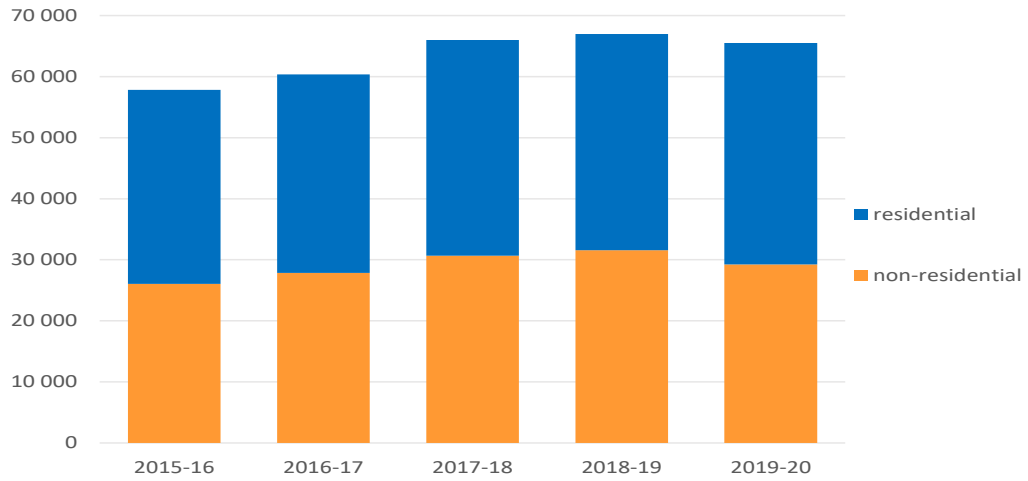
For the purposes of this Report, total urban water supplied is TasWater's metered volume of water (both drinking water quality and non-drinking water quality) supplied to customers during 2019-20 plus estimated non-metered water supplied. The total water supplied comprises the sum of residential, commercial, municipal, industrial and other water supplied.

TasWater provided the following detailed breakdown of the 65 537 ML of water supplied to its residential and non-residential customers[22] during 2019-20:

- residential customers were supplied with 36 287 ML of water (potable and non-potable); and
- commercial, municipal and industrial customers were supplied with 29 250 ML of water (which included recycled water and stormwater).

Figure 3.1 shows the total volumes of urban water supplied from 2015-16 through to 2019-20, including the supply of stormwater and recycled water.

Figure 3.1 Total urban water supplied (ML)



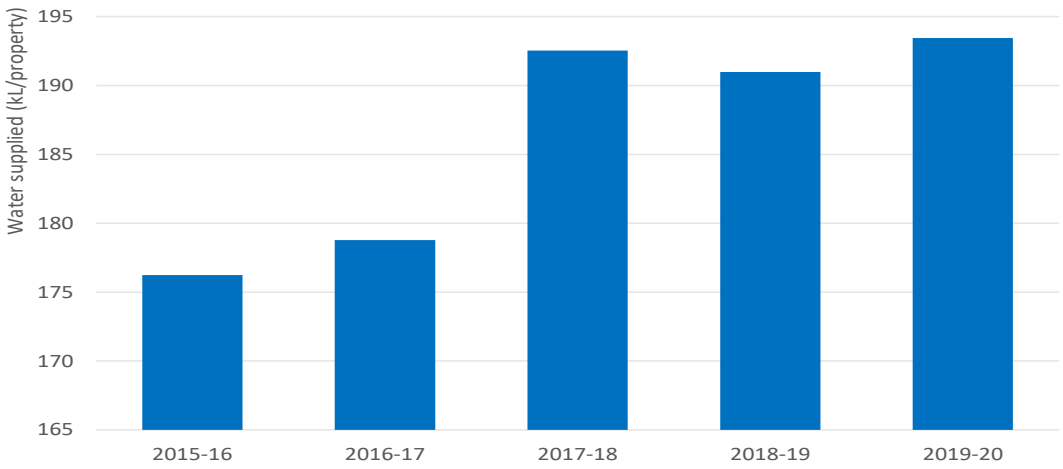
[22] Non-residential customers include all commercial, industrial and municipal users.

Urban water supply in 2019-20 was approximately 6.7 per cent above the long-term average from 2015-16 to 2019-20 of 61 413 ML.

Water supply to residential customers increased by 2.5 per cent in 2019-20, accounting for 55 per cent of total urban water supplied. By contrast, water supplied to commercial, municipal and industrial customers decreased by approximately 7.4 per cent in 2019-20.

The average annual consumption per connection across the State in 2019-20 was 309 kilolitres (kL). This represents a 3.3 per cent decrease from the average for 2018-19 of 320 kL. Average residential consumption rose slightly, with consumption increasing from 191 kL per connection in 2018-19 to 193 kL in 2019-20 (Figure 3.2). Residential consumption has shown marginal variation over more recent years.

Figure 3.2 Average annual residential water supplied (kL/property)

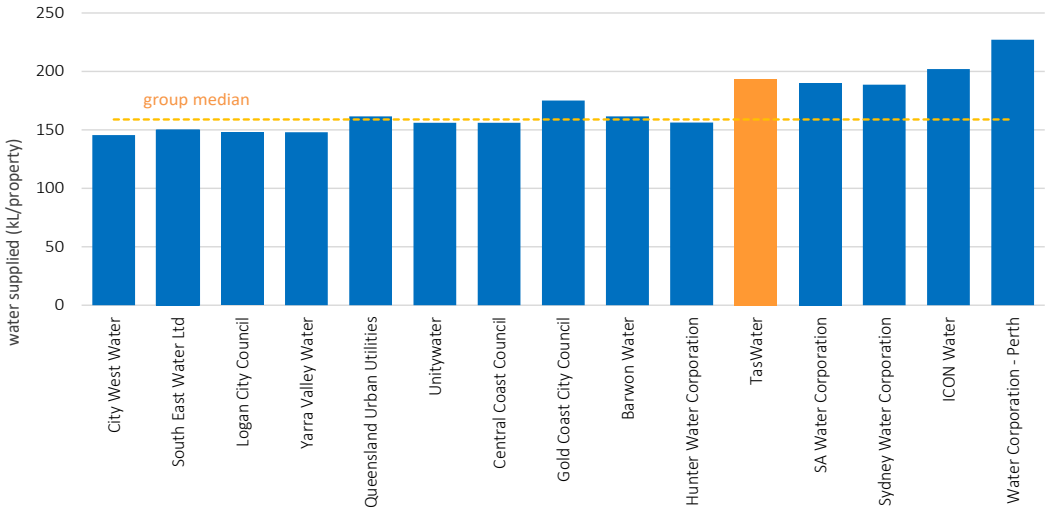


In terms of potential demand changes, as a result of COVID-19, with people continuing to wash their hands much more frequently, TasWater anticipates that the increase in demand for water is likely to be minimal and well within the capacity of the system. In addition, TasWater remains confident that biological treatment systems will continue to function satisfactorily in the treatment of the cleansers and sanitisers coming into its wastewater treatment systems.

Figure 3.3 shows the average annual volumes of residential water supplied by major utilities (100 000 or more connected properties) across Australia during 2019-20 together with the median volume of water supplied by these providers.

TasWater's average annual volume of residential water supplied of 193 kL per residence was 21.7 per cent above the median for major water utilities in 2019-20, which was 159 kL.

Figure 3.3 Average annual residential water supplied (kL/property) – major utilities (large)



Source: Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator W12)

The volume of water supplied to customers outside the urban water supply system (ie irrigators) was 3 655 ML in 2019-20, representing around four per cent of the total volume of potable water produced by TasWater. This was a 21.1 per cent increase over the volume of water supplied outside the urban water supply system in 2018-19.

3.2 Pricing

For 2019-20, TasWater's prices were required to comply with the Economic Regulator's *Tasmanian Water and Sewerage Corporation Pty Ltd, Water and Sewerage Services Price Determination, 1 July 2018 – 30 June 2021* and the decisions in the Economic Regulator's *2018 Water and Sewerage Price Determination Investigation – Final Report,* May 2018.

State-wide uniform 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.

ⓘ 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.

3.2.1 Residential bills

Table 3.1 shows the components of a residential customer's annual water and sewerage bill based on average consumption and the applicable target 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.

ⓘ Target tariffs

'Target tariffs' are the published prices that TasWater charges for water and sewerage services. All customers were required to transition to these target tariffs by 1 July 2020.

Table 3.1 Components of typical annual residential customer bill

Component	Charges (2019-20)
Water fixed charge	$342.96
Water usage charge	106.20c/kL
Average annual residential water use	193 kL
Typical residential bill - water	$548.40 [a]
Sewerage fixed charge	$658.16
Typical residential bill - water and sewerage	$1 206.56[a]

[a] Based on Tasmanian average annual residential consumption of 193 kL.

Due to past pricing structures, not all customers have been paying the same price for the same service. During 2019-20, and to meet the requirements of the Industry Act, customers paying below target tariffs continued to be transitioned to target tariff by the target date of 1 July 2020.[23]

TasWater's *Shareholders Letter of Expectations* required that prices be frozen, including any transition target pricing, for water and sewerage customers from 1 July 2019 to 30 June 2020. The TasWater Board also agreed to apply a price freeze for 2020-21 in order to provide financial relief for customers to assist in dealing with the impacts COVID-19.

To meet legislative requirements, in 2020-21 TasWater's transitioning customers are liable to pay the target tariffs but they are provided with an offsetting rebate to maintain their 2019-20 tariffs. These customers are scheduled to reach target tariff prices in 2022-23 with TasWater absorbing the cost of this rebate.

TasWater has reported that, as at 30 June 2020, 614 water customers (0.3 per cent) and 3 497 sewerage customers (1.8 per cent) were paying tariffs below the target tariffs.

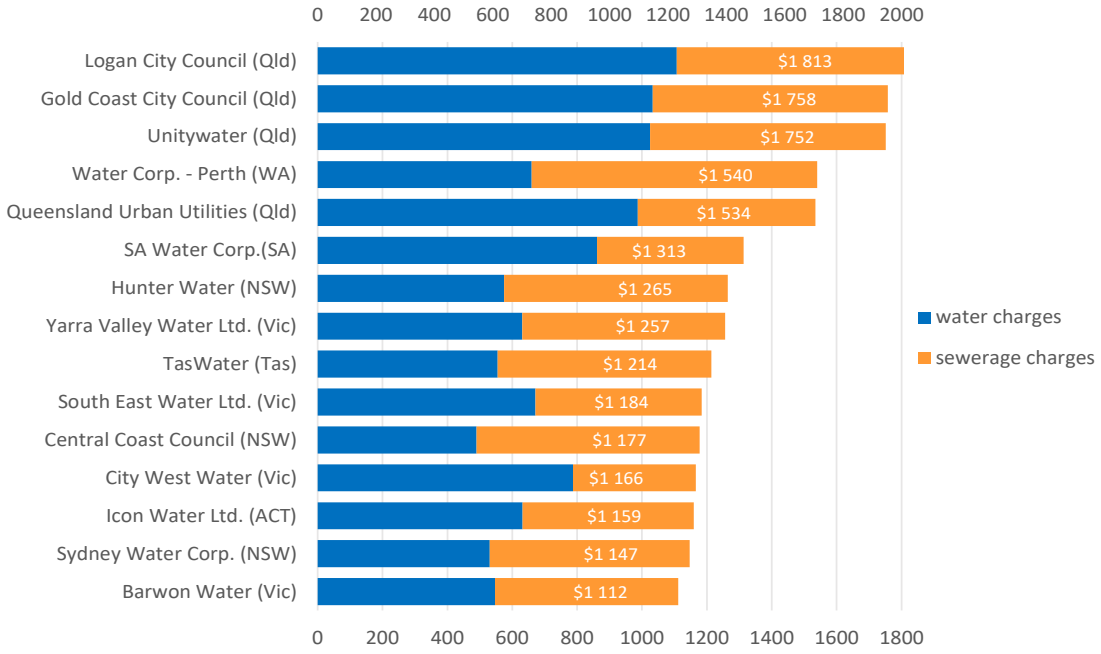
For comparison, annual bills are calculated for residential customers across Australia based on usage of 200 kL of water per annum. Figure 3.4 compares water and sewerage bills for customers of major water utilities (ie utilities with 100 000 or more customers), including TasWater (target tariffs) during 2019-20.[24]

[23] 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.

[24] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator P7).

The national median residential bill for water and sewerage services was around $1 261 while a TasWater customer's bill based on the same consumption was the seventh lowest in this group at $1 214, or around 3.7 per cent below the national median.

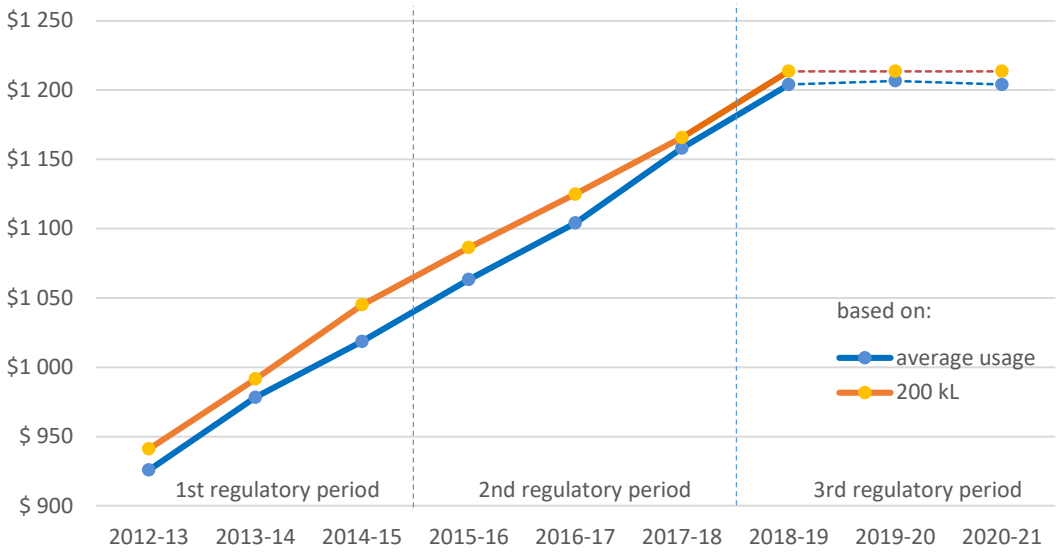
Figure 3.4 Annual bills based on 200kL/pa (water and sewerage), $ 2019-20



Overall, TasWater customers would be paying, on average, around $47 less per annum than their interstate counterparts for water and sewerage based on this consumption level.

Figure 3.5 shows the calculated annual residential bill for TasWater's customers based on the target tariffs, average annual usage and 200 kL per annum. From 2018-19 to 2019-20, for a household using 200 kL per year, the bill has remained unchanged at $1 214.

Figure 3.5 Annual residential bill ($ nominal)



Compared to other major utilities in Australia, TasWater's fixed water charges are relatively high, with mainland utilities typically charging around $185 per property.[25] As a percentage of total water and sewerage bills, TasWater's fixed water charges ($342.96) represent 28 per cent of the total bill while the fixed water charges of mainland utilities are typically around 13 per cent of the total bill.

Conversely, TasWater's usage charges are significantly less than those charged by mainland utilities (around $2.55 per kL compared to TasWater's $1.06 per kL). 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 TasWater has not been required to invest in very high cost water treatment plants (eg desalination plants) to meet urban water supply requirements and water transport costs, including pumping costs, are relatively low for much of Tasmania.

3.2.2 Concession customers

Eligible customers were entitled to an annual water and sewerage concession of $197 ($98.50 each for water and sewerage) during 2019-20. The concession increases each year in line with movements in the consumer price index (CPI) for Hobart. In 2019-20, 53 460 customers received the benefit of a concession (approximately 28.5 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 TasWater to provide services at much less than total cost. In 2019-20, TasWater received a total of approximately $8.5 million in CSO payments to cover the cost of providing these concessions.

3.3 Call centre performance

TasWater's call centre provides the entity with an important link to its customers.

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.

Table 3.2 shows call centre performance for 2019-20 and over the previous four financial years.

[25] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator P1.2).

Table 3.2 Call centre performance

Category	2015-16	2016-17	2017-18	2018-19	2019-20
Total number of calls	134 127	149 170	174 579	153 866	168 291
Number of calls answered by an operator within 30 seconds	118 691	132 876	151 017	134 040	139 737
Performance/service standard (%)	88% / 85%	89% / 85%	87% / 85%	87% / 85%	**83%** / 85%

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

During 2019-20, TasWater's call centre responded to 168 291 customer calls, an increase of 14 425 calls from the prior year. TasWater advised that around 11 000 of these additional calls occurred in the first half of the financial year, and so prior to the COVID-19 pandemic, with no clear external driver for the increase and no observable trend across TasWater's various call categories. Following a 12 per cent reduction in call volumes in 2018-19, the 2019-20 result shows the variability in call volumes from year to year.

During the financial year, 83 per cent of TasWater's customer calls were answered within 30 seconds, slightly below the service standard target of 85 per cent and below the percentage in 2018-19 of 87 per cent. Tas Water advised that the reduced performance year-on-year was primarily due to the unexpected increase in call volumes in the first half of 2019-20.

To address this decline in performance, TasWater implemented a number of measures including adjustments to resourcing levels, changes to the telephony queue infrastructure and the introduction of overflow queues. TasWater stated that this enabled achievement of the minimum service standard during the second half of the financial year despite call centre operators entering working from home arrangements from 30 March 2020 as part of the response to COVID-19.

TasWater's call centre performance was much better than the median for similar sized water utilities on mainland Australia, which was 73 per cent of calls answered within 30 seconds in 2019-20.[26] TasWater has been the highest performing against this measure amongst similar sized utilities on the mainland during the period 1 July 2015 and 30 June 2018. In 2018-19, TasWater was the second highest performing utility with respect to this measure by comparison to similar sized utilities nationwide and in 2019-20 was the third highest performing utility.

3.4 Complaints

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

During 2019-20, TasWater received 1 138 complaints, which represented a reduction of approximately 57 per cent on the number of complaints received in 2018-19. TasWater attributed the reduction in complaint numbers to the entity taking a more

ⓘ 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."

[26] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator C14).

proactive approach to dealing with customer concerns and enquiries at the first point of contact.

The rate of complaints per 1 000 properties reduced significantly from 12.6 in 2018-19 to 5.4 in 2019-20. The 2019-20 result easily met the service standard target of 10 complaints per 1 000 properties. TasWater's rate of complaints per 1 000 properties was slightly higher than the rate reported for comparable utilities on the mainland (median of 4.2 per 1 000 properties for 2019-20).[27]

TasWater advised that, overall, 98 per cent of complaints were resolved within 10 days in 2019-20 against a target of 90 per cent, which is an improvement on the result achieved the previous year (96 per cent).

To ensure continued strong performance in this area, TasWater reported that it has developed a new complaints management system for implementation in 2020-21. This system is designed to deliver further improvements in recording, managing and reporting of complaints leading to a better experience for customers.

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 target that applies to TasWater for complaints to the Ombudsman is 0.5 per 1 000 customers.

During 2019-20, the Ombudsman received 29 complaints[28] regarding TasWater which was a significant decrease compared with the previous year (64 complaints). The complaints received for 2019-20 equates to 0.14 complaints per 1 000 properties and therefore easily meets the service standard target of 0.5.

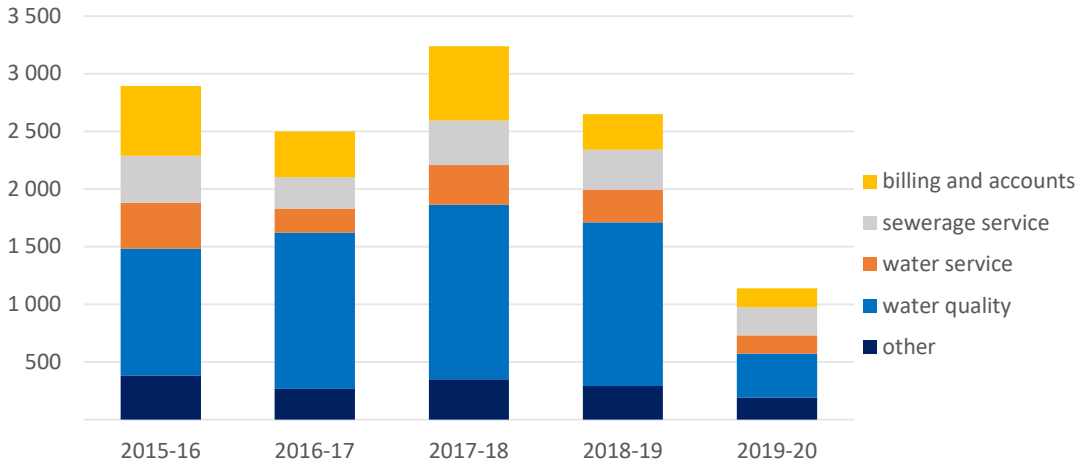
Figure 3.6 summarises the complaints received by category for 2019-20 and over the previous four financial years. One third of complaints received in 2019-20 related to water quality (ie taste, colour and odour), which was also the case for the previous four financial years. The number of complaints received across all complaint categories in 2019-20 decreased significantly from those received in 2018-19, the most significant of which were complaints regarding water quality, which decreased by 73 per cent.

The absence of any long term boil water alerts or public health alerts also contributed to the reduction in complaints in 2019-20.

[27] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator C13).

[28] Ombudsman Tasmania, *Annual Report 2019-20,* October 2020.

Figure 3.6 Summary of complaints received by category



As part of ongoing efforts to improve drinking water quality across the State, TasWater undertook the following key projects during 2019-20:

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

In addition, TasWater reported that approximately 19.6km of water mains were replaced during 2019-20 which will also contribute to improvements in water quality.

3.5 Payment management

Under the *Tasmanian Water and Sewerage Industry Customer Service Code* (the Code), TasWater is required to provide customers with flexible payment options and to offer a hardship program to customers who are experiencing difficulties paying their bill.

In certain circumstances, TasWater may restrict or disconnect the water supply to residential customers for non-payment. Water restrictions for non-payment 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 3.3 shows data for residential customers who had difficulty paying their accounts during 2018-19 and 2019-20. Data for concession customers are shown in brackets.

As at 30 June 2020, 4 448 residential customers were repaying a debt, comprising around 2.4 per cent of residential connected properties. Results for 2019-20 show an increase in the

number of customers repaying a debt, which is also reflected in increases in the number of customers owing more than $500 and a significant increase in the number of customers on the hardship program.

As at 30 June 2020, 728 non-residential customers were repaying a debt, an increase compared with the previous year (664). This figure would almost certainly have been much higher had TasWater not implemented a rebate scheme for eligible small business customers in response to the very weak business conditions faced by many businesses arising from the COVID-19 pandemic.

Table 3.3 Residential customers with payment difficulties

Category	2018-19	2019-20
Customers repaying a debt	4 060	4 448
Average debt	$1 203	$1 194
Customers owing more than $500 (percentage of total)	2 431 (60%)	2 434 (55%)
Customers on hardship program (concession customers)	226 (132)	603 (173)
Average debt of customers on hardship program (upon entry)	$2 922	$1 806
Water supply restrictions applied for non-payment (concession customers)	1 (0)	0 (0)
Restrictions for non-payment removed within seven days of being applied (concession customers)	0 (0)	0 (0)
Customers to which legal action applied for non-payment of water bill	114	74

The average amount of debt decreased slightly compared to 2018-19, with residential customers owing, on average, $1 194.

The number of customers on the hardship program increased significantly from 226 customers in 2018-19 to 603 customers in 2019-20. As noted in previous Annual Performance Reports, TasWater has a dedicated hardship team known as Customer Support which liaises with TasWater's hardship customers on a regular basis.

Of the 603 customers using the hardship program, 173 were concession customers. Customers using the hardship program have significant levels of debts, with the average debt at the time of entering the hardship program around $1 806 which is just under one and a half times a typical annual bill for water and sewerage.

TasWater reported that, during 2019-20, no customers had their water supply restricted for non-payment, compared to the one restriction applied in 2018-19.

3.6 Performance against key customer outcomes

TasWater is required to report to the Economic Regulator on its performance against the key customer outcomes set out in its 2018-21 Price and Service Plan.[29]

[29] TasWater's Price and Service Plan for the third regulatory period available for download at https://www.taswater.com.au/Your-Account/Price---Service-Plan. Amendments introduced into the Industry Act in 2020 extended the Economic Regulator's *Tasmanian Water and Sewerage Corporation Pty Ltd, Water and Sewerage Services Price Determination, 1 July 2018 – 30 June 2021* and application of TasWater's Price and Service Plan for an additional 12 months to 30 June 2022.

TasWater's Price and Service Plan sets out the prices, services, projects and outcomes to be delivered by 2021 in support of the long term outcomes in its Long Term Strategic Plan. Based on the preferences expressed by its customers, TasWater sought to deliver the following outcomes to its customers:

- 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.
- Microbiological compliance of 100 per cent, removal of all boil water and public health alerts and a progressive reduction of public health risk in TasWater's water systems.
- Risk reduction of all but one dam to within tolerable levels, with the remaining dam managed through interim measures to reduce its risk appropriately.
- The maintenance of current service reliability standards by focusing investment on assets that, if they failed, would cause substantial service interruption or environmental impact.
- Limiting price increases to be less than full cost recovery to achieve the above outcomes while managing impacts to customer bills and maintaining prudent debt levels.

As at 30 June 2020, TasWater remained well advanced in achieving the key outcomes listed above.

TasWater had already achieved its targets for microbiological compliance and boil water and public health alerts in 2018-19. For the second consecutive year, TasWater achieved 100 per cent microbiological compliance across its network of reticulated water supply. In addition, no system operated under long term boil water alerts or had a public health alert (do not consume) in place during the reporting period.

TasWater's focus in 2020-21 will be to build on its improved performance in 2019-20 and deliver a number of initiatives to realise further performance improvements. TasWater is currently developing its proposed Price and Service Plan 4, for submission to the Economic Regulator by 30 June 2021, which will set out the customer outcomes and prices to be delivered in the following regulatory period.

TasWater's key priorities for improved performance are discussed further in Chapter 8. Chapter 8 also provides an overview of TasWater's progress in addressing those key priorities for improved performance as outlined in last year's Report (*2018-19 Report on the State of the Tasmanian Water and Sewerage Industry*).

4 SERVICE RELIABILITY AND PERFORMANCE

The reliability and performance of TasWater's water and sewerage infrastructure is measured in terms of the frequency and duration of interruptions to service, bursts, leaks or spills, and compliance with regulatory standards.

4.1 Water service reliability and performance

Information on the frequency and duration of water interruptions provides a guide to 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.

Reporting of performance relies on accurate and reliable data collection, which, for some indicators, remained below the expected audit quality.

ⓘ Customer service standards

TasWater is required to meet the minimum service standards set out in Schedule 1 of the *Tasmanian Water and Sewerage Industry Customer Service Code* (the Code).

TasWater indicates that it remains committed to improving data quality and reliability for its performance metrics. During 2019-20, TasWater continued work on realising its Data and Reporting Framework and Data Quality Policy objectives.

TasWater had anticipated improvements in data capture and accuracy for its 2019-20 reporting process through the introduction of the H2Go application. TasWater subsequently reported that the roll-out of the application was delayed as a result of COVID-19 restrictions.

4.1.1 Water main breaks

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

Table 4.1 shows the number of water main breaks per 100 kilometres of water main as reported by TasWater for 2019-20 and the previous four years.

Table 4.1 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)
2015-16	2 051	33
2016-17	3 021	48
2017-18	2 461	39
2018-19	2 609	41
2019-20	2 104	33

The average rate of bursts and leaks across the State in 2019-20 was 33 per 100 kilometres of water main, the same as in 2015-16 but below the number in all intervening years. For

comparative purposes, the median rate of water main breaks for mainland major water utilities was 19 per 100 kilometres of water main.[30] TasWater's rate of water main breaks has been much higher than the national median for this indicator over the past five years.

4.1.2 Water losses

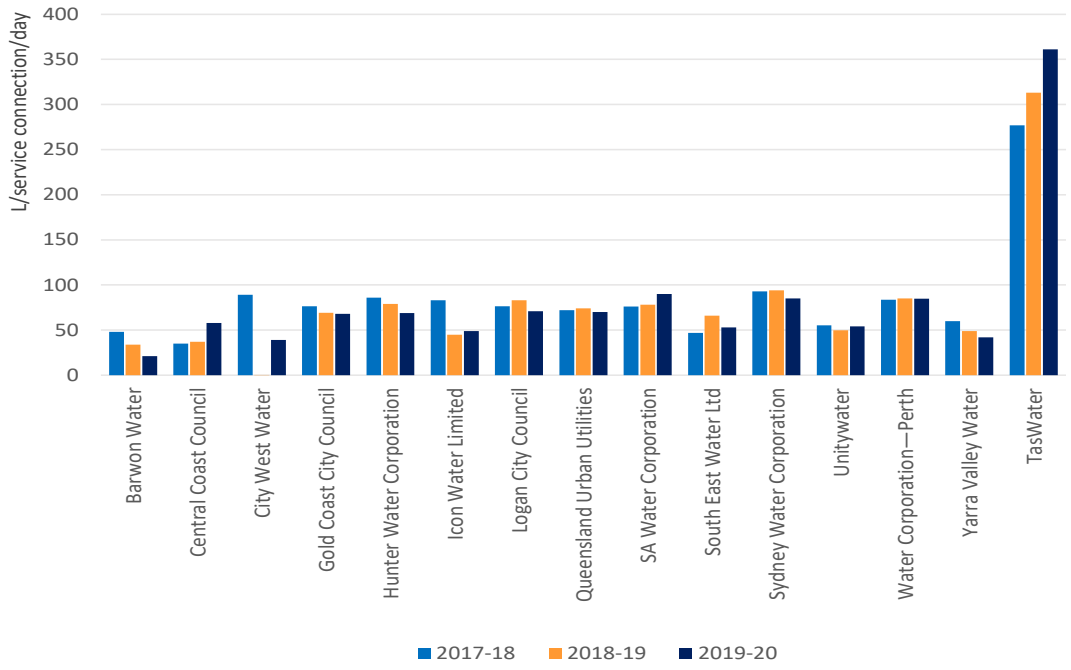
Water losses in the distribution system can be either apparent losses (unauthorised or unrecorded consumption, metering errors) or real losses (leakage and overflows from mains, service reservoirs and service connections prior to customers' meters).

The level of real losses per service connection per day provides a measure of the effectiveness of the management of the network and of the condition of the network. Water pressure, condition and age of the infrastructure, or a combination of these factors can all influence performance against this measure.

Water losses represent a wasted resource, reduce the effective capacity of a water supply system and result in unnecessary operating costs (ie the costs of treating water that customers are unable to use) and forgone revenue.

TasWater estimates that, in 2019-20, real losses in its reticulation networks were in the order of 361 litres per service connection per day. This represents 15 per cent more than the real losses per service connection per day estimated for 2018-19. TasWater's water losses continue to be the highest of all major Australian water utilities by a substantial margin (Figure 4.1). Per service connection, TasWater's real losses represented over five and a half times the median for similar sized utilities on the mainland, which was 63 litres per day in 2019-20. [31]

Figure 4.1 Real losses (L/service connection/day)



[30] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator A8).

[31] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator A10).

Expressed as real losses per kilometre of water main, TasWater's real losses, estimated at 11.3 kL per kilometre of water main per day, were over four times the median for major mainland water utilities, which was 2.7 kL per day.[32]

In 2019-20, TasWater's infrastructure leakage index (the ratio of actual real losses to unavoidable real losses[33]) was 3.2, which provides evidence of a significant volume of preventable water loss in TasWater's water supply systems. The increase in the reported real losses continues to be due, in part, to the availability of more accurate data.

Overall, TasWater estimates that around 28 per cent of the total volume of potable water was unaccounted for in 2019-20. The current service standard target for 2019-20 is for unaccounted for potable water to represent no more than 28 per cent of the total volume of potable water. TasWater just achieved this target. The target of 28 per cent was set for application from 1 July 2018 in light of the volume of unaccounted for water being very high for TasWater in earlier years.

In response to its unaccounted for potable water performance results, TasWater has also developed a Non-Revenue Water Reduction Strategy which is designed to improve performance in this area. Key initiatives to be delivered by TasWater under this Strategy include:

- replacing older, differential pressure flow meters with new high-accuracy meters in major systems and upgrading and installing meters on previously unmetered water filling stations around the State;
- a pressure reduction trial in high-risk areas;
- working with the Tasmanian Fire Service on efficient use of water during training and exercises;
- reviewing and improving water mains flushing programs;
- incorporating greater water efficiency in hygienic operational practices, construction and maintenance works; and
- ongoing installations and upgrades of water filling stations.

Matters relating to TasWater's rate of unaccounted for potable water, including the current service standard target, will be considered as part of the Economic Regulator's 2022 Water and Sewerage Price Determination Investigation.

4.1.3 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 as a result of scheduled repairs and maintenance. TasWater is required to notify customers of planned interruptions.

[32] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator A11).

[33] 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.

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

ⓘ 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.

For 2019-20, TasWater reported 220 unplanned interruptions per 1 000 properties, a marginal increase from 2018-19 (215) and above the required service standard of 170. The median rate of water supply interruptions reported by mainland major water utilities was 123 unplanned interruptions per 1 000 properties.[34]

In 2019-20, TasWater reported that the average duration of an unplanned water supply interruption was 152 customer minutes off supply (ie each unplanned water supply interruption lasted, on average, just over 2½ hours). Similar utilities on the mainland reported a median of 128 customer minutes off supply during the year.

Depending on the location of the break or fault, an unplanned interruption may affect one or many customers. Unplanned interruptions to water supply affected, in total, 46 710 customers during 2019-20.

Table 4.2 shows that the number of customers affected by unplanned interruptions increased marginally in 2019-20 compared to the preceding year despite the number of unplanned interruptions decreasing from one year to the next.

Table 4.2 Unplanned water interruptions

	Number of unplanned interruptions	Number of customers affected
2015-16	5 807	33 898
2016-17	Unreliable data	Unreliable data
2017-18	1 463	44 737
2018-19	1 511	45 026
2019-20	1 477	46 710

Data collection issues affected Taswater's performance data for supply interruptions during 2016-17. This resulted in unreliable or incomplete data that is not considered to provide a reliable representation of performance for that year.

TasWater has previously reported 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. Therefore, these data have been excluded from this Report. TasWater further advised that the figures reported for the most recent financial years are lower than for previous years due to improvements in data collection that now exclude 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 4.3 shows the average customer minutes off supply for both planned and unplanned water interruptions, together with the minimum service targets for 2019-20.

In relation to planned water interruptions, TasWater did not meet any of the Code's minimum service targets in 2019-20. As an example, with respect to the duration of planned

[34] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator C17).

interruptions, TasWater only achieved the customer service standard of less than 3 hours 14 per cent of the time (against a target of 80 per cent). This is also reflected in other measures, with 84 per cent of planned interruptions lasting less than five hours (against a target of 90 per cent).

TasWater reported that its ability to resolve planned water supply interruptions within 3 hours was impacted, in part, by COVID-19. However, significant improvement occurred in 2019-20 in the number of planned interruptions that were restored within five hours. A continued focus by TasWater on increased planning, preparedness and improving the reliability of the Geographic Information System is targeted at further improving TasWater's performance in this area in the future.

Table 4.3 Water supply interruptions and water main breaks

	CSC standard 2019-20[35]	2015-16	2016-17	2017-18	2018-19	2019-20
Planned interruptions						
Average customer minutes off supply*		2	N/R	36#	29	21
Incidence of planned interruptions - water (no. per 1 000 properties)	20	N/A	N/A	109	112	**61**
Percentage of planned water interruptions with a duration of less than 3 hours[a]	80%	94	N/R	11[b]	27	**14**
Percentage of planned water interruptions with a duration of less than 5 hours[c]	90%	97	99#	38#[b]	59	**84**
Water main breaks (no. per 100km of water main)	35	33	48	39	41	33
Unplanned interruptions						
Average customer minutes off supply*		34	N/R	34	37	33.5
Incidence of unplanned interruptions - water (no. per 1 000 properties)	170	167	N/R	216	215	**220**
Percentage of unplanned water interruptions with a duration of less than 3 hours[a]	80%	90	N/R	86	86	87
Percentage of unplanned water interruptions with a duration of less than 5 hours[c]	94%	94	86#	96	96	95

Results for 2019-20 in **bold** indicate that the standard for 2019-20 was not met.

* This estimate is calculated with reference to all TasWater customers and not just those experiencing a supply interruption.

- Data contain errors or is unreliable N/R - Not reported due to incomplete or missing data

N/A - Standard not applicable for relevant period and result, therefore, not reported.

a - The service standard in the Code refers to the 'average duration' of interruptions being 180 minutes.
b - TasWater reported that documentation on this measure was not maintained into 2017-18. Calculation assumes worst-case scenario in absence of exact figures.
c - The service standard in the Code refers to the percentage of interruptions 'restored within 5 hours'.

[35] Minimum service standards for 2019-20, as per the *Tasmanian Water and Sewerage Industry Customer Service Code*, Version 6, 25 November 2019.

With respect to the incidence of unplanned interruptions per 1 000 properties, TasWater did not meet the Code's minimum service standard target of 170 in 2019-20. However, TasWater met the minimum standards for the remaining two performance indicators relating to the duration of unplanned interruptions.

For those customers who experienced an unplanned interruption to their water supply in 2019-20, for 87 per cent of the time the average duration of the interruption met the target of 3 hours, which was a slight improvement on the result of the previous year. Ninety five per cent of unplanned interruptions were restored within five hours, meaning that the minimum service standard target for 2019-20 of 94 per cent was met.

TasWater reported that the incidence of unplanned interruptions result for 2019-20 was primarily due to interruptions caused by the early failure of some ageing infrastructure. TasWater also stated that asset renewal remains a significant focus of its capital expenditure program and, with improved network outage data, renewals will be focused on assets that have the most impact on customers. TasWater also reported that its focus in 2020-21 will be to build on the improved performance in 2019-20 and deliver the following initiatives to realise further performance improvements:

- Refinements to the H2Go application to increase reliability of data capture and operator usability.
- Improved processes to ensure customers are made aware of supply interruptions, preventative maintenance programs and operational activities that may alter the quality or aesthetics of their water supply.
- Enhancement of network cleaning programs utilising standard operating procedures.
- Installation of automated flushing devices to reduce customer impacts and improve productivity.
- Better identification of poor performing assets for earlier renewal due to improved data capture.
- Upskilling of employees to assist in the planning of works to reduce planned outage durations.

4.1.4 Bursts and leaks

Water breaks, in the form of 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. Bursts and leaks are prioritised according to their respective impact on, for example, customers, water quality and the environment.

Table 4.4 shows, for each interruption priority, the 'time to attend' and 'percentage of time the measure was met' performance measures, together with TasWater's performance, against each, during 2019-20 and for the previous four years.

ⓘ 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 2019-20, TasWater met the minimum service standards for Priority 1, Priority 2 and Priority 3 bursts and leaks.

Table 4.4 Time to attend bursts and leaks (% of time standard achieved)

	CSC standard 2019-20[36]	2015-16	2016-17	2017-18	2018-19	2019-20
Priority 1	60 min/90%	87%	93%	94%	97%	92%
Priority 2	180 min/90%	98%	94%	96%	96%	97%
Priority 3	4 320 min/90%	91%	81%	90%	89%	95%

4.2 Sewerage service reliability and performance

In cases where the relevant information for Level 1 STPs is not available, this Chapter relates only to the performance of TasWater's 77 Level 2 STPs.[37,38]

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.

4.2.1 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 that results in an interruption to sewerage transport and treatment operations. 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.

TasWater reported 1 981 sewer main breaks and chokes during 2019-20, which is an increase on the previous year (1 752 reported in 2018-19).

ⓘ 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

Reliability of the sewerage network is measured by the frequency of the number of sewer main breaks and chokes per 100 kilometres of sewer main (Table 4.5). This measure does not include breaks and chokes that occur within property connections (ie inside the customer's property boundary).

TasWater's performance of 41 breaks and chokes per 100 kilometres of sewer main in 2019 -20 is approximately 12 per cent more than the number in the previous year (37) and comfortably achieves the 2019-20 service standard target of 65 per 100 kilometres of sewer main.

[36] Minimum service standards for 2019-20, as per the *Tasmanian Water and Sewerage Industry Customer Service Code*, Version 6, 25 November 2019.

[37] The EPA does not regulate Level 1 STPs are performance information is therefore not collected in relation to the performance of these STPs.

[38] The performance of Level 2 STPs operated by organisations other than TasWater are outside the scope of this Report.

The performance of TasWater's sewerage network for 2019-20 was worse than that of its mainland counterparts, as the median rate reported for mainland major water utilities was 29 breaks and chokes per 100 kilometres of sewer main.[39]

Table 4.5 Sewerage main breaks and chokes

	Total number of breaks and chokes	Sewerage mains breaks and chokes (per 100km sewer main)
2015-16	2 895	61
2016-17	2 156	45
2017-18	2 135	45
2018-19	1 752	37
2019-20	1 981	41

4.2.2 Property connection sewer breaks and chokes

The property connection is a short sewer owned and operated by TasWater that 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 2019-20 was 13 per 1 000 property connections, slightly higher than the rate of 11 per 1 000 property connections reported in 2018-19.

The national median for similarly sized urban water utilities on mainland Australia was around three breaks per 1 000 properties.[40]

4.2.3 Sewer spills

A spill 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 spills.

ⓘ 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

TasWater must notify the Director, EPA, of any release of sewage that causes or may cause serious or material environmental harm.[41] The threshold for reporting sewer spills varies between environmental regulators in different jurisdictions. Because of the variations in these thresholds, sewer spills are no longer included in national performance reporting.

[39] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator A14).

[40] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator A15).

[41] 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.

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. TasWater's performance result for 2019-20 is shown in Table 4.6, along with the number of sewer spills per 100km of sewer main and the percentage of spills contained within five hours (against a customer service target of 99 per cent).

TasWater reported that two spills occurred in sensitive environments and that there were 102 dry weather sewage spills during the year. Chapter 6 provides details of incidents in 2019-20 that resulted in TasWater receiving environmental infringement notices from the EPA.

Table 4.6 Sewer spills

	Sewer overflow rate (per 100 km of sewer main)	Number of sewer spills (per 100km of sewer main)	Spills contained within five hours (%)
2015-16	4.3	57	99.1%
2016-17	2.8	NR [a]	NR [a]
2017-18	3.1	78	99.7%
2018-19	4.8	98	99.7%
2019-20	6.1	88	99.7%

Source: TasWater Annual Performance Report 2019-20.

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

Almost 100 per cent of sewage spills (from reticulation and branch sewers) in 2019-20 were contained within five hours. This performance is consistent with that reported for 2017-18 and 2018-19.

During 2019-20, the rate of spills relative to the length of the sewerage network was 88 per 100 km of sewer main. This was a decrease from the 98 sewer spills per 100km of sewer main reported in 2018-19. The rate of sewer spills has fluctuated year to year and can be affected by weather events and network blockages.

4.2.4 Sewerage interruptions

A sewerage interruption is any event affecting sewerage-related activities. This includes events that cause sewerage-related activities to be reduced or suspended without affecting customers. Timing of the duration of an interruption starts when TasWater is made aware of that interruption and ends when normal activities resume. Table 4.7 shows the minimum service standards for sewerage activities as outlined in the Code.

Table 4.7 Sewerage interruptions

	CSC standard 2019-20[42]	2015-16	2016-17	2017-18	2018-19	2019-20
Sewerage mains breaks and chokes (no. per 100km of sewer main)	65	61	45	45	37	41
Percentage of response times within 60 minutes to attend sewer spills, breaks and chokes	85%	74%	NR	81%	89%	91%
Percentage of sewage spills contained within 5 hours	99%	99.1%	NR	99.7%	99.7%	99.7%

NR - Not reported due to incomplete or missing data.

In 2019-20, TasWater met all three standards for sewerage service interruptions as specified in the Code. TasWater noted that this is largely due to its continued focus, through the year, on resource sharing across teams to ensure satisfactory performance, as well as a greater understanding of reasons for variance.

TasWater also reported that continued refinement of its scheduling and dispatch processes is expected to further improve response times to sewerage interruptions. During 2020-21, options will also be investigated by TasWater to further increase dispatch efficiency and provide data on fleet usage.

4.3 Incidents of non-compliance

For 2019-20, TasWater reported the following regulatory non-compliances:

- One public health non-compliance in drinking water that led to an incident based boil water alert for Lauderdale in November 2019.
- One instance of non-compliance with economic regulation. This related to a water main burst that was not rectified within the required timeframe as outlined in the Code.
- One environmental infringement notice issued by the EPA in relation to the discharge of effluent from the Sandy Bay Road network in July 2019.
- One environmental infringement notice issued by the EPA in relation to the discharge of unchlorinated effluent from the Selfs Point STP in September 2019.
- Two environmental infringement notices issued by the EPA in relation to an incident in August 2019 where a loss of power at the Macquarie Point STP resulted in the discharge of unchlorinated effluent into the Derwent River.

TasWater reported no instances of non-compliance with the Dam Safety Regulator.

[42] Minimum service standards for 2019-20, as per the *Tasmanian Water and Sewerage Industry Customer Service Code*, Version 6, 25 November 2019.

5 DRINKING WATER

This Chapter outlines the Department of Health's (DoH's) assessment of TasWater's compliance with respect to drinking water quality against microbiological, chemical and fluoridation standards.

5.1 Drinking water systems and zones

TasWater undertakes compliance testing across the State. Sampling requirements are determined by both the risk and the geographical layout of a supply system.

Several systems comprise numerous monitoring zones to ensure that the water supplied to customers does not pose a threat to public health. In these systems, an aggregation of all the available data from these monitoring zones has been undertaken prior to the assessment of compliance of that system.

ⓘ 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.

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 treatment

Further to the three categories of water treatment discussed in section 2.2.1 of this Report, during 2019-20 no water supply systems supplied raw water (no treatment processes) prior to delivery to customers.

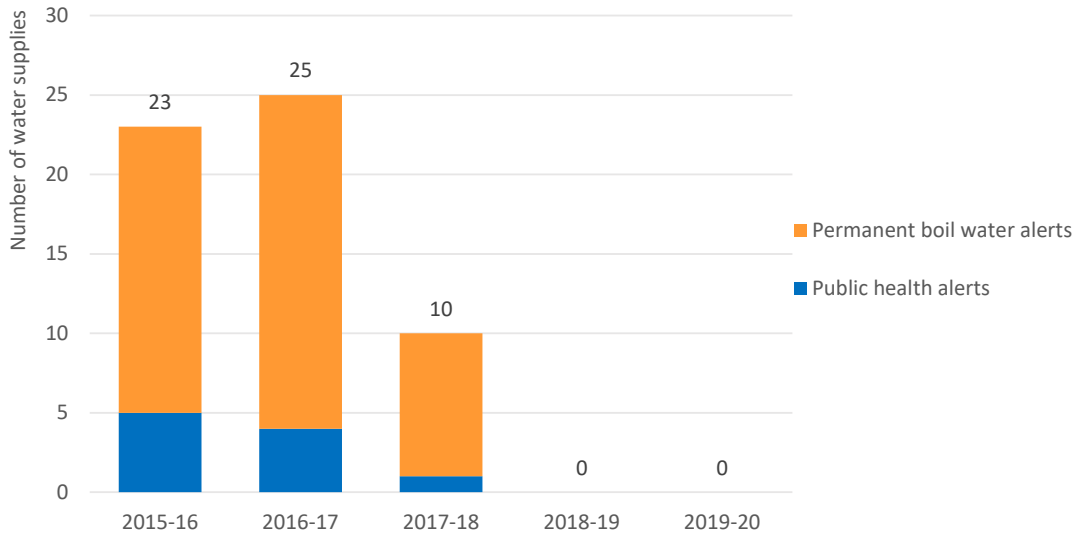
One water supply system provided disinfection only, with a single treatment barrier such as chlorination or ultraviolet light. Chlorination can become ineffective if the source water becomes turbid, which commonly affects raw water during heavy rain and/or drought conditions. If chlorination becomes ineffective a temporary boil water alert (BWA) may be issued.

The remaining 60 water supply systems (98 per cent) had multiple water treatment processes to address public health risks posed by the source water quality. These water treatment processes require effective operation and ongoing maintenance to ensure they are adequate. These systems are effective against most microbiological hazards that may be present in the source water.

5.3 Drinking water compliance

As at 30 June 2020, none of TasWater's 61 water supply systems operated under either a long-term BWA or a public health alert (PHA - do not consume) which was the same number as the previous year. Figure 5.1 shows the number of water supplies with a public health warning applied over the past five years.

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



5.4 Microbiological compliance of water supply systems

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

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.[43]

ⓘ Drinking water guidelines

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

During 2019-20, DoH found that TasWater had adequately monitored all 61 of its water supply systems in compliance with the required sampling frequency specified in the ADWG and DWQG.

DoH assessed all 61 of TasWater's public drinking water supply systems to be microbiologically compliant (100 per cent). This is based on each water supply system exhibiting greater than 98 per cent of all microbiological samples to be free of microbiological contamination (ie *E.coli*).

[43] Information about the quality of each drinking water supply can be obtained from DoH's Annual Drinking Water Quality Report or from water quality reports published by TasWater.

Table 5.1 compares the level of compliance, non-compliance and unknown compliance (due to insufficient sampling) from 2015-16 to 2019-20.

Table 5.1 Microbiological compliance of drinking water supply systems

Microbiological compliance	2015-16	2016-17	2017-18	2018-19	2019-20
Compliant (no. / percentage)	66 (76)	71 (82)	56 (88)	62 (100)	61 (100)
Non-compliant (no. / percentage)	20 (23)	16 (18)	8 (12)	0	0
Unknown compliance (no. / percentage)	1 (1)	0	0	0	0

TasWater uses microbiological compliance data to identify and manage risks of water supply systems. TasWater addresses the risks by commissioning the capital projects required to provide permanent improvements to the microbiological quality of these water supply systems.

5.4.1 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 BWA is issued to protect the public from the risk of water contamination in the meantime.

ⓘ Boil water alerts (BWAs)

When a BWA 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 BWAs 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 BWAs 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 BWA, and additional criteria must be met before the alert can be lifted.

No Tasmanian water supply system operated under a permanent BWA in 2019-20.

Part of one water supply system operated on a temporary BWA during 2019-20 owing to the identification of potential risks to public health from treatment barriers not being able to operate to a sufficient standard. A summary of that instance of the temporary BWA is presented in Table 5.2 below.

Table 5.2 Summary of drinking water non-compliances, 2019-20

Date	Water supply affected	Action	Status
5 November 2019	Lauderdale (Part of Greater Hobart)	A temporary BWA was issued following the detection of microbiological contamination within a reservoir.	Temporary BWA lifted 7 November 2019

The Clarence Monitoring Zone is part of the Greater Hobart water supply system, with water originating from the Bryn Estyn treatment plant and distributed to Hobart's eastern shore via the West Derwent Pipeline. A sample taken from the Lauderdale reservoir on 4 November 2019 returned a positive detection for *E. coli* indicating potential microbiological contamination. Owing to multiple samples taken throughout the Clarence Monitoring Zone, the contamination was able to be isolated to the broader Lauderdale area; affecting 5 770 residents (approximately one[44] per cent of the serviced population).

In this instance no attributable source of contamination was identified within the supply itself. The system was flushed with clean water and subsequent microbiological samples were all clear. The original *E. coli* detection was subsequently reassessed as *E. vulneris* and DoH was satisfied it was reported as a false positive *E. coli* in the original sample.

Table 5.3 compares the number of water supply systems which operated with permanent or temporary BWAs between 1 July 2015 and 30 June 2020. During and at the end of 2019-20, there were no drinking water supplies with a permanent BWA in place. This large decrease in the number reported in 2016-17 to 2018-19 and was largely due to the completion of TasWater's Regional Towns Water Supply Program.

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

Alert type	2015-16	2016-17	2017-18	2018-19	2019-20
Temporary BWAs	7	3	3	2	1[(a)]
Permanent BWAs	18	21	9	0	0

(a) The temporary BWA operated for three days during 2019-20.

5.4.2 Population receiving microbiologically compliant reticulated water

Eighty per cent of Tasmanians (431 513[45]) receive their drinking water from a public drinking water supply system.

During 2019-20, none of the Tasmanian population supplied with water from a reticulated water supply received drinking water that was microbiologically non-compliant.

5.5 Chemical compliance of water supply systems

During 2019-20, TasWater adequately monitored all 61 water supply systems for chemical contaminants.

Compliance is assessed against health based guideline values, which 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.

[44] Determined to be 1.3 per cent, rounded to the nearest whole number and reported as one per cent.

[45] These estimates exclude visitors to the State. In 2019-20, there were 1.3 million visitors to Tasmania, a very large percentage of whom would have consumed water supplied by TasWater (https://www.tourisimtasmania.com.au/research/visitors).

As shown in Table 5.4, two of TasWater's water supply systems had chemical contaminants detected above the ADWG health guideline during 2019-20. This continues the improvement in recent years.

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

	2015-16	2016-17	2017-18	2018-19	2019-20
Chemical non-compliances	13	10	7	2	2

During 2019-20, temporarily elevated levels of mercury were identified in the Deep Creek water supply system (4 697 people). Temporarily elevated levels of disinfection by-products were detected in the Coles Bay water supply system (152 people). In both cases, remedial action was taken by TasWater and re-sampling of the water supply showed that contaminants had returned to acceptable levels.

Overall chemical compliance saw 59 of the 61 water supply systems assessed as being compliant and two systems as non-complaint.

5.5.1 Public Health Alerts

PHAs (do not consume notices) are put in place when non-compliant water is detected that cannot be rendered safe by boiling. No water supply systems operated under a PHA as at the end of 2019-20.

Table 5.5 shows the number of water supply systems operating under a PHA between 1 July 2015 and 30 June 2020. There were no new PHAs issued during 2019-20.

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

	2015-16	2016-17	2017-18	2018-19	2019-20
Public health alerts	5	4	1	0	0

5.5.2 Population receiving chemically compliant reticulated water

In 2019-20, 99[46] per cent of the Tasmanian population serviced by a reticulated water supply system received drinking water that was chemically compliant throughout the year. This is comparable to what has been reported since 2017-18. It remains difficult for TasWater to achieve 100 per cent compliance in this assessment, as any sampling result that is non-compliant for the year results in the entire system being assessed as non-complaint. Matters relating to sample contamination and erroneous results, which are beyond the control of TasWater, are recorded in some sampling events.

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 that is both safe and effective in reducing tooth decay.

[46] Determined to be 98.6 per cent, rounded to the nearest whole number and reported as 99 per cent.

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 with populations 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 has expanded the fluoridation of public water supplies to have all serviced communities of greater than 500 population receiving a fluoridated supply.

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.

5.6.1 Fluoridation compliance

Of the Tasmanian population receiving a reticulated water supply, 99[47] per cent receive fluoridated water.[48]

Under the *Fluoridation Regulations 2019*, the fluoride concentration range required in the drinking water supply (to achieve optimum tooth decay prevention) is 0.8 to 1.1 milligrams per litre (mg/L). 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 (2018)* prescribes that the average of all samples taken from within a reticulation network should fall within that 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 2019-20, there were 38 fluoridation systems in operation throughout the State servicing 39 of the 61 water supply systems. Thirty three of the 38 fluoridation systems maintained an average fluoride level within the required fluoride concentration range. This is a reduction to the compliance reported in 2018-19. The non-compliant fluoridation systems, including the average fluoride concentration, were Deloraine (0.7 mg/L), Forth (0.7 mg/L), Leven River (0.5 mg/L), Longford (0.7 mg/L), North Esk (0.7 mg/L) and West Tamar (0.7 mg/L); all providing less than the required annual average fluoride level.

All these fluoridation systems had operational issues during 2019-20 with many having their fluoride storage tanks repaired or replaced. This results in periods of fluoridation suspension with no fluoride supplied to that water supply. During periods of no or low fluoridation, the requirement still exists to take compliance samples, and this contributes to a lower average fluoride concentration throughout the year.

Table 5.6 shows fluoridation compliance between 1 July 2015 and 30 June 2020. In 2019-20, 75.1 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 1.1 mg/L.

[47] Determined to be 98.9 percent, rounded to the nearest whole number and reported as 99 per cent.

[48] 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. For very small systems, TasWater is not required to provide fluoridated water.

Table 5.6 Fluoridation compliance (per cent of serviced population)

	2015-16	2016-17	2017-18	2018-19	2019-20
Fluoridation compliance	100	82	100[49]	99[50]	75[51]

This is a significant reduction on what was reported in previous years, as the non-compliant fluoridation systems serviced very large population bases. Whilst non-compliant with the Tasmanian requirement of having an average fluoride concentration between 0.8 and 1.1 mg/L, only Leven River was outside the National Health and Medical Research Council's recommended fluoridation range of 0.6 to 1.1mg/L.

During 2019-20, there were no instances where a fluoride concentration exceeded the ADWG health related guideline of 1.5 mg/L.

[49] Determined to be 99.8 per cent, rounded to the nearest whole number and reported as 100 per cent.

[50] Determined to be 98.9 per cent, rounded to the nearest whole number and reported as 99 per cent.

[51] Determined to be 75.1 percent, rounded to the nearest whole number and reported at 75 per cent.

6 ENVIRONMENT

This Chapter reports on the performance of TasWater's sewage treatment plants (STPs) including effluent and biosolids reuse, and environmental impact on waterways. For the purpose of this Chapter, only the performance of Level 2 STPs operated by TasWater is assessed. The EPA's analysis of the performance of individual STPs operated by TasWater during 2019-20 is presented in Appendix 3.

6.1 Sewerage schemes

ⓘ 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 municipal councils, or STPs operated by entities other than TasWater.

During 2019-20, 15 of TasWater's Level 2 STPs received annual inflows of more than 1 000 ML. Table 6.1 provides the total flow volumes for 2018-19 and 2019-20 for these STPs, which together accounted for approximately 72 per cent of the total inflows to TasWater's Level 2 STPs during this period. Most of the listed plants service major urban areas and/or accept large volumes of industrial trade waste. Ti-Tree Bend remains the largest STP by inflow volume in the State. This is in part due to both sewage and stormwater flows from the Launceston Combined System[52] being collected and transported to that STP.

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

		Total flow ML/year	
Premises name	Catchment area	2018-19	2019-20
Ti-Tree Bend	Launceston	5 503	5 644
Pardoe	Devonport	4 552	4 865
Macquarie Point	Hobart	3 881	3 816
Prince of Wales Bay	Glenorchy	2 918	2 970
Selfs Point	Hobart	3 205	2 929
Ulverstone	Ulverstone	2 624	2 800
Rosny	Clarence	2 213	2 301
Round Hill	Burnie	2 293	2 200
Blackmans Bay	Kingston	1 597	1 889
Cameron Bay	Glenorchy	1 763	1 856
Smithton	Smithton	1 486	1 516
Wynyard	Wynyard	1 331	1 389
Newnham Drive	Launceston	1 072	1 071
Hoblers Bridge	Launceston	1 043	1 053
Norwood	Launceston	1 041	1 049

[52] In this system, both sewage and stormwater are treated before being discharged into waterways.

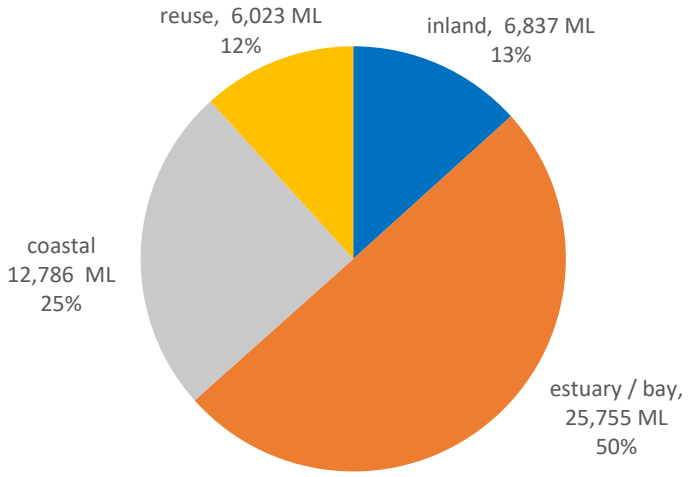
6.2 Outfalls to the environment

STPs discharge to inland, estuarine and marine (coastal) environments. The type of receiving environment provides an indication of environmental sensitivity and capacity to cope with pollutants, with inland waters considered the most sensitive.

TasWater operated 77 Level 2 STPs during 2019-20. Of these, 13 were authorised to discharge to marine environments, 29 to estuaries or bays and 35 to inland waters. Not all STPs actually discharged to water in 2019-20. Treated effluent produced at 10 plants was fully reused and not discharged to receiving waters.

Figure 6.1 shows the volume and percentage of treated effluent discharged by Level 2 STPs during 2019-20, categorised by receiving environment. These percentages have remained relatively unchanged over recent reporting periods.

Figure 6.1 Sewage discharge by receiving environment 2019-20 (ML/year; percentage of flow)



With 25 755 ML or 50.1 per cent of the total, discharge to estuarine waters represents the largest part of the total volume of effluent discharged. Discharge to coastal waters accounted for 12 786 ML or 24.9 per cent, and inland waters accounted for 6 837 ML or 13.3 per cent. 6 023 ML or 11.7 per cent of effluent was reused.

Regional differences in population settlement are reflected in the predominant type of receiving environment for different parts of the State. Discharges in southern and northern Tasmania are predominantly to the Derwent and Tamar estuaries respectively, with smaller volumes discharged to inland watercourses. In the north-western region, discharges are predominantly to coastal environments. Most treated effluent reuse occurs in southern Tasmania. The Clarence, Brighton and Penna effluent reuse schemes together accounted for 67 per cent of the total volume of effluent reused in 2019-20.

6.3 Sewage treatment plant compliance

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

Regulatory discharge limits for each Level 2 STP are specified in the environmental conditions issued by the EPA. Discharge limits vary from STP to STP depending on the sensitivity of the receiving environment and the volume of discharge. Discharge limits may change over time as these aspects are re-evaluated.

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 reported to provide an indicator of changes in STP performance over time.

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

ⓘ Discharge limits

Environmental conditions for many STPs have been updated recently via the issue of Environment Protection Notices (EPNs) - a process that is continuing. While most EPNs contain interim discharge limits based on the 90th 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.

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 samples that complied with the specified limit as a percentage of the total number of 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. To calculate compliance, only flows directed to the respective receiving environments (i.e. waters vs reuse) are taken into account.

If discharge limits for both discharge to land (effluent reuse) and discharge to water exist for a STP, compliance is assessed and reported separately against each set of limits. The flow-weighted combined compliance for discharge to water and land is also reported.

The discharge to waters compliance figure for STPs with full reuse has relevance as an indicator of the likely discharge quality for potential future discharge events. For this reason, discharge to waters compliance for full reuse STPs with authorised discharge points to water is presented in the compliance assessment for individual STPs in Appendix 3, despite the fact that discharge may not have occurred in the reporting period.

6.3.1 Compliance with current discharge to waters limits

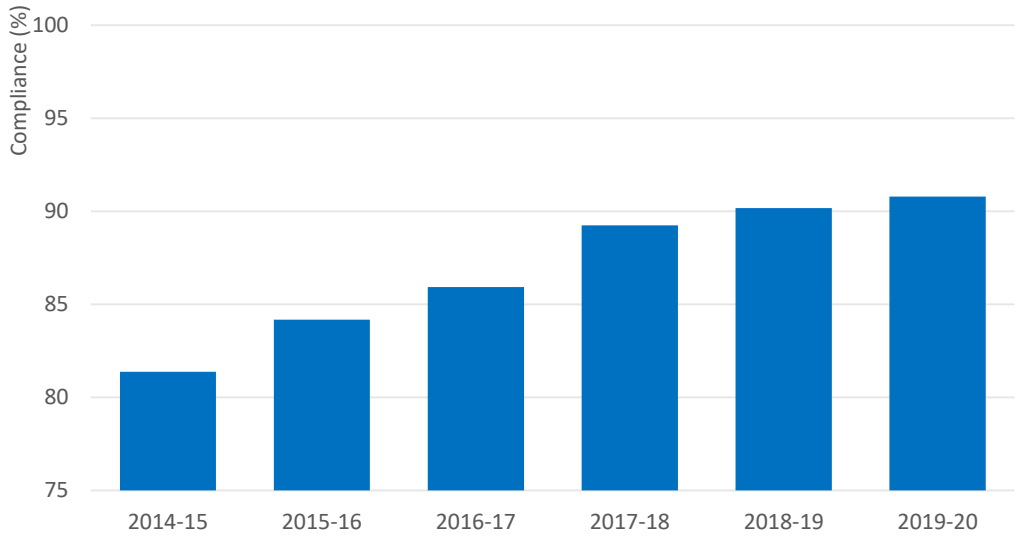
This section assesses compliance with regulatory discharge to waters limits for all STPs combined. 10 STPs from which discharge to waters did not occur during 2019-20 are excluded from the assessment. Sixty five[53] out of TasWater's 77 Level 2 STPs contributed to the flow-weighted discharge to waters compliance measure for 2019-20.

Figure 6.2 shows compliance against discharge to waters limits over time. In 2019-20, TasWater achieved 90.8 per cent compliance with regulatory discharge to waters limits.

ⓘ 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 are 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, 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) (flow-weighted)



Overall compliance levels are further illustrated in Table 6.2. In 2019-20, 13 TasWater STPs were classified as substantially non-compliant (ie 75 per cent or less compliant) with their regulated discharge limits, the same number as in 2018-19. This includes 12 STPs that discharged treated effluent to water and one STP which discharged all effluent to a recycled water scheme. Effluent recycling diverts pollutant loads away from waterways towards beneficial uses.

In 2019-20, flow-weighted overall compliance with regulatory discharge to water limits continued the upwards trend that is evident since 2014-15 (81.4 per cent). Eight of the 13[54] largest plants achieved more than 90 per cent compliance in 2019-20. Treatment process optimisation efforts over the past years have resulted in steady improvements in compliance levels, particularly at those larger STPs. This is illustrated by the difference in average

[53] Discharge to water from a further 2 STPs (St Marys and Midway Point) occurred during 2019-20, but could not be assessed for limits compliance due a lack of data.

[54] Refers to the 'Big 13' strategy, which was a component of the MoU, targeting performance improvements for TasWater's largest STPs by volume.

compliance between all 65 assessed STPs that discharged to water in 2019-20 (85.5 per cent), and the average compliance of the 13 largest STPs (91.1 per cent). As a result, the overall flow-weighted compliance figure is biased towards those large STPs. Smithton STP had the poorest compliance results of the 13 largest STPs in the 2017-18 (59.0 per cent) and 2018-19 (71.2 per cent) periods, but achieved a compliance level of 90.2 per cent in 2019-20, reflecting the recovery of its treatment performance following desludging.

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

	2015-16	2016-17	2017-18	2018-19	2019-20
>90% compliance	24	30	33	25	31
>75 - 90% compliance	31	30	27	35	26
>50 - 75% compliance	12	8	11	11	10
≤50 % compliance	5	4	3	2	3

Table 6.3 lists the three STPs (Bridport, Port Sorell and Westbury) with 50 per cent or less compliance against regulatory discharge to water limits in 2019-20. All three include 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 tourist visitation. At the Port Sorell STP, surveys of sludge in treatment lagoons have previously confirmed significant sludge accumulation, which may impact on performance. Desludging may lead to improved performance outcomes in the future for this STP. At the Westbury STP, a number of minor works have been noted as having the potential to improve compliance, including desludging, reduction of inflow and infiltration, and lagoon repairs.

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[1]	Max/Min	9	48.5
Port Sorell[1]	Max	4	41.8
Westbury	Max/Min	9	49.5

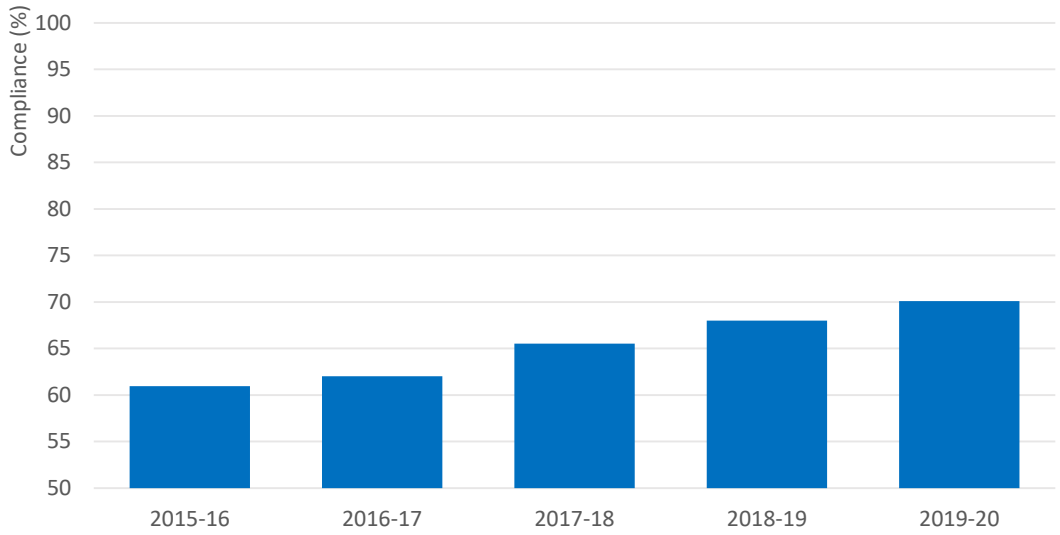
Notes: 1. Indicates consecutive years of 50 per cent or less compliance.

6.3.2 Performance against AMT discharge to waters limits

The limits adopted for the analysis in this section represent AMT standards specified by 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 and disinfection 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 more stable over time than compliance with regulatory discharge to water limits, but also displays an upwards trend commencing in 2016-17. The 2019-20 performance level of 70.1 per cent of flow-weighted sample compliance was boosted by upgrades to the Blackmans Bay STP commissioned in August 2019, exceeding the 2018-19 result of 68 per cent by more than 2 per cent.

In parallel to compliance with regulatory limits, the average performance level of 65.3 per cent across all 64[55] STPs contributing to this measure is below the flow-weighted performance of 70.1 per cent, demonstrating that the larger STPs perform better against the AMT benchmark.

Table 6.4 below shows distribution of STP numbers separated into performance categories over time. Of the 13 largest STPs, Blackmans Bay STP in Kingborough, Round Hill STP in Burnie and Selfs Point STP in Hobart achieved more than 90 per cent compliance with the AMT benchmark in 2019-20.

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

	2015-16	2016-17	2017-18	2018-19	2019-20
>90% compliance	9	10	12	11	12
>75 - 90% compliance	9	15	14	17	15
>50 - 75% compliance	33	34	30	24	25
≤50 % compliance	23	15	19	20	19

[55] Rosny STP was not assessed against AMT limits in 2019-20 due the change of monitoring parameters from biochemical oxygen demand (BOD) to carbonaceous biochemical oxygen demand (cBOD). cBOD is considered a more appropriate compliance parameter for this particular STP, but is not part of the AMT parameter suite.

6.3.3 Summary of discharge to waters limits compliance

TasWater's flow-weighted compliance against regulatory discharge to waters limits continued to improve with a lift from 90.2 per cent in 2018-19 to 90.8 per cent in 2019-20. Flow-weighted performance against AMT limits also improved from 68 per cent in 2018-19 to 70.1 per cent. Both reflect overall improvements in the quality of effluent discharged to water.

Table A3.1 and Figures A3.1 and A3.2 in Appendix 3 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 for discharge to effluent recycling schemes that use treated effluent generated by Level 2 STPs. Effluent recycling schemes operated in 2019-20 were assessed against regulatory discharge to land limits, following a review of those limits by the EPA in 2019. In previous reporting periods, compliance with discharge to land limits was assessed against 'Class B'[56] quality standards as outlined in the *Environmental Guidelines for the Use of Recycled Water in Tasmania* (DPIWE, 2002). While regulatory discharge to land limits generally align with 'Class B' recycled water quality, individual variations to parameter limits were introduced to reflect the outcomes of long-term monitoring programs and the use of the recycled water at individual reuse schemes.

The total parameter compliance requirement for treated effluent that is discharged to an approved recycled water scheme is 90 per cent. This requirement reflects the reduced environmental risk of discharge to effluent reuse and is part of a set of measures that support the discharge of treated effluent to sustainable reuse in Tasmania.[57] Where total parameter compliance of treated effluent discharged to reuse is 90 per cent or more, compliance is reported as 100 per cent (i.e. fully compliant with requirements).

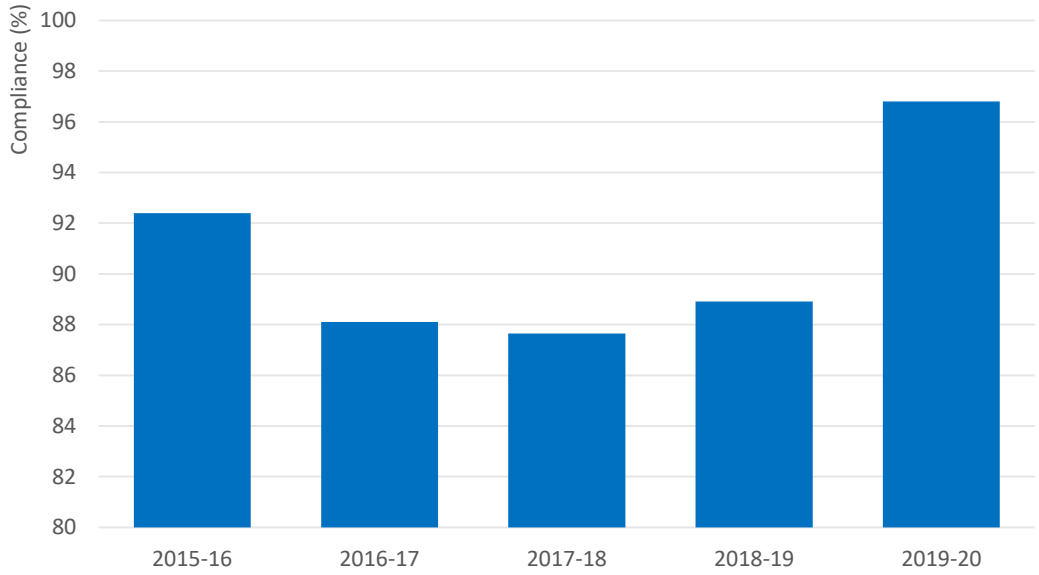
TasWater's flow-weighted performance against regulatory discharge to land limits was 96.8 per cent in 2019-20, a considerable increase from the 88.9 per cent reported for 2018-19. The change from the assessment against 'modified Class B' limits to regulatory discharge to land limits is estimated to account for less than 1 of the additional percentage points, with approximately another 2 additional percentage points explained by the introduction of the 90 per cent compliance requirement for discharge to effluent reuse.

The remainder of the compliance lift is considered to be the result of underlying performance improvement, which represents a significant improvement on the 2018-19 result.

[56] The EPA's assessment prior to 1 July 2019 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/100 mL *E.coli*.

[57] For further information please refer to the 'Regulatory Framework for the Sustainable Discharge of Treated Wastewater from Level 2 WWTPs', EPA Tasmania November 2020, www.epa.tas.gov.au.

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



Land irrigation with treated effluent from the Smithton STP, which first commenced in 2017-18, continued in 2019-20. Performance against Class B reuse limits for Smithton is included in the flow-weighted compliance assessment for 2019-20. Effluent performance for Smithton against reuse limit expectations improved from 72.7 per cent in 2018-19 to 100 per cent in 2019-20, following completion of lagoon desludging. There is a degree of uncertainty attached to this result, due to an incomplete monitoring data set.

The most significant contribution to the improvement in flow-weighted compliance is from the improved treated effluent compliance at Rosny STP, which accounts for almost a quarter (23.4 per cent in 2019-20) of the treated effluent volume discharged from Level 2 STPs to reuse. Compliance with discharge to land limits for Rosny STP improved from 81.9 per cent in 2018-19 to 100 per cent in 2019-20.

Similar to 2018-19, no STP achieved less than 50 per cent compliance with its reuse limits in 2019-20, and most STPs are represented in the two highest categories of compliance. Three STPs reported up to 75 per cent compliance and 12 STPs reported up to 90 per cent compliance with Class B reuse limits. Nineteen STPs achieved compliance above 90 per cent in 2019-20. While this is a significant improvement on previous years, the higher number of STPs with 90 per cent or more compliance with discharge to land limits is in part due to the change to reporting against regulatory discharge limits in 2019-20 (as opposed to previously reporting against Class B reuse limits).

Table 6.5 provides an overview of the distribution of STP compliance against discharge to land limits for 2019-20 and for the previous four financial years.

Table 6.5 Number of STPs by performance category (reuse limits)

	2015-16[1]	2016-17[1]	2017-18[1]	2018-19[1]	2019-20
≥ 90% compliance*	13	15	15	14	19
>75 - < 90% compliance*	12	8	10	16	12
>50 - 75% compliance	7	7	5	4	3
≤50 % compliance	0	1	1	0	0

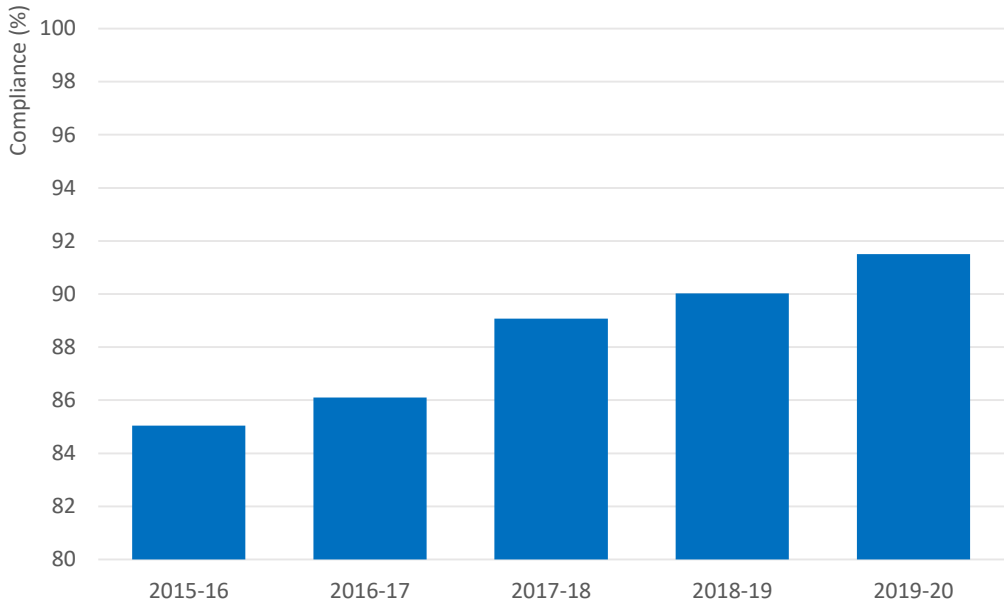
* Compliance categories changed in 2019-20 to include 90.0 % in the highest category. Past period results were updated.
[1] Up to and including 2018-19, reporting is against 'Class B' reuse limits.

Tables A3.2 and A3.4 in Appendix 3 show compliance with discharge to reuse limits and reuse flow volumes and reuse proportion for each STP.

6.3.5 Combined discharge compliance to water and land

This section summarises the levels of compliance achieved by TasWater's Level 2 STPs when assessed against the regulatory discharge limits for discharge to water and discharge to land limits combined, on a flow-weighted basis.

Figure 6.5 Compliance with discharge limits – combined water and land (per cent)



As the largest part of the flow volume is discharged to water (in 2019-20, 11.7 percent of effluent from Level 2 STPs was discharged to land, and 88.3 per cent to water), the combined compliance result is weighted towards the discharge to water compliance result.

In 2019-20, TasWater achieved a combined compliance with regulated limits for discharge to water and land of 91.5 per cent, an improvement from the 2018-19 result of 90 per cent.

Table A3.3 and Figure A3.3 in Appendix 3 show the flow weighted combined compliance with regulatory discharge to waters and regulatory discharge to reuse limits and the reuse proportion for each individual STP.

6.3.6 Public disclosure of sewage treatment plant performance

TasWater is required to submit Annual Environmental Review (AER) reports for its Level 2 STPs to the Director, EPA and to make these publicly available. In 2019-20, TasWater provided a single state-wide AER report to the EPA, which reports on all its Level 2 STPs. Similar to 2018-19, the EPA assessed the reliability of the data provided in the 2019-20 AER as not sufficiently high, and expects further data quality improvements in subsequent reports.

The EPA makes AERs available to the public upon request. Publication of the STP performance information in this Report is another means of public disclosure, supporting transparency and helping to make 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.[58] TasWater makes discharge monitoring results for individual STPs available to the public on request.

6.3.7 Compliance with EPA requirements

Sections 6.3.1 to 6.3.5 discuss level of compliance with regulatory discharge limits to water and to reuse achieved by TasWater's Level 2 STPs. Effluent compliance is one of a number of measures relevant to 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 management of other incidents.

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

TasWater received four Environmental Infringement Notices for offences that occurred in 2019-20 as follows:

- depositing a controlled waste in a manner likely to adversely affect the use or value of receiving waters, as a result of a sewage spill at Sandy Bay in July 2019;
- failing to develop an operational procedures manual sufficient to ensure compliance with effluent quality limits, as a result of a significant discharge of untreated sewage from Macquarie Point wastewater treatment plant in August 2019;
- depositing a controlled waste as a result of a significant discharge of untreated sewage from Macquarie Point wastewater treatment plant in August 2019; and
- failing to develop an operational procedures manual sufficient to ensure compliance with effluent quality limits, as a result of a significant discharge of non-disinfected effluent from Selfs Point STP in September 2019.

Each of the Environmental Infringement Notices specified fines of $1 680, totalling $6 720 of penalties payable by TasWater.

During 2019-20, the EPA undertook five audits of compliance with permit and EPN conditions. Areas identified for corrective action were consistent with those identified in previous audits and included:

- flow meter validation;
- signage at monitoring and discharge locations;
- development of operational manuals and contingency management plans;
- maintenance of controlled waste registers;
- lagoon maintenance; and
- late submission of monitoring results, reports and plans.

[58] Refer to www.outfalls.info for further details.

Section 8.2.1 provides further information on the EPA's priorities for improving TasWater's environmental performance.

6.4 Biosolids reuse

Biosolids are stabilised organic solids produced in sewage treatment processes. Biosolids are a valuable source of nutrients, energy and other components that, when managed appropriately, can be safely and sustainably used in agriculture (as fertilisers or soil conditioners), mine rehabilitation, and other beneficial applications.

The following calculation is used to estimate the proportion of biosolids reused in a reporting period:

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

TasWater reported that 8 738 dry solid tonnes (dst) of biosolids were produced at Level 2 STPs across Tasmania during 2019-20, not including 231 dst that were reprocessed or blended internally. 8 671 dst were beneficially reused during 2019-20. A minor volume of approximately 28 dst was taken to landfill. The proportion of the biosolids material beneficially reused in 2019-20 was 99.2 per cent of the volume generated (as calculated by the EPA).

Approximately 2 870 dst remained stored on STP sites at the end of the reporting period, including some volumes produced during previous reporting periods. Significant biosolids stockpiles at the end of 2019-20 were reported at the STPs at Ti-Tree Bend (1 208 dst), Smithton (1 463 dst).

Composting as an end use of biosolids decreased from 85 per cent in 2018-19 to 43 per cent in 2019-20 after a significant increase from 18 per cent in 2017-18. Both direct application of biosolids to land and reprocessing by composting extract value from biosolids nutrients, and both are therefore recognised as biosolids reuse. However, the increase in composting during 2018-19 largely represented reprocessing of a product that was already suitable for its end use, requiring additional energy and potentially entailing some nutrient loss. Direct application to land is preferred where appropriate.

A number of lagoon systems continue to hold significant sludge accumulations at levels likely to impact treatment capacity. Desludging of such lagoons is therefore likely to improve treatment capacity.

An overview of the STPs generating the greatest volumes of biosolids in 2019-20 and associated reuse/management practices is set out in Table 6.6, based on the best information available at the time of assessment. Improvements to accounting and record-keeping practices will be required to achieve increased accuracy.

Section 8.2.1 provides further information on the EPA's priorities for improvements to TasWater's biosolids management.

Table 6.6 Biosolids – major volumes generated and reuse percentage in 2019-20

STP Name	Biosolids generated (dry solid tonnes / year)	Biosolids beneficially reused (dry solid tonnes / year)	End use / purpose	Biosolids reused (%)
Ti-Tree Bend	881	881	Ti-Tree Bend STP generates significant volumes of biosolids at the premises as well as receiving additional material from other STPs. The biosolids produced in 2019-20 were composted prior to beneficial reuse. 1 208 DST of sewage sludge remained stockpiled at the STP premises at the end of 2019-20.	100%
Selfs Point	869	869	Biosolids generated at Selfs Point STP were applied to agricultural land.	100%
Pardoe	793	793	Biosolids generated at Pardoe STP were composted prior to beneficial reuse.	100%
Prince of Wales Bay	626	626	418 DST of biosolids generated at Prince of Wales Bay STP were composted prior to beneficial reuse, 208 DST were applied to agricultural land.	100%
Rosny	529	529	Biosolids generated at Rosny STP were applied to agricultural land.	100%
Round Hill (Burnie)	441	441	Biosolids generated at Round Hill STP were composted prior to beneficial reuse.	100%
State-wide (TasWater) total	8 738	8 671	Material removed from the treatment system which remains stockpiled at the premises is counted as generated but not reused. 2 870 dst biosolids remained stored at STP sites at the end of 2019-20. Composted sewage sludge is counted as beneficially reused if the end product is used in accordance with the relevant definition in the *Tasmanian Biosolids Reuse Guidelines* (1999). Stockpiles from previous reporting periods are not counted in biosolids generated.	99.2%

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 2019-20, TasWater's total net greenhouse gas emissions were estimated around 46 248 tonnes CO_2-equivalents (CO_2e) or an average of 218 tonnes produced per 1 000 properties. Greenhouse gas emissions categorised into water and sewerage related operations are set out in Table 6.7.

The quality and accuracy of the data reported to date is low. It is known that, on a per 1 000 properties basis, sewerage-related operations produce a higher volume of CO_2e 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_2-equivalent)

	Water-related operations (E9)		Sewerage-related operations (E10)	
	CO_2e (tonnes)	CO_2e (per 1 000 properties)	CO_2e (tonnes)	CO_2e (per 1 000 properties)
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
2018-19	12 131	57.9	27 277	149.0
2019-20	12 348	58.2	33 156	179.05

TasWater's net greenhouse gas emissions were significantly below those reported by similar utilities on the mainland, which typically average around 256 tonnes CO_2e produced per 1 000 properties.[59]

TasWater did not trigger the 50 000 tonnes CO_2-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.

[59] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator E12).

7 FINANCE AND CAPITAL PROJECTS

A range of factors determine TasWater's costs of providing water and sewerage services including the value of the assets held by TasWater, its operating costs and its level of capital expenditure. This Chapter provides an overview of TasWater's financial performance and its planned expenditure.

7.1 Financial performance

Analysis of TasWater's financial performance indicators provides a guide as to the efficiency of its operations, its viability and its longer-term sustainability.

Financial performance measures have been calculated based on information presented in TasWater's annual reports and the financial statements attached to those reports. Some measures are reported exactly as they appear in those reports and statements. Other measures are calculated in accordance with the *NPR Indicators and Definitions Handbook* using data sourced from those statements and reports. For example, asset values and depreciation on a written down replacement cost basis are used to calculate three of the financial performance measures. Where relevant, TasWater's financial performance in prior years has been recalculated adopting this approach so accurate comparisons can be made.

Appendix 6 sets out the formulae used to calculate the measures reported in this Chapter, together with details of the data sources for each of the components in those formulae.

7.1.1 Revenue

Table 7.1 shows TasWater's revenue from water and sewerage services and related activities for the period 1 July 2015 to 30 June 2020. Other income includes revenue from other sources such as revenue from third parties (ie CSOs and contributed assets) and other revenue from TasWater's operations.

Table 7.1 Revenue ($'000s, nominal)

		2015-16	2016-17	2017-18	2018-19	2019-20
F1	Water	142 665	143 471	153 147	164 506	161 193
F2	Sewerage	150 450	157 197	172 564	183 046	179 127
	Other	16 216	14 816	10 556	11 487	10 673
F3	**Total income**	**309 331**	**315 484**	**336 267**	**359 039**	**350 993**

TasWater's total income was $351 million in 2019-20, a decrease of just over $8 million or 2.2 per cent from 2018-19. Due to COVID-19 bill rebates, water revenue in 2019-20 was lower by $5.2 million and sewerage revenue was lower by $6.6 million. The total value of CSOs for 2019-20 was $20.3 million, or 5.8 per cent of TasWater's total income.

TasWater's overall income was constrained by:

- loss of revenue associated with providing COVID-19 rebates to eligible small business customers; and

- a pause in the transition of customers to target pricing tariffs due to COVID-19.

Contributed asset revenue of $30.8 million (including headworks charges) made a significant contribution to TasWater's financial position in 2019-20 and revenue from trade waste continued to increase from the previous year, contributing almost $13 million to TasWater's income for the year.

Revenue from residential water usage charges increased by nine per cent, from $35.6 million to $38.8 million in 2019-20, and represented 37 per cent of water revenue.

7.1.2 Infrastructure asset values

TasWater is required to report annually on the value of its water and sewerage infrastructure assets under the NPR Framework on a written down replacement cost (WDRC) basis.

Table 7.2 summarises the value of TasWater's water and sewerage infrastructure assets (net of accumulated depreciation) over the past five years.

Table 7.2 Fixed asset values ($'000s, nominal)

		2015-16	2016-17	2017-18	2018-19	2019-20
F9	Water assets	1 308 099	1 269 045[a]	1 273 448	1 313 597	1 329 607
F10	Sewerage assets	1 320 226	1 286 529[a]	1 270 873	1 292 058	1 376 031
	Total	2 628 325	2 555 574	2 544 321	2 605 655	2 705 638

[a] 2016-17 asset values were amended in TasWater's 2017-18 Annual Report to correct an error.

As at 30 June 2020, the value of TasWater's water and sewerage infrastructure assets was $2.7 billion (WDRC), a $100 million (3.8 per cent) increase from 30 June 2019. This growth in infrastructure asset values from the previous year is due to increased capitalisation of works in progress (assets under construction decreased from $256 million as at 30 June 2019 to $123 million as at 30 June 2020). Depreciation on water and sewerage infrastructure assets in 2019-20, on a WDRC basis, was around $178 million.

Care should be taken in interpreting some of the measures in this Chapter as some of the measures are calculated based on asset values other than the WDRC asset values set out in Table 7.2 of this Report.

7.1.3 Operating costs

For the purpose of this Report, operating costs are the direct costs TasWater incurs providing water and sewerage services (eg chemicals, raw materials, energy costs and salaries and wages). Table 7.3 summarises TasWater's operating costs (including non-regulated activities) over the past five years, allocated between water and sewerage operations.

Table 7.3 Operating costs ($'000s, nominal)

		2015-16	2016-17	2017-18	2018-19	2019-20
IF11	Water	88 951	84 184	93 683	103 429	106 886
IF12	Sewerage	88 812	103 414	91 826	101 379	105 781
IF13	Total	177 763	187 598	185 509	204 808	212 667

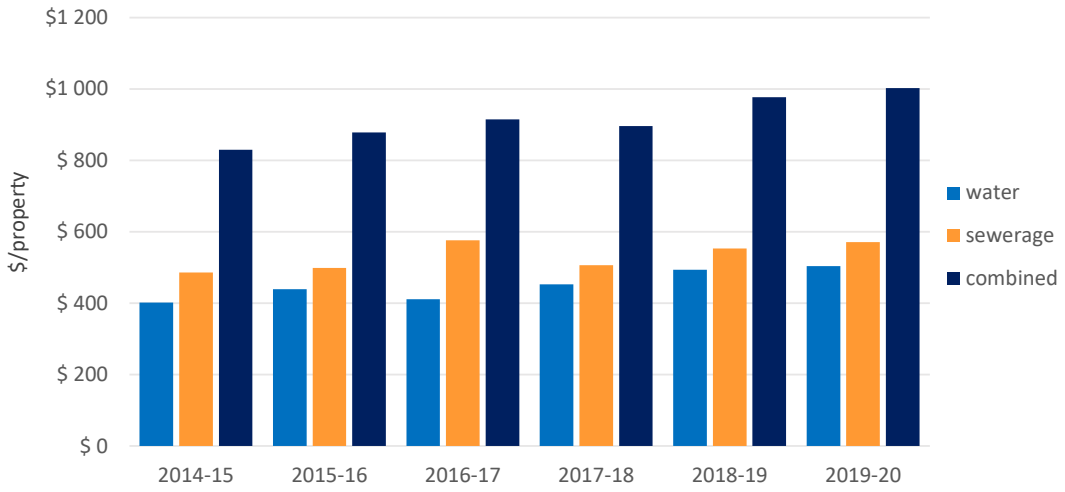
The $7.9 million increase in TasWater's total operating costs in 2019-20 included a $7.7 million increase in administration expenses (the majority of which was a $6.7 million increase in the provision for doubtful debts due to the impacts of COVID-19) and a $1.4 million increase in

employee-related expenses. Operating costs for sewerage-related activities increased slightly more than those for water-related activities.

Raw materials and operations and maintenance expenditure fell slightly between 2018-19 and 2019-20. TasWater has forecast a reduction in operating costs in 2020-21 due to its planned productivity improvements across its retail and procurement programs.

Per property, TasWater's average operating cost (Figure 7.1) was $1 003 in 2019-20; approximately $504 for water-related activities and $571[60] for sewerage-related activities. Operating costs per property increased by 2.6 per cent from the previous year, compared to a five-year average increase of around four per cent per year.

Figure 7.1 Operating costs - water, sewerage and combined ($/property, nominal)



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

TasWater's operating costs per property in 2019-20 were higher than many of its interstate counterparts[61] where the median cost was $881 per property.[62] Across the nation, the median operating cost for similarly sized water utilities held stable from the previous year, with most utilities reporting small movements in their operating costs per property.

TasWater has previously reported that its operating costs reflect the relatively larger number of dispersed and separate water and sewerage assets that it operates. TasWater also reported that it expects operating costs to rise as it builds new infrastructure and upgrades existing non-compliant infrastructure. TasWater is expecting to offset most of these cost increases with efficiency gains.

7.1.4 Capital expenditure

Water and sewerage capital expenditure represents the investment made by TasWater in its infrastructure, and includes expenditure on new works, renewals or replacements and expenditure on plant and equipment.

[60] Based on NPR indicator definitions, operating costs per property for water supply (F11) and operating costs per property for wastewater (F12) will not sum to equal combined operating costs per property (F13).

[61] Major utilities (large) with 100 000 or more customers.

[62] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator F13).

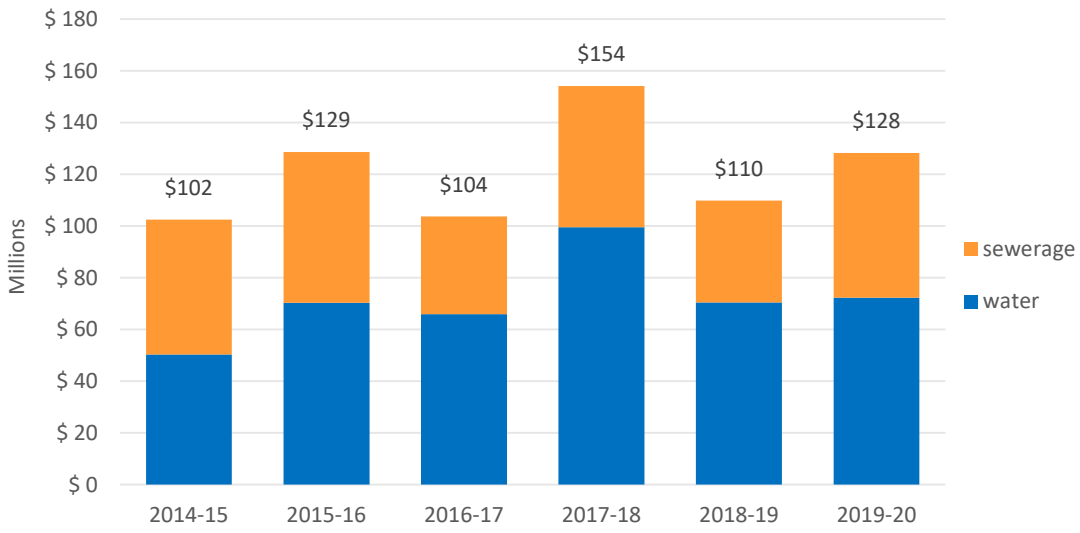
In 2019-20, TasWater's total capital expenditure was $128.8 million, which was marginally higher than the average for the past 6 years of $121 million. Figure 7.2 shows TasWater's capital expenditure (F16) for water and sewerage over the previous six years. These totals exclude gifted assets and developer charges.

Around $57.8 million was spent on dedicated water assets with drinking water upgrades and new pipelines completed during the year. Water main replacements around the State aimed at improving water quality and reducing the risk of bursts and leaks cost approximately $15.7 million during the year.

Around $48.9 million was spent on dedicated sewerage assets during 2019-20, an increase of around 42 per cent compared to the previous year. Completion of the Kingborough Sewerage Strategy in the first half of the year, along with upgrades to the Ti Tree Bend, Longford and Prince of Wales STPs contributed to the increased expenditure.

During the year, approximately $14.4 million was spent on non-network business information systems, fencing, fleet and facilities.

Figure 7.2 Water and sewerage capital expenditure ($millions, nominal)



During 2019-20 TasWater invested $72 million in water infrastructure and $55.9 million in sewerage infrastructure, an overall increase of $18.4 million (17 per cent) from 2018-19. By contrast, between 2017-18 and 2018-19, capital expenditure in these categories decreased by $44.3 million. Figure 7.2 highlights the variability of TasWater's capital expenditure on water and sewerage infrastructure from year to year.

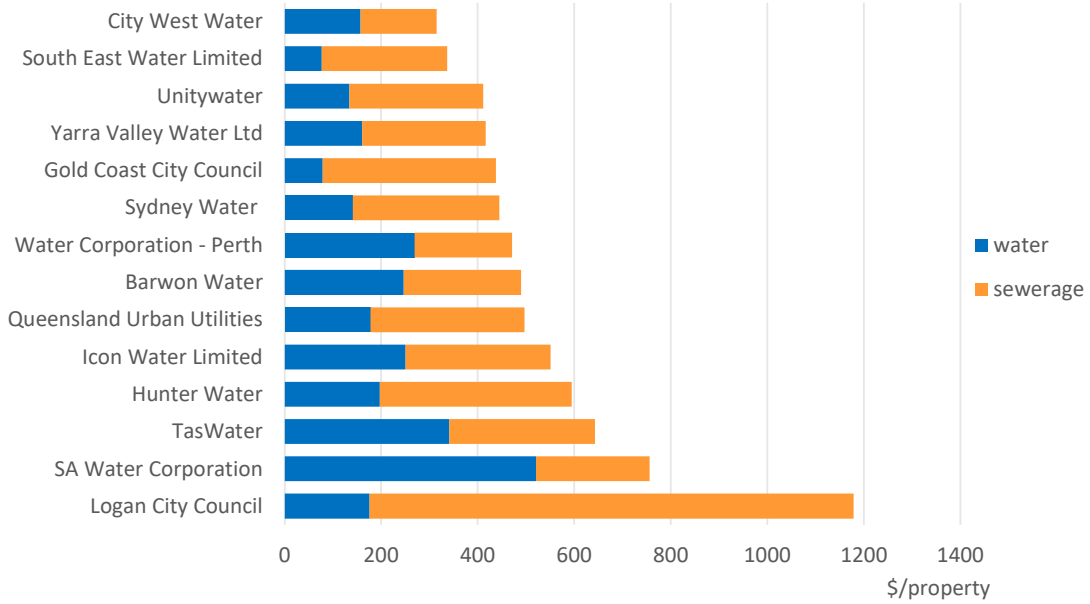
Amongst major Australian water utilities, TasWater was one of many utilities that reported an increase in total capital expenditure between 2018-19 and 2019-20, the median percentage increase in this group being 16 per cent.

Figure 7.3 shows capital expenditure per property for water and sewerage for major Australian water utilities. In 2019-20, TasWater's capital expenditure per property was $341 for water and $302 for sewerage, a total of $643 per property. This is higher than most similar utilities on the mainland, which reported a median capital expenditure per property for 2019-20 of around $176 for water and $277 for sewerage (total of $453).[63] This outcome indicates the

[63] Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicators F28 & F29).

scale of capital expenditure required to bring the Tasmanian water and sewerage network up to the required standards, including the work associated with replacing infrastructure that is currently underperforming.

Figure 7.3 Water and sewerage capital expenditure - major water utilities ($/per property), 2019-20



TasWater's approved price and service plan included significantly increased approved spending on sewerage projects in 2019-20, with capital investment targeted at improving compliance and addressing the current backlog of renewals.

Table 7.4 shows capital expenditure categorised by new works, and renewals or replacements. It shows that in 2019-20, compared to the previous year, expenditure on new works almost doubled, increasing by $30 million to total around $60 million. Renewals and replacements for water cost over $33 million during 2019-20, while around $14 million was spent on renewals or replacements for sewerage.

Table 7.4 Water and Sewerage capital expenditure by category ($'000s, nominal)

	2015-16	2016-17	2017-18	2018-19	2019-20
Water:					
New works	4 764	3 887	23 580	14 833	28 133
Renewals or replacements	19 402	15 449	19 916	24 306	33 769
Other	46 191	46 588	56 033	31 365	10 422
Subtotal for water (F14)	70 357	65 924	99 530	70 504	72 324
Sewerage:					
New works	5 559	10 351	12 945	14 850	31 810
Renewals or replacements	20 610	12 095	10 933	16 950	13 693
Other	32 121	15 308	30 760	7 527	10 422
Subtotal for sewerage (F15)	58 290	37 753	54 638	39 327	55 925
Total (F16)	**128 647**	**103 677**	**154 168**	**109 831**	**128 249**

TasWater reported that about half of its total capital expenditure was invested to meet renewal requirements to address its current backlog. The remaining amount was largely for improvement and compliance-related activities. Improvement activities predominately

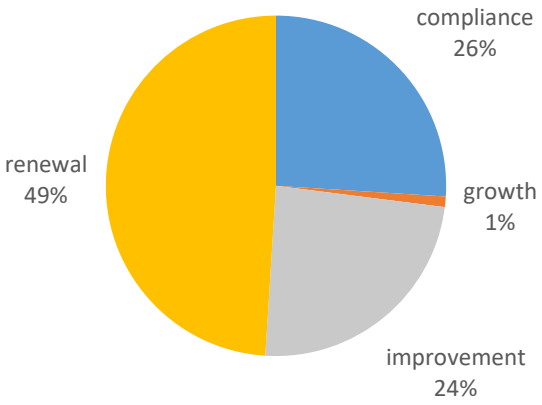
related to water quality projects to meet the expected standards for water quality, while compliance expenditure was assigned to improving the effluent quality from TasWater's STPs.

The key driver for capital expenditure in 2019-20 (which differs from the categories used above) is shown in Figure 7.4. It shows that asset renewal was a primary driver for TasWater's capital program during 2019-20 (49 per cent of expenditure). This is a shift in comparison to the previous year when expenditure on compliance activities was the primary driver for capital works (58 per cent of expenditure).

The amount spent on 'other' capital expenditure includes expenditure on:

- ongoing programs to renew high priority water main and sewerage networks;
- the installation of water meters; and
- an electrical program to reduce safety risk at specific sites.

Figure 7.4 Capital expenditure on water and sewerage infrastructure by driver, 2019-20



Further details about capital projects completed or commenced during 2019-20 are set out in section 7.2.

7.1.5 Other financial performance information

Table 7.5 provides a summary of other financial performance information the Economic Regulator has used to determine how efficiently TasWater is using its financial resources and assess its financial sustainability and viability.

Table 7.5 Financial performance measures

NPR Ref	Description	2015-16 [a]	2016-17[a]	2017-18	2018-19	2019-20
F24	Net Profit After Tax ($000s) (NPAT)	25 310	25 804[a]	40 214[b]	41 259[c]	14 968[d]
n/a+	Earnings Before Interest and Tax (EBIT) ($000s)*	12 626	10 932	33 278	13 404	(39 472)
F30	Net Profit After Tax ratio (%)	8.2	8.2[a]	12.0[b]	11.5	4.3
F19	Economic rate of return (%)*	0.48	0.43	1.31	0.51	(1.46)
F20	Dividends ($000s)	20 332	19 457	18 499	10 489	8 380
F21	Dividend payout ratio (%)	80.3	68.0	43.3	25.4	55.0
F22	Net debt to equity (%) (NDTE)	27.2	29.9	33.6	34.9[c]	40.0[d]
F23	Interest cover ratio (ICR)*	0.70	0.60	1.74	0.71	0

Notes:

\+ EBIT is an input into the calculation of other financial performance measures.

* The written down replacement cost approach is used for asset values and depreciation when calculating these measures. As a result, they are measured on a different basis to some other financial performance measures in this table.

a 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 million to $25.804 million (Note 2.4, page 77).

b TasWater's 2018-19 Annual Report included a correction of a prior period error which reduced NPAT for 2017-18 from the previously reported $42.685 million to $40.214 million and reduced total asset values from $2 249m to $2 244m (Note 2.4, page 88).

c TasWater's 2018-19 Annual Report included very substantial asset revaluation decrements and increments for water and sewerage infrastructure respectively (Note 11, page 105). The impact of both of these changes has been removed from the calculation of NPAT and NDTE for 2018-19.

d TasWater's 2019-20 Annual Report included very substantial asset revaluation decrements for water and sewerage infrastructure (Note 11, page 82). The impact of the revaluation has been removed from the calculation of NPAT and NDTE for 2019-20.

Key observations:

- TasWater's underlying result for 2019-20 was a loss of $15.8 million before tax, significantly lower than the 2018-19 underlying profit before tax of $21.7 million.
- Effective from 1 January 2019, by virtue of Section 9 of the *Water and Sewerage Legislation (Corporate Governance and Pricing) Amendment Act 2018*, TasWater was

withdrawn from the National Tax Equivalent Regime and, therefore, was no longer required to make tax equivalent payments to its council owners from that date.

- Including contributed asset revenue, TasWater's NPAT was $15 million, a decrease of around $26 million from the previous year.
- The depreciation of TasWater's infrastructure assets totalled $178 million in 2019-20 ($95.6 million for water assets and $82.2 million for sewerage assets). This has resulted in a negative EBIT of $39.5 million in 2019-20.
- TasWater's NPAT as a percentage of revenue (NPAT ratio) of 4.3 per cent in 2019-20 was the lowest amongst major utilities nationwide, while the group's median NPAT ratio was 15 per cent.[64]
- The $52.9 million decrease in EBIT between 2018-19 ($13.4 million) and 2019-20 (- 39.5 million) reflected a $8.1 million decrease in total revenue, a $38 million increase in depreciation and an $7.8 million increase in expenses (excluding depreciation).
- TasWater's negative EBIT resulted in its economic rate of return being negative, almost two percentage points lower in 2019-20 than in the previous year.
- TasWater's borrowings increased by two per cent during 2019-20 with its NDTE ratio increasing by over 5 percentage points to 40 per cent due to a large decrease in the fair value of TasWater's assets and a relatively smaller increase in its borrowings. TasWater's NDTE ratio is well below that of similar mainland utilities, where reported NDTE ratios are between 64 and 113 per cent, with the 2019-20 median around 84 per cent.[65]
- Due to its negative EBIT, TasWater's interest cover ratio was 0. The median interest cover ratio (ICR) for major Australian water utilities was 2.3 in 2019-20.
- TasWater's dividend payout ratio increased by 30 percentage points in 2019-20 due to the significantly lower profit result after tax. In addition to the $8.4 million dividend, Councils also received $1.6 million in income tax equivalents payments during the year.[66]

7.2 Status of major projects

This section provides an overview of the major projects completed or progressed by TasWater during 2019-20. Major projects are those that are high priority and/or involve expenditure of over $2 million.

TasWater's 2018-21 Price and Service Plan[67] included its planned major capital investment projects that were to be progressed or completed during the third regulatory period.

The Economic Regulator's assessment of the capital expenditure TasWater requires for each year of the regulatory period is a key input into the calculation of TasWater's annual revenue requirement. The revenue requirement is used, in turn, to determine the maximum regulated

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64 Bureau of Meteorology, *National performance report 2019-20: urban water utilities,* February 2021 (indicator F30).

65 Ibid, (indicator F22).

66 The Income Tax Equivalent payment made during the financial year was full and final settlement of TasWater's final tax liability as at 31 December 2018. *TasWater Annual Report 2019-20*, page 45.

67 TasWater's 2018-21 PSP is available at: https://www.taswater.com.au/Your-Account/Price---Service-Plan

prices TasWater can charge customers.[68] It is, therefore, appropriate and important that TasWater explain delays or changes to its capital expenditure program.

In 2019-20, TasWater completed the following major projects:

- The King Island Water Infrastructure Project including WTP upgrade, clearwater storage tanks, re-chlorination station and raw water intake projects, improving and guaranteeing the water quality to the communities of Grassy and Lady Currie. The new WTP opened in November 2019.
- The Kingborough Sewerage Strategy allows the decommissioning of three STPs (Electrona, Margate and Howden) with the construction of one new plant, which should reduce operating costs, along with the implementation of a single discharge point, and the improvement in compliance for environmental discharge. The project was completed in August 2019.
- Gretna, Glenora and Bushy Park water supply upgrade (stage 1) involving construction of a new WTP at Bushy Park.
- Burnie-Cam pipeline involving the decommissioning of the existing Cam WTP, which will improve and guarantee safe drinking to the Cam area while also reducing operational costs
- Margate water main upgrade - stage 2 of this project to duplicate the water main to support growth in demand.
- St Helens rising main replacements (stage 1) at Jason St and Esplanade sewer pump stations.
- St Mary's reuse upgrade involving new irrigators to improve effluent compliance.
- Glen Dhu stormwater pipeline diversion to prevent overflowing to the Glen Dhu Primary School.

ⓘ Abbreviations

ANCOLD - Australian National Committee on Large Dams
BWA - boil water alert
DAFF - dissolved air flotation-filtration
HBT - health based targets
LoT - Limit of Tolerability
NMSIP - Northern Midlands Sewerage Improvement Plan
PAC - powdered activated carbon
PHA - public health alert

A further eight major projects have been reported as being under construction during 2019-20, with some of these projects continuing from the previous year. Construction works occurring throughout the year included the following projects:

- Bryn Estyn WTP major upgrade/replacement. Project budget has been increased to $244 million and completion date extended to 2023-24.
- Prince of Wales STP primary sewer digester roof replacement due to potential failure
- Northern Midlands Sewerage Improvement Plan - Major upgrade at the Longford STP to improve effluent compliance and reduce odour (continuing).
- Lake Mikany Dam safety upgrades to meet ANCOLD guidelines

[68] Tasmanian Economic Regulator, *2018 Water and Sewerage Price Determination Investigation, Final Report*, May 2018, Chapters 6 and 11.

- Pet Dam upgrade involving raising the crest level of the dam and reconstruction of the spillway.
- Geeveston STP optimisation
- Lower Prosser Dam
- Orford - Triabunna trunk main

Other notable projects in progress include upgrades at Forth River WTP, Fern Tree WTP and Upper Reservoir Dam.

TasWater reported that the Upper Reservoir project was delayed during 2019-20 but is expected to progress to tender stage in 2020-21. The Forth River WTP project worth around $50.5 million has been extended again to consider alternative options in light of the required water licences not being granted for the previous preferred option. The expected completion date is now January 2026.

The $22 million project to improve safety at Ridgeway Dam has also been extended again after receiving conflicting data on the status of the dam's integrity. Once completed the project will ensure the dam meets the ANCOLD guidelines.

Options to improve the capacity of the greater Launceston sewerage network are still being explored under TasWater's Launceston Sewer Improvement Program. TasWater operates and maintains a network of seven sewage treatment plants in the greater Launceston area and has stated the outdated network can no longer effectively cope with current demand, increasing the risk of odour, raw sewage discharging into waterways and breaches of operational permit conditions. The project was in the planning stage during 2018-19 and 2019-20.

TasWater has deferred or rescheduled ten major projects from their original start dates. These delays are typically due to a shift in the project scope, further analysis being conducted or due to interruptions caused by COVID-19.

7.2.1 Future capital works projects

TasWater's 2020-21 capital works program includes projects and programs with a total budget of $193.3 million.

TasWater's major capital works projects that will continue into, or commence, in 2020-21, including forecast expenditure in the year and the project budget, are shown in

Table 7.6. The majority of TasWater's expenditure is targeted towards projects to improve the safety of drinking water within various systems.

Table 7.6 Capital projects to continue or commence in 2020-21

Project	Project budget ($ millions)	Project description	Scheduled completion
Bryn Estyn WTP major upgrade	$244	Upgrade to improve best practice risk mitigation to ensure compliance and ensure safety of drinking water.	2023-24
Fern Tree WTP Major Upgrade	$69	Upgrade or replace the existing WTP to reduce the risk of non-compliant water in the system.	2023-24
Forth and Leven WTP major upgrades (includes pipeline)	$50.6	Upgrades to improve risk mitigation and ensure compliance and safety of water. Includes a pipeline from Level to Gawler, enabling decommissioning of the Gawler WTP.	2025-26 (extended)
Longford STP upgrade	$34.7	Part of the Northern Midlands Sewerage Improvement Plan to improve environmental compliance. Phase 1 to improve effluent compliance.	2021-22
Lake Mikany Dam safety upgrade	$23.2	Upgrades to remove the dam from above the ANCOLD level of tolerability.	2021-22 (delayed)
Smithton SPS upgrade	$22.7	Replace deteriorated asset and prevent overflows into shellfish leases.	2020-21
Pet Dam safety upgrade	$12.1	Removal of dam from above the ANCOLD level of tolerability	2022-23
Henderson Dam Raising	$9.2	Raise dam weir by 2m and upgrade spillway to provide water surety to Flinders Island during the summer months.	2020-21 (delayed)
Latrobe sewerage system - network upgrade and augmentation	$6.8	Various upgrades and modifications to the sewerage system to ensure the network has adequate dry and wet weather flow capacity	2020-21
Prince of Wales Primary Sewer Digester Roof Replacement	$5	Renewal of existing digester roof due to potential failure	2020-21 (extended)
Blackstone Road SPS	$3.9	Upgrade of SPS and associated rising main in land slip area to increase capacity and prevent sewer spills	2020-21

TasWater reported that the delivery of some projects has been delayed due to the slower than expected integration of the Capital Delivery Office (CDO), combined with a large proportion of its projects not being ready for delivery and requiring further planning and investigation before progressing into the delivery phase. Due to delays in some major projects, TasWater has redirected expenditure into minor works programs.

Upgrades to Forth and Leven WTPs are expected to commence in 2020-21. The Longford STP upgrade was also delayed and is now expected to be completed in 2021-22.

Upgrades to Bryn Estyn WTP, which is the primary water supply for the City of Hobart and surrounding areas, will take approximately three years, with early works commencing in March 2020.

Projects 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 for the period from 1 July 2018 to 30 June 2021.[69]

The *Electricity, Water and Sewerage Pricing (Miscellaneous Amendments) Act 2020* (Amendment Act) extended by a year the 2018 Water and Sewerage Price Determination. On 22 June 2020, the Economic Regulator published a revised Water and Sewerage Price and Service Plan Guideline for the fourth regulatory period to account for the revised dates and legislative changes introduced in the Amendment Act. In December 2020, the Economic Regulator published a Price Determination that reflected the provisions in the Act and amended the *Tasmanian Water and Sewerage Industry Customer Service Code* and explanatory text on its website. While TasWater was not required to revise its *Price and Service Plan 3* due to the extension of the regulatory period, the Economic Regulator has required TasWater to provide information for the 2021-22 financial year in relation to a range of items including its budgeted operating expenditure and capital expenditure.

TasWater's major projects list, including the status of projects and programs planned for this and the next regulatory periods, is set out in Appendix 6.

[69] TasWater's price and service plan is available at: https://www.taswater.com.au/Your-Account/Price---Service-Plan

8 KEY PERFORMANCE PRIORITIES

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 Progress on previously identified key priorities for improved performance

8.1.1 Environment Protection Authority

In December 2016, TasWater entered into a Memorandum of Understanding (MoU) with the Environment Protection Authority (EPA) with a focus on materially improving environmental performance using a targeted approach to maximise effectiveness. The primary objective of the MoU was to increase effluent compliance through improvements targeted at the agreed Big 13 (highest volume) and Top 20 (high environmental risk) sites.

Over the three-year period of the MoU, which concluded in December 2019, TasWater delivered a significant improvement in compliance performance. In particular, effluent compliance (combined to water and to reuse compliance as calculated by TasWater) increased from 42 per cent to 65 per cent as measured by TasWater's internal compliance metric and from 87 per cent to 92 per cent using the EPA's metric.

Following the conclusion of the MoU, TasWater maintained focus to ensure that the management and minimisation of environmental risk remained a key factor in the prioritisation of projects. TasWater has reported that an environmental risk assessment for discharges to waterways is under review and will be incorporated into the prioritisation tool used for the Price and Service Plan 4. TasWater will also move towards compliance based on scientific evidence of risk to receiving environments through development of risk-based emission limits in conjunction with the EPA.

In relation to biosolids management, TasWater reported that the state-wide biosolids handling contract put in place in September 2018 has continued to benefit customers and the Tasmanian community, with 99.7 per cent (as calculated by TasWater) of the biosolids from treatment plants beneficially reused for agriculture and composting during 2019-20, with only 0.3 per cent sent to landfill.

During 2019-20, the sewage lagoon desludging program progressed at Beaconsfield, Beauty Point, Port Sorell, Richmond and Turners Beach to improve the function of these lagoons. A total of eight lagoons were desludged, which resulted in over 2 215 tonnes of sludge removed.

8.1.2 Public health

During 2019-20, TasWater continued to address the priority capital works list agreed with the Department of Health (DoH) as part of its operating licence. TasWater's capital expenditure was delivered across a wide range of drinking water projects addressing compliance, growth and renewals of TasWater's water assets.

Key improvements progressed by TasWater during the financial year include:

- Completion of a new water treatment plant (WTP) at Grassy to supply the townships of Grassy and Currie on King Island.

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

As a result of its delivery of the Water Systems Optimisation Program, TasWater continued to see improvements in the performance and risk management capability of its water treatment and distribution assets during 2019-20.

In particular, an update to the water quality risk assessment methodology undertaken during 2019-20 showed that TasWater has achieved a significant reduction in catchment risk at its WTPs since 2017, improving drinking water quality for its customers. TasWater has also delivered a large improvement in operational compliance and staff awareness relating to water safety through its ongoing focus on Critical and Operating Control Points compliance.

As reported above, for the second year in a row, TasWater achieved full microbiological compliance with the Tasmanian Drinking Water Quality Guidelines, meaning that, as at 30 June 2020, all Tasmanian customers had access to safe drinking water.

8.1.3 Water allocations/licences and dam safety

TasWater has stated that ensuring that there are adequate water supplies to meet expected future demand remains a key area of strategic focus.

In response to the difficult summer period experienced in 2019-20, TasWater undertook work to ensure that it will continue to appropriately manage its water supplies, including:

- development of a Demand Management Strategy;
- completion of a water surety risk assessment and development of draft restriction 'trigger points' for all systems;
- development of an urban water supply master planning framework to guide source augmentation investment decisions;
- formal submission to the Tasmanian Government's Rural Water Use Strategy;
- development of a strategy to reduce the percentage of unaccounted for water; and
- commencement of a program of technical assessments focused on improving surety of supply on the East Coast of Tasmania and other stressed communities, including Bridport.

TasWater made further progress on longer-term solutions for catering to growth in specific systems, such as the North-West Water Supply Strategy and Bridport Water Surety project, both of which are related to securing long-term access to water.

As part of ongoing efforts to ensure there are adequate rights to water for future needs, TasWater progressed the following initiatives:

- Review of water allocations and extraction licences to update water licences in line with demand projections and establish immediate and near-term compliance risks.

- Establishment of systems that allow TasWater to monitor water licence usage in real-time.
- Establishment of a five-yearly rolling review of water licence adequacy.
- Development of actions to respond to near-term issues identified by DPIPWE.

In relation to dam safety, TasWater continued to deliver the priority-improvement program approved by the Dam Safety Regulator to ensure that dams meet modern engineering standards and legacy issues are addressed. The following major initiatives were undertaken by TasWater during 2019-20 are set out below.

- Improvements to the flood warning systems at the Isandula and Blackmans No.2 Dams, which enabled both dams to be reduced below the ANCOLD LoT.
- A maintenance program at the Upper Reservoir Dam to enhance its future safe performance, improve stormwater management and upgrade water outlet facilities.
- Completion of the Swansea Dam upgrade, ensuring a reliable water source for the Swansea community and visitors to the area.
- Safety works at the Waratah Dam to clear out and widen the spillway to ensure that inflows into the dam can be safely managed.
- Commencement of upgrades at the Mikany Dam to guarantee water supply into the future and improve its flood capacity.
- Completion of design and investigation works for the Henderson Dam upgrade on Flinders Island that will provide Whitemark residents with improved drinking water security.
- Implementation of measures to bring the Grey Mountain Dams 1 and 2 in the Huon Valley to an acceptable level of risk.

Dam safety governance has also been strengthened through improvements and updates to TasWater's Dam Safety Management Strategy, Dam Safety Improvement Program and Dam Safety Management Plan.

As a result of these initiatives, the number of dams plotting above the ANCOLD LoT for societal risk was reduced from seven to four during 2019-20. Temporary risk mitigation measures remained in place for the four dams above the LoT.

8.1.4 Priorities of the Economic Regulator

8.1.4.1 Implementing strict financial management and securing long-term efficiency gains to enable its capital investment program to be achieved

During 2019-20, TasWater reported that its Productivity Improvement Program (PIP) delivered $4.1 million in operational cost reductions and that its overall business savings since its inception in 2013 to $28.7 million.

During 2019-20, TasWater developed a Financial Sustainability Strategy that establishes a framework for ensuring that sound and sustainable financial decisions are made to support the long-term financial sustainability of the business.

The aim of the Strategy is to ensure that:

- TasWater remains in a healthy financial position;

- TasWater recovers its costs fairly from current and future customers;
- funding is made available for the maintenance, replacement and upgrade of assets to deliver expected levels of service to the Tasmanian community;
- there is consistent delivery of essential services and efficient development of infrastructure; and
- price increases are minimised to the extent practicable while future increases are predictable and do not result in price shocks for customers.

The Economic Regulator will assess the progress TasWater has made in securing productivity increases and its overall management of operating costs as part of its Price Determination investigation for TasWater's fourth Price and Service Plan.

8.1.4.2 Reducing the volume of treated water for which there is no metered consumption

In 2019-20, TasWater did not achieve an improvement in the very high volume of treated water for which there is no metered consumption as the percentage of unaccounted for water remained at 28 per cent.

TasWater has stated that it recognises that further effort is required to improve system performance and reduce losses, including by reducing unbilled water consumption. This matter is discussed further below.

8.1.4.3 Ensuring adequate water supplies to meet expected future demand without water restrictions except where they are needed due to factors outside TasWater's control

In 2019-20, TasWater imposed water restrictions in many parts of the State. Some of these restrictions, such as those in the Bridport area, were due to exceptionally low rainfall and insufficient water in water catchment areas.

Other restrictions, however, were due, at least in part to the condition of TasWater's infrastructure and other factors within its control. The initiatives delivered in this area during 2019-20 are outlined in section 8.1.3.

As noted earlier in this Report, TasWater has commenced upgrade works at its largest water treatment plant, Bryn Estyn with an expected completion date of 2023-24. This project will increase water security and service the expected population growth in southern Tasmania. In addition, TasWater's upgrade of Ridgeway Dam, due for completion July 2025, is another major project aimed to improve safety and security of supply.

8.1.4.4 Further improvement in TasWater's information collection and management, including data required for the Annual Performance Report and the proposed Price and Service Plan for the fourth regulatory period

TasWater has stated that it remains committed to improving the quality of data and reliability for performance metrics.

During 2019-20, work continued on realising the Data and Reporting Framework and the Data Quality Policy objectives with the purpose of:

- developing a robust and consistent performance reporting process that incorporates the goals of the organisation as well as meeting all obligations for various statutory bodies and external stakeholders; and

- implementing a mechanism for timely distribution and access to accurate and reliable data across the organisation to embed a data-driven approach to decision making.

A key area of focus for TasWater over the last 12 months has been to address the findings of the 2018-19 TasWater Annual Performance Report audit conducted by BDO. Work undertaken during 2019-20 included: the development of data integrity reports that enable better cross-checking of results; a review of metadata documents for currency and accuracy; and the development of a prototype data capture tool that was used to capture results for TasWater's 2019-20 Annual Performance Report.

TasWater also engaged with the Office of the Tasmanian Economic Regulator regarding a planned audit schedule that will result in all National Performance Report metrics audited once during a three year period, with TasWater to provide its internal documents defining the collation of the metric to the Economic Regulator to ensure a consistency of understanding. TasWater expects this revised schedule will continue to deliver audit benefits in 2020-21.

TasWater's development of automated reporting has continued, with many reports now available on the TasWater intranet for its staff to reference. TasWater has reported that this will continue for numerous software interfaces throughout the business as part of a process to determine which software best meets business requirements.

The 2019-20 TasWater Annual Performance Report audit conducted by BDO identified that tangible improvements had been made in TasWater's audit performance, with improved systems and processes relating to data capture and an overall increase in data reliability and accuracy.

8.2 Key priorities for improved performance

8.2.1 Environment Protection Authority

As noted under section 8.1.1, in December 2016, the EPA and TasWater signed a three-year MoU on Public Wastewater Management aimed at accelerating improvements in environmental compliance and performance. Improved overall flow-weighted effluent compliance against regulatory limits occurred during the period of the MoU, which expired on 2 December 2019.

The key priorities identified by the EPA for TasWater to focus on in the short to medium term are:

- determining sustainable treated effluent discharge limits based on sound scientific evidence and reaching agreement with the EPA on future discharge management options for STPs, prioritised according to risk;
- completing planned upgrades to those STPs that pose the greatest environmental and public health risk;
- integrating regular STP optimisation assessments into the business cycle to achieve an ongoing high level of effluent compliance;
- increasing both the number of sustainable effluent reuse schemes and the proportion of treated effluent diverted to sustainable reuse, particularly for STPs discharging to inland waters;
- achieving significant improvements to the availability and quality of critical data used for process control and infrastructure planning, including improved flow metering, process monitoring, and incident detection capabilities;

- improvements to operational and contingency documentation for key assets and promoting staff knowledge and use of these;
- attaining sustainable, low-cost and efficient state-wide biosolids management practices with a high proportion of biosolids reused. This includes addressing legacy sludge accumulations and reliably meeting an ongoing pre-emptive desludging roster for lagoon systems. Improvements in record keeping and data management practices for biosolids will support achievement of these goals; and
- improving the quality and reliability of Annual Environmental Reports provided to the EPA.

8.2.2 Public health

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

During 2019-20, 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 October 2019, DoH issued a priority listing for inclusion in TasWater's fourth Price and Service Plan.

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, where there are changing populations and community needs;
- evaluating drinking water infrastructure, risk review, and asset maintenance and upgrades on an ongoing basis;
- improved fluoridation performance;
- when benchmarked, achieving comparable compliance outcomes as other similarly-sized water corporations;
- achieving sustained and improved drinking water quality compliance;
- major upgrades planned for the Forth and Bryn Estyn water treatment plants to meet industry best risk management practices, including of additional barriers to improve water safety; and
- upgrades to the data acquisition components of water quality management enabling full automation and remote operation of all water treatment plants.

TasWater's Drinking Water Quality Management Plan was externally audited in November and December 2017 and November 2019 as required under the *Public Health Act 1997*. No significant public health issues were identified, but the audit highlighted several opportunities for improvement in TasWater's practices. TasWater has been working on addressing, documenting and reporting to DoH in relation to these opportunities.

8.2.3 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, a water 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.[70] 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 and the *Water Management (Safety of Dams) Regulations 2015).*[71]

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 continue progressing work on a number of dams to lower their level of tolerability.

8.2.4 Priorities of the Economic Regulator

The Economic Regulator considers that, in addition to the priorities identified above, areas where TasWater should continue to focus its efforts include:

- implementing strict financial management and securing long term efficiency gains to enable its capital investment program to be achieved;
- reducing the volume of treated water for which there is no metered consumption;

[70] As of 1 January 2016, the approval Committee (Assessment Committee for Dam Construction) requirements under the *Water Management Act 1999* have been rescinded.

[71] The *Water Management (Dam Safety) Regulations 2011* were rescinded and remade with an effective date of 1 January 2016.

- ensuring adequate water supplies to meet expected future demand without water restrictions except where they are needed due to factors outside TasWater's control; and
- continued improvement in its information collection and management, including data required for TasWater's future Annual Performance Reports and its proposed Price and Service Plan for the fourth regulatory.

Ensuring TasWater establishes, and applies, strict financial management remains one of the Economic Regulator's major priorities.

In 2019-20, TasWater incurred operating expenditure of $212 million in providing regulated water and sewerage services. This is substantially above TasWater's regulated operating expenditure of $173.9 million for that year approved by the Economic Regulator in 2018 in TasWater's Price and Service Plan 3 (PSP3).

Further, TasWater's actual capital expenditure for 2019-20 of $128 million was 10 per cent lower than TasWater's regulated capital expenditure for that year, as set out in TasWater's approved PSP3.

The forthcoming Price Determination investigation will include a thorough review of TasWater's actual and planned operating expenditure and capital expenditure, including the reasons why, in 2019-20, operating expenditure was 22 per cent above the level approved by the Economic Regulator in TasWater's PSP3 and capital expenditure was 10 per cent below the approved level in its PSP3.

The Economic Regulator continues to be concerned at the very high share of treated water that is not accounted for, at around 28 per cent, which is significantly above the share for mainland utilities. This is resulting in very high levels of unnecessary water treatment costs and forgone revenue for TasWater.

The Economic Regulator notes that TasWater has more recently demonstrated greater effort in addressing this issue. TasWater has recently commenced work on preparing estimates of unaccounted for water on a regional basis to better understand where the high rates of water loss occur. TasWater anticipates that this work will take up to two years to complete.

TasWater has recently advised that a major problem is the lack of accurate inflow and outflow data from a number of its water treatment plants. This results in inaccuracies in TasWater's calculation of volumes of potable water available for customer use, which, in turn, impacts on TasWater's estimate of unaccounted for water. TasWater is assessing how this may be rectified but has advised that the work program for the installation of the required meters in its water treatment plants is significant and time intensive.

TasWater has reported positive outcomes from its Revenue Assurance Project which involves TasWater identifying properties where there may be data integrity issues including unbilled water consumption. TasWater is allocating significant resources to this project, anticipated to run until June 2025. TasWater has advised that the net increase in annual revenue in future years as a result of the work undertaken to 31 March 2021 is around $3 million, with an expected net increase in revenue of $6 million per year at the completion of the project.

The volume of unaccounted for water is an issue that the Economic Regulator will continue to monitor closely and will consider in the forthcoming Price Determination investigation.

The Economic Regulator considers that TasWater should continue to focus on ensuring there are adequate water supplies to meet expected future demand, where possible. The Economic Regulator notes that TasWater is implementing a range of measures, as discussed above. It is

important that some major projects that increase water storage levels, such as those at Bryn Estyn and Ridgeway, are managed effectively by the Capital Delivery Office to prevent undue delays.

TasWater has made progress on improving data collection and management. However, further work is required, including in areas that will assist TasWater reduce the level of unaccounted for water. As discussed in section 6.3.6, the EPA continues to assess the reliability of TasWater's data for the Annual Environmental Review reports as not sufficiently high, and expects further data quality improvements.

8.2.5 TasWater's current priorities

In August 2017, TasWater released its *Long Term Strategic Plan 2018-2037* (LTSP). The LTSP, which was developed in consultation with industry regulators, identifies the customer outcomes that TasWater plans to deliver over the next 20 years and the resulting balance that must be maintained between customer prices, service standards and the time to reach full compliance.

The outcomes outlined in the LTSP are reflected in TasWater's PSP3, which initially covered the regulatory period 1 July 2018 to 30 June 2021. This Plan was extended for an additional year by the Tasmanian Government in response to the uncertainty created by the economic impacts of the measures imposed by the Australian and State Governments to address the COVID-19 outbreak.

TasWater has prioritised projects in its PSP3 based on the potential customer benefit and the cost of the project. Benefits are determined by the project's contribution towards achieving specified customer outcomes (such as improving environmental performance - see section 3.6 in Chapter 3 for a list of identified customer outcomes). Results from customer consultation were used to determine the weighting applied to each customer outcome in TasWater's strategic framework.

Drinking water quality receives the highest priority in PSP3 with key projects planned for completion early in the period. The next highest priorities are dam safety, water security and environmental compliance.

TasWater's primary focus is on compliance, with planned projects including both high priority dam safety upgrades and sewerage upgrades to meet environmental standards. TasWater notes that it has placed a lower priority on renewing its networks to maintain service reliability and will seek to maintain, rather than improve, service reliability in PSP3, and has stated that the majority of its customers support this approach. This is also consistent with the priorities in TasWater's long-term plans.

In addition to those priorities and initiatives outlined above, the following reflect current priorities for TasWater.

8.2.5.1 Supporting customers through COVID-19

Recognising that COVID-19 is expected to present a risk for some time, TasWater is continuing to support its customers with increased communications about its hardship policy, expanded customer support program and actions being taken by the business to mitigate the financial effects of the pandemic. TasWater has also updated its customer-related strategies to take into account lessons learned from its COVID-19 response.

8.2.5.2 Capital Investment Program

In 2017, TasWater set a target to deliver $1.7 billion total capital expenditure over 10 years. The Capital Delivery Office (CDO) was established in 2018 to lead the delivery of the program. The CDO model includes an alliance partnership with UGL Engineering and CPB Contractors, with support from WSP Australia.

During 2019-20, TasWater continued to embed the CDO within its operating model. After an initial period of mobilisation, the CDO has undertaken considerable planning, investigation and project development activities. TasWater reported that, whilst some initial challenges had been experienced, a steady delivery of projects is expected over the coming years.

In early 2021, TasWater resumed direct responsibility for simpler, lower-cost infrastructure projects that require a level of urgency. This change is expected to support an acceleration in TasWater's capital expenditure program over coming years and enable the CDO to focus on the larger projects for which it is best suited.

8.2.5.3 Improving health and safety outcomes

TasWater's goal is to achieve zero harm to its employees, contractors and the community by ensuring that work is undertaken safely, and contractors operate to the same standards of safety that is expected of TasWater employees. Consistent with this focus, TasWater joined the global campaign, Vision Zero, in December 2018 as a Zero Harm company.

In 2019-20, TasWater's total recordable injury frequency rate, at 18.2 was over twice the target rate of eight.[72] TasWater has further escalated its focus and resourcing in this area and is committed to delivering high quality and maintainable health and safety outcomes through its Health and Safety Improvement Plan 2019-2024.

Key areas of focus include major hazard areas that have the potential for a serious injury or fatality and reducing the risk exposure to manual and physical tasks that can produce soft tissue injuries.

8.2.5.4 Climate change and the environment

TasWater is currently developing a Climate Change Strategy and Adaptation and Mitigation Plan that will establish a coordinated approach to the mitigation of climate change risk and identify options to reduce TasWater's climate impact.

Development of this strategy and plan will include a risk and vulnerability assessment, high-level scenario planning, identification of priority areas for investment and the development of an opportunity map in relation to potential investment in renewables and energy efficiency initiatives.

TasWater is also developing an Environment Strategy that will outline its long-term goals and priorities in relation to the natural environment. This Strategy will provide the framework for a number of new and existing strategies across several key environmental focus areas, including sewerage system management, climate change adaptation and mitigation, catchment management, emissions reduction and changing customer expectations, biosolids and trade waste.

[72] The total recordable injury frequency rate is the number of lost-time injuries per million hours worked.

8.2.5.5 Price and Service Plan 4

TasWater is required to submit its proposed Price and Service Plan 4 to the Economic Regulator by 30 June 2021.

TasWater is currently finalising its proposed Price and Service Plan 4 submission that will set out the customer outcomes and prices to be delivered over the period 1 July 2022 to 30 June 2026. TasWater will then support the Economic Regulator's investigation of the proposed Price and Service Plan 4 during 2021-22.

8.2.5.6 Long-Term Strategic Plan Refresh

TasWater's first *Long Term Strategic Plan* (LTSP)[73] was developed in 2017 and sets out the outcomes the business intends to deliver to its customers over the period 2018 to 2037. TasWater is currently updating the LTSP to take into account the progress it has made towards these outcomes since the initial LTSP was released as well as the broadening in its strategic focus since that time. This work is expected to be completed by 30 June 2021.

[73] TasWater's *Long Term Strategic Plan 2018 - 2037* is available at: https://www.taswater.com.au/About-Us/Long-Term-Strategic-Plan-2018---2037

APPENDIX 1 REGULATORY FRAMEWORK

A1.1 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 customers' 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[74] are:

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

A1.2 Regulatory framework

The key piece of legislation governing the Tasmanian 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.

Currently, TasWater is the only licensed entity in Tasmania. The licence places a number of regulatory obligations on TasWater 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.

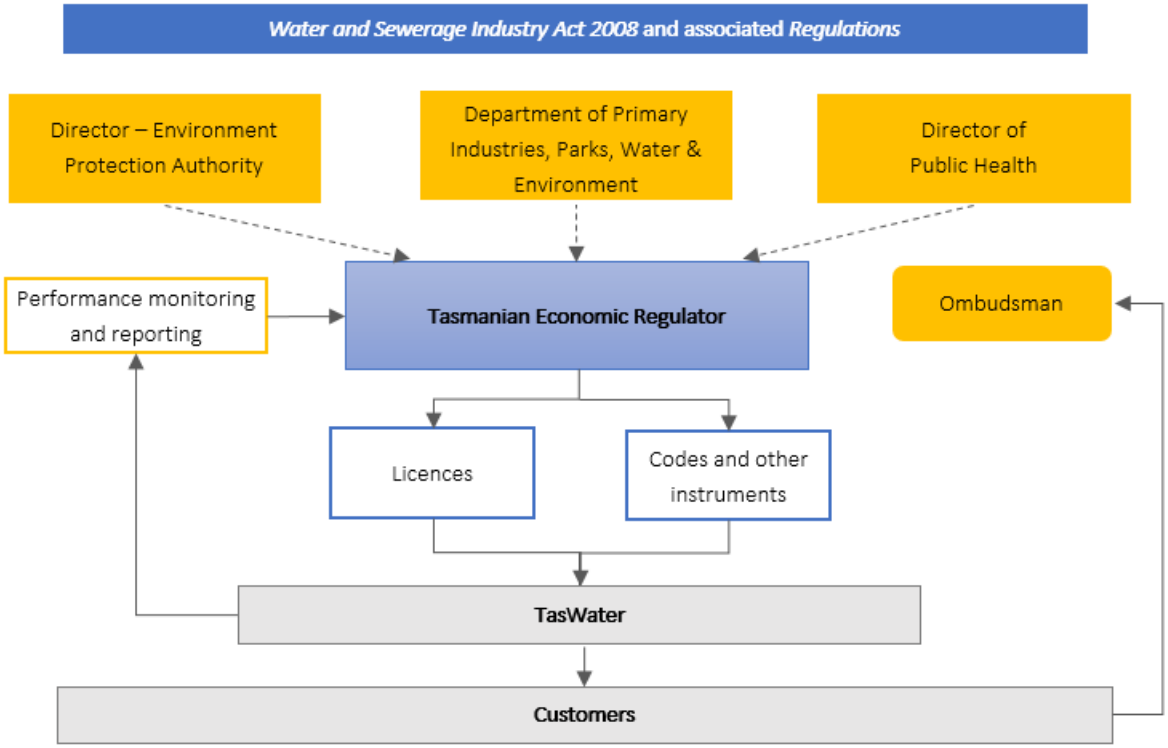
Industry regulators for the industry comprise the Tasmanian Economic Regulator, the Director, the Environment Protection Authority (EPA), the Director of Public Health and the Secretary, the Department of Primary Industries, Parks, Water and Environment (DPIPWE).

Additional legislation, including the Tasmanian *Environmental Management and Pollution Control Act 1994*, *Public Health Act 1997, Fluoridation Act 1968*, *Water Management Act 1999*

[74] From section 6 of the *Water and Sewerage Corporation Act 2012* (Tas).

and the *Water Management (Safety of Dams) Regulations 2015*, imposes a range of compliance and regulatory obligations on TasWater. A diagram setting out the economic regulatory framework for the Tasmanian water and sewerage industry is shown in Figure 8.1.

Figure 8.1 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
- irrigation water, stormwater and water recycling and re-use. Supply or use of water for irrigation is excluded from the definition of water service under section 3 of the Industry Act and therefore is not regulated. Services relating to stormwater, water recycling and water re-use are not regulated under clause 3 of the *Water and Sewerage Industry Declaration Order 2011* (Order).

While services in relation to recycling or re-use of water are not regulated activities, Chapter 2 of this Report provides commentary on these issues in the context of the treatment of wastewater.

A1.3 Industry Regulators

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

Tasmanian Economic Regulator

The Economic Regulator's role includes industry licensing, consumer protection, performance monitoring and retail pricing:[75]

- 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 Tasmanian Water and Sewerage Industry Customer Service Code, issued by the Economic Regulator, sets out TasWater's obligations for the delivery of services to customers across Tasmania and sets service standards and targets for the delivery of those services.
- 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 the maintenance of appropriate service standards.

Director of Public Health

The Director of Public Health (and the Department of Health) 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 1997* (and its associated Tasmanian Drinking Water Quality Guidelines 2015);
- *Fluoridation Act 1968*;
- *Fluoridation Regulations 2019*; and
- Australian Drinking Water Guidelines 2011 (updated in 2018).

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

[75] 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.

Director, Environment Protection Authority

The Director of the EPA and the EPA Board[76] are responsible for administering and enforcing the *Environmental Management and Pollution Control Act 1994*. In discharging their functions and duties the Director and EPA Board are supported by EPA Tasmania, which is part of DPIPWE.

The Director's responsibilities in regulating Level 2 sewage treatment plants (STPs)[77] 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 relating to the operation of STPs;
- applying the *Tasmanian State Policy on Water Quality Management 1997* as it relates to wastewater management activities;
- ensuring compliance with environmental conditions;
- investigating incidents involving STPs or the sewerage network; and
- 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.

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 Agriculture and Water 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.

[76] For further information on the EPA's functions, see www.epa.tas.gov.au.

[77] The EPA regulates Level 2 STPs, i.e. STPs with a design flow capacity to treat more than 100kL per day. Local governments (Councils) regulate Level 1 STPs.

Delegate for Dam Safety Regulation

The Minister for Primary Industries and Water also has regulatory oversight of dam safety. The Operations Branch, part of the Agriculture and Water 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.[78]

The Minister's Delegate is the General Manager of the Agriculture and Water Division. The Delegate's key functions include:

- 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; 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.

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, include:

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

The Industry Act permits TasWater reducing or restricting the quantity of water it supplies on days declared by the TFS to be days of total fire ban. Limiting non-essential water use such as garden watering or lawn sprinklers on days of total fire ban can help to ensure that the TFS and residents who may be facing a bushfire threat have water available for firefighting.

The *Water and Sewerage Industry (General) Regulations 2019* also permits TasWater to restrict the supply of water by all or any of the means including such things as specifying the days or times, or both, when water may be used or how water may be used).[79]

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*. It is a condition of TasWater's licence that it complies with any recommendations made by the Ombudsman relating to a complaint (under section 77 of the Industry Act).[80]

[78] For further information on dam safety, see www.dpipwe.tas.gov.au/water/dams/dam-safety.

[79] See Part 2 of the *Water and Sewerage Industry (General) Regulations 2019*.

[80] See www.ombudsman.tas.gov.au for further information.

A1.4 Performance and regulatory reporting

Performance reporting

The Industry Act requires the Economic Regulator to prepare a report on the state of the water and sewerage industry (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 for Primary Industries and Water and the Minister for Finance. The Report must be published within a reasonable time of its preparation and tabled in 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 1.5, July 2018* sets out the data and contextual information that TasWater must provide to the Economic Regulator, so that its performance can be measured.

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 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 4, February 2021*. The Economic Regulator's approach to managing non-compliance is outlined in its *Compliance Enforcement Policy, Version 3, February 2021.*

TasWater's performance indicator data are 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 is assessed each year.

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

TasWater continues to adjust its processes and improve the quality of its data to ensure that independently audited and consistent data is available for its annual performance reporting requirements and inclusion in the state of the industry reports.

A1.5 National policies and obligations

Regulation of the water and sewerage industry is effected by national policies and obligations. These policies and regulatory obligations and responsibilities are set out below.

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.

National performance reporting framework

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

ⓘ NPR framework guidelines

- The *National Urban Water Utility Performance Reporting Framework: Indicators and Definitions Handbook,* January 2018; 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 is available on the Bureau's website at www.bom.gov.au/water/npr/index.shtml.

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 engaged a consultant to undertake a review of the NPR Framework with a view to developing a set of recommendations that support the Framework into the future. The consultant's final report was published 1 July 2019.

The review report outlined a number of key findings and recommended actions. This included new administrative and governance arrangements, extending to the replacement of the Round Table Group (the governing body for the NPR Framework for urban water utilities) with two new separate committees: a technical reference committee and a steering committee.

A1.6 Other government bodies

Department of Treasury and Finance

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

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). TasWater is presently owned by local government (29 Councils) and the Tasmanian Government (which became a shareholder in early 2019). 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 STPs 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. A SSMP must specify:

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

Tasmanian Government

In May 2018, a Memorandum of Understanding (MoU) was signed between the State Government, the Council Owner's Chief Representative and TasWater. The MoU proposed new ownership arrangements for TasWater under which the State Government became a shareholder of TasWater. In accordance with the MOU, councils remain the majority owner of TasWater and receive all returns from TasWater. The parties also agreed to work cooperatively to reform the water and sewerage sector; accelerate TasWater's infrastructure investment program and progress projects of special economic importance to Tasmania.

Under these new ownership arrangements, the Crown provides TasWater with $200 million of equity funding in exchange for ten per cent ownership in TasWater.

To date, the Crown has purchased three million shares for $60 million, which represents three per cent ownership in TasWater.

The State Government has also committed $100 million in grant funding for the relocation of the Macquarie Point wastewater treatment plant and funding sources have been agreed for the other projects of special importance (Launceston combined sewerage and stormwater system improvements and the Freycinet Peninsula wastewater system).

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. 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.[81]

The Bureau's water information functions are contained in the *Water Act 2007* (Cwlth), under Part 7 - Water Information. The *Water Regulations 2008* (Cwlth) (Water Regulations) support the carrying out of these functions.

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

[81] 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.

APPENDIX 2 PERFORMANCE INDICATORS

Performance indicators used in this Report are defined in the *National Urban Water Utility Performance Reporting Framework: Indicators and Definitions Handbook*, January 2018, and the *Tasmanian Water and Sewerage Industry Performance and Information Reporting Guideline*, July 2018. Key performance indicators are shown below.

Indicator	NPR reference
WATER RESOURCES	
Sources of water	
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
Uses of water supplied	
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
Sewage collected	
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
Uses of recycled water and stormwater	
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
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
ASSET	
Water treatment plants	
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
Other water assets	
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	
Sewerage assets	
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
Water main breaks	
Water main breaks (no. per 100 km of water main)	A8
Water losses	
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
Sewerage breaks and chokes	
Sewerage mains breaks and chokes (no. per 100 km sewer main)	A14
Property connection sewer breaks and chokes (no. per 1 000 properties)	A15
CUSTOMERS	
Connected properties and population	
Population receiving water supply services (000s)	C1
Connected residential properties - water supply (000s)	C2
Connected non-residential properties - water supply (000s)	C3
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
Complaints, call wait time, service interruptions, customer restrictions and legal actions	
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
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
ENVIRONMENT	
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
Compliance against discharge to waters regulatory limits (%)	
Compliance against discharge to waters AMT limits (%)	
Compliance with 'Class B' discharge to land limits (%)	
Percent of biosolids reused (%)	E8
Greenhouse gas emissions - water (tonnes CO_2-equivalents per 1 000 properties)	E9
Greenhouse gas emissions - sewerage (tonnes CO_2-equivalents per 1 000 properties)	E10
Net greenhouse gas emissions - other (net tonnes CO_2-equivalents per 1 000 properties)	E11
Total net greenhouse gas emissions (net tonnes CO_2-equivalents per 1 000 properties)	E12
FINANCE	
Revenue	
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
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
Written down replacement costs of fixed assets	

Nominal written down replacement cost of fixed water supply assets ($000)	F9
Nominal written down replacement cost of fixed sewerage assets (000$)	F10
Costs	
Operating cost - water ($ per property)	F11
Operating cost - sewerage ($ per property)	F12
Combined operating cost - water and sewerage ($ per property)	F13
Capital expenditure	
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
Economic real rate of return	
Economic real rate of return - water	F17
Economic real rate of return - sewerage	F18
Economic real rate of return - water and sewerage	F19
Dividends	
Dividend ($000)	F20
Dividend payout ratio (%)	F21
NDTE, interest cover, net profit after tax and community service obligations	
NDTE (%)	F22
Interest cover	F23
Net profit after tax (NPAT) ($000)	F24
NPAT ratio (%)	F30
Community service obligations ($000)	F25
Capital works grants	
Capital works grants - water ($000)	F26
Capital works grants - sewerage ($000)	F27
HEALTH	
Water quality guidelines	H1
% of population where microbiological compliance was achieved	H3
Number of zones where chemical compliance was achieved (eg 23 / 24)	H4
Risk-based drinking water management plan externally assessed? (yes/no)	H5
PRICING	
Water	
Tariff structure - water (text)	P1
Free water allowance (kL per property) - water	P1.1
Fixed charge ($ per property) - water	P1.2
Usage charge ($ 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
Sewerage	
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
Water and sewerage	
Annual bill based on 200kL per annum (water and sewerage)	P7
Typical residential bill (water and sewerage)	P8

APPENDIX 3 SEWAGE TREATMENT PLANT PERFORMANCE SUMMARY

This Appendix provides detailed information on the compliance performance of TasWater's Level 2 sewage treatment plants (STPs) for effluent discharged to waters and to land (effluent re-use). A flow-weighted combined compliance assessment is also included.

Table A3.1 and Figures A3.1 and A3.2 show, for all Level 2 STPs assessed, TasWater's compliance with regulatory discharge limits and Accepted Modern Technology (AMT) limits, for effluent discharges to water. Where compliance with AMT limits exceeds compliance with regulatory limits, this generally means that the regulatory limits, which are site-specific, are more stringent than AMT limits.

Table A3.2 lists the reported compliance for each discharge to a recycled water scheme that uses treated effluent generated by Level 2 STPs. Compliance is measured against the regulatory discharge limits for discharge to the respective reuse scheme for 2019-20. For financial years 2015-16 to 2018-19, compliance is measured against 'Class B' quality expectations (as outlined in the *Environmental Guidelines for the Use of Recycled Water in Tasmania, DPIPWE 2002*). Regulatory discharge limits are generally similar to 'Class B' limits, but some individual parameter limits have been varied to take into account the results of long-term monitoring programs undertaken by TasWater.

Table A3.3 and Figure A3.3 show the total compliance for each STP when compliance with regulatory limits for both discharge to waters and discharge to land are combined on a flow-weighted basis.

Table A3.4 lists the proportion of effluent re-used and total re-use flow per year, for each Level 2 STP that discharges to re-use, for each of the 2015-16 to 2019-20 financial years.

Table A3.5 provides the permitted average dry weather flow limit and the actual average annual inflow in 2019-20 for each Level 2 STP. Actual average inflow generally includes a wet weather component and may exceed the dry weather flow limit for a number of reasons, including as a result of catchment growth or due to inflow and infiltration into the sewerage system.

The data as presented in this Appendix is derived from EPA Tasmania records, which are based on data submitted by TasWater.

Table A3.1 Compliance results - Summary of STP discharge to waters against regulatory limits and AMT limits, 2015-16 to 2019-20

Premises name	2019-20		2018-19		2017-18		2016-17		2015-16	
	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)
Beaconsfield	76.9	41.7	90.7	54.6	84.3	49.1	80.6	57.4	83.6	60.7
Beauty Point	92.7	54.6	86.5	52.8	(94.8)	(66.7)	94.7	66.0	88.5	48.2
Bicheno	89.6	63.0	68.8	61.1	77.1	60.2	87.5	76.9	89.6	68.5
Blackmans Bay	98.1	94.9	76.1	45.3	75.8	54.3	70.4	55.8	73.3	53.7
Boat Harbour	75.0	72.2	79.6	77.8	76.9	75.9	85.9	83.8	74.1	71.3
Bothwell	(85.2)	(69.4)	(78.7)	(64.8)	88.0	72.2	(91.7)	(76.9)	(75.9)	(69.4)
Bridgewater	94.4	64.8	83.3	63.9	87.0	58.3	90.7	61.1	87.6	62.3
Bridport	48.5	48.5	50.0	50.0	43.5	43.5	49.1	49.1	45.4	45.4
Brighton	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]
Cambridge	99.1	100.0	90.7	94.4	96.3	98.1	88.9	92.6	83.3	88.0
Cameron Bay	98.3	80.7	97.9	80.6	98.7	81.2	93.3	80.2	92.5	74.1
Campania	72.9	40.7	(76.0)	(39.8)	(70.3)	(54.6)	58.3	51.9	37.5	38.0
Campbell Town	(72.2)	(54.6)	(68.5)	(45.4)	83.3	53.7	(72.0)	(44.4)	(80.2)	(50.0)
Carrick	70.4	50.0	76.1	53.2	78.7	50.9	82.5	63.1	75.2	54.3
Cradle Mountain	98.1	98.5	100.0	100.0	99.6	100.0	99.6	99.8	98.8	99.2
Cressy	(80.2)	(59.3)	82.3	48.1	(87.5)	(44.4)	93.8	55.6	(83.3)	(40.7)
Currie	87.4	64.5	79.2	55.6	91.7	52.8	96.7	57.1	90.1	66.0
Cygnet	89.2	76.9	85.8	80.6	80.8	76.9	89.6	83.3	100	85.9
Deloraine	68.5	68.5	70.4	70.4	70.4	70.4	71.7	71.7	57.4	54.6
Dover	92.6	85.2	89.8	79.6	100.0	93.5	97.2	89.8	96.3	88.9
East Strahan	93.2	79.7	89.8	75.9	91.5	70.8	83.0	65.0	91.4	70.2

Evandale	(76.0)	(41.7)	(76.0)	(42.6)	(70.5)	(36.4)	76.8	33.3	(71.9)	(33.3)
Exeter	82.9	32.4	85.4	40.7	93.8	44.4	90.6	42.6	80.2	32.4
Fingal	81.5	51.9	75.9	47.2	74.1	45.4	93.5	63.0	83.3	53.1
Geeveston	88.3	82.4	89.2	83.3	86.7	78.7	82.5	75.0	73.3	67.6
George Town	94.5	71.3	88.3	62.9	92.5	63.0	89.5	68.5	83.3	63.0
Hoblers Bridge	98.3	88.9	97.5	87.0	92.5	82.4	93.7	80.5	90.2	68.8
Kempton	62.5	40.7	(65.6)	(40.7)	54.7	41.7	(27.1)	(39.8)	(39.6)	(41.5)
Latrobe	68.8	39.8	77.1	42.6	61.9	37.3	64.6	47.2	81.3	48.2
Legana	88.2	36.1	82.4	35.2	84.3	43.5	83.0	40.9	75.9	34.3
Lilydale	(88.9)	(82.4)	(91.7)	(85.2)	88.9	81.5	91.7	84.3	89.4	85.2
Longford	78.1	75.0	83.3	75.0	63.8	50.0	70.2	56.6	64.6	46.3
Macquarie Point	86.1	52.4	93.1	52.6	94.6	56.2	94.0	54.2	88.3	54.6
Midway Point	-[2]	-[2]	75.5	73.2	(80.4)	(69.4)	91.7	75.0	95.8	72.2
New Norfolk	81.7	53.7	81.7	54.6	86.7	54.6	87.5	54.6	91.7	56.5
Newnham	76.2	55.4	77.6	53.6	82.3	54.7	82.8	52.6	71.7	50.0
Norwood	94.7	89.2	98.3	88.0	97.5	83.3	91.7	73.1	94.5	72.6
Oatlands	75.8	47.7	70.8	39.8	(71.9)	(54.6)	(37.5)	(45.4)	(53.2)	(50.5)
Orford	91.7	68.5	84.3	63.0	89.8	66.7	84.9	62.3	88.0	63.9
Pardoe	88.9	20.1	87.2	18.5	86.9	19.0	89.7	23.7	84.4	19.6
Perth	57.3	35.2	69.8	32.4	(65.6)	(31.5)	64.6	29.6	(73.5)	(35.5)
Port Sorell	41.8	33.3	37.5	36.8	37.5	29.0	39.6	32.4	27.1	25.9
Prince of Wales	97.9	70.1	97.7	62.4	89.5	59.7	87.9	59.7	79.2	52.8
Prospect Vale	92.2	79.1	92.6	79.6	90.4	77.2	82.0	71.2	85.9	67.7

Queenstown	95.8	73.1	96.9	79.6	98.9	78.3	96.4	75.0	91.5	68.2
Railton	100.0	55.6	68.8	61.1	93.8	66.7	-[2]	-[2]	(-)	(-)
Ranelagh	96.7	99.1	94.2	98.1	95.8	98.1	97.5	100	93.3	95.4
Richmond	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(40.7)	(-)[1]	(47.5)	-[1]	44.4
Ridgley	95.4	95.4	93.5	94.4	88.0	88.9	86.9	89.9	80.2	80.0
Risdon Vale	99.2	97.2	100.0	96.3	93.9	93.5	100	94.4	97.9	90.7
Riverside	81.5	46.3	88.0	48.1	91.7	56.5	93.5	52.8	93.5	52.8
Rokeby	100.0	100.0	(92.6)	(92.6)	(92.6)	(92.6)	93.6	93.6	(95.3)	(95.3)
Rosebery	91.7	91.7	94.3	94.3	99.1	99.1	94.2	94.2	79.3	79.3
Rosny	80.9	-[2]	87.8	-2	81.1	59.0	85.0	58.3	89.6	58.3
Round Hill	96.5	96.5	90.4	90.4	91.4	91.4	81.1	81.3	95.4	95.4
Scamander	(-)[1]	83.3	(-)[1]	(-)[1]	(-)[1]	(77.8)	-[1]	82.4	-[1]	64.3
Scottsdale	97.9	72.9	100.0	63.0	96.9	61.1	97.9	60.2	96.8	57.0
Selfs Point	95.2	97.3	96.4	99.6	96.7	98.7	93.3	96.4	90.3	96.2
Sheffield	99.1	99.1	98.1	98.1	96.0	96.0	99.1	99.1	95.4	95.4
Sisters Beach	88.0	88.0	88.9	88.9	90.7	90.7	97.0	97.0	96.3	97.2
Smithton	90.2[2]	52.7	71.2	41.6	59.0	35.7	85.0	42.7	89.7	46.0
Somerset	77.9	65.5	82.4	68.5	93.8	78.7	93.2	75.8	88.8	66.7
Sorell	66.7	16.7	82.3	59.4	47.3	50.9	89.6	61.1	91.7	68.5
St Helens	99.1	100.0	100.0	100.0	99.1	100.0	100	100	96.3	100
St Marys	-[2]	-[2]	(-)[1]	(-)[1]	86.1	40.5	-[2]	-[2]	-[2]	-[2]
Stanley	87.8	53.2	85.4	55.6	92.7	48.1	94.4	54.0[1]	86.1	37.2
Stieglitz	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]	(-)[1]
Swansea	73.1	45.4	75.0	40.7	77.8	47.2	75.9	45.4[1]	83.3	48.2
Ti-Tree Bend	97.5	87.0	98.8	89.6	96.3	87.3	95.1	84.7	94.3	81.8
Triabunna	79.6	61.1	(79.6)	(56.5)	79.6	53.7	87.0	63.0	75.0	51.9

Tullah	90.8	73.6	93.6	76.4	92.7	72.2	95.6	69.6	87.5	65.2
Turners Beach	83.2	47.8	76.9	45.4	76.9	51.9	80.9	60.0	68.5	42.6
Ulverstone	86.2	77.0	84.8	77.1	90.8	59.0	56.0	28.5	41.7	18.2
Westbury	49.5	49.5	64.3	64.3	69.9	69.9	75.1	75.1	51.9	51.9
Wynyard	91.9	76.7	90.4	74.8	90.4	69.9	88.0	69.0	92.4	75.9
Zeehan	94.4	86.1	89.6	76.4	91.3	80.6	80.9	78.2	81.6	82.6

() Values in brackets: full re-use, no discharge to water

[1] cannot be assessed (no relevant limits or no discharge to this location)

[2] dataset incomplete

Table A3.2 STP compliance with regulatory limits for discharge to effluent re-use schemes (2019-20) and modified 'Class B' re-use limits (2015-16 to 2018-19)[82]

STP	2019-20	2018-19[1]	2017-18[1]	2016-17[1]	2015-16[1]
Beaconsfield	83.3*	95.0	96.0	-*	93.3
Beauty Point	77.8	85.0	95.0	94.8	86.7
Bicheno	100.0	86.7	90.0	93.3	96.7
Bothwell	100.0	85.0	88.3	93.3	85.0
Bridgewater	100.0	100.0	98.3	98.3	98.3
Bridport	100.0	83.3	78.3	83.3	80.0
Brighton	84.3	86.7	86.7	83.9	79.3
Cambridge/Airport	100.0	100.0	100.0	100	98.3
Cameron Bay	100.0	100.0	100.0	98.5	98.3
Campania	100.0	91.7	91.7	83.3	90.0
Campbell Town	88.3	75.0	91.7	70.0	80.0
Carrick	88.3	91.7	-	96.6	-
Cressy	100.0	93.3	86.7	91.7	85.0
Evandale	68.3	78.3	70.9	66.7	68.3
Exeter	86.3	81.7	93.3	71.7	78.3
Kempton	66.7	73.3	65.0	45.0	53.5
Latrobe	-	-	-	53.3	-
Legana	100.0	88.3	85.0	86.3	80.0

[82] EPA changed its assessment to regulatory limits in 2019-20, with a total parameter compliance requirement of 90 per cent. Compliance assessment up to 2018-19 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/100 mL thermotolerant coliforms.

STP	2019-20	2018-19[1]	2017-18[1]	2016-17[1]	2015-16[1]
Lilydale	100.0	93.3	91.7	91.7	93.6
Oatlands	89.8	78.3	93.3	80.0	77.6
Orford	-	-	-	89.7	-
Penna	100.0	87.9	87.3	86.7	90.0
Perth	80.0	78.3	68.3	68.3	83.9
Railton	100.0	94.0	88.0	93.3	73.4
Richmond	81.8	81.7	80.0	74.5	80.0
Riverside	71.7	93.3	-	90.0	90.0
Rokeby	100.0	100.0	98.3	100	100
Rosny	100.0	81.9	82.4	82.7	100
Scamander	100.0	88.3	85.0	93.3	91.9
Selfs Point	77.3	100.0	-	99.6	-
Smithton[1]	100.0*	72.7	60.0	-	-
St Marys	80.0	70.0	48.3	68.3	72.4
Stieglitz	100.0	91.7	100.0	95.0	95.0
Swansea	88.3	81.7	75.0	75.0	85.0
Triabunna	100.0	86.7	91.7	91.7	75.0
Westbury	100.0	100.0	92.4	93.4	70.2

* Insufficient number of samples provided

- No discharge to this receiving environment reported for this period

[1] Not authorised as effluent re-use, assessment against Class B Recycled Water quality expectations.

Table A3.3 Flow-weighted combined compliance results – STP discharge to waters and to land against regulatory limits, 2019-20

Premises name	Discharge to water (ML/year)	Compliance to water (%)	Discharge to land (ML/year)	Compliance to land (%)	Re-use proportion of total discharge (%)	Combined compliance water and land (%)
Beaconsfield	0.9	76.9	105.30	83.3[2]	99	83.2
Beauty Point	35.0	92.7	79.00	77.8	69	82.4
Bicheno	9.0	89.6	85.83	100.0	91	99.0
Blackmans Bay	1708.4	98.1	0.00		0	98.1
Boat Harbour	15.3	75.0	0.00		0	75.0
Bothwell	0.0	(85.2)	32.56	100.0	100	100.0
Bridgewater	54.9	94.4	850.18	100.0	94	99.7
Bridport	103.1	48.5	8.52	100.0	8	52.4
Brighton	0.0	()[1]	223.56	84.3	100	84.3
Cambridge	17.0	99.1	188.02	100.0	92	99.9
Cameron Bay	1777.1	98.3	78.47	100.0	4	98.3
Campania	0.1	72.9	29.82	100.0	100	100.0
Campbell Town	0.0	(72.2)	66.49	88.3	100	88.3
Carrick	130.0	70.4	99.20	88.3	43	78.1
Cradle Mountain	65.3	98.1	0.00		0	98.1
Cressy	0.0	(80.2)	70.36	100.0	100	100.0
Currie	113.4	87.4	0.00		0	87.4
Cygnet	109.6	89.2	0.00		0	89.2
Deloraine	343.6	68.5	0.00		0	68.5
Dover	79.0	92.6	0.00		0	92.6
East Strahan	264.7	93.2	0.00		0	93.2

Evandale	0.0	(76.0)	59.08	68.3	100	68.3
Exeter	19.3	82.9	40.94	86.3	68	85.2
Fingal	12.8	81.5	0.00		0	81.5
Geeveston	149.5	88.3	0.00		0	88.3
George Town	797.3	94.5	0.00		0	94.5
Hoblers Bridge	1053.3	98.3	0.00		0	98.3
Kempton	1.2	62.5	29.22	66.7	96	66.5
Latrobe	492.6	68.8	0.00		0	68.8
Legana	257.0	88.2	246.20	100.0	49	94.0
Lilydale	0.0	(88.9)	43.84	100.0	100	100.0
Longford	714.6	78.1	0.00		0	78.1
Macquarie Point	3816.0	86.1	0.00		0	86.1
Midway Point	0.0	-[2]	216.64	()[1]	100	-[2]
New Norfolk	701.4	81.7	0.00		0	81.7
Newnham	1071.0	76.2	0.00		0	76.2
Norwood	1049.2	94.7	0.00		0	94.7
Oatlands	3.0	75.8	57.03	89.8	95	89.1
Orford	74.0	91.7	0.00		0	91.7
Pardoe	4865.3	88.9	0.00		0	88.9
Penna	0.0	()[1]	407.79	100.0	100	100.0
Perth	23.4	57.3	155.78	80.0	87	77.0
Port Sorell	357.1	41.8	0.00		0	41.8
Prince of Wales	2969.6	97.9	0.00		0	97.9
Prospect Vale	598.3	92.2	0.00		0	92.2

Queenstown	936.5	95.8	0.00		0	95.8
Railton	11.9	100.0	146.24	100.0	92	100.0
Ranelagh	443.4	96.7	0.00		0	96.7
Richmond	0.0	()[1]	53.03	81.8	100	81.8
Ridgley	59.8	95.4	0.00		0	95.4
Risdon Vale	381.8	99.2	0.00		0	99.2
Riverside	569.3	81.5	12.25	71.7	2	81.3
Rokeby	39.8	100.0	828.37	100.0	95	100.0
Rosebery	383.5	91.7	0.00		0	91.7
Rosny	705.4	80.9	1506.79	100.0	68	93.9
Round Hill	2200.5	96.5	0.00		0	96.5
Scamander	0.0	()[1]	47.03	100.0	100	100.0
Scottsdale	169.6	97.9	0.00		0	97.9
Selfs Point	2905.1	95.2	24.00	77.3	1	95.0
Sheffield	144.9	99.1	0.00		0	99.1
Sisters Beach	39.8	88.0	0.00		0	88.0
Smithton	1298.3	90.2	181.27	100.0[2, 3]	12	91.4
Somerset	386.1	77.9	0.00		0	77.9
Sorell	9.7	66.7	191.44	()[1]	95	66.7
St Helens	177.5	99.1	0.00		0	99.1
St Marys	3.5	-[2]	38.17	80.0	92	73.3
Stanley	76.1	87.8	0.00		0	87.8
Stieglitz	0.0	()[1]	75.01	100.0	100	100.0
Swansea	1.3	73.1	49.20	88.3	97	87.9
Ti-Tree Bend	5402.4	97.5	0.00		0	97.5
Triabunna	20.9	79.6	58.89	100.0	74	94.7

Tullah	56.7	90.8	0.00		0	90.8
Turners Beach	205.2	83.2	0.00		0	83.2
Ulverstone	2800.0	86.2	0.00		0	86.2
Westbury	134.2	49.5	45.31	100.0	25	62.2
Wynyard	1541.0	91.9	0.00		0	91.9
Zeehan	422.7	94.4	0.00		0	94.4

() Values in brackets: full re-use, no discharge to water

[1] cannot be assessed (no relevant limits or no discharge to this location)

[2] dataset incomplete

[3] assessed against modified Class B limits

Figure A3.1 STP compliance with regulatory discharge to waters limits and re-use proportion, 2019-20 (per cent)

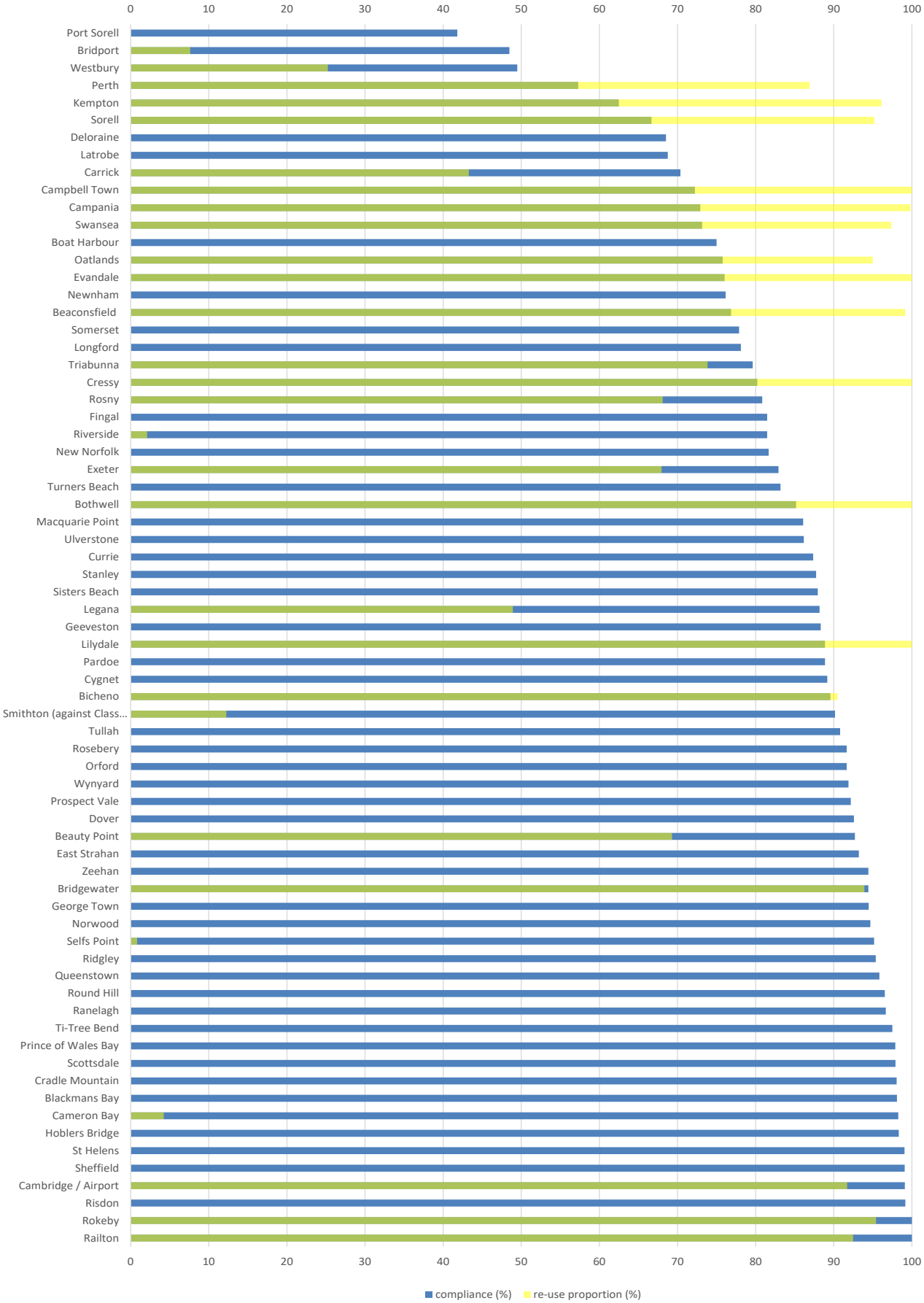


Figure A3.2 STP compliance with AMT discharge to waters limits and re-use proportion, 2019-20 (per cent)

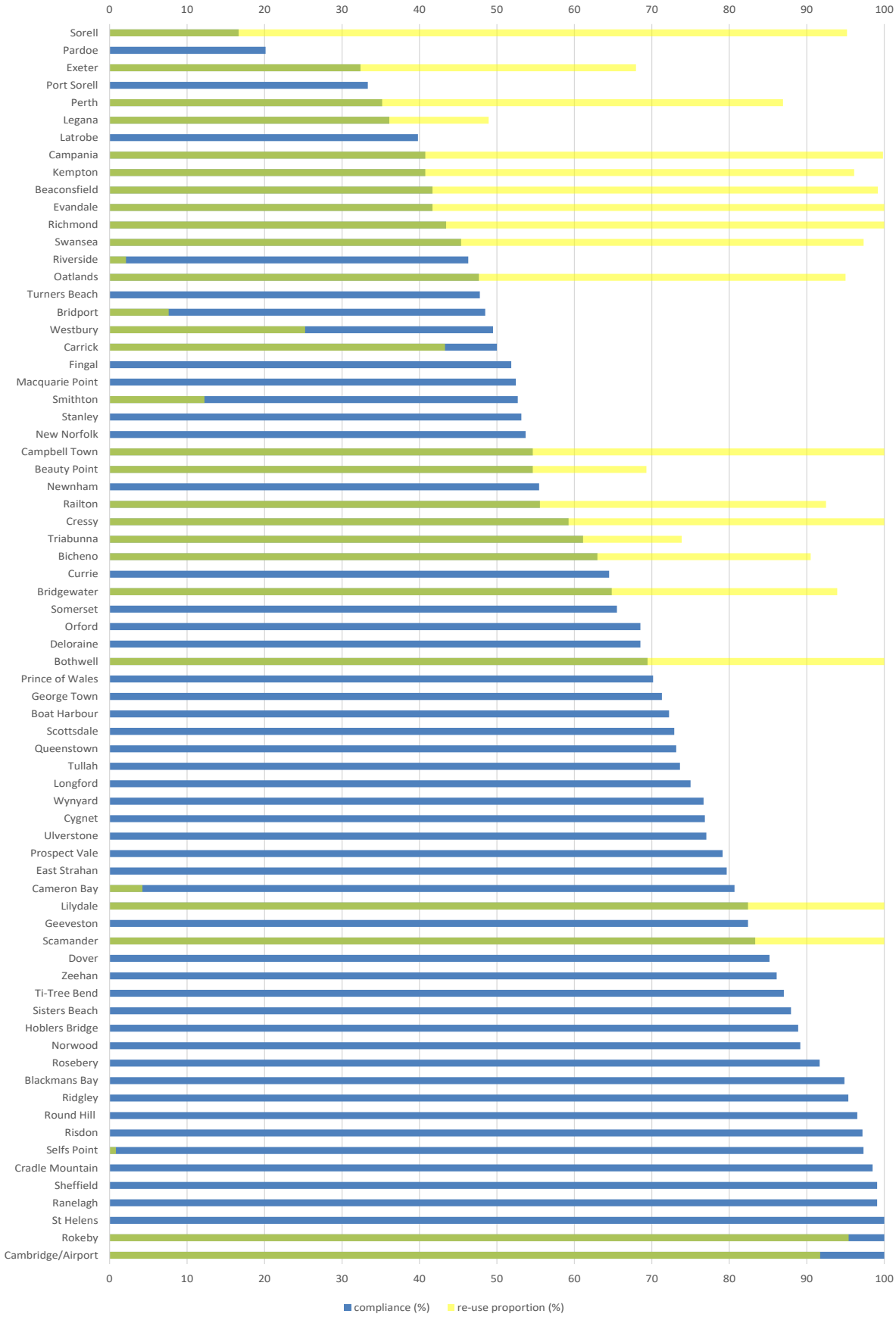


Figure A3.3 STP compliance combined regulatory discharge to waters and reuse limits; re-use proportion, 2019-20 (per cent)

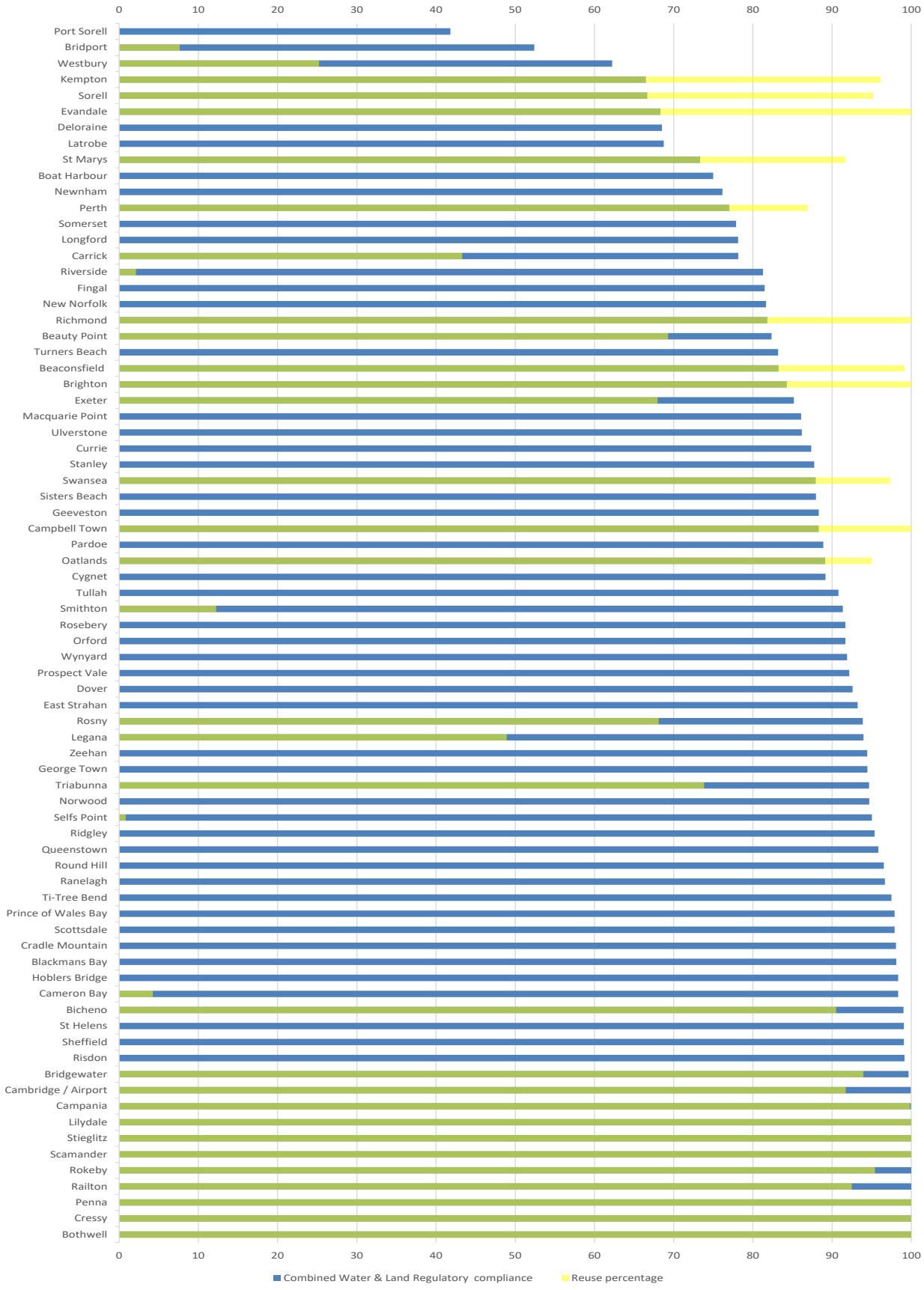


Table A3.4 Re-use proportion per STP (per cent proportion and ML/year) 2015-16 to 2019-20

	2019-20		2018-19		2017-18		2016-17		2015-16	
Premises name	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	105	99	101	99	104	60	84	89	101
Beauty Point	69	79	80	147	100	146	39	81	75	120
Bicheno	91	86	93	91	80	80	58	66	37	46
Bothwell	100	33	100	28	73	25	100	48	100	39
Bridgewater	94	850	81	647	92	785	67	550	81	644
Bridport	8	9	8	10	6	7	10	10	13	9
Brighton	100	224	100	237	100	214	100	221	100	203
Cambridge	92	188	68	137	20	34	15	24	4	6
Cameron Bay	4	78	6	108	7	119	3	50	3	45
Campania	100	30	100	20	100	35	97	33	91	29
Campbell Town	100	66	100	62	64	42	100	119	100	72
Carrick	43	99	41	88	-	-	-	-	-	-
Cressy	100	70	83	58	100	69	32	23	100	57
Evandale	100	59	100	45	100	81	83	65	100	76
Exeter	68	41	51	29	49	25	36	24	41	26
Kempton	96	29	100	28	99	29	100	21	100	23
Legana	49	246	71	263	57	209	41	172	63	232
Lilydale	100	44	100	60	66	22	58	42	86	31
Midway Point	100	217	79	150	100	165	73	105	83	133
Oatlands	95	57	71	22	100	68	100	103	100	73
Penna	100	408	100	275	100[1]	389[1]	100	266	100	270
Perth	87	156	88	136	100	209	83	154	100	199

	2019-20		2018-19		2017-18		2016-17		2015-16	
Premises name	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
Railton	92	146	76	125	66	105	42	180	100	152
Richmond	100	53	100	55	100	71	100	60	100	63
Riverside	2	12	2	13	-	-	3	18	2	9
Rokeby	95	828	100	802	100	749	99	723	100	682
Rosny	68	1507	73	1589	57	1300	55	1265	76	1673
Scamander	100	47	100	42	-	-	92	45	85	46
Selfs Point	1	24	1	24	-	-	-	-	-	-
Smithton	12	181	16	230	16	207	-	-	-	-
Sorell	95	191	64	128	100	226	72	165	82	166
St Marys	92	38	100	30	86	40	40	19	80	36
Stieglitz	100	75	100	38	100	54	100	102	100	66
Swansea	97	49	89	48	66	48	19	17	48	45
Triabunna	74	59	100	53	97	55	91	69	94	60
Westbury	25	45	34	56	22	47	10	33	42	97

- No discharge to this receiving environment reported for this period

[1] data correction

Table A3.5 2019-20 Licensed average dry weather flow limit and actual average annual inflow per STP (kL/day and per cent proportion)

Premises name	Catchment area	Licensed ADWF limit (kL/day)	2019-20 average annual inflow (kL/day)	Actual inflow (per cent of licensed limit)
Beaconsfield	West Tamar	400	290	72
Beauty Point	West Tamar	540	463	86
Bicheno	Glamorgan/Spring Bay	450	286	64
Blackmans Bay	Kingborough	8530	5175	61
Boat Harbour	Waratah/Wynyard	170	42	25
Bothwell	Central Highlands	155	89	58
Bridgewater	Brighton	3500	2520	72
Bridport	Dorset	1400	306	22
Brighton	Brighton	650	612	94
Cambridge/Airport	Clarence	800	449	56
Cameron Bay	Glenorchy	6000	5084	85
Campania	Southern Midlands	136	113	83
Campbell Town	Northern Midlands	325	182	56
Carrick	Meander Valley	624	562	90
Cradle Mountain	Kentish	500	214	43
Cressy	Northern Midlands	240	193	80
Currie	King Island	290	311	107
Cygnet	Huon Valley	400	300	75
Deloraine	Meander Valley	850	941	111
Dover	Huon Valley	360	216	60
East Strahan	West Coast	1056	725	69
Evandale	Northern Midlands	375	225	60
Exeter	West Tamar	150	174	116
Fingal	Break O' Day	125	35	28
Geeveston	Huon Valley	300	449	150
George Town	George Town	3600	2129	59
Hoblers Bridge	Launceston	4500	2886	64
Kempton	Southern Midlands	135	80	59
Latrobe	Latrobe	1000	1350	135
Legana	West Tamar	540	1128	209
Lilydale	Launceston	135	120	89
Longford	Northern Midlands	2700	2101	78
Macquarie Point	Hobart	18000	10455	58
Midway Point	Sorell	810	594	73
Turiff Lodge	Derwent Valley	4100	1886	46
Newnham Drive	Launceston	3920	2934	75
Norwood	Launceston	4050	2875	71
Oatlands	Southern Midlands	136	202	148
Orford	Glamorgan/ Spring Bay	473	203	43
Pardoe	Devonport	14000	13330	95
Penna#	Sorell	1400	1117	80

Premises name	Catchment area	Licensed ADWF limit (kL/day)	2019-20 average annual inflow (kL/day)	Actual inflow (per cent of licensed limit)
Perth	Northern Midlands	450	634	141
Port Sorell	Latrobe	961	978	102
Prince of Wales	Glenorchy	9900	8136	82
Prospect Vale	Meander Valley	1720	1639	95
Queenstown	West Coast	1100	2566	233
Railton	Kentish	600	433	72
Ranelagh	Huon Valley	1200	1215	101
Richmond	Clarence	236	200	85
Ridgley	Burnie	110	164	149
Risdon	Clarence	1000	1022	102
Riverside	West Tamar	2800	1593	57
Rokeby	Clarence	4000	2207	55
Rosebery	West Coast	242	1051	434
Rosny	Clarence	7500	6305	84
Round Hill	Burnie	9000	6029	67
Scamander	Break O' Day	240	129	54
Scottsdale	Dorset	3200	465	15
Selfs Point	Hobart	13000	8025	62
Sheffield	Kentish	350	567	162
Sisters Beach	Waratah/Wynyard	585	82	14
Smithton	Circular Head	5200	4154	80
Somerset	Waratah/Wynyard	1200	1058	88
Sorell	Sorell	810	551	68
St Helens	Break O' Day	1500	463	31
St Marys	Break O' Day	190	114	60
Stanley	Circular Head	276	208	75
Stieglitz	Break O' Day	110	162	148
Swansea	Glamorgan/ Spring Bay	430	194	45
Ti-Tree Bend	Launceston	25000	15463	62
Triabunna	Glamorgan/ Spring Bay	253	174	69
Tullah	West Coast	243	155	64
Turners Beach	Central Coast	600	562	94
Ulverstone	Central Coast	7500	7671	102
Westbury	Meander Valley	600	650	108
Wynyard	Waratah/Wynyard	2900	3805	131
Zeehan	West Coast	214	1158	541

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 4 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 A4.1 below lists TasWater's 'Significant' or higher consequence category dams.

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 associated works, that is constructed for the storage, control or diversion of water and other liquids, silt, debris or 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 risks associated with all dams which have a 'Significant' or higher consequence category are reduced As Low As Reasonably Practicable (ALARP) and brought within the Limit of Tolerability (LoT) in terms of societal risk as defined in the Australian National Committee on Large Dams (ANCOLD) guidelines. Dams not currently meeting these criteria require a program of works to be carried out to bring them within the LoT.

Dam Safety Emergency Plans (DSEP)

A DSEP is prepared for use in a situation where there is a dam safety emergency; it is 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 that each dam is inspected and any planned remedial works required to maintain or upgrade the inspected dam are set out.

Table A4.1 TasWater's dams in the 'Significant' or higher consequence categories as at 30 June 2020

Dam name	Consequence category
Flagstaff Gully	Extreme
Ridgeway Reservoir	Extreme
Knights Creek	High A
Limekiln Gully	High A
Tolosa Reservoir	High A
Curries Dam	High A
Risdon Brook	High A
Lower Reservoir	High A
Swansea (Meredith) Reservoir	High A
Upper Reservoir	High A
Lake Isandula	High B
Lake Mikany	High B
Conglomerate Dam	High C
Coles Bay	High C
Duckhole Rivulet	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	Significant
Barwick Effluent Lagoons	Significant
Bicheno Dam	Significant
Blackmans #1	Significant
Blackmans #2	Significant
Swansea Saddle Dam	Significant
Lake Fenton	Significant
Guide Dam	Significant
Midway Point Sludge Lagoon	Significant
North Esk Intake Weir	Significant
Sorell Sludge Lagoons	Significant
Mt Leslie Basin	Significant
Stiglitz Wastewater & Reuse Dams	Significant
Waratah Dam	Significant
Georges River Weir	Significant

APPENDIX 5 CUSTOMER SERVICE STANDARDS

Table A5.1 Tasmanian Water and Sewerage Industry Customer Service Code service standards for 2019-20 and TasWater's performance results for 2018-19 and 2019-20

Service standard	CSC minimum standard 2019-20	2018-19	2019-20
Water:			
Water main breaks (no. per 100 km of water main)	35	**41**	33
Percentage of response times taken to attend bursts and leaks:			
– priority 1 (within 60 minutes)	90%	97%	92%
– priority 2 (within 180 minutes)	90%	96%	97%
– priority 3 (within 4 320 minutes)	90%	**89%**	94%
Incidence of unplanned interruptions - water (no. per 1 000 properties)	170	**215**	**220**
Incidence of planned interruptions - water (no. per 1 000 properties)	20	**112**	**61**
Average duration of an unplanned interruption - water (180 minutes) - achieved % of the time	80%	86%	87%
Average duration of a planned interruption - water (180 minutes) - achieved % of the time	80%	**27%**	**14%**
Percentage of unplanned water supply interruptions restored within 5 hours	94%	96%	95%
Percentage of planned water supply interruptions restored within 5 hours	90%	**59%**	**84%**
Percentage of non-revenue water (of total sourced potable water) (unaccounted for water)	28%	26%	28%
Sewerage:			
Sewerage mains breaks and chokes (no. per 100 km of sewer main)	65	37	41
Percentage of response times within 60 minutes to attend sewer spills, breaks and chokes	85%	89%	91%
Percentage of sewage spills contained within 5 hours	99%	99.7%	99.7%
Customers:			
Total water and sewerage complaints (no. per 1 000 properties)	10	**13**	5
Water and sewerage complaints to the Ombudsman (no. per 1 000 properties)	0.5	0.3	0.1
Percentage of calls answered by an operator within 30 seconds	85%	87%	**83%**

NOTE: Results in **bold** and underlined indicate that the standard was not met.

The most recent version of the *Tasmanian Water and Sewerage Industry Customer Service Code* (27 November 2020) can be found at: https://www.economicregulator.tas.gov.au/water/regulatory-framework/customer-service-code

APPENDIX 6 FINANCIAL PERFORMANCE MEASURES AND CAPITAL WORKS LIST

A6.1 Financial performance measures

The following table sets out the formulae used to calculate the financial performance measures reported in Chapter 7 of this Report, together with details of the data sources for each of the components in those formulae.

Table A6.1 Financial performance measures

Item	National Performance Report		NPR formula / NPR requirement	Formulae		Notes
	Reference	Performance measure		Component/s	Sources	
1	F1	Revenue from providing water services and related activities	The total revenue generated from the utility's water businesses and related activities.	Revenue	TasWater's annual financial statements (Statement of Comprehensive Income) Note 4.	
2	F2	Revenue from providing sewerage services and related activities	The total revenue generated from the utility's wastewater businesses and related activities.	Revenue	TasWater's annual financial statements (Statement of Comprehensive Income) Note 4.	
3	F3	Total income	The total income from water and wastewater businesses and related activities received by the utility during the reporting year	Income	TasWater's annual financial statements (Statement of Comprehensive Income) Note 5.	
4	F9 and F10	Fixed asset values	Value of water and sewerage infrastructure assets on a written down replacement cost (WDRC) basis.	• Water infrastructure assets • Sewerage infrastructure assets	TasWater's 2018-19 Financial Statements - see 'Cost disclosure' table in Note 11 on page 107 of TasWater's 2018-19 Financial Statements.	The WDRC represents the replacement costs of the fixed water and sewerage assets that TasWater uses to deliver water and sewerage services and derive income.
5	IF11 and IF12	Operating costs	Expenses with the exception of depreciation and finance expenses.	• Operating and Maintenance Expenses (including Raw Materials) • Employee-related Expenses • Administration Expenses	TasWater's annual financial statements (Statement of Comprehensive Income) Note 6.	

Item	National Performance Report		NPR formula / NPR requirement	Formulae		Notes
	Reference	Performance measure		Component/s	Sources	
6	N/a (see Notes)	EBIT	Revenue from the utility's operations less operating costs and current cost (WDRC) depreciation).	• Total Income/Revenue (F3) • Operating costs (IF11 and IF12) • WDRC depreciation	• Income/Revenue: TasWater's annual financial statements (Statement of Comprehensive Income) Note 5. • Operating costs: TasWater's annual financial statements (Statement of Comprehensive Income) Note 6. • Depreciation: TasWater's 2018-19 Financial Statements - see 'Cost disclosure' table in Note 11 on page 107 of TasWater's 2018-19 Financial Statements.	EBIT is not reported separately and is a component of, and input to, the calculation of other performance measures. Both revenue and expenses are for the whole water and sewerage business.
7	F19	Economic Rate of Return	EBIT / Value of fixed assets (WDRC)	• EBIT • Water and sewerage infrastructure assets (WDRC)	• EBIT: see Item 6 above. • Asset values: TasWater's 2018-19 Financial Statements - see 'Cost disclosure' table in Note 11 on page 107 of TasWater's 2018-19 Financial Statements.	
8	F20	Dividends	The dividends paid, payable or proposed to be paid by the utility in relation to profits from its water supply and wastewater business for the reporting year.	Dividends paid	TasWater's annual financial statements: • Statement of Cash Flows and Note 9.	
9	F21	Dividend payout ratio	The ratio of the dividends paid, payable or proposed to be paid by the utility in relation to profits from its water supply and wastewater business to the utility's NPAT for the reporting year.	• Dividends paid (F20) • NPAT (F24)	TasWater's annual financial statements: • Dividends paid: Statement of Cash Flows and Note 9. • NPAT: Statement of Comprehensive Income (see also Item 12 below).	
10	F22	Net Debt To Equity (NDTE)	Net debt = (Long term plus short term borrowings) less (Cash plus investments) Equity = Total assets less total liabilities for the whole water utility Net debt to equity = Net debt / Equity	• Long term borrowings • Short term borrowings • Cash and investments • Total assets • Total liabilities	TasWater's annual financial statements (Statement of Financial Position).	Assets at fair value.

Item	National Performance Report		NPR formula / NPR requirement	Formulae		Notes
	Reference	Performance measure		Component/s	Sources	
11	F23	Interest Cover Ratio (ICR)	The ratio of the utility's earnings before interest and tax (EBIT) to its net interest expense: EBIT / Net Interest Expense (Interest expense less Interest income)	• EBIT • Interest income • Interest expense	• EBIT: see Item 6 above. • Interest income: TasWater's annual financial statements (Statement of Comprehensive Income) Note 4. • Interest expense: TasWater's annual financial statements (Statement of Comprehensive Income) Note 6.	
12	F24	Net Profit After Tax (NPAT)	The net profit after tax, disclosed in the utility's annual financial statements for the reporting year.	NPAT	TasWater's annual financial statements (Statement of Comprehensive Income).	NPAT does not account for abnormal items such as the impact of actuarial losses, gains relating to superannuation schemes, interest costs and write-off of deferred tax assets and the revaluation of assets.
13	F30	NPAT Ratio	The ratio of the net profit after tax, disclosed in the utility's annual financial statements, to its total income for the reporting year.	• NPAT (F24) • Total income (F3)	TasWater's annual financial statements (Statement of Comprehensive Income): • NPAT: see Item 12 above. • Total income: see Item 3 above.	

A6.2 Major capital works projects

Table A6.2 TasWater's major capital works projects, as at January 2021

Project Name	Driver	Total Budget $'000	Project description	Actual/ Expected completion	Status
Water Treatment					
Forth River Major Upgrade / Replacement	Improvement	97,436	Upgrade or replace the existing WTP to reduce the risk of non-compliant water in the system. Will increase state-wide compliance to Best Practice Risk Mitigation System by 7.5%.	Jan-26	Extended
Bryn Estyn WTP Major Upgrade / Replacement	Improvement	243,944	Upgrade or replace the existing WTP to reduce the risk of non-compliant water in the system. Will increase state-wide compliance to Best Practice Risk Mitigation System by 23.7%.	Jul-23	Extended
Huon Valley Major Upgrade / Replacement	Improvement	26,652	Upgrade or replace the existing WTP to reduce the risk of non-compliant water in the system. New WTP at the same location of the existing WTP. Will increase state-wide compliance to Best Practice Risk Mitigation System by 1.6%.	Jul-23	On track
Fern Tree WTP Major Upgrade	Improvement	69,000	Upgrade or replace the existing WTP to reduce the risk of non-compliant water in the system. Best option to be determined. Will increase state-wide compliance to Best Practice Risk Mitigation System by 5.9%.	Aug-26	Extended
Regional Towns Stage 4	Improvement	22,500	Project to upgrade the water supply to the 7 next highest water quality risk systems. This will be undertaken by upgrading the following seven WTPs: Dover, Coles Bay, Oatlands, Bothwell, Ellendale, Bruny and St Marys.	Feb-24	On track
King Island Treated Water Supply	Compliance	21,689	New WTP at Currie with connecting pipeline to Grassy. Improve water quality and prevent risk of non-compliant water.	Oct-20	Completed
Gretna, Glenora and Bushy Park Water Supply Upgrade - Stage 2	Compliance	800	Existing discharge site for waste stream pipeline was originally identified is no longer viable. Alternative discharge site to be installed.	Oct-21	On track

Project Name	Driver	Total Budget $'000	Project description	Actual/ Expected completion	Status
Water Networks					
Burnie Cam Pipeline Construction	Improvement	3,782	To supply water to Somerset/Wynyard by utilising the existing spare capacity of the Burnie WTP. This was achieved by constructing a new pipeline between the Cam reservoir and the existing Burnie WTP.	Aug-19	Completed
Margate Water Main Upgrade Stage 2	Growth	13,770	Duplication main to support demand growth.	Dec-19	Completed
Sewer Networks					
Jason St SPS and Esplanade SPS Rising Main Replacements (St Helens) - Stage 1	Improvement	2,029	Environmental and shellfish lease improvements. This will be achieved by replacing the rising mains from the respective SPS to the downstream pump station. Shellfish and Public Waterways Spills Mitigation.	Oct-19	Completed
Jason St SPS and Esplanade SPS Rising Main Replacements (St Helens) - Stage 2	Improvement	1,195	Environmental and shellfish lease improvements. This will be achieved by replacing the rising mains from the respective SPS to the downstream pump station.	Dec-21	On track
Davis St, Smithton SPS Upgrade	Renewal	4,095	Current issue is overflowing sewage during high rainfall events into shellfish leases. Current scope is still to be confirmed. Will reduce Shellfish and Public Waterways Spills Mitigation and ensure 100% of sewer network (pipes, pump stations) have adequate dry and wet weather overflow capacity to transfer flows to STPs while meeting Code requirements by 0.9% state-wide.	Aug-22	On track
Latrobe Sewerage System - Network Upgrade and Augmentation	Improvement	6,184	Overflows occurring during rain events. Replace and upgrade a significant amount of the Latrobe sewer network as it is not providing an adequate capacity. 0.3% of state-wide level of service, as indicated by uncontrolled sewage surcharges occurring from manholes to private property.	Apr-21	On track

Project Name	Driver	Total Budget $'000	Project description	Actual/ Expected completion	Status
Blackstone Rd SPS	Renewal	3,230	Upgrade of SPS and associated rising main in land slip area to increase capacity and prevent sewer spills. Percentage of critical water network assets (pump stations, pressure mains) in the most extreme risk category due for renewal are renewed/ responded to as per our established rules.	Jun-21	On track
Wellington St SPS upgrade	Improvement	2,123	Various alterations to the existing process for the SPS including conversion of existing overflow well into wet well and installation of new pumps and pedestal. Shellfish and Public Waterways Spills Mitigation WW Overflow Mitigation (flows between 1.3 ADWF & 1-5 year Recurrence Interval event)	Jun-21	On track
Sewage Treatment					
Kingborough Sewerage Strategy - Treatment & Network	Growth	59,770	Decommissioning of the Electrona, Margate and Howden STP's. Conversion of these STPs into storage and pumping operations. Major upgrade of the Blackmans Bay STP to treat all of these flows and allow for future growth in the system.	Aug-19	Completed
Northern Midlands Sewerage Improvement Plan - Longford STP Upgrade	Compliance	33,672	Project will consist of 1) Upgrade of the existing STP 2) new discharge to Back Creek 3) partial reuse to nearby land owners. Will increase percentage of STP effluent fully compliant with EPA licence requirements by state-wide effluent volume basis - 0.3%	Aug-21	On track
St Marys Reuse Upgrade	Compliance	2,446	Install two new pivot irrigators and upgrade a third to conform with standards. Further civil upgrades and rectifications including fencing in the reuse zone.	Jan-20	Completed
Geeveston Optimisation	Compliance	3,238	Current discharge point poses a high risk. Relocate the existing outfall to Shipwrights Point. This will reduce the number of STP's which pose environmental risks.	Dec-23	Extended
System optimisation - Sewer	Compliance	2,261	Minor activities which will improve the compliance of effluent discharge at various sites.	Jul-21	On track

Project Name	Driver	Total Budget $'000	Project description	Actual/ Expected completion	Status
Turriff Lodge Optimisation	Compliance	2,225	Top 20 STP for sensitive receiving waters. Optioneering still being undertaken but scope will most likely involve a new outfall or reuse scheme. Will reduce the number of STPs which pose environmental risks.	Jan-22	Extended
Launceston Sewerage Improvement Program (LSIP)	Compliance	273,000	Multiple STP sites within Greater Launceston which are currently non-compliant, posing high environmental Launceston Sewerage risk and excessive operational costs. Improvement Program P64 Will look at rationalising multiple STP's (LSIP) into one new STP at the current Ti Tree Bend site. Will increase overall state-wide effluent compliance by 5.3%.	Feb-28	On track
Westbury STP Upgrade and Reuse	Compliance	4,675	Currently the Westbury STP is non-compliant. Increased storage to the existing lagoons with minor remedial works. Inlet works, including consolidating two inlets into one and a new inlet screen. Project will increase state-wide effluent by 0.4%.	Jan-25	On track
Prince of Wales Bay STP Digester Roof Replacement/Repairs	Compliance	5,006	Centrifuge is in a critical condition. Replace the existing digester roof to prevent catastrophic failure.	Aug-21	On track
Wynyard STP Upgrades	Compliance	16,904	Current Wynyard STP is non-compliant with EPA guidelines. Project scope still to be confirmed. May include disinfection upgrade, partial reuse or outfall extension. Outcome will make STP compliant.	Sep-25	On track
Hamilton STP Relocation	Improvement	2,500	Complaints received from neighbouring properties and relocation of STP lagoons to appease neighbouring landowner. Will reduce odour complaints.	Apr-23	On track
Other					
Rocherlea Redevelopment	Improvement	1,843	Redevelopment of TasWater office/Depot. Fit for purpose.		Cancelled
Glen Dhu Stormwater Management Improvements	Improvement	2,529	Stormwater pipeline diversion to prevent overflowing to the Glen Dhu school.	Dec-19	Completed
Dams					
Lake Mikany P43	Design	20,067	Current dam does not meet ALARP guidelines regulated by ANCOLD guidelines. Safety upgrades allowing dam to meet ANCOLD guidelines.	Jun-22	Delayed

Project Name	Driver	Total Budget $'000	Project description	Actual/ Expected completion	Status
Pet Dam	Compliance	7,710	Current dam does not meet ALARP guidelines regulated by ANCOLD guidelines. Current scope is raising the crest level of the dam by 300mm and reconstruction and upgrade of the spillway. Safety upgrades allowing dam to meet ANCOLD guidelines.	May-23	On track
Flagstaff Dam P44	Compliance	5,528	Current dam does not meet ALARP guidelines regulated by ANCOLD guidelines. Safety upgrades allowing dam to meet ANCOLD guidelines.	Dec-22	On track
Upper Reservoir P45	Compliance	4,335	Current dam does not meet ALARP guidelines regulated by ANCOLD guidelines. Works include raising of dam crest, installing a localised filter, providing new erosion protection and upgrading of instrumentation and associated telemetry.	Nov-21	Change in scope
Swansea - Stage 1 and 2	Compliance	6,603	Original construction of dam had defects undermining the structural integrity of the dam. Full clay liner installed including sourcing and testing.	Nov-18	Completed
Lake Isandula	Compliance	2,072	Current dam does not meet ALARP guidelines regulated by ANCOLD guidelines. Safety upgrades allowing dam to meet ANCOLD guidelines.	Mar-24	On track
Ridgeway upgrade	Compliance	20,718	Current dam does not meet ALARP guidelines regulated by ANCOLD guidelines. Safety upgrades allowing dam to meet ANCOLD guidelines.	Jul-25	Revised schedule
Blackman River Dam No 1	Compliance	1,278	Current dam does not meet ALARP guidelines regulated by ANCOLD guidelines. Safety upgrades allowing dam to meet ANCOLD guidelines.	Jun-24	Revised schedule
Henderson Dam Raising	Compliance	11,168	Current Dam does not provide surety in water supply during warmer months on Flinders Island. Increase of Henderson's Dam to provide water surety to Flinders Island during the summer months. This will be undertaken by raising of Henderson's Dam weir by 2m and associated raising and upgrade of spillway. Also allowing for temporary measures until implemented.	Jul-21	Delayed

Key:

Orange – delayed or extended from original schedule
Green – has been completed
Red – has been cancelled

A6.2 Major capital works programs

Table A6.3 TasWater's major capital works programs, as at January 2021

Project	Driver	Project value $'000	Project description
Water			
System optimisation - Water	Improvement	8,308	Various improvements to systems to ensure that ADWG compliance is maintained.
WTP Renewals program	Renewal	5,845	Public health and compliance.
Water Mains Proactive Asset Management - Renewals	Renewal	10,715	Water main renewals.
Reservoir Renewal Program	Renewal	2,348	Upgrade and minor renewals of reservoirs, will maintain water surety.
Water Metering Program	Renewal	6,907	Renew and Replacement of water meters.
Sewer			
CCTV Program	Renewal	1,103	Ongoing CCTV program.
Inflow and Infiltration Program	Improvement	2,464	Program to investigate inflow and infiltration in various systems.
Sewers Main Proactive Asset Management - Renewals	Renewal	11,330	Sewer main renewals.
SPS Proactive Asset Management - Renewals	Renewal	5,617	Replacement of pumps and mechanical components within SPS.
STP Renewals Program	Renewal	11,663	Renewals to STP. Effluent will be compliant with EPA requirements.
Dams			
Dams - Minor CAPEX	Improvement	6,554	Safety upgrades, Place dam above ANCOLD limit of tolerability.
Dams - Compliance Reporting	Compliance	3,932	Safety upgrades, above ANCOLD limit of tolerability.
Other			
Minor Projects Program	Various	10,675	Ensure efficient and prudent funding of projects that do not fall into any of the other programs currently provided.
Non-network IT	Renewal	7,438	Fit for purpose non-network IT improvements.
Facility, Fleet and Plant renewals	Improvement	12,728	Replace vehicles and plant as appropriate.
SCADA program	Improvement	8,694	Implementation of SCADA.
Electrical Program	Renewal	6,229	Electrical switchboard and safety renewals.
Combined System Program	Various	2,656	Allow for expenditure in the Launceston combined system region.