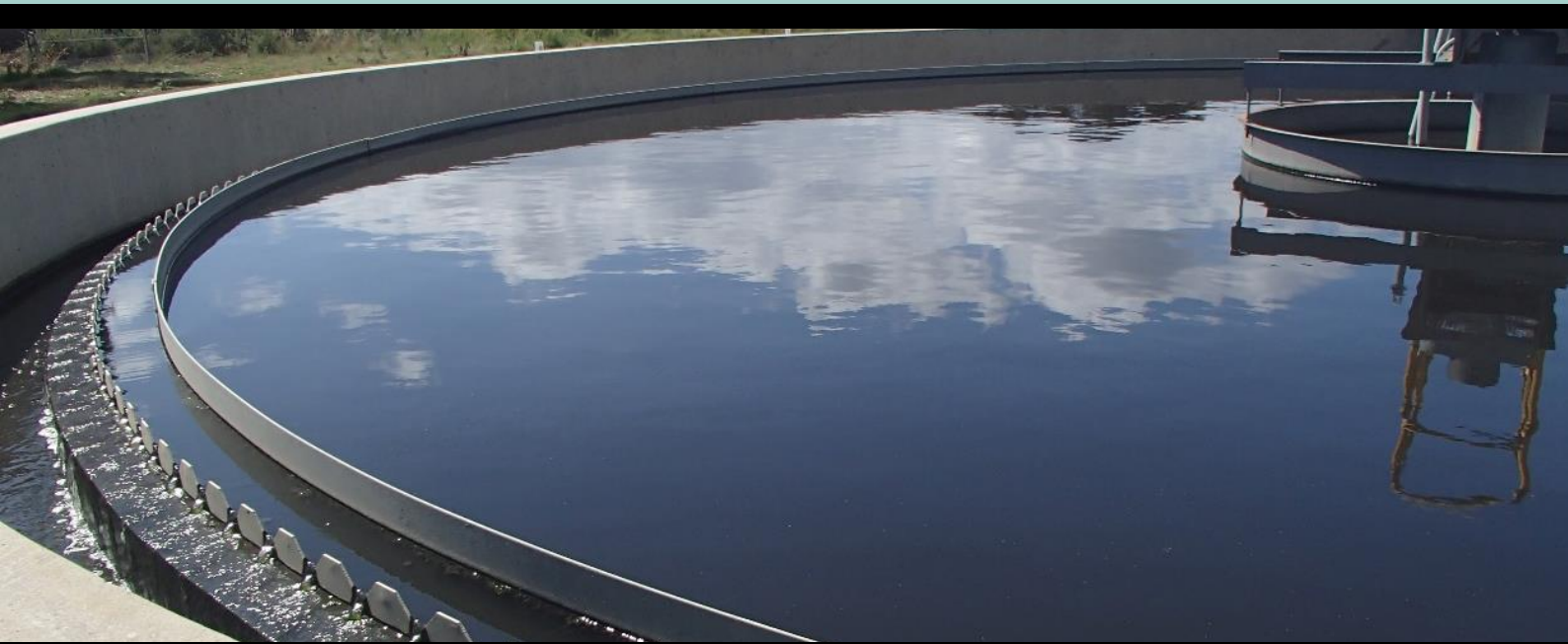


# TASMANIAN WATER AND SEWERAGE STATE OF THE INDUSTRY REPORT 2014-15



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# TABLE OF CONTENTS

<b>ACRONYMS .....</b>	<b>I</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>III</b>
<b>1 INTRODUCTION .....</b>	<b>1</b>
1.1 SCOPE OF THIS REPORT .....	2
1.2 THE ECONOMIC REGULATOR'S ROLE IN REGULATING SERVICE STANDARDS.....	3
1.3 PERFORMANCE DATA .....	4
1.4 INFORMATION SOURCES.....	4
1.5 WATER AND SEWERAGE SERVICES .....	4
1.6 CONTRIBUTION OF THE WATER AND SEWERAGE SECTOR TO THE TASMANIAN ECONOMY .....	6
<b>2 INDUSTRY STRUCTURE AND REGULATION .....</b>	<b>9</b>
2.1 INDUSTRY STRUCTURE .....	9
2.2 ECONOMIC REGULATORY FRAMEWORK .....	9
2.4 CHANGES TO THE REGULATORY FRAMEWORK DURING 2014-15 .....	12
2.5 INDUSTRY REGULATORS.....	13
2.6 OTHER REGULATORY OBLIGATIONS AND RESPONSIBILITIES .....	17
2.7 CUSTOMER SERVICE STANDARDS .....	19
2.9 PERFORMANCE AND REGULATORY REPORTING.....	23
<b>3 WATER RESOURCES .....</b>	<b>25</b>
3.2 SOURCES OF WATER .....	26
3.3 WATER RESOURCE ALLOCATION AND USAGE .....	26
3.4 SUPPLY AND DEMAND BALANCE OF WATER .....	29
3.5 WASTEWATER PRODUCTION.....	30
3.6 RECYCLED WATER USES .....	31
3.8 SUPPLY AND DEMAND BALANCE OF WASTEWATER .....	33

<b>4</b>	<b>INDUSTRY INFRASTRUCTURE .....</b>	<b>35</b>
4.1	WATER ASSETS .....	35
4.2	SEWERAGE ASSETS .....	40
4.3	PERFORMANCE OF WATER AND SEWERAGE INFRASTRUCTURE .....	43
4.4	SEWER OVERFLOWS .....	46
<b>5</b>	<b>CUSTOMER SERVICE .....</b>	<b>49</b>
5.1	CALL CENTRE PERFORMANCE .....	49
5.2	COMPLAINTS .....	50
5.3	WATER SUPPLY INTERRUPTIONS .....	51
5.4	CUSTOMERS WITH PAYMENT DIFFICULTIES .....	55
<b>6</b>	<b>PUBLIC HEALTH .....</b>	<b>57</b>
6.1	BACTERIOLOGICAL COMPLIANCE OF WATER SUPPLY SYSTEMS .....	58
6.2	INCIDENCE OF BOIL WATER ALERTS .....	59
6.3	POPULATION RECEIVING BACTERIOLOGICALLY COMPLIANT RETICULATED WATER .....	60
6.4	CHEMICAL COMPLIANCE OF WATER SUPPLY SYSTEMS .....	60
6.5	DRINKING WATER QUALITY MANAGEMENT PLANS .....	62
6.6	PUBLIC DISCLOSURE OF WATER QUALITY .....	62
6.7	FLUORIDATION OF PUBLIC DRINKING WATER SUPPLY SYSTEMS .....	62
<b>7</b>	<b>ENVIRONMENT .....</b>	<b>65</b>
7.1	EFFLUENT TREATMENT .....	66
7.2	OUTFALLS TO THE ENVIRONMENT .....	68
7.3	COMPARATIVE SEWAGE TREATMENT LEVELS .....	70
7.4	SEWAGE TREATMENT PLANT COMPLIANCE .....	71
7.5	NUMBER OF WASTEWATER TREATMENT PLANTS COMPLIANT AT ALL TIMES .....	80
7.6	PUBLIC DISCLOSURE OF WASTEWATER TREATMENT PLANT PERFORMANCE .....	80
7.7	COMPLIANCE WITH THE DIRECTOR, ENVIRONMENT PROTECTION AUTHORITY'S REQUIREMENTS .....	80
7.8	BIOSOLIDS REUSE .....	81
7.9	NET GREENHOUSE GAS EMISSIONS .....	84

<b>8</b>	<b>PRICING AND FINANCE .....</b>	<b>85</b>
8.1	PRICING .....	85
8.2	FINANCIAL PERFORMANCE .....	86
<b>9</b>	<b>PRIORITIES FOR IMPROVING PERFORMANCE.....</b>	<b>93</b>
9.1	FRAMEWORK FOR THE IDENTIFICATION OF PRIORITY FUTURE PROJECTS.....	93
9.2	MAJOR PROJECTS COMPLETED OR UNDERTAKEN DURING 2014-15.....	98
9.3	ONGOING PROJECTS DURING THE 2015-16 FINANCIAL YEAR.....	100
<b>APPENDIX 1</b>	<b>PERFORMANCE INDICATORS .....</b>	<b>A-1</b>
<b>APPENDIX 2</b>	<b>WASTEWATER MANAGEMENT ISSUES .....</b>	<b>A-7</b>
<b>APPENDIX 3</b>	<b>DAM SAFETY ASSESSMENT TERMINOLOGY .....</b>	<b>A-13</b>
<b>APPENDIX 4</b>	<b>WWTP PERFORMANCE SUMMARY .....</b>	<b>A-15</b>
<b>APPENDIX 5</b>	<b>CUSTOMER SERVICE CODE MINIMUM STANDARDS AND TRANSITIONAL SERVICE STANDARDS .....</b>	<b>A-27</b>



## ACRONYMS

Term	Meaning within the context of this report
ADWF	Average dry weather flow
ADWG	Australian Drinking Water Guidelines 2011
AMT	Accepted Modern Technology
ANCOLD	Australian National Committee on Large Dams
ANZBP	Australian and New Zealand Biosolids Partnership
COAG	Council of Australian Governments
Code	Customer Service Code
CSO	Community Service Obligation
DHHS	Department of Health and Human Services
DPIPWE	Department of Primary Industries, Parks, Water and Environment
DSMP	Dam Safety Management Plan
DWQG	Tasmanian <i>Drinking Water Quality Guidelines 2005</i>
EBIT	Earnings Before Interest and Tax
EMPCA	<i>Environmental Management and Pollution Control Act 1994</i>
EPA	Environment Protection Authority
EPN	Environment Protection Notice
ERR	Economic Rate of Return
Industry Act	<i>Water and Sewerage Industry Act 2008</i>
NDTE	Net Debt to Equity
NPAT	Net Profit After Tax
NPR	National Performance Report
Water and Sewerage Corporation Act	<i>Water and Sewerage Corporation Act 2012</i>
WDRC	Written down replacement cost
WTP	Water treatment plant
WWMP	Wastewater Management Plan
WWTP	Wastewater treatment plant

### Basic measures:

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

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

GL gegalitre = 1 000 ML

TL teralitre = 1 000 GL or 1 km<sup>3</sup> (cubic kilometre)





## EXECUTIVE SUMMARY

In accordance with the requirements set out in the *Water and Sewerage Industry Act 2008* (the Industry Act), the Economic Regulator has prepared, in consultation with other industry regulators, a state of the industry report for the Tasmanian water and sewerage industry for the period 1 July 2014 to 30 June 2015. The Report includes an overview of the industry's performance and identifies key priorities for improving performance.

The industry continued to face significant challenges during the year. It is evident that initial estimates were overly optimistic of the timeframe and amount of money required to deliver the major capital works projects necessary to improve compliance and public health and environmental outcomes to acceptable modern standards.

Capital expenditure increased substantially during 2014-15 as planned infrastructure upgrades and maintenance works commenced following the finalisation of TasWater's corporate restructure and the completion of the associated review of its capital expenditure program.

Despite a range of improvements to the supplies of small towns across the State, 26 towns operated with restrictions on the safe use of their drinking water. Overall, 1.4 per cent of Tasmania's serviced population did not receive safe drinking quality water that met microbiological standards. This result is significantly poorer than for mainland jurisdictions where full microbiological compliance was achieved. Additionally, TasWater is yet to fully implement its monitoring program and ten drinking water systems were not adequately monitored during 2014-15.

Service and reliability were impacted by the age and condition of the water and sewerage network, with a high number of unplanned interruptions to the water supply. There were also a high number of sewer main breaks and chokes and a high rate of sewer overflows, indicating that significant investment is still required in the sewerage network.

In some areas, the existing wastewater infrastructure was not adequately coping with demand. Twelve of TasWater's wastewater treatment plants had inflows that exceeded their hydraulic capacity while a similar number of plants operated at, or below, half their capacity, indicating a potential for increased efficiencies.

Further, there continued to be a number of instances of raw sewage being released to the environment through sewer breaks and overflows. Again, these outcomes resulted from prolonged under investment in sewerage networks and treatment facilities across the State as well as unsatisfactory operating practices and inadequate maintenance.

TasWater acknowledges the poor performance of its sewerage assets and has committed to addressing wastewater compliance issues and improving environmental outcomes. Despite significant investment aiming at improving wastewater treatment plants and operational practices, compliance with regulatory discharge limits has steadily declined over the past five years.

A summary and comparison of TasWater's performance against key indicators for 2013-14 and 2014-15 is provided in Table A.

**Table A Comparison of performance for 2014-15 and 2013-14 against key indicators**

	2013-14	2014-15
Water and sewerage connected properties	200 512	200 527
Total urban water supplied	53 934 ML	54 592 ML
Average residential consumption	179 kL	172 kL
Water network reliability (water main breaks/100 km of main)	35	28
Sewer network reliability (sewer breaks and chokes/100 km of main)	50	57
Average customer minutes off supply (minutes)	131	143
Average sewerage interruption (minutes)	118	274
Treated wastewater volume fully compliant with EPA requirements (flow-weighted)	84.3 %	81.4 %
Percentage of population receiving drinking water that complied with ADWG microbiological guidelines	98.5 %	98.6 %
Drinking water supply systems on long term boil water notices or public health alerts	25 / 88	21 / 88
Customer complaints	1 313	2 324
Calls answered within 30 seconds	92 %	89 %
Total revenue	\$268.6 m	\$300.3 m
Operating costs	\$153.6 m	\$166.5 m
Capital expenditure	\$74.2 m	\$102.5 m
Net Debt to Equity ratio (%)	21	23

Taste and odour problems affected the greater Hobart water supply area in early 2015 when the warmer weather triggered a series of algal blooms in source water catchments and this issue contributed to a large number of complaints about water quality. There has been an improvement in the management of complaints, however billing continued to be an issue and the number of billing complaints increased for the year.

TasWater's call centre operations were centralised during 2014-15 and this, coupled with investment in new systems and processes, appears to have made a positive impact with performance for the year complying with the standards set under the Customer Service Code.

For 2014-15, TasWater's total revenue rose by 12 per cent to \$300.31 million as the capped price increases approved by the Regulator in 2012 allowed TasWater to recover a greater proportion of the costs it incurs in delivering water and sewerage services. From its net profit after tax (NPAT) of \$33.16 million TasWater returned \$30 million to its council owners including \$22.12 million in dividends. The percentage of dividends to NPAT is high compared to some mainland providers.

Operating costs increased by more than eight per cent during 2014-15 due to increases in staffing and operating costs. TasWater's operating costs per property were higher than mainland providers whose levels of compliance were greater than TasWater's. TasWater's debt to equity and interest cover ratios continued to be much lower than its mainland counterparts suggesting that TasWater has the capacity to fund further capital expenditure to address its service performance without risking its financial stability.



# 1 INTRODUCTION

The Tasmanian Economic Regulator (the Economic Regulator) is responsible for the economic regulation of the Tasmanian water and sewerage industry. The water and sewerage industry provides drinking water and wastewater services (including sewage treatment) to residential, commercial and industrial customers across the State.

The key piece of legislation governing the water and sewerage industry is the *Water and Sewerage Industry Act 2008* (the Industry Act). The Industry Act establishes the regulatory framework for the water and sewerage industry, including the Economic Regulator's role and responsibilities.

One of the Economic Regulator's main functions with respect to the water and sewerage industry is monitoring and reporting performance. The objective of the performance framework is to provide reliable and consistent information that brings transparency and accountability in the provision of water and wastewater services in Tasmania. It also helps regulated businesses, regulatory agencies and Government identify key priorities for improving performance of the industry and informing their respective decision making processes.

Under the Industry Act, the Economic Regulator has an obligation to prepare and report on the state of the water and sewerage industry (the *state of the industry report*), either at the request of the responsible Minister or in the lead up to a price determination investigation. The Report is to include an overview of the industry's performance and identify key priorities for improved performance. In the preparation of the Report, the Regulator must consult with other industry regulators; the Director of Public Health, the Director, Environment Protection Authority (EPA) and the Secretary, Department of Primary Industries, Parks, Water and Environment (DPIPWE).

The Economic Regulator was requested to produce a state of the industry report on the water and sewerage industry's performance during 2014-15, via a joint direction received on 29 September 2015 from the Minister for Primary Industry and Water and the Treasurer.

In carrying out its functions under the Industry Act, the Economic Regulator is required to promote the efficient pricing of regulated services, maintain appropriate service standards and promote efficient long-term investment in infrastructure. The Director of Public Health regulates health, public safety and monitoring with respect to the supply of drinking water whilst the Director, EPA, and DPIPWE regulate relevant environmental and dam safety obligations respectively. More information on the regulatory framework and the respective roles and responsibilities of the various industry regulators is contained within Chapter 2.

This Report, the eighth in the series, is a comprehensive, independent review of the industry's performance. It addresses the key areas of affordability, customer service, network reliability and efficiency, financial performance, drinking water quality, environmental performance and an identification of priorities for improving performance.

Combined with a licensing system that ensures that only competent participants deliver regulated water and sewerage services to customers, the Report provides insights to consumers on the ongoing capability of the industry and monitors the costs of delivering those services.

The Report assesses the performance of the Tasmanian Water and Sewerage Corporation Pty Ltd (trading as TasWater) during 2014-15 across a number of key performance measures. This Report is the second to assess TasWater's performance as a single entity following the amalgamation of the three previous regional corporations into the single corporation in July 2013.

Much of the data provided by TasWater for 2014-15 has either not been independently audited or, where the data has been audited, the identified improvements were yet to be implemented. The reliability and accuracy of the data cannot, therefore, be assured. Where possible, TasWater has provided some indication of data confidence and has had the opportunity to comment on the Economic Regulator's assessment of its performance.

As the availability of performance data for the industry improves over time, the Economic Regulator will continue to benchmark performance against similar service providers in other states and territories.

## **1.1 Scope of this report**

The structure and content of this Report is based on the National Performance Reporting Framework<sup>1</sup> with some additional State-based measures, although reporting against a number of indicators is limited due to the absence of some performance data.

This Report focuses on indicators in a number of key performance areas including:

- water resources – water sources, consumption and treatment;
- industry infrastructure – water and sewerage assets, reliability and efficiency of the network including frequency, duration and rectification of water supply interruptions, sewer blockages and spills as well as levels of leakage and losses from water supply systems;
- customers – connected properties and population, responsiveness and customer service including customer complaints, call centre performance and timeliness of response to supply interruptions;
- public health – water quality compliance with bacteriological and fluoridation standards;
- environment – wastewater collection and treatment, effluent discharge, impacts on waterways, effluent and biosolids reuse;

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<sup>1</sup> 2013-14 urban water performance report indicators and definitions handbook, and auditing requirements, 2014.

- pricing and finance – tariff structures, revenue from water and sewerage operations and expenditure;
- priorities for improving performance – strategic planning and initiatives; and
- historical performance – including comparisons with last year's data where possible.

This Report does not include information on the collection and use of stormwater or the supply or use of water for irrigation purposes as these activities are not regulated in accordance with Clause 3 of the *Water and Sewerage Industry Declaration Order 2011* and section 3 of the Industry Act respectively.

While services in relation to recycling or re-use of water are not regulated activities under Clause 3 of the Water and Sewerage Industry Declaration Order, Chapter 3 of this Report provides commentary on these issues in the context of the treatment of wastewater.

## **1.2 The Economic Regulator's role in regulating service standards**

This Report measures performance in several key areas including environmental management and pollution and water quality. However, it is important to note that the Economic Regulator is not responsible for regulating performance in these areas.

In addition to pricing, the Economic Regulator is responsible for regulating service standards and conditions of supply. In this regard, the Economic Regulator has issued a Customer Service Code (the Code) as required under the Industry Act. The Code provides:

- an overarching framework for the delivery of services to customers across Tasmania;
- obligations for key matters including connection and service provision, charges, handling of complaints and disputes, billing, payment of bills, collection of outstanding bills, actions for non-payment, quality of supply, reliability of supply, disconnection, meters, works and maintenance;
- service targets and standards; and
- a requirement that TasWater maintains a customer charter that informs customers about the services that it offers, the respective rights and responsibilities of TasWater and its customers and the service standards that TasWater proposes to deliver over the regulatory period.

The Economic Regulator is responsible for monitoring and enforcing compliance with the obligations set out in the Code. It does this by:

- auditing compliance with the regulatory obligations on a regular basis;
- responding to and following up on issues or concerns raised by customers or other stakeholders about compliance matters; and
- publishing data on performance against Code requirements.

### 1.3 Performance data

TasWater, in line with the Economic Regulator's *Water and Sewerage Industry Performance and Information Reporting Guideline*, Version 1.2, April 2013, (Reporting Guideline) has provided performance data used in this Report<sup>2</sup>.

The Economic Regulator, in developing the Reporting Guideline, considered the requirements and obligations under the Industry Act, standards and targets prescribed by the Code and the performance reporting obligations agreed by the Tasmanian Government under the National Water Initiative Agreement.

It is in the interests of both the Economic Regulator and industry stakeholders that data and information supplied in accordance with the Reporting Guideline will allow the monitoring of TasWater's performance over time against standards and targets and against the performance of similar service providers in other states and territories.

### 1.4 Information sources

This Report is based on two principal sources of information:

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

As in previous years, there are significant gaps in the performance information available to present in this Report. The Economic Regulator expects further improvement over time as TasWater develops the necessary systems to collect and report on performance across the industry.

In most cases, the Economic Regulator has not been in a position to verify the accuracy of the data contained in this Report and has therefore relied on the information provided to it. When interpreting the data and commentary presented in the Report, readers should take this into account.

### 1.5 Water and sewerage services

Tasmania's drinking water infrastructure extracts, treats and distributes drinking water, whilst TasWater's sewerage infrastructure involves the collection, treatment and discharge of wastewater. The urban water cycle begins when water is collected or extracted for use and ends when the water is returned to the environment.

As shown in Figure 1.1, water is collected from the environment in a catchment before being transported via rivers and pipes to water storage dams. Water is then cleansed and purified before being transported through water supply mains to suburban

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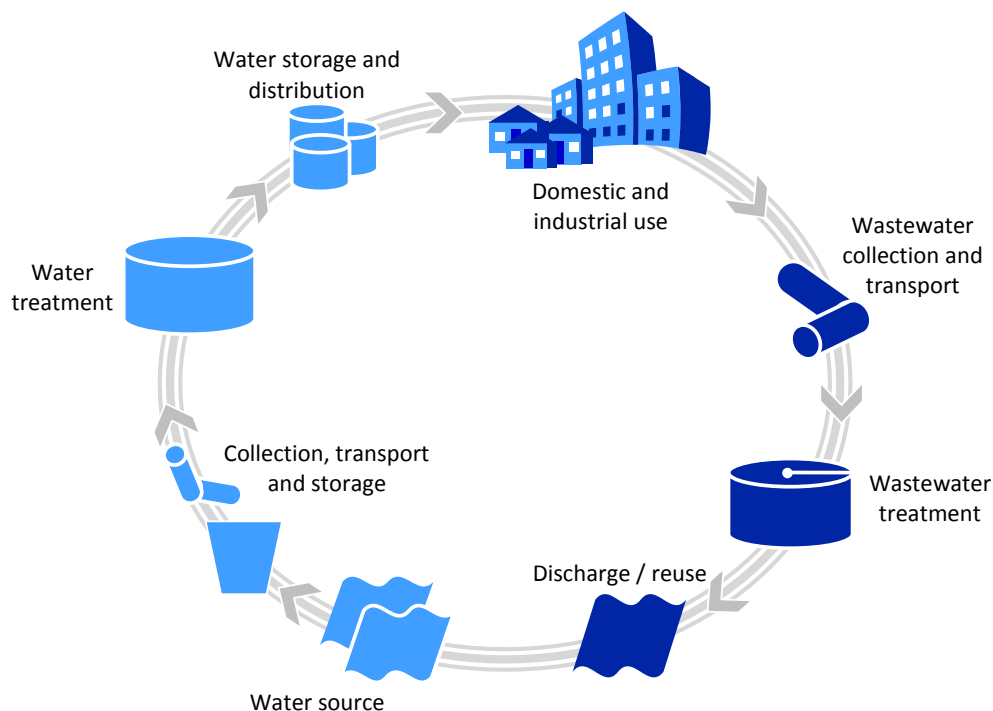
<sup>2</sup> In early 2015-16 the Reporting Guideline was revised to account for structural changes to the Economic Regulator and to reflect the abolition of the National Water Commission. The revised Reporting Guideline (Version 1.3) became effective from 28 October 2015.



reservoirs. Water mains then deliver treated water to domestic and commercial customers.

Sewerage pipes carry the wastewater to the sewer and on to processing at a sewage treatment plant. Treated wastewater is either returned to the environment or distributed for reuse. The cyclical nature of this process means that increases in demand for water not only increase the costs of providing that water, but also increase the costs associated with removing and treating wastewater before its return to the environment.

**Figure 1.1 The urban water cycle**



### 1.5.1 Water and sewerage service providers

The Industry Act requires any person or entity owning or operating water and sewerage infrastructure, or supplying water and sewerage services to others to be licensed, unless either the use or the person providing the service are otherwise exempted.

TasWater commenced operating on 1 July 2013 and was formed through the amalgamation of the three previously licensed water and sewerage service providers (Ben Lomond Water, Cradle Mountain Water and Southern Water), and their jointly owned subsidiary and service provider, Onstream.

As at 30 June 2015, TasWater was the sole licensed water and sewerage service provider in Tasmania.<sup>3</sup> TasWater is responsible for the control, ownership and operation of the water supply and sewerage system in Tasmania. TasWater provides wholesale, distribution and retail services for both water and sewerage and is therefore a vertically integrated service provider. Services provided include:

- harvesting, storage and treatment of raw water supplies;
- transmission of bulk water supplies;
- the operation of the bulk sewerage service and treatment of the majority of sewage;
- retail services;
- trade waste; and
- managing rivers and creeks and major drainage systems.

TasWater manages all aspects of the water supply chain from the dams to customer properties and from sewers to wastewater treatment plants and disposal, with the overarching objective of complying with public health, environmental and customer service regulatory requirements. Around 200 500 properties are supplied with a reticulated water supply from TasWater. This represents around 85 per cent of the State's population. The principal objectives of TasWater are to:

- promote the efficient delivery of water supply and provision of sewerage services; and
- to encourage water conservation, demand management of water and the re-use of water on an economic and commercial basis.

## **1.6 Contribution of the water and sewerage sector to the Tasmanian economy**

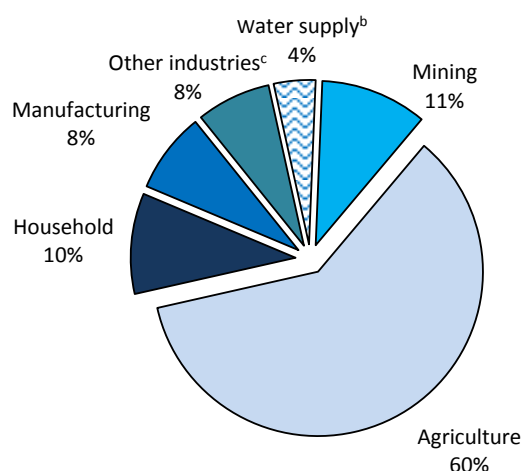
The water and sewerage industry makes a significant contribution to the Tasmanian economy through employment, investment and returns to local government owners.<sup>4</sup> In addition, the price, availability, reliability and quality of water and sewerage services impacts significantly on the economic performance of other sectors of the Tasmanian economy such as tourism and vegetable processing.

This Report is primarily concerned with urban water and sewerage services. However, as Figure 1.2 shows, urban water use is only a small component of the State's total water consumption. Figure 1.2 does not show water usage for electricity generation, but the amount of water available for power generation is important to the State's economy. In addition, the need for water storage for electricity generation can affect the availability of water for other purposes.

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<sup>3</sup> The three regional water corporations surrendered their respective water and sewerage licences as at 30 June 2013. The Economic Regulator granted a water and sewerage licence to the Tasmanian Water and Sewerage Corporation Pty Ltd (trading as TasWater) on 22 April 2013. This licence took effect on 1 July 2013.

<sup>4</sup> From 1 July 2009, councils received dividends, guarantee fees and income tax equivalent payments from the water and sewerage corporations.

**Figure 1.2 Water consumption in Tasmania (2013-14)**

Source: *Water Account Australia*, 2013-14 (ABS Cat No 4610.0), November 2015

- Notes:
- a Water consumption by the electricity and gas industries is not included as the majority of water used by this industry is 'in-stream' and is often re-used downstream by other water users.
  - b Includes water losses as well as water used by the water supply, sewerage, and drainage services industry.
  - c Other industries includes forestry and fishing; construction; wholesale and retail trade; accommodation, cafes and restaurants; transport and storage; finance, property and business services; government administration; education; health and community services; and cultural, recreational and personal service industries.

Irrigation schemes have provided opportunities to expand the State's agricultural, horticultural and viticulture enterprises. Growth in these sectors is reliant upon the availability and quality of the State's freshwater resources.

Tasmania has the highest proportion nationally of agricultural land area under irrigation, which places increased pressure on water resources during periods of low rainfall. Above average rainfall across much of the State during 2013-14<sup>5</sup> led to a slight reduction in use by the agricultural industry from 62 per cent to 60 per cent of the total State water consumption. However, the agricultural industry continued to be the major water user with consumption totalling 235 GL for 2013-14 (246 GL for 2012-13). The mining industry consumed 41 GL or 10 per cent of Tasmania's total water consumption for 2013-14, which was a 45 per cent increase on the volume of water consumed by the industry during 2012-13.

The availability of sustainable and reliable water and wastewater services, including investment in water storage, treatment and delivery infrastructure, has a direct impact on land use planning and the capacity of the State to attract and appropriately manage economic development. Effective water management also influences Tasmanian businesses and the community as a whole by ensuring there is sufficient supply to meet demand.

The water and sewerage industry is a very large business activity and provides vital input to the State's economy. Regulatory arrangements have the objective, amongst other things, of assisting the industry to achieve sustainable operations over time and ensuring that the services provided meet current and future community and business

<sup>5</sup> <http://www.bom.gov.au/water/waterinaustralia/>

needs. A significant program of infrastructure renewal and expansion will continue over at least the next decade to ensure system capability and environmental compliance.

Over the past five years, TasWater and the previous regional corporations have invested significantly in upgrading existing assets or constructing new assets. The total value of combined water and wastewater infrastructure in Tasmania is approximately \$2.7 billion<sup>6</sup> as at 30 June 2015.

Table 1.1 summarises the number of employees, net profit after tax and returns to council owners for TasWater in 2014-15.

**Table 1.1 Summary indicators - TasWater as at 30 June 2015<sup>7</sup>**

	<b>Number of employees FTEs</b>	<b>Net profit after tax \$'000</b>	<b>Returns to council owners \$'000<sup>Note 1</sup></b>
2013-14	814	27 236	29 000
2014-15	824	33 154	30 000

Note 1: Includes dividends, guarantee fees and income tax equivalents.

For 2014-15, TasWater reported a net profit after tax of \$33.15 million, up from \$27.24 million for the previous year.

Since the establishment of the previous regional corporations on 1 July 2009, council owners have received, on a cash basis, returns totalling over \$143 million in the form of dividends, guarantee fees and income tax equivalents.

Following a small reduction in full-time equivalent employees during 2013-14 as a result of the merger of the former regional corporations, the number of full-time equivalent employees increased marginally from 814 in 2013-14 to 824 as at 30 June 2015.

<sup>6</sup> Based on the written down replacement cost methodology.

<sup>7</sup> Report of the Auditor-General No. 6 of 2015-16: *Auditor-General's Report on the Financial Statements of State entities Volume 3 Local Government Authorities and Tasmanian Water and Sewerage Corporation Pty Ltd 2014-15*, November 2015.

## 2 WATER AND SEWERAGE INDUSTRY STRUCTURE AND REGULATION

This chapter provides an overview of the Tasmanian water and sewerage industry, including its structure, the regulatory framework and the roles of the various entities and bodies involved in the industry.

### 2.1 Industry structure

Since 1 July 2013<sup>1</sup> TasWater has owned, controlled and operated water supply and sewerage systems in Tasmania. TasWater manages all aspects of the water supply chain from dams and reservoirs to customer property connections and from customer sewer connections to wastewater treatment and disposal. TasWater is subject to various public health, environmental and customer service regulatory requirements.

Across Tasmania during 2014-15 TasWater serviced 200 527 properties with a water connection and 176 449 properties with a sewerage connection.

### 2.2 Economic regulatory framework

In July 2009, Tasmania's urban water and sewerage industry was reformed and restructured. Three regional water and sewerage entities took over the operation of the water and sewerage services previously provided by 28 local councils and three bulk water authorities.

Two pieces of legislation were enacted to enable the implementation of the reforms:

- the *Tasmanian Water and Sewerage Corporations Act 2008*, to address the structural elements of the reforms, and
- the *Tasmanian Water and Sewerage Industry Act 2008* (the Industry Act), to address the economic regulatory elements.

The *Tasmanian Water and Sewerage Corporation Act 2012* was subsequently enacted to provide the legislative basis for the amalgamation of these three regional corporations to form TasWater, which commenced operations on 1 July 2013.

TasWater's objectives include ensuring that infrastructure planning occurs on a statewide basis, service is delivered consistently, governance arrangements between council owners and TasWater are streamlined and opportunities are created for cost savings.

The Industry Act provides for the establishment of an economic regulatory framework for the provision of water and sewerage services and is similar to utility regulatory frameworks used in other jurisdictions.

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<sup>1</sup> Ben Lomond Water, Cradle Mountain Water, Southern Water and Onstream were amalgamated to form TasWater.

The economic regulatory framework is focused on ensuring competitive market outcomes from the sector in relation to both price and service, ensuring the financial sustainability of the water and sewerage industry and providing sufficient funding to meet other regulatory obligations.

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

The Industry Act also provides for the following:

- a licensing regime, requiring any person or entity owning or operating water and sewerage infrastructure, or supplying water or sewerage services to others to be licensed, unless otherwise exempted;
- an independent Economic Regulator for the sector with clear accountabilities and responsibilities to ensure effective and efficient outcomes for the sector and the protection of customers;
- a customer service standards framework for the sector, including a Customer Service Code, to ensure that service providers meet a minimum level of service;
- independent pricing regulation of the sector with service providers required to submit a price and service plan to the Economic Regulator to outline the services, revenue requirements and operational requirements of the service provider (the plan to be the basis upon which the Economic Regulator makes a price determination);
- the Economic Regulator to be guided by legislated pricing principles when making a price determination, including the principle of two-part pricing for water services;
- an annual state of the industry report (this Report) prepared by the Economic Regulator in consultation with the other industry regulators (on matters including customer service, water quality, financial performance, environmental and water management) and service providers;
- a formal complaints and disputes process, including the Tasmanian Ombudsman being assigned the role of Ombudsman for the sector who will, as a last resort, arbitrate any unresolved disputes between customers and service providers; and
- the regulatory framework to require mandatory asset management planning in the sector (this requirement is formalised as a condition of the operating licences issued by the Economic Regulator).

The regulatory framework also provides for the imposition of a range of monetary and non-monetary sanctions as appropriate where an entity fails to meet its regulatory obligations.

The regulatory framework does not cover:

- water used for irrigation or electricity generation purposes;

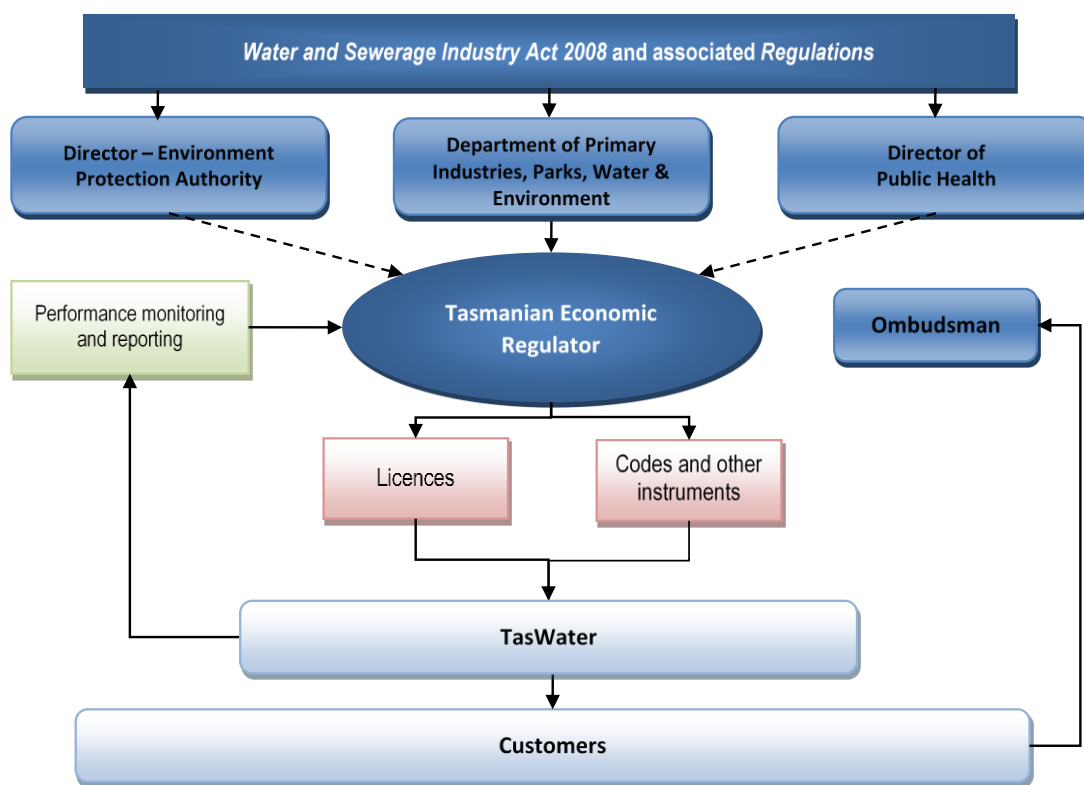
- private water supplies, including drinking water supplies at premises that do not receive water from a reticulated system managed by a licensed provider - namely, private bores and tanks and small privately owned water systems; or
- on-site sewerage treatment (septic tanks) or small private sewerage treatment plants.

A diagram setting out the economic regulatory framework for the Tasmanian water and sewerage industry is shown in Figure 2.1.

### 2.2.1 Licensing

TasWater was granted a licence by the Economic Regulator on 22 April 2013, which took effect on 1 July 2013.

**Figure 2.1 Tasmanian water and sewerage industry economic regulatory framework**



## 2.4 Changes to the regulatory framework during 2014-15

The only major changes made to the regulatory framework during 2014-15 related to the changes introduced in the *Economic Regulator Amendment Act 2015* (Amendment Act) and the consequential amendments made to the Industry Act. The Amendment Act received Royal Assent on 19 May 2015 with the consequential changes becoming effective from 1 July 2015.

The Amendment Act introduced a range of changes to the *Economic Regulator Act 2009* (Economic Regulator Act) and to the industry specific acts that impact on the Economic Regulator's operations as a result of the outcomes from the Government's review of the Economic Regulator's role and functions.

In terms of the Economic Regulator Act and the Economic Regulator itself, the Amendment Act:

- reduced the membership of the Economic Regulator from a three person panel to a single person with the capacity to appoint an Assistant Economic Regulator for specific functions if required;
- provided the ability to appoint an Acting Economic Regulator in instances where the Economic Regulator is indisposed;
- required that all appointments are to be made by the Minister responsible for the Economic Regulator Act; and
- allowed for the appointment of the Economic Regulator to be external to the State Service.

With respect to water and sewerage, the Amendment Act removed the requirement for the Economic Regulator to undertake water and sewerage performance reports each year. Instead the Economic Regulator is now required to produce a performance report at the commencement of a water and sewerage prices investigation (up to every five years) or if directed to by the Minister responsible for the Industry Act, with the agreement of the Minister responsible for the Economic Regulator Act.

In relation to this Report, on 29 September 2015, the Minister for Primary Industry and Water and the Treasurer jointly directed the Economic Regulator to produce a state of the industry report on the water and sewerage industry's performance during 2014-15. The direction also referred to the expectation that this Report would be published on or before 1 April 2016.



## 2.5 Industry Regulators

### 2.5.1 Tasmanian Economic Regulator

Under the Industry Act, the Economic Regulator has a wide range of functions including:

- administering the licensing system established under Division 2 of the Industry Act;
- advising the Minister that a licence has been granted under Division 2 of the Industry Act and making the Minister aware of any conditions that apply to that licence;
- advising the Minister of any variation or amendments to the conditions of a licence;
- monitoring and reporting to the Minister on the compliance of a water and sewerage corporation with its licence conditions and obligations, including compliance with the Customer Service Code;
- establishing and administering the Customer Service Code;
- regulating prices, terms and conditions for regulated services;
- making price determinations and determinations generally;
- monitoring the performance of the water and sewerage industry and reporting on the performance of a water and sewerage corporation;
- providing advice to the Minister in connection with the regulation of the water and sewerage industry;
- undertaking inquiries, including such inquiries as may be required by the Minister, in relation to the regulation of the water and sewerage industry;
- developing and publishing guidelines on the Economic Regulator's website; and
- performing such other functions as may be imposed on the Economic Regulator under the Industry Act.

### 2.5.2 Director of Public Health

The Department of Health and Human Services (DHHS) 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*.

Under the Act the Director of Public Health is able to issue, and enforce compliance with, guidelines for drinking water quality. The legally enforceable Tasmanian *Drinking Water Quality Guidelines 2015* (DWQG) support the principles, management practices, preventive measures and guideline values contained in the current Australian Drinking Water Guidelines (ADWG). The *Australian Drinking Water Guidelines 2011*, which were updated in 2015, are the current version of the ADWG.

With respect to drinking water, the key functions of the Director of Public Health and the Department of Health and Human Services key functions relate to:

- protecting public health with respect to the supply of drinking water;
- establishing drinking water quality performance standards;
- monitoring water suppliers' performance against the standards and requirements prescribed by the *Public Health Act 1997* (and its associated Tasmanian Drinking Water Quality Guidelines 2015), the *Fluoridation Act 1968*, the *Fluoridation (Interim) Regulations 2009* and the Australian Drinking Water Guidelines 2011 (which were updated in 2015);
- enforcing compliance with the requirements prescribed by the Acts and Guidelines;
- reporting on the water suppliers' compliance with the prescribed standards;
- providing oversight of the fluoridation program in Tasmania through the Fluoridation Committee; and
- developing and implementing strategies to promote and improve public health.

### 2.5.3 Director, Environment Protection Authority

The Director, Environment Protection Authority (EPA) is one member of the EPA Board. The Board and the Director are responsible for administering and enforcing the *Environmental Management and Pollution Control Act 1994* (EMPCA). They are supported in discharging their functions and duties by the EPA Division which is part of the Department of Primary Industries, Parks, Water and Environment (DPIPWE). With respect to sewerage, the EPA Division provides advice to the Director and the Board on assessment and regulation of significant wastewater treatment plants (WWTPs), defined as Level 2 Activities under Schedule 2 of EMPCA. Level 2 WWTPs are those with capacity to treat 100 kilolitres or more per day of sewage or wastewater.

The Director's responsibilities in regulating Level 2 WWTPs include:

- undertaking environmental impact assessments as a member of the Board or under delegation from the Board, as provided for under EMPCA, in relation to proposals for new WWTPs or significant changes to existing WWTPs;
- imposing legally binding environmental conditions upon the operation of WWTPs. These are either incorporated into the planning permit or issued as a stand-alone Environment Protection Notice;
- applying the Tasmanian policy framework for water quality management (the State Policy on Water Quality Management 1997) as relevant to wastewater activities and updating environmental conditions where necessary; and
- ensuring compliance with environmental conditions, largely through collection and evaluation of data on specified discharge limits and impacts on the receiving environment.

The EPA also offers advice on a broad range of wastewater issues including those relevant to pumping stations, wastewater reuse, trade waste and biosolids reuse.

For example, the EPA has released environmental guidelines for the recycling of wastewater and biosolids in Tasmania. The guidelines provide a framework for the sustainable reuse and recycling of wastewater and biosolids in a manner which is practical and safe for agriculture, the environment and the public, and which is consistent with industry standards and best practice environmental management.

#### **2.5.4 Department of Primary Industries, Parks, Water and the Environment**

The Urban Water Policy Unit in DPIPWE develops and coordinates policies relating to the regulation of the water and sewerage industry and to support the Minister for Primary Industries and Water in fulfilling the Minister's functions under the Industry Act. The Minister's responsibilities under the Industry Act include:

- issuing and administering interim licences for the new corporations;
- granting interim exemptions from the requirement to be licensed;
- setting penalties and annual licence fees;
- issuing emergency directions in order to deal with serious risks to public health or safety or to deal with the likelihood of environmental harm arising from the provision of a regulated activity;
- declaring a regulated entity to be the "reserve supplier" for a particular area of operation; and
- directing the Economic Regulator to conduct inquiries, review codes and report on matters for which the Minister requires a report.

The Unit is also responsible for coordinating policy input across the State Government as well as undertaking strategic water supply and demand planning. The Unit also monitors the performance outcomes reported by the Economic Regulator to ensure consistency with overall Government policy.

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

The Water Resources Division's functions, with regard to the water and sewerage sector, include the assessment, regulation and enforcement of water allocation licensing and dam permits to ensure the sustainable and equitable use of Tasmania's water resources.

Further information about the Division's functions is outlined in Chapter 3 of this Report.

#### **2.5.5 Delegate for Dam Safety Regulation**

Through administration of the *Water Management Act 1999* and the *Water Management (Safety of Dams) Regulations 2011*, the Minister for Primary Industries and Water has regulatory oversight of dam safety. The Minister's key functions in this regard relate to:

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

The Water Management Branch of the Water and Marine Resources Division of DPIPW administers the dam safety legislation. In relation to dam safety this is primarily implemented through:

- reviewing new dam applications to ensure dams are constructed to contemporary safety standards and in accordance with the statutory requirements; and
- a program ensuring owners of existing dams meet their statutory dam safety responsibilities by monitoring, reviewing and managing dam safety as required by the above mentioned Act and Regulations which incorporate the national dam safety guidelines.

## 2.5.6 Chief Officer of the Tasmania Fire Service

The Tasmanian Fire Service (TFS) is the regulatory authority responsible for fire safety in Tasmania. The responsibilities of its Chief Officer, who is also Chairperson of the State Fire Commission, include:

- developing and implementing appropriate fire prevention and community preparedness strategies;
- establishing fire brigades that are trained, resourced and available to respond to fires; and
- maintaining other arrangements as are necessary to ensure ongoing capacity to deliver effective and efficient fire prevention and protection measures throughout Tasmania.

Under the *Building Regulations 2014* and *Fire Service (Miscellaneous) Regulations 2007*, the TFS is required to, amongst other things, inspect and report on the installation of new fire hydrants. The TFS is also required to comment on the suitability of the water flows and pressure as part of this reporting. Testing to ensure the required flows and pressures is also required to be undertaken when a new hydrant is commissioned. TasWater's obligations under the Industry Act, with respect to fire safety, relate to:

- the installation of 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
- the need to keep its water infrastructure charged with water where that infrastructure supplies water to a fire hydrant.

The Industry Act provides that TasWater can also impose a ban on the use of outdoor water 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 help to ensure that the TFS and residents who may be facing a bushfire threat have water available for firefighting and prevention.

### **2.5.7 Ombudsman**

If a customer is dissatisfied with the outcome of a complaint made under a regulated entity's customer complaints process the customer may refer the complaint to the Ombudsman under the *Ombudsman Act 1978*. Under section 77 of the Industry Act it is a condition of its licence, that the regulated entity comply with any recommendations made by the Ombudsman relating to a complaint involving the regulated entity and a customer.

## **2.6 Other regulatory obligations and responsibilities**

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

### **2.6.1 National water initiative**

In June 2005, along with the Australian Government and the other states and territories, Tasmania became a signatory to the National Water Initiative (NWI) Agreement. The Australian Government is represented by the National Water Commission (NWC) and the states and territories are represented by the agencies responsible for regulating water supply services. 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 and rural water delivery agencies.

The signatories of the NWI Agreement have developed a performance reporting framework for urban utilities (Urban Framework) and a performance reporting framework for rural water delivery agencies (Rural Framework). The Urban and Rural Frameworks are reflected in a handbook of performance indicators and definitions.

The performance data is subject to independent audit at least once every three years. Further information on the NWI Agreement and the performance reporting framework can be found on the NWC website at <http://www.nwc.gov.au/nwi> and <http://www.nwc.gov.au/publications/topic/nprs> respectively.<sup>2</sup>

### **2.6.2 National performance reporting framework**

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 are based on a nationally consistent performance framework that builds on reporting already in place in the urban and rural water sectors.

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<sup>2</sup> Whilst the NWC no longer exists, the NWI is continuing and the NWC's website continues to be available.

Originally the national performance reports covered both urban water utilities and rural water service providers; however, effective from 1 July 2013, the National Performance Report (NPR) in respect of rural water service providers was discontinued. The National Performance Reporting Framework for urban utilities was finalised in June 2006. The first urban utilities performance report was released in 2007, reporting on the 2005-06 financial year. Updated versions of the framework are published in April each year.

The Tasmanian water and sewerage State of the Industry Report is intended to complement the national performance reporting framework. TasWater is required to submit annual performance information for the NPR, with oversight of data submission provided by the Economic Regulator.

## **2.6.3 Other government bodies**

### **2.6.3.1 *Department of Treasury and Finance***

The Department of Treasury and Finance has responsibilities in relation to water and sewerage pricing policy, which remain a responsibility of the Treasurer under the Industry Act.<sup>3</sup>

### **2.6.3.2 *Local Government***

Prior to 2009-10 local government was responsible for providing most reticulated urban water and sewerage services (excluding some water and sewerage infrastructure located within private or Crown land). From 1 July 2009 the responsibility for providing these services transferred to the three regional water and sewerage corporations. Local government retained ownership of the corporations and from 1 July 2013, TasWater continued to be owned by local government.

Local government continues to be responsible for the regulation of small and on-site sewerage infrastructure (such as septic tanks) and private water supplies (such as private bores and tanks).

### **2.6.3.3 *National Water Commission***

The NWC, was created to drive the national water reform agenda, is an independent, statutory authority within the Australian Government's Environment, Water, Heritage and the Arts portfolio. Established under the *National Water Commission Act 2004* the NWC provided advice to the Council of Australian Governments (COAG) and the Australian Government on national water issues.

The Australian Government announced the abolition of the NWC as part of its 2014-15 Budget. The *National Water Commission (Abolition) Act 2014* (Cwlth) was subsequently passed by both houses of parliament during 2014-15 resulting in the repeal of the *National Water Commission Act 2004* (Cwlth) effective from 17 June 2015.

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<sup>3</sup> The administration of Subdivision 3 of Division 1, and Division 5 of Part 4 and sections 88 and 111 of the Industry Act are assigned to the Treasurer and the Department of Treasury and Finance.

Prior to abolition, the NWC was responsible for overseeing progress towards the sustainable management and use of Australia's water resources as required under the NWI as described in section 2.5.1.

The NWC was also responsible for assessing progress on water reform against the NWI commitments through its biennial assessments and national performance reports on urban and rural water utilities (also as described in section 2.5.1). The NWC also published position statements on major water reform issues.

#### **2.6.3.4 Bureau of Meteorology**

In 2008 the Bureau of Meteorology (the Bureau) assumed a new role in relation to water accounting, as part of the then Australian Government's Water for the Future initiative. Water for the Future contains urban and rural policies and programs, including significant funding for water purchasing, irrigation modernisation, desalination, recycling, and stormwater capture. Water for the Future is designed to secure long-term water supply for all Australians and includes the Improving Water Information Program administered by the Bureau.

One function of this program is to coordinate the way in which water data is gathered, analysed and reported across Australia. The information collected will be used by the Bureau to better measure and understand Australia's water resources, through new reporting, forecasting and other services.

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

The Water Regulations came into effect on 30 June 2008. The Water Regulations define who must give specified water information to the Bureau and the time and format in which it must be supplied.

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

Following the announcement of the NWC's abolition, state and territory regulators agreed that the Bureau would take over the NWC's administrative role and coordinate and produce the National Urban Performance Reports for 2013-14, 2014-15 and 2015-16.

## **2.7 Customer service standards**

The economic regulatory framework established under the Industry Act incorporates a customer service standards framework for the sector including the requirement that the Economic Regulator issue and administer a Customer Service Code specifying minimum service standards and conditions for regulated services that a regulated entity must comply with.

The *Water and Sewerage Industry (Customer Service Standards) Regulations 2009* lists matters that must, or may, be included in the Customer Service Code (the Code). The Code is also able to address other matters in addition to those required under the Regulations.

The Code stipulates obligations in relation to:

- minimum customer service standards;
- complaint handling and dispute resolution;
- billing, payment and collection arrangements;
- actions for non-payment; and
- quality and reliability of services.

The Economic Regulator's approach to regulating the standards and conditions of supply for water and sewerage services has been to:

- develop the Code;
- establish minimum service standard targets in the Code;
- require the water and sewerage corporations to develop customer charters;
- require the water and sewerage corporations to propose transitional customer service standards, as part of their proposed Price and Service Plans<sup>4</sup>, which establish a transition path to achieving the minimum service standard targets specified in the Code; and
- establish a performance reporting framework that, amongst other things, monitors performance against approved transitional service standards and minimum service standard targets.

Transitional service standards were approved for each water and sewerage corporation as part of the Economic Regulator's 2012 Price Determination investigation<sup>5</sup>.

For the first regulatory period each water and sewerage corporation's performance was monitored against approved transitional service standards with performance against these standards detailed in the Economic Regulator's annual State of the Industry Report.

The Code provided that the Economic Regulator would undertake a review of the minimum service standards by 30 June 2013 to take into account cost and service level data which came to light during the first Price Determination Investigation.

A review was consequently undertaken during January 2013 and February 2013 with the objective of introducing differential service standards for the second regulatory period to reflect the different costs of delivering the regulated services to different geographical areas.

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<sup>4</sup> As part of the 2012 Price Determination Investigation for regulated water and sewerage services in Tasmania.

<sup>5</sup> Under amendments introduced in the *Water and Sewerage Corporation Act 2012*, the determinations made by the Economic Regulator in respect of each of the regional corporations continued to apply to the amalgamated entity, TasWater.



It was presumed, at the time of the review, that the former water and sewerage corporations would have a better understanding of the systems involved and the different costs to provide services over those systems. The implementation, therefore, of a differential service standard approach was more likely to be practically achievable by adopting this approach.

However, it quickly became evident, through representations from the previous water and sewerage corporations, that there were continuing issues with the availability of comprehensive cost and service level data on a detailed system or area basis.

Despite this, the Economic Regulator resolved that, based on the information known at that time and the further data that would become available in the short to medium term, there was scope for the adoption of appropriately defined differential standards of service for the second regulatory period.

To this end, the Economic Regulator proposed that moving to a 'metropolitan' and 'non-metropolitan' split would be the most practical and achievable basis for differentiating service standards.

The Economic Regulator also decided that the appropriateness of zone boundaries for such differentiation would be assessed in consultation with the new entity, TasWater. The Economic Regulator stated that it would require TasWater to determine and provide advice of its relevant metropolitan and non-metropolitan areas, identifying these zones with the use of maps (which may, for example, be systems based). TasWater would also be required to detail the characteristics it had used for justifying the provision of different levels of service across those defined metropolitan and non-metropolitan areas. These requirements were outlined in the Economic Regulator's *Tasmanian Water and Sewerage Industry, 2014-15 Price Determination Investigation, Price and Service Plan Guideline* which was released in November 2013. Further, this information was required to be submitted by TasWater as part of its proposed price and service plan and considered by the Economic Regulator as part of the second price determination investigation process.

However, upon receipt of TasWater's 2015-18 proposed price and service plan, the Economic Regulator identified that TasWater had not, in fact, proposed service standards, nor outlined any associated transition path, on a differential basis. Rather, TasWater had proposed state-wide minimum service standards as well as annual transition targets to move to the service standard targets during the second regulatory period.

Under this proposal, in reporting against the level of service standards, TasWater would effectively be continuing to report aggregated performance (ie averaged out across the system).

Subsequently, the Economic Regulator, in its 2015 Price Determination Investigation Draft Report, proposed a more binding arrangement on TasWater, with the adoption of the then applicable minimum service standards (as published in the Code at the time) as actual, absolute minimum standards.

TasWater was the only interested party to provide a submission in response to the Economic Regulator's indicated position concerning customer service standards. TasWater noted concern with the Economic Regulator's proposal, maintaining that averages provide better incentives for businesses to drive efficiency, which was particularly relevant at that stage in TasWater's maturity. In addition, TasWater

considered that the setting of actual minimums would possibly drive outcomes that were at odds with the priorities set by the technical regulators and TasWater's legislative obligations.

TasWater also remained concerned about the quality of its data, noting that systems and processes required to fully comprehend its underlying performance did not yet exist. TasWater also considered that it would be in a better position to provide more accurate and evidence-based customer service standard targets for the third regulatory period.

Nevertheless, TasWater indicated that it was open to exploring, with the Economic Regulator, the possibility of setting actual minimum standards for some of the indicators.

To this end, TasWater provided a secondary proposal in relation to customer service standards for the Economic Regulator's consideration. The secondary proposal was based on TasWater's analysis of actual performance data for the period 1 July 2014 to 28 February 2015. On the basis of that analysis, and recognising the Economic Regulator's desire to move to actual minimum standards, TasWater identified it was in a better position to propose more accurate and evidence-based customer service standards with respect to 'response time' and 'duration related' indicators and service standards relevant to 'water supply interruptions' and 'sewer breaks and chokes' indicators.

Revised 'actual minimum' service standards for these aforementioned indicators were subsequently provided to the Economic Regulator for its consideration.

The Economic Regulator, after considering TasWater's alternative proposal, accepted that the proposal represented movement in the right direction towards service standards that are meaningful to customers. The Economic Regulator subsequently issued a revised version of the Code, effective 1 July 2015, reflecting the revised minimum service standards to apply in the second regulatory period (1 July 2015 to 30 June 2018).

The Economic Regulator will continue to work with TasWater towards the development of more relevant and representative customer service standards, on a differential basis, for the third regulatory period.

For further details on the minimum service standards applicable for in the second regulatory period, refer to the Economic Regulator's Price Determination Investigation Final Report (published 30 April 2015).

## 2.9 Performance and regulatory reporting

### 2.9.1 Performance reporting

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 *Water and Sewerage Industry Performance and Information Reporting Guideline* (Version 1.2, April 2013)<sup>6</sup>, issued in April 2013, sets out the data and contextual information that a regulated entity must provide to the Economic Regulator so that its performance can be measured.

The Guideline provides for a transitional compliance regime where TasWater will be required to achieve compliance overtime with respect to the full range of performance measures. TasWater's performance in meeting those requirements will be monitored by the Economic Regulator.

### 2.9.2 Regulatory reporting

In exercising its powers and functions the Economic Regulator seeks assurances from each regulated entity that it is appropriately managing its assets and operations to deliver a level of service that is acceptable to stakeholders.

In practice, these assurances are provided through the independent review of management plans and compliance plans and confirmation by an independent 'reporter' that the reported performance information can be relied upon. These independent reviews are conducted in accordance with the Economic Regulator's *Regulatory Reporting Guideline*, (Version 3, July 2014).

During 2013-14, the independent appraisal of TasWater's performance indicators was commenced, with the first tranche of indicators being reviewed. The second tranche of performance indicators was reviewed during 2014-15, with the third and final tranche to be reviewed during 2015-16.

TasWater was also required to undertake independent reviews of its compliance and emergency management plans during 2014-15, whilst the report of the outcomes from the independent appraisal of its asset management plan was conducted early in the 2015-16 financial year as scheduled.

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<sup>6</sup> An updated Version 1.3 of the Guideline was published 28 October 2015 to reflect amendments consequential to the Economic Regulator Reforms and the abolition of the National Water Commission. The Guideline is available from the Economic Regulator's website: [www.economicregulator.tas.gov.au](http://www.economicregulator.tas.gov.au).

### 2.9.3 Regulatory compliance

Over the 2014-15 reporting period TasWater reported four instances of non-compliance with the *Price and Service Plan Guideline* and the Industry Act:

- Complaints management policy – the Economic Regulator requested the policy be amended to include all of the information required under the customer service code.
- Price and service plan policies – TasWater was late in its submission of some policies required to accompany the *Price and Service Plan 2015-18*. The policies were submitted in October 2014 and approved by the Regulator.
- Notice of intended licence enforcement action – the Regulator issued a notice of enforcement under Section 41 of the Industry Act with regards to seven items of contravention in TasWater's *draft Price and Service Plan 2015-18*. TasWater addressed the issues and the Regulator determined that no punitive action would be taken.
- Refund of charges – TasWater failed to refund overcharges of developer charges within the agreed timeframes. The oversight was corrected and the refunds were completed by 30 September 2014.

In addition, TasWater reported one instance of non-compliance with the *Archives Act 1983* regarding the removal and destruction of archived records at Forth. An investigation recommended remedial actions to prevent recurrence.

### 3 WATER RESOURCES

The *Water Management Act 1999* is part of Tasmania's resource management and planning system and, as specified in section 6 of the Act, provides for the use and management of Tasmania's freshwater resources having regard to the need to:

- promote sustainable use and facilitate economic development of water resources;
- recognise and foster the significant social and economic benefits resulting from the sustainable use and development of water resources for the generation of hydro-electricity and for the supply of water for human consumption and commercial activities dependent on water;
- maintain ecological processes and genetic diversity for aquatic and riparian ecosystems;
- provide for the fair, orderly and efficient allocation of water resources to meet the community's needs;
- increase the community's understanding of aquatic ecosystems and the need to use and manage water in a sustainable and cost-efficient manner; and
- encourage community involvement in water resources management.

The Water Management Act also provides for the Minister for Primary Industries and Water to oversee the sustainable use and development of all freshwater resources in the State, including dispersed surface water and water in watercourses, lakes, wetlands and groundwater resources. In particular, the Water Management Act:

- establishes institutional arrangements for water management in Tasmania;
- provides for consistent water licensing arrangements for all types of users, including the establishment of special licences for large generators of electricity, such as Hydro Tasmania, and other major water users;
- facilitates trading in water entitlements;
- provides for the formal allocation of water to the environment (ie environmental flows);
- provides for the development of water management plans; and
- sets out the procedures for dealing with applications for dam permits.

## 3.2 Sources of water

Whilst Tasmania has only 0.9 per cent of Australia's land area and supports around 2.2 per cent of the population, the State has 12 per cent of the Nation's total freshwater resources. This represents a significant comparative advantage for the State.

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

### ① Water volumes

kL kilolitres = 1 000 litres

ML megalitres = 1 000 000 litres

GL gigalitres = 1 000 000 000 litres

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

## 3.3 Water resource allocation and usage

Water licensing and allocation in Tasmania provides for water to be allocated to specific uses, with irrigation, commercial (including industrial and mining), aquaculture and urban water being the major allocation classes. The total water allocations across the State for each of these classes in 2014-15 were:

- Irrigation 780 167 ML;
- Aquaculture<sup>3</sup> 419 901 ML;
- Urban Water 213 599 ML;
- Commercial<sup>4</sup> 115 348 ML; and
- Mining<sup>5</sup> 32 466 ML.

Water allocation figures provide an indication of potential demand for water from the various sectors but as water usage is not reported for Tasmanian allocations it is not possible to view actual demand from the water licence information. The Australian Bureau of Statistics (ABS) has published a National Water Account for 2013-14<sup>6</sup> which details the water extraction and consumption for each sector in each state and territory. These figures show that water use for the major sectors for Tasmania in 2013-14 was as follows:

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

<sup>2</sup> Audit Advisory Council 2001, *National Land and Water Resources Audit 1997-2002* in Tasmanian Planning Commission 2009, *State of the Environment Tasmania* 2009.

<sup>3</sup> The majority of water extracted for Aquaculture use is returned to the water source.

<sup>4</sup> Includes mining and mineral extraction.

<sup>5</sup> Estimated from DPIPWE allocation data.

<sup>6</sup> ABS 4610.0 *Water Account, Australia 2013-14*, November 2015.

- Agriculture 234 822 ML;
- Aquaculture<sup>7</sup> 434 ML;
- Urban Water 56 531 ML;
- Commercial<sup>8</sup> 30 358 ML; and
- Mining<sup>9</sup> not reported.

Whilst the ABS consumption figures are not directly comparable with DPIPWE's allocation figures, they do provide a useful indication of water demand versus water allocation. The water consumption for 2013-14 shows that the level of state-wide demand for water is adequately covered by the volumes of water allocated; the aquaculture sector was the only one to use more than half of its allocation, although most of that use was in-stream use rather than consumption. Although the water allocated exceeds water consumption at the state-wide level there are many catchments around the State that are resource constrained during different periods of the year or on an ongoing basis.

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

Urban use of groundwater accounts for only a very small portion of the estimated total groundwater usage and only around 0.3 per cent of reticulated drinking water.

During 2014-15 only 248 ML of groundwater was extracted for use in reticulated supplies, all of which was utilised in the northern and north-western regions of the State. The 2014-15 total represents an increase of 140 ML from 2013-14 (167 ML) in the use of groundwater for reticulated supplies. This represents a return to levels of groundwater usage for urban reticulated supplies that is similar to those recorded in 2012-13 (275 ML).

Rain water tanks represent another important source of water for many Tasmanian households. Approximately 22 per cent of Tasmanian households have rain water tanks as their primary source of drinking water.<sup>10</sup> Approximately 85 per cent of Tasmanian households receive reticulated water services compared with the national average of 93 per cent. The jurisdiction with the next lowest proportion of households that receive a reticulated water service is Queensland with 89 per cent. This trend reflects, amongst other things, that Tasmania's population is relatively small and the most dispersed of all jurisdictions. It may, therefore, be expensive to provide reticulated water services to some areas.

During 2014-15 virtually all urban water in Tasmania was supplied by TasWater, sourcing 73 542 ML. Urban water in Tasmania was not sourced from desalination or

<sup>7</sup> The Tasmanian aquaculture industry used 516 936 ML but almost all of this water was used in-stream. The industry consumed only 434 ML of water during 2013-14.

<sup>8</sup> Commercial is made up of self-extracted water usage figures for the manufacturing and "other" industry classifications from the *Water Account, Australia 2013-14*.

<sup>9</sup> Comparable allocation and consumption figures for the mining sector are not available. ABS data includes a significant mine de-watering component which is not separately reported as an allocation is not issued.

<sup>10</sup> ABS 4602.0.55.033, Environmental Issues: Water Use and Conservation, March 2013.

recycled water, although TasWater did use recycled water for some non-drinking uses (see section 3.5 of this report).

For this Report, urban water supplied does not include irrigation water or private supply systems. Total urban water supplied is the total metered volume of water (both drinking water quality and non-drinking water quality) supplied to customers during 2014-15 plus estimated non-metered water supplied. The total water supplied comprises the sum of residential, commercial, municipal, industrial and other water supplied.

TasWater provided a detailed breakdown of water supplied to residential and non-residential customers<sup>11</sup> for 2014-15 as follows:

- residential customers were supplied with 30 726 ML of water; and
- commercial, municipal and industrial customers were supplied with 22 017 ML of water.

The total amount of urban water supplied in 2014-15 was 54 592 ML, which is a total of residential and commercial customer consumption with the remaining 1 849 ML being supplied for other uses. This volume was delivered to around 200 500 property connections across residential and non-residential customers.

The average annual consumption per connection across the State in 2014-15 was 272 kilolitres (kL). This was very similar to the average for 2013-14, when the average annual consumption was 269 kL.

The average annual consumption per residential connection across the State declined, with consumption falling marginally from 179 kL in 2013-14 to 172 kL in 2014-15. The level of average residential consumption per connection has fallen significantly over the past five years from 225 kL in 2010-11 to 172 kL in 2014-15. This is a 24 per cent decline over the five year period.

The steady decline in average consumption per connection is likely to be due to a number of factors, including:

- variations in rainfall for the State between the years, which influences household demand for outside water usage;
- the state-wide roll-out of water meters raising consumers' awareness of their consumption levels; and
- the improvement in the quality of the data collection relating to water consumption with the state-wide introduction of water meters.

Figure 3.1 shows the average annual volumes of residential water supplied by major utilities (100 000 or more connected properties) across Australia during 2014-15 together with the average volume of water supplied by providers in this category.

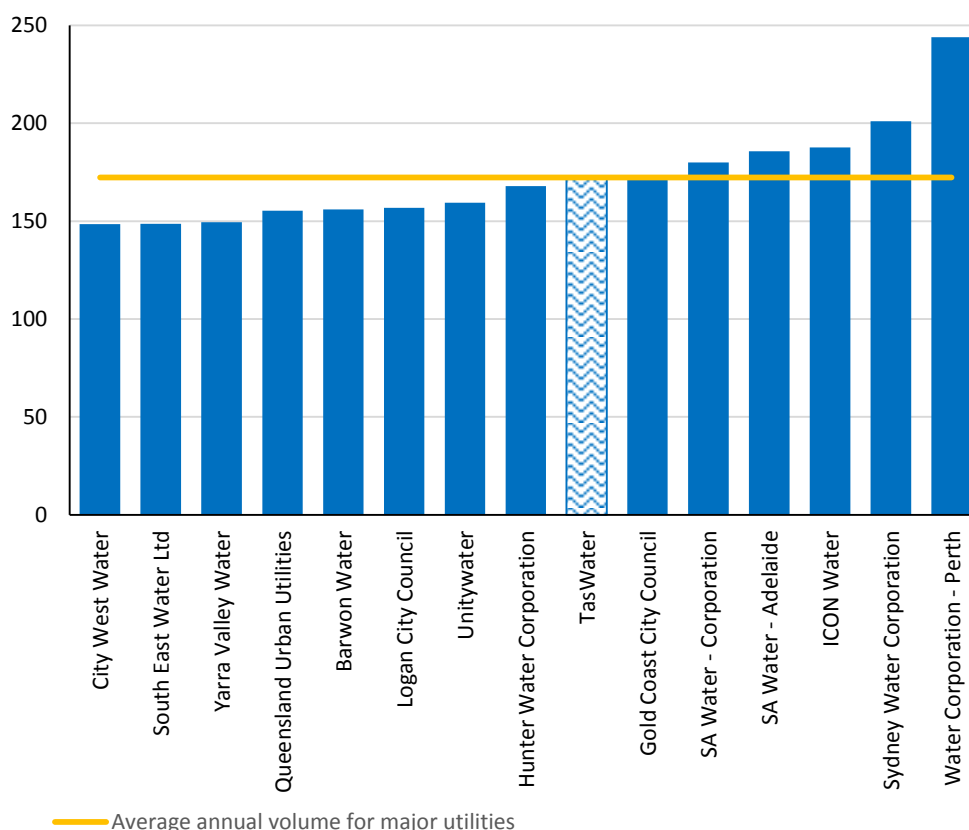
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<sup>11</sup> Non-residential customers include all commercial, industrial and municipal users.



TasWater's average residential consumption of 172 kL per residence was equal to the average residential consumption for major water utilities in 2014-15.

**Figure 3.1 Average annual residential water supplied (kL/property) – major utilities (large)**



Source: Bureau of Meteorology, *National performance report 2014-15: urban water utilities*

### 3.4 Supply and demand balance of water

This section assesses the current supply and demand balance for drinking water in Tasmania, within the constraints of the available data.

For urban water, the data constraints mean that a comparison between the annual water allocation and annual water consumption in Tasmania only can be made.

The licensed annual water allocations are used as a measure of 'water supply', for water across the State, categorised according to surety levels. The surety levels indicate the level of certainty with which a water allocation can be expected to be available for extraction. Surety level 1 is the most secure and reliable allocation and surety level 8 is the least secure. In 2014-15, TasWater had approximately two thirds of its allocations at surety level 1 with the remainder at surety level 5. The water allocations provide a reasonably accurate picture of Tasmania's current potential raw water supply for urban use.

In terms of demand, consumption data is a reasonable proxy measure. However, it does not capture the number of people/properties that demand water but do not receive it. Nor does it account for the impact that any water restrictions may have on usage or the difference between the quality of water demanded and received.

Since 2011-12 water meters have been installed at almost all properties in Tasmania, meaning that consumption data is now available across the State. This data is compared with water allocation data to provide an indicative picture of the current water supply and demand balance, which is shown in Table 3.1.

While this analysis suggests that water supply is generally sufficient to satisfy demand this ignores any seasonal impact from variations in raw water availability and the availability at a more disaggregated level. The production and delivery capacity of the supply systems which could restrict the volume supplied to be less than the volume demanded is not reflected in this analysis nor is the quality of water supplied.

**Table 3.1 Comparison of water allocations and urban water consumption, 2011-12 to 2014-15**

Year	Total allocation (ML)	Total consumption (ML)	Percentage consumed
2011-12	192 991	54 538	28
2012-13	192 991	60 429	31
2013-14	208 039	53 934	26
2014-15	213 599	54 592	26

### 3.5 Wastewater production

Treated wastewater can be considered as an alternative water supply. In Tasmania, treated wastewater is primarily discharged to the environment (waterways) with only a small proportion (less than 10 per cent) recycled for agricultural and municipal uses. Section 3.5 contains further information about recycled water.

In 2014-15, 81 Level 2 wastewater treatment plants (WWTPs) operated in Tasmania, with 78<sup>12</sup> operated by TasWater and three<sup>13</sup> operated by State Government agencies and authorities. Each WWTP has a permitted or licensed maximum discharge specified in kilolitres per day and based on average dry weather flow (ADWF). Table 3.2 shows the combined maximum flow limits for all WWTPs, together with the combined actual flows reported for all WWTPs during 2014-15.

In addition to Level 2 WWTPs, 33 Level 1 WWTPs (flow rate <100 kL/day) serviced smaller towns throughout regional and rural areas of the State in 2014-15. These assets are further discussed in Chapter 4. Level 1 WWTPs are currently regulated by local councils which are not required to report flow or other environmental data to State Government agencies. The number of connections and customers serviced by Level 1 WWTPs is also currently not reported.

<sup>12</sup> Includes Penna WWTP. Whilst this plant is licensed, it is classified as a holding lagoon rather than a treatment plant.

<sup>13</sup> The three non-TasWater WWTPs were operated by the Parks & Wildlife Service (Ben Lomond and Lake St Clair National Parks) and the Port Arthur Historical Site Management Authority.

**Table 3.2 Level 2 WWTPs - comparison of actual flows to average dry weather flow licence limits, 2011-12 to 2014-15**

Year	Total average dry weather flow licensed limits (kL/day) Note 1	Total actual flows (kL/day)	Total number of WWTPs Notes 3,4	No. of WWTPs reporting flow data	Proportion of WWTPs exceeding licensed average dry weather flow limit Note 2
2011-12	188 349	147 357	78	77	24/78
2012-13	188 863	134 885	78	78	13/78
2013-14	188 863	155 391	77	77	27/77
2014-15	187 893	139 386	77	77	12/77

Source: EPA WWTP database.

- Notes:
1. Combined average dry weather flow licensed limits for all WWTPs.
  2. Based on actual flow compared with average dry weather flow limits for those WWTPs for which flow data was available.
  3. Penna WWTP is excluded as it is classified as a holding lagoon not a treatment plant.
  4. Taroona WWTP decommissioned during 2013-14.

Since management of water and sewerage services was transferred from councils, the collection and provision of inflow data has improved markedly. In recent years, inflow data has been reported for all Level 2 WWTPs owned by TasWater.

In 2014-15, the total volume of sewage collected across the State was 51 009 ML. The average volume of sewage collected (residential and non-residential) was 289 kL per property, which is lower than the volume reported for 2013-14 (362 kL) but similar to that reported for the 2012-13 reporting period (294 kL).

There is generally considerable variation in the average volume of sewage collected per connection from year to year. This variation can be explained by one or more of the following:

- data quality issues;
- ingress of stormwater to the sewer networks; or
- the treatment of trade waste.

A more detailed discussion of the sewerage infrastructure in the State can be found in Chapter 4 of this Report.

### 3.6 Recycled water uses

Recycled water is water that has been extracted through the process of treating wastewater. Recycled water can be utilised on-site, or used for off-site applications, including irrigation of agricultural or recreational land or providing water for industrial processes.

In Tasmania treated wastewater is primarily discharged to waterways and only a small proportion (less than 10 per cent) is recycled. In other jurisdictions, particularly those experiencing water shortages, wastewater is increasingly being regarded as a valuable resource, and recycling uptake rates are therefore higher than in Tasmania.

Table 3.3 shows the volume of recycled water used per annum in Tasmania and the percentage of total treated effluent volume which has been recycled each year over the last five years. The figures indicate that after reaching a peak of 5 239 ML in 2013-14, the volume of effluent beneficially reused reduced slightly in 2014-15 despite drier climatic conditions favouring irrigation reuse. This highlights that while one new reuse scheme was commissioned in recent years (Beaconsfield), overall there has been little structural investment in this area to facilitate an expansion of reuse as an alternative to the continued discharge to waters.

**Table 3.3 Volume of Recycled Water and percentage of total treated effluent reused**

Year	Total volume of effluent recycled (ML)	Percentage of treated effluent recycled
2010-11	3 906	6.60
2011-12	3 520	6.50
2012-13	4 147	8.50
2013-14	5 239	9.40 <sup>14</sup>
2014-15	4 814	9.40

The Clarence Recycled Water Scheme continued to be the largest in the State based on the volume of treated effluent recycled. The scheme provides recycled water to the Coal Valley for a variety of uses including irrigation of agricultural and horticultural crops and golf courses. However, the volume of treated effluent supplied through this scheme was significantly lower in 2014-15 than in the previous year (1 952 ML compared with 2 311 ML in 2013-14).

The second largest scheme was the Brighton/Bridgewater scheme, which provided 707 ML of recycled water during 2014-15, within the same range as in previous years. The third largest recycled water scheme in the State was the Sorell/Midway Point scheme which supplied 276 ML during 2014-15, similar to the previous two years.

TasWater also operated a number of single user reuse schemes across the State. The largest of these in 2014-15 were the Legana, Perth and Beauty Point WWTP reuse schemes, all of which achieved reuse volumes of over 100 ML/year. In addition, the Railton WWTP reuse scheme in the North-West of the State achieved approximately 150 ML reuse volume in 2014-15. TasWater reported that there was no discharge from this WWTP to the receiving waterway throughout the year.

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

### **3.8 Supply and demand balance of wastewater**

This section assesses the current supply and demand balance for wastewater in Tasmania. A balance can be determined by assessing the regulated supply capacity of the WWTPs against the demand for sewerage services by those connected to the system. However, it should be noted there are limitations to this approach due to constraints of the available data for measured sewage flow.

The limits specified in the environmental conditions for the WWTPs relate to Average Dry Weather Flow (ADWF) conditions. ADWF does not capture periods of peak flow during or after periods of precipitation which results in groundwater infiltration or stormwater ingress into the reticulation system. Consequently, ADWF will generally be less than average flows for a WWTP. Reporting of treatment plant flow generally does not differentiate between flow conditions (average flow versus peak flow). Therefore, a true comparison against the ADWF limit is not possible. However, it is the best indicator available at this time and has been utilised to highlight potential supply and demand conflicts.

Appendix 4 lists all WWTPs operated by TasWater, their ADWF limits, measured average flows for 2014-15, and measured flow as a percentage of the ADWF limit for each WWTP.

The data indicates that average annual flows for 12 of TasWater's 78 WWTPs were greater than their ADWF limit in 2014-15. Of those, one exceeded ADWF by more than 100 per cent. However, there are unresolved questions around the accuracy of flow information for this WWTP. The remaining 11 WWTPs exceeded regulated capacity by between one per cent and 81 per cent.

Of the remaining WWTPs with average flow less than the ADWF limit, 19 operated at more than 75 per cent of regulated capacity with five of those plants reporting daily flows at or above 90 per cent of ADWF. 30 WWTPs averaged flows at between 50 per cent and 75 per cent of ADWF, whilst the remaining 15 WWTPs reported daily flow rates of less than half of ADWF.

Whilst lack of data restricts the nature of the analysis, this assessment of the supply and demand balance for sewerage services in Tasmania indicates that each regional area has locations in which demand for sewerage services exceeds supply. This is in addition to widespread non-compliance, as outlined in Chapter 7, which also indicates that existing infrastructure is not adequately coping with current demand.



## 4 INDUSTRY INFRASTRUCTURE

This Chapter provides information on the water and sewerage networks, the condition of assets and the reliability and efficiency of systems. The type and condition of water and sewerage assets impacts on the level and quality of services to customers.

Figure 1.1 in Chapter 1 depicts the urban water cycle and the type of infrastructure used to deliver water and remove waste water in urban areas.

### 4.1 Water assets

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

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

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

#### 4.1.1 Water supply systems and treatment plants

A WTP is an individual facility receiving raw or partially treated water for treatment and ultimate delivery to customers and does not include secondary or booster disinfection plants. There may be more than one WTP at a specific location. TasWater is required to report the level and complexity of treatment provided to bring water quality to an acceptable level for the customer. The information in these reports can, therefore, also explain the basis for TasWater's relative operating costs.

There are three broad categories of WTP:

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

odour, softening, pH correction and the targeted removal of elements and compounds such as iron, manganese, nitrates and pesticides.

Table 4.1 provides details of the number and type of WTPs operated by TasWater during 2014-15.

**Table 4.1 Number of water treatment plants in Tasmania**

Disinfection only WTPs	Further treatment WTPs	Full treatment WTPs	Total WTPs
12	1	43	56

Note: For analysis of the quality of water supplied, see Chapter 6 (Public Health) of this Report.

During 2014-15 TasWater operated 88 water supply schemes<sup>1</sup>, supplying a total of 446 785 consumers.

TasWater spent around \$50.3 million in capital works on its water infrastructure during the period, with major projects focusing on improving the quality of drinking water in towns previously subject to temporary boil water alerts.

Major capital projects completed during 2014-15 included:

- upgrades to the Ellendale WTP resulting in the removal of the Boil Water Alert;
- construction of a new WTP servicing the Ouse and Hamilton water supply systems providing fully treated water; and
- construction of the new Fingal WTP.

Major projects commenced by TasWater during 2014-15 are outlined in Chapter 9 (Priorities for Improving Performance) of this Report.

#### 4.1.2 Storage dams

TasWater is responsible for the operation and maintenance of a number of water supply and wastewater dams throughout Tasmania. All dams in Tasmania must be maintained and operated in accordance with the *Water Management Act 1999* and the *Water Management (Safety of Dams) Regulations 2015*.

Owners of dams have a legal obligation to maintain and operate them so as not to cause significant environmental harm or present a danger to the public. The procedures required and standards to be met to achieve these objectives are largely based on the guidelines produced by the Australian National Committee on Large Dams (ANCOLD) and other policy and guidelines produced by DPIPWE.

<sup>1</sup> A water supply system is a unique system for the extraction and preparation of water for distribution via the water supply network.



ANCOLD guidelines are based on the relative risk posed by a particular dam if there was to be a catastrophic failure of the dam. Each dam is assessed for its severity of damage and loss and potential population at risk, once assessed under ANCOLD guidelines each dam is assigned a consequence category. The risk posed by a dam is assessed against three major considerations:

- the potential population placed at risk by the 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.

The consequence category of each dam can be assigned to one of seven levels (Table 4.2) through a structured process provided by ANCOLD.

**Table 4.2 ANCOLD Guidelines consequence category for dams**

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

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

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

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

All dams with a consequence category of "Significant" or higher require comprehensive surveillance inspections, and 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. TasWater owns and operates in the order of 200 water and wastewater dams, lagoons and weirs around the state. Of these 36 are identified as having a consequence category of "Significant" or higher, due to their size, environmental impacts or proximity to the population they service. The remaining dams and storages are assessed as a low or very low risk.

In addition to the higher consequence category dams that TasWater inherited from the three regional water and sewerage corporations, a number of low risk dams and storages have also required significant levels of modification or maintenance to substantially reduce their risk of failure or to meet other operational requirements. As part of TasWater's dam assessment program the corporation has undertaken a review of the required maintenance for each dam and included this in its dam works programs.

The terminology used in Dam Safety Assessments is set out in Appendix 3.

In response to a written requirement issued by DPIPWE in 2012, TasWater prepared a Dam Safety Management Plan (DSMP) during 2013-14 for those dam assets considered to pose a risk to human life if they were to suffer a catastrophic failure. Since then, the 2014-15 DSMP was provided to DPIPWE for review in August 2015 and was subsequently approved.

During 2014-15 TasWater reported that it undertook a range of dam safety management activities aimed at maintaining and improving the risk position of its portfolio of dams. A number of the activities undertaken during the year were aimed at providing an interim reduction in the level of risk posed by dams that are classified as having high risk profiles. These activities included reducing the water storage level of a number of dams and keeping the outlet and scour valves of some dams fully open to dewater the dams.

In addition to the interim risk reduction works undertaken, routine inspections, surveys and studies in accordance with the ANCOLD guidelines were carried out on all of TasWater's dam assets that have a consequence category of "Significant" or higher.

Of particular note, TasWater applied, and received approval from the Assessment Committee for Dam Construction (ACDC), for dam works permits to decommission two high risk dams (both High C consequence category dams) located at Queenstown, the Roaring Meg and Cutten Street No. 3 dams. The works to decommission and remediate both dam sites were completed in April 2015. It is anticipated that the decommissioning of these two dams will be the first of a number of such projects across the state to decommission dams that have a high consequence category and are no longer operationally required by TasWater.

Table 4.3 details TasWater's storage dams with "Significant" or higher consequence category as set out in TasWater's DSMP.

**Table 4.3 TasWater's Significant or higher consequence category dams in Tasmania**

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

### 4.1.3 Other water assets

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

Table 4.4 summarises the other water infrastructure assets in Tasmania. The total length of water mains includes all transfer, distribution, reticulation mains and recycled water distribution and reticulation mains delivering water for urban areas.

**Table 4.4 Other water assets owned by TasWater as at 30 June 2015**

Number of water pumping stations	Number of water distribution storage facilities	Length of water mains (km)
225	292	6 186

The length of water mains and properties serviced per kilometre of water main indicates the scale of TasWater's water mains network and the spatial density and distribution of properties served.

In 2014-15 the length of the water network increased by four percent compared to 2013-14, with an average customer density of 32 properties per km of main. Compared to other large mainland water utilities TasWater's customer density is relatively low, owing to the regional nature of much of the network's service area. Urban water networks on the mainland typically service around 50 properties per km of water main.

## 4.2 Sewerage assets

Sewerage assets include wastewater treatment plants (WWTPs), pumping stations<sup>2</sup>, sewer mains and effluent outfalls<sup>3</sup>. Performance indicators for these infrastructure elements relate to their number, density, length and operational performance.

### 4.2.1 Wastewater treatment plants

Nearly every major township in Tasmania has reticulated sewerage and an associated WWTP. WWTPs discharge to waterways and to effluent recycling schemes. Treatment levels and receiving environments are discussed in more detail in Chapter 7 of this Report.

Table 4.5 summarises the sewerage assets operated by TasWater during 2014-15.

<sup>2</sup> Sewage pumping stations pump sewage from low points in the reticulation system to facilitate the passage of sewage to the wastewater treatment plant.

<sup>3</sup> An effluent outfall is the outlet of a drain or a sewer where it discharges into another body of water, usually a lake, river or the sea.

**Table 4.5 Sewerage assets operated by TasWater as at 30 June 2015**

Sewage pumping stations	Length of sewerage mains and channels (km)	Level 1 WWTPs	Level 2 WWTPs	Total number of WWTPs
745	4 754	33	78	111

In addition to the 78 Level 2 WWTPs operated by TasWater during 2014-15, three Level 2 WWTPs were owned by a government agency or authority, including the Tasmanian Parks and Wildlife Service.

Where reticulated sewerage services are not available, wastewater is often treated on site by means of septic tanks or package treatment plants, with effluent disposal to soil absorption systems rather than to surface waters. On-site systems need to be designed and constructed in accordance with the provisions of the Tasmanian Plumbing Code and require council approval.

TasWater spent around \$52 million in capital works on its sewerage infrastructure during 2014-15, with major projects focusing on upgrading plants and complying with environmental requirements.

Major capital projects progressed during the period included:

- construction of a new WWTP and sewer pipeline at Rosebery;
- upgrades to a number of sewage pump stations; and
- commissioning of additional odour control facilities at Rosny.

Major projects commenced by TasWater during 2014-15 are outlined in Chapter 9.

Table 4.6 provides a breakdown of the Level 2 WWTPs that operated in Tasmania during 2014-15, by treatment level. As shown, the majority of Level 2 WWTPs provided secondary treatment of wastewater. The only primary treatment WWTP was located at Pardoe Downs in East Devonport.

**Table 4.6 Number of Level 2 WWTPs operated by TasWater (by treatment level<sup>4</sup>)**

Primary	Secondary	Tertiary
1	67	10

Further discussion on sewage treatment levels can be found in Chapter 7 of this Report.

<sup>4</sup> Primary treatment involves screening the solids from the water and allowing a proportion of the suspended solids and organic matter to settle from the wastewater. Secondary treatment takes primary treated effluent and, with the aid of mechanical 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. The main aim is to remove nutrients such as nitrogen and phosphorus and further reduce the remaining organic material and harmful micro-organisms in the secondary treated effluent.

The number of properties served per kilometre of sewer main gives an indication of the scale of the TasWater's sewerage network and the spatial density and distribution of properties serviced.

In 2014-15, there were on average 37 properties serviced per kilometre of sewer main. This is lower than for most major mainland utilities, which would usually service around 55 properties per kilometre of sewer main.<sup>5</sup>

#### 4.2.2 Recycled water treatment plants

The definition of a 'recycled' WTP under the NPR Framework takes into account two factors. Firstly, a facility is only included as a recycled WTP if additional treatment processes are required to bring effluent quality to a level appropriate for recycling. Secondly, if the treatment plant has a dual purpose (used both as a sewage treatment plant and as a recycled WTP), the plant is classified based on its predominant use (ie more than 50 per cent). Predominant usage may change over time due to upgrades or variations in demand.

Effluent recycling schemes in Tasmania typically involve the irrigation of golf courses, agricultural land (eg pasture, seed crops) and municipal recreational areas. These uses require the wastewater to meet 'Class B' quality standard as specified in the *Tasmanian environmental guidelines for the use of recycled water in Tasmania*.<sup>6</sup>

The level of treatment required for discharge to waters is usually of an equal or higher standard than would be required to meet 'Class B' reuse requirements. As a consequence, WWTP upgrading is generally not necessary in order to achieve effluent quality suitable for recycling. However, there are currently two exceptions. The Rokeby and Rosny WWTPs have been retrofitted with special helminth<sup>7</sup> filters to complement existing treatment processes and to provide for discharge to reuse.

While Rokeby and Rosny are the only Tasmanian WWTPs which meet the strict NPR definition of recycled WTPs, Table 4.7 categorises the Level 2 WWTPs operated by TasWater according to whether full reuse, partial reuse or no reuse of treated wastewater occurred over the last five financial years. To provide greater consistency with the relevant NPR measures, the partial reuse schemes were further divided into those achieving less than 50 per cent, and greater than 50 per cent, effluent recycling. Schemes are classified each year based on the actual recycling percentages achieved.

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<sup>5</sup> *National Performance Report 2014-15: urban water utilities.*

<sup>6</sup> 'Class A' quality criteria specified in the Guidelines would be relevant for recycled water used to irrigate crops intended for raw consumption, non-potable domestic uses (e.g. toilet flushing) or groundwater recharge. Currently there isn't any operating effluent recycling scheme associated with any Tasmanian Level 2 WWTPs which requires 'Class A' quality wastewater.

<sup>7</sup> Helminths are parasitic worms.

**Table 4.7 Classification of reuse schemes associated with Level 2 WWTPs**

	Tasmanian reuse category				Recycled WTPs (More than 50% reuse)
	Full	Partial (>50% recycled)	Partial (<50% recycled)	None	
2010-11	6	12	14	47	18
2011-12	5	13	16	45	18
2012-13	8	17	12	42	25
2013-14	7	19	11	42	26
2014-15	10	18	7	43	28

A positive development highlighted in Table 4.7 is that the number of WWTPs associated with full reuse schemes increased in 2014-15 even though the total volume of reuse effluent declined slightly in the same period. This is due to the fact that some of the smaller schemes avoided discharge to waters entirely, mainly as a result of dry climatic conditions. In 2014-15, Bothwell, Campbell Town, Cressy and Railton WWTPs changed status from partial to full reuse. There is a corresponding decrease in the number of schemes with <50 per cent recycled water due to redistribution to the higher proportion reuse categories.

Table A4.3 in Appendix 4 lists the proportion of effluent reused and reuse flow per year for each Level 2 WWTP between 2010-11 and 2014-15.

### 4.3 Performance of water and sewerage infrastructure

Water supply network reliability is measured by the frequency of interruptions, as indicated by the number of water main breaks per 100 kilometres of water main. Water loss and leakage (eg the volume of water that does not reach customers due to leaking pipes) are also used to gauge system reliability.

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

Reliability standards are listed in the Economic Regulator's Customer Service Code, which is discussed in Chapter 2.

TasWater concedes that the quality of its performance data remains relatively poor. This creates a challenge for TasWater with respect to understanding the underlying performance and condition of its assets, particularly given many of these assets are not meeting the standards required by the relevant regulator.

#### 4.3.1 Water main breaks

A water supply interruption is an event that causes a total loss of water supply to customers. The factors affecting the frequency of interruptions include soil type, rainfall, pipe material and the age and condition of the network. Water main breaks are the primary cause of supply interruptions for the reticulated water network.

Table 4.8 shows the number of water main breaks per 100 kilometres of water main reported by TasWater. In 2014-15 the average rate of bursts and leaks across the

State was 28 per 100 kilometres of water main, with a higher incidence of events occurring in the south of the State.

**Table 4.8 Water main breaks (per 100 km of water main)**

	<b>Water main breaks (per 100 km of water main)</b>
2010-11	56.1
2011-12	34.4
2012-13	47.5
2013-14	34.6 <sup>note 1</sup>
2014-15	28.3

Note 1: rate of 9.1 breaks per 100 km was erroneously reported in 2013-14.

For comparative purposes the average water main breaks for mainland major water utilities was around 20 per 100 kilometres of water main. However, due to concerns about the reliability of TasWater's data, it is difficult to assess TasWater against its mainland counterparts in terms of this performance indicator.

Depending on the location of the break or fault, one unplanned interruption may affect one or many customers. Interruptions to water supply affected a total of 33 352 customers in 2014-15, with more than half (18 270 customers) located in the southern region where there is a greater population density. This means that around 166 in 1 000 properties (16 per cent of customers) across Tasmania experienced an unplanned interruption to their water supply in 2014-15.

Table 4.9 shows that the number of unplanned interruptions to water supply and the number of customers affected has increased year on year (an unplanned interruption is often the result of a water main break).

**Table 4.9 Unplanned water interruptions**

	<b>Number of unplanned interruptions</b>	<b>Number of customers affected</b>
2012-13	3 513	23 382
2013-14	4 451	28 286
2014-15	6 007	33 352

However, while the number of unplanned interruptions appears to have increased significantly, TasWater believes that northern region data in 2012-13 was significantly under-reported. Further discussion on service interruptions and impacts on customers can be found in Chapter 5.

#### **4.3.2 Water loss**

Eliminating leaks and other unaccounted for water losses is an effective way of saving water. With regular maintenance, replacement and waste detection systems, the amount of water lost through leakage can be significantly reduced.

Water losses in the distribution system can be classified as either apparent losses (unauthorised consumption, retail metering errors) or real losses (leakage and



overflows from mains, service reservoirs and service connections prior to customer meters).

Real losses per service connection per day indicate how effectively the network is being managed. This measure is influenced by water pressure, condition or age of the infrastructure, or a combination of all these factors. Real losses represent a wasted resource, reduce the effective capacity of a water supply system and may result in unnecessary operating costs.

TasWater estimates that losses in the reticulation networks are in the order of 225 litres per service connection per day and seven kilolitres per km of water main per day. This level of water loss equates to around 20 per cent of the total water sourced by TasWater.

### **4.3.3 Sewer main breaks and chokes**

The number of breaks and chokes in the sewer main indicates both the level of customer service and the condition of the sewerage network. A break or leak is a failure of the sewer main which results in an interruption to the sewerage service.

A choke is a partial or total blockage that may or may not result in a spill from the sewer system to the external environment. A sewage spill may occur as a result of a blockage or the sewer's inability to handle the volume of sewage, particularly at times of high rainfall, or if the wastewater treatment plant is operating at capacity.

A range of external factors can influence sewer performance, particularly fats and tree roots in the sewers, as well as the asset management practices of service providers. Soil type may also affect performance, such as in areas with reactive clay soils as these soils are subject to expansion and contraction depending on seasonal weather and site conditions. Also, dry weather conditions can cause tree roots to enter the sewer in search of water, compromising sewer performance. Age of the infrastructure, type of materials, seasonal conditions and asset maintenance programs also influence sewer performance and need to be considered when comparing performance across regional areas.

Across its sewerage system in 2014-15, TasWater reported approximately 2 710 sewer main breaks and chokes, which is more than the 2 244 breaks and chokes reported in 2013-14. As with previous years, a considerable number of breaks occurred in the southern region.

Reliability of the sewerage network is measured by the frequency of service failure, as indicated by the rate of sewer breaks and chokes per 100 kilometres of sewer main (Table 4.10). This measure does not include sewer breaks and chokes that occur within property connections.

TasWater's performance of 57 breaks and chokes per 100 kilometres in 2014-15 appears to be in line with previous years but still quite above the expected standard of 28 per 100 km. By comparison, the national average for similarly sized utilities interstate was 30 breaks and chokes per 100 kilometres of sewer main<sup>8</sup>.

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<sup>8</sup> National Performance Report 2014-15: urban water utilities (indicator A14).

**Table 4.10 Sewerage mains breaks and chokes**

	<b>Total number of breaks and chokes (sewerage mains only)</b>	<b>Sewerage mains breaks and chokes (per 100km sewer main)</b>
2010-11	2 619	56
2011-12	2 723	57
2012-13	2 669	56
2013-14	2 244	50
2014-15	2 710	57

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

#### **4.3.4 Property connection sewer breaks and chokes**

The property connection is a short sewer owned and operated by TasWater, which connects the sewer main and the customer's property at the inspection opening. TasWater measures breaks and chokes in property connections and report it as a measure per 1 000 connected properties.

The rate of property connection sewer breaks and chokes reported for 2014-15 was 20 per 1 000 property connections. This is an improvement on the previous year (31 per 1 000 property connections) although is still high compared to other water utilities on the mainland. The national average for similarly sized urban water utilities around Australia is around six breaks per 1 000 properties<sup>9</sup>.

Details of capital projects planned and in progress across the State to improve infrastructure performance can be found in Chapter 9.

## **4.4 Sewer overflows**

An overflow occurs when untreated sewage spills or discharges from the sewerage system (ie pumping stations, pipes, maintenance holes or designed overflow structures) escape into the external environment. It includes sewer overflows in wet and dry weather as well as both contained and uncontained spills.

Sewer overflows may adversely impact on water quality, public health and ecosystem stability, particularly in the latter case when overflows occur in sensitive areas. It is, therefore, important to be aware of how frequently these overflows occur. The number of overflows may provide a guide as to the condition of the sewerage network and how effectively the network is being managed.

The sewerage reticulation network, including sewer mains and feeder lines, pumping stations, manholes, access holes and overflow structures does not form part of the Level 2 WWTP activity and is, therefore, not directly regulated by the Director, EPA. However, under section 32 of the EMPCA, TasWater must notify the EPA within 24 hours of becoming aware of a pollutant being released as a result of

<sup>9</sup> National Performance Report 2014-15: urban water utilities (indicator A15)

any incident including an emergency, accident or malfunction if this release causes or may cause an environmental nuisance.<sup>10</sup>

The information in this section is based on information provided by TasWater rather than information held by the EPA Division and the accuracy of the data has, therefore, not been independently verified.

The number of sewer overflows is calculated with reference to the length of the sewer mains and channels to give the average frequency of sewer overflows for the system per 100 km of sewer main as shown in Table 4.11.

**Table 4.11 Sewer overflows**

	<b>Number of sewer overflows reported</b>	<b>Sewer overflows (per 100 km of sewer main)</b>
2010-11	235	5.7
2011-12	173	3.7
2012-13	178	3.9
2013-14	645	14.3
2014-15	164	3.5

In 2014-15 TasWater reported 164 sewer overflows to the environmental regulator, the EPA. This equates to around 3.5 overflows per 100 km of sewer main. This appears to be an improvement compared to the previous year, however, in the past TasWater has identified issues with reporting against this indicator and therefore any results should be viewed with caution.

The rate of sewer overflows to the environment across Tasmania is high compared to the national average of around 0.5 per 100 kilometre of sewer main in 2014-15.<sup>11</sup>

Stormwater infiltration has in the past been identified as one of the main factors in the high frequency of sewer overflows in the Launceston City area. That is, the design and capacity of Launceston's combined sewerage/stormwater system, may lead to more overflows in times of high rainfall.

Environmental compliance is discussed further in Chapter 7.

<sup>10</sup> Section 32(2) of the EMPCA relates to Level 2 activities.

<sup>11</sup> *National Performance Report 2014-15: urban water utilities* (indicator E13).



## 5 CUSTOMER SERVICE

This Chapter outlines TasWater's customer service performance with respect to the operation of its call centre and management of complaints as well as the timeliness of its responses to service complaints and interruptions.

TasWater is required to meet the service standards and conditions of service and supply specified in the Customer Service Code (the Code). Details of these (transitional) standards and expectations for TasWater in 2014-15 are detailed in Chapter 2 and listed at Appendix 5.

In 2014-15 approximately 200 527 properties were connected to the water and sewerage network operated by TasWater, with residential customers making up around 90 per cent of connections.

### 5.1 Call centre performance

Call centres provide an important link between customers and TasWater and remains a popular way of doing business for many customers. In late 2014 TasWater moved from three regional call centres to a single virtual call centre so that customer calls can be answered from any call centre in the State.

TasWater's call centre performance is measured in terms of the time it takes an operator to answer a customer's call. TasWater's call centre operators are required to answer 90 per cent of calls (ie where the customer has selected a relevant operator option) within 30 seconds.

TasWater's call centre received 126 152 calls during 2014-15, 89 per cent of which were answered within the 30 second service target. Call volumes have decreased by six per cent compared to the previous year, with a drop in call volumes observed over the last four years. This is despite two major water outages in the greater Hobart region in 2015 which resulted in increased call volumes.

Overall, the responsiveness of the call centre indicates that while falling just short of its service target in 2014-15, TasWater has successfully lifted its performance in this area in the last two years.

TasWater is also required to report on the number of abandoned calls. In 2014-15 TasWater reported 2 991 abandoned calls, or 2.4 per cent of calls received. This is a significant improvement on the previous regional corporations' call centre performance (2012-13) when unsatisfactory levels of abandoned calls were reported.

## 5.2 Complaints

The number of customer complaints received by TasWater provides an indication of overall customer satisfaction and is also a useful tool for identifying issues of concern to customers.

TasWater's required customer service standard is less than nine complaints per 1 000 properties.

During 2014-15, TasWater received 2 324 complaints or 12 complaints per 1 000 properties which is over the target. The total number of complaints increased from the previous year by 77 per cent.

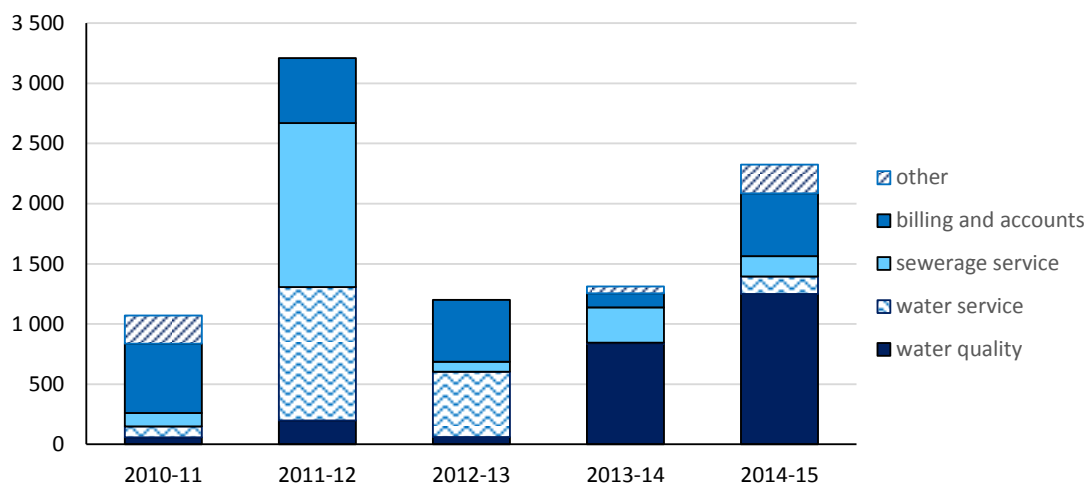
### ① Complaint (per Australian Standard ISO 2006)

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

TasWater has implemented new reporting processes since 2012-13 which has seen an improvement in the identification and management of complaints as well as the accuracy of categorisation and reporting.

Figure 5.1 summarises the complaints received by category over the last five years. As with the previous year, the majority (54 per cent) of complaints in 2014-15 were in relation to water quality. Approximately 34 per cent of those (water quality) complaints related specifically to the Hobart water taste and odour issue that occurred in February 2015.<sup>1</sup>

**Figure 5.1 Summary of complaints received by the regional corporations (2010-11 to 2012-13) and TasWater (2013-14, 2014-15)**



Notably, the number of billing and accounts related complaints returned to high levels in 2014-15, possibly due to the commencement of eBilling in 2015 which provides customers with the option of receiving their water accounts electronically.

<sup>1</sup> In February 2015 TasWater had more than 500 complaints about poor water quality from the Greater Hobart area. Testing identified low levels of methyl-isoborneol (MIB) and geosmin in the water, produced by the presence of algae in the raw water source.

TasWater reports that it is scoping a major project to amalgamate the three regional billing systems into a single state-wide system. This will enable billing to become more streamlined, for example moving to one bill per customer, rather than the current approach of one bill issued per property.

Overall 86 per cent of complaints were resolved within 10 business days for the year against a target of 80 per cent.

Customers whose complaints are not resolved through TasWater's customer complaints process may refer their complaint to the Ombudsman. TasWater has a target of having less than 0.5 complaints per 1 000 properties referred to the Tasmanian Ombudsman (the Ombudsman).

The Ombudsman reported<sup>2</sup> that it received 65 complaints regarding TasWater during 2014-15 which equates to 0.32 complaints per 1 000 properties. This continues the downward trend seen in the last two reporting periods, suggesting that complaints are being dealt with more effectively by TasWater, which now has front-line complaint handlers and only matters that have proved more difficult to resolve are forwarded to the Ombudsman.

### 5.3 Water supply interruptions

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

An unplanned interruption is measured from when TasWater is aware water is no longer available at a customer's first cold water tap until normal service has been restored. The average duration of unplanned interruptions is an indication of the condition of the water supply network and how effectively the network is operated and managed.

The frequency of unplanned water supply interruptions may be influenced by a number of factors including age, construction material, the condition of water mains and the type of soil in which pipes are laid.

Figure 5.2 shows the average frequency and duration of unplanned water supply interruptions over the last four years. In 2014-15 TasWater reported an incidence of 166 unplanned interruptions per 1 000 properties. The average rate reported by similar utilities on the mainland was around 150 unplanned interruptions per 1 000 properties in 2014-15<sup>3</sup>.

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<sup>2</sup> Ombudsman Tasmania Annual Report 2014-2015.

<sup>3</sup> Bureau of Meteorology, *National Performance Report: Urban Water Utilities 2014-15*.

In 2014-15, TasWater reported the average customer minutes off supply (duration of unplanned water supply interruptions) was 143 minutes while similar utilities on the mainland typically reported around 130 customer minutes off supply.

**Figure 5.2 Incidence and duration of unplanned water supply interruptions**

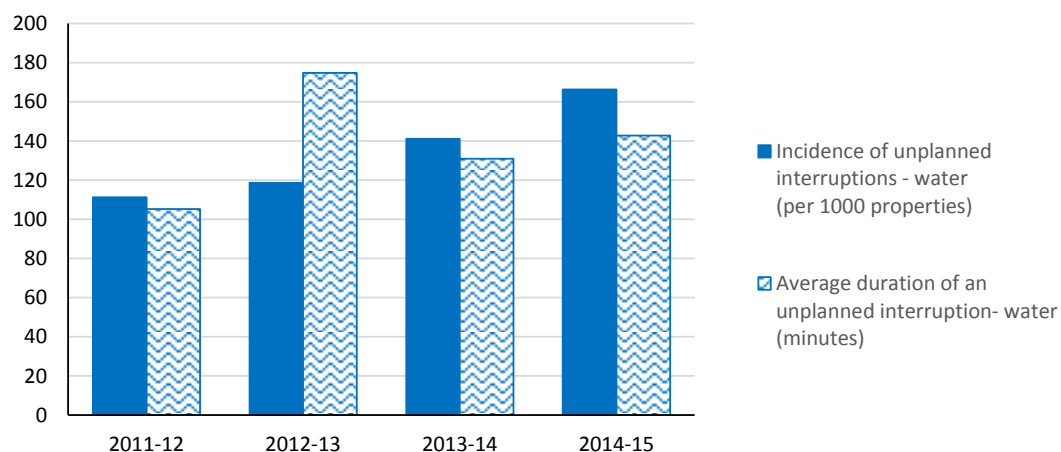


Table 5.1 shows the average duration of interruptions and customer minutes off supply for both planned and unplanned water interruptions, together with the transitional service standards for 2014-15 and for comparison, the minimum service standards targets for TasWater which are required to be met by 30 June 2018.

**Table 5.1 Duration of water supply interruptions**

	TasWater		North		North-west		South	
	CSC standard <sup>4</sup>	2014-15 Actual	RTS standard <sup>5</sup>	2014-15 Actual	RTS standard	2014-15 Actual	RTS standard	2014-15 Actual
<b>Planned interruptions</b>								
Average duration (minutes)	180	292	280	<b>175</b>	200	<b>195</b>	280	694
Average customer minutes off supply	15	<b>9</b>	30	<b>8</b>	30	<b>12</b>	30	<b>10</b>
Interruptions restored within five hours (%)	95	<b>95</b>	78	<b>93</b>	91	<b>94</b>	55	<b>99</b>
<b>Unplanned interruptions</b>								
Interruptions (per 100 km of water main)	32	97	38	79	68	133	39	93
Average duration (minutes)	100	143	170	<b>133</b>	170	<b>129</b>	170	<b>152</b>
Average customer minutes off supply	20	24	20	22	25	<b>16</b>	30	<b>28</b>
Interruptions restored within five hours (%)	98	97	80	<b>98</b>	95	<b>97</b>	80	<b>97</b>

Note: **Bolded** figures reflect those measures where TasWater has met the relevant service standard.

<sup>4</sup> Customer Service Code Minimum Standard.

<sup>5</sup> Regional Transitional Service Standard for 2014-15.



As shown in Table 5.1, the majority of transitional service standards for water interruptions were achieved during 2014-15. A high number of prolonged planned water outages in southern Tasmania in 2014-15 caused the average duration of planned outages in the region to exceed the service standard. However, response times to unplanned outages were satisfactory and expected to meet the service standards by the end of the regulatory period.

As with the previous year, TasWater did not meet the transitional standards for the number of interruptions per 100 km of water main in any region in 2014-15. However, all regions met the transitional standards for water service interruptions restored within five hours.

### 5.3.1 Bursts and leaks

TasWater also monitors water network bursts and leaks. These events are often attributable to failure of a pipe, hydrant, valve, fitting or joint material. A burst or leak may not necessarily result in loss of supply to the customer.

The average response time (minutes) to attend bursts and leaks, categorised by interruption priority against the transitional service standards, are shown in Table 5.2.

Bursts and leaks classified as priority 1 were generally attended to in 45 minutes or under in all regions, which was within the applicable transitional service standard.

#### ① Bursts and leaks – interruption priority categories

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

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

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

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

For priority 2 bursts and leaks the average response time varied between regions, though differed little from the previous year. The north western and northern regions reported 30 and 67 minutes respectively while the southern region reported 76 minutes on average to attend to priority 2 bursts and leaks. All priority 2 response times were within the transitional service target of 120 minutes.

**Table 5.2 Bursts and leaks, 2014-15**

	Average time taken to attend bursts and leaks (minutes)			2014-15 service standard (minutes)		
	Priority 1	Priority 2	Priority 3	Priority 1	Priority 2	Priority 3
TasWater	36	70	673	30	120	1 440
Northern region	44	67	415	55	120	1 440
North western region	23	30	209	45	120	1 440
Southern region	36	76	1 073	44	120	4 320

Priority 3 bursts and leaks have less stringent attendance targets, and all three regions met the applicable transitional service standards in 2014-15. The performance of the southern region's Priority 3 bursts and leaks response time has improved from 2013-14 when the installation of water meters was expected to impact performance.

Further discussion regarding network reliability in relation to customer supply can be found in Chapter 5. TasWater's performance against the minimum standards set out in the Code and the regionally based transitional service standards approved as part of the 2012 Price Determinations is listed in Appendix 5.

### 5.3.2 Sewerage service interruptions

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

During 2014-15, there were 2 014 sewer service interruptions, each of which lasted an average of 274 minutes (4.5 hours). This is significantly above the minimum service standard (150 minutes) and the typical performance level reported by similar utilities on the mainland (160 minutes). The average duration of sewerage interruptions over the past four years is shown in Figure 5.3.

**Figure 5.3 Average sewerage interruption (minutes)**

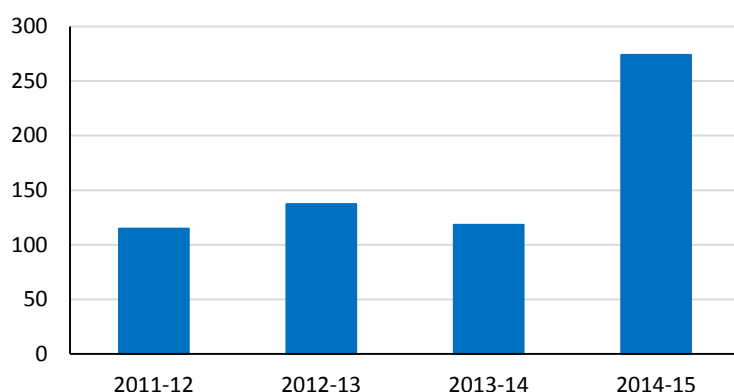


Table 5.3 shows the average duration of interruptions and customer minutes off supply for sewerage interruptions, together with the transitional service standards for 2014-15 and the minimum service standards targets which TasWater is required to meet by 30 June 2018.

**Table 5.3 Sewerage service interruptions (total and by region)**

	TasWater		North		North-west		South	
	CSC standard <sup>6</sup>	2014-15 Actual	RTS standard <sup>7</sup>	2014-15 Actual	RTS standard	2014-15 Actual	RTS standard	2014-15 Actual
Average time to attend breaks and chokes (minutes)	41	51	65	<b>56</b>	65	<b>32</b>	65	<b>53</b>
Average duration (minutes)	150	274	230	300	230	277	180	256
Spills contained within five hours (%)	99	98	90	<b>92</b>	97	<b>99</b>	93	<b>100</b>

Note: **Bolded** figures reflect those measures where TasWater has met the relevant service standard.

Table 5.3 shows that the transitional standard for the time to attend breaks and chokes was met in all regions. However, overall TasWater exceeded the attendance time standard specified in the Code. The interruptions restored within five hours targets were met for each region, and TasWater fell just short of the minimum service standards targets it is required to meet by 30 June 2018.

## 5.4 Customers with payment difficulties

TasWater is obliged to provide flexible payment options and to offer a hardship program to customers who are experiencing difficulty paying their bill.

Table 5.4 shows data for residential customers who have had difficulty paying their accounts over the last two years.

**Table 5.4 Residential customers with payment difficulties**

Category	2013-14		2014-15	
Residential customers repaying a debt	3 643		6 102	
Average debt for residential customers	\$1 861		\$1 017	
Customers on hardship program (concession customers)	159	(73)	139	(49)
Restrictions applied for non-payment (concession customers)	174	(35)	0	(0)
Restrictions removed within seven days of being applied (Concession customers)	108	(18)	-	-
Customers to which legal action applied for non-payment of water bill	28		29	

Of the 6 102 residential customers repaying a debt in 2014-15, 45 per cent owed more than \$500. While the average debt of residential customers decreased compared to the previous year, residential customers still owed on average \$1 017, which is the equivalent of a typical annual bill for water and sewerage for a customer on target for fixed water and sewerage charges and assuming water consumption of 550 litres/day.

<sup>6</sup> Customer Service Code Minimum Service Standard.

<sup>7</sup> Regional Transitional Service Standards for 2014-15.

The number of customers on the hardship program declined in 2014-15, as has the proportion of concession customers using the program.

In certain circumstances, TasWater may restrict or disconnect the water supply to residential customers for non-payment. Water restrictions are only applied after other arrangements such as flexible payment plans have failed to achieve the desired outcome of the customer either paying or agreeing to pay their outstanding account. No restrictions were applied to customers in 2014-15.

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 in court. During 2014-15 TasWater pursued legal action against 29 customers due to non-payment.

## 6 PUBLIC HEALTH

TasWater and the previous regional corporations have been wholly responsible for water quality for the public drinking water supply systems since 2009.

There were 88 public drinking water supply systems in Tasmania during 2014-15.

TasWater also manages nine bulk supply systems that relate to pipelines which distribute drinking water around the greater Hobart metropolitan area. None of the pipelines deliver drinking water directly to consumers. Rather, water conveyed via the bulk water supply systems is sent to customers via a reticulation network servicing a water supply system. Each of these bulk water supply systems has been reclassified by TasWater to include supply zones within the greater Hobart area based on the source of the supply water.

Whilst water quality monitoring of the pipelines occurs, it is not necessarily reflective of the quality of water finally delivered to consumers because compliance monitoring occurs in the reticulation networks at the point of supply within a given supply system. For this reason, discussion of the nine bulk supply systems is excluded from this Report. Accordingly this Chapter reports information on the 88 public drinking water supply systems only.

In 2014-15, 16 of TasWater's public drinking water supply systems operated under a permanent boil water alert because they did not receive any water treatment. These were typically small supply systems which together supplied around one per cent of the Tasmanian population receiving a reticulated water supply. Another 16 supply systems provided "disinfection only" in which only one treatment barrier (ie chlorination) was present. These systems are effective against most bacteriological hazards that may be present in the source water. However, chlorination can become ineffective if the source water becomes turbid, which commonly occurs during heavy rain events and/or drought conditions. When chlorination becomes ineffective a temporary boil water alert is issued.<sup>1</sup> When a boil water alert is issued for the area supplied by a system water for consumption should be, as a precaution, brought to a rolling boil and then cooled to room temperature or below before drinking and/or use, so as to inactivate pathogenic bacteria, viruses and protozoa. Five water supplies operated on a temporary boil water alert owing to varied compliance with the microbiological standards. These are typically small supplies and affect approximately 0.5 per cent of the Tasmanian population receiving a reticulated water supply.

The remaining 60 per cent of systems (53 systems) had multiple water treatment processes to address public health risks posed by the source water quality. These

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

require effective operation and ongoing maintenance to ensure the water treatment processes are appropriate and adequate.

Furthermore, other barriers beyond treatment are required throughout the drinking water supply system to ensure the water is not re-contaminated. Examples of such barriers include having roofs on reservoirs, good operational procedures to reduce recontamination during mains repairs and installation of backflow prevention devices.

Six per cent of all water supplies (five systems in total) operated under a Public Health Alert in 2014-15, which is put in place when non-compliant water is detected that cannot be rendered safe by boiling. These alerts affected 0.3 per cent of the serviced population.

## 6.1 Bacteriological compliance of water supply systems

Bacteriological compliance monitoring is one way of measuring the effectiveness of the management of drinking water supply systems. Microbiological monitoring of the water demonstrates whether the bacteriological risk associated with each component of the supply system has been adequately managed.

The majority of Tasmanian water supply systems which operate under a permanent boil water alert do not have any water treatment processes in place. That is, even if the source water was of excellent quality, there is no water treatment process (such as disinfection by chlorination) applied to the water to protect against any incidental contamination. The permanent boil water alert informs the public that they must provide the treatment process themselves (ie by boiling the water) to ensure the water is safe to drink.

The determination of the bacteriological compliance of a drinking water supply system is dependent on the collection of sufficient and appropriate microbiological samples. Water suppliers must sample and test drinking water from their drinking water systems in accordance with the sampling requirements prescribed in the ADWG and the Tasmanian DWQG. Sufficient samples and appropriate frequency of sampling demonstrates that monitoring is sufficiently representative of the 'whole' of the water given to the consumer throughout the year. For the purpose of this Report, bacteriological compliance has not been determined for systems which were not sampled to the required level because the level of compliance in such circumstances could not be deemed to be statistically valid.

### ① Drinking water guidelines

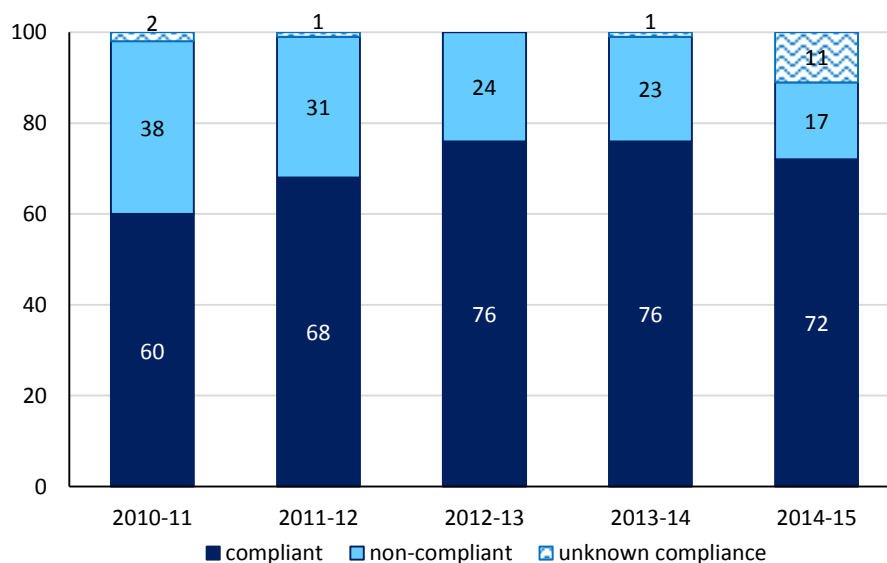
The Australian Drinking Water Guidelines (ADWG) and the Tasmanian Drinking Water Quality Guidelines 2015 (DWQG)

In 2014-15 TasWater adequately monitored 89 per cent of their systems to enable the level of compliance to be determined. The exceptions were the Branxholm (315 people), Derby (270), Gladstone (180), Gormanston (80), Herrick (20), Legerwood (150), Pioneer (130), Ringarooma (375), Wayatinah (165) and Whitemark (400) water supplies where the compliance was deemed unknown because insufficient samples were taken to be able to determine a statistically valid compliance measure. The ten systems determined as unknown compliance is an increase on the one reported for the 2013-14 period and is attributable to TasWater not fully implementing all of its monitoring programs.

Of TasWater's 88 public drinking water supply systems, 63 were considered by the DHHS to be bacteriologically compliant (72 per cent).

Figure 6.1 compares the level of compliance, non-compliance and unknown compliance (due to insufficient sampling) from 2010-11 to 2014-15 for the State. There was a significant improvement in bacteriological compliance in both 2012-13 and 2013-14 compared to previous years and a noted decrease in compliance in 2014-15 when a number of systems moved from being of known non-compliance to unknown due to insufficient sampling.

**Figure 6.1 Bacteriological compliance of drinking water supply systems (per cent of systems), 2009-10 to 2014-15**



TasWater has continued to strive to better understand the level of bacteriological compliance within its systems and to manage the risks associated with non-compliant systems. This action will be necessary until TasWater can commission the capital projects necessary to provide permanent improvements to the bacteriological quality of water supplies.

It is anticipated that in coming years, key projects such as the Ringarooma Valley, Mole Creek, King Island and Flinders Island water schemes, will address many of the issues with currently non-compliant systems and will improve the level of compliance within the State.

## 6.2 Incidence of boil water alerts

In accordance with the DWQG issued under the Public Health Act, when water samples indicate non-compliance (eg the presence of *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, however, a more wide ranging investigation is required and temporary boil water alerts are issued by TasWater to protect the public from the risk of water contamination in the meantime.

Permanent boil water alerts occur in systems that are not able to prevent the contamination. In Tasmania this is usually because the water treatment process is inadequate or there is no water treatment process in the first place such that individual members of the public are required to take action to protect themselves against contaminated water.

Table 6.1 compares the number of systems which operated with permanent or temporary boil water alerts across the State between 1 July 2009 and 30 June 2015. During 2014-15 there were 16 drinking water supply systems where a permanent boil water alert was in place. This is a reduction in the number of permanent boil water alerts as reported in 2013-14. It should be noted that two systems are currently operating on a Public Health Alert (Rossarden and Winnaleah) that were previously on permanent boil water alerts (these are discussed in section 6.4). For the purposes of this Report, these two systems have not been included in the overall number of permanent boil water alerts. The Ellendale water supply had its boil water alert removed during 2014-15 following the upgrade of the existing water treatment plant.

**Table 6.1 Incidence of boil water alerts: 2009-10 to 2014-15**

Alert type	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Temporary boil water alerts	16	12	10	6	6	5
Permanent boil water alerts	24	22	22	22	19	16

In 2014-15 a total of five drinking water supply systems operated with one or more temporary boil water alerts, which is similar to the previous two years. Temporary alerts are often a result of poor weather resulting in rising flood waters and turbid source water. The alerts are provided as a precautionary measure and usually involve water supply systems that receive chlorination as the only water treatment process. Such chlorination-only systems can become ineffective if the water being chlorinated is very turbid.

### 6.3 Population receiving bacteriologically compliant reticulated water

Approximately 87 per cent of Tasmanians<sup>2</sup> receive their drinking water from a public drinking water supply system. Approximately one per cent of the population is serviced by the 16 small supply systems that operate with a permanent boil water alert.

In 2014-15, 1.4 per cent of the Tasmanian population serviced with reticulated water received non-compliant or compliance unknown drinking water. This is similar to last year and a small increase since 2012-13 (1.1 per cent). Sound ongoing performance reflects increased operational management and investment in infrastructure since the hand-over of the water supply infrastructure from local Councils to the regional corporations and then TasWater.

### 6.4 Chemical compliance of water supply systems

There were 14 water supply systems that had chemical contaminants detected above the respective health guideline values (as stated in the ADWG). An additional four water supplies did not have adequate sampling programs in place to assess compliance through statistical validity. Of the sampling conducted in each of these

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<sup>2</sup> Connection data provided by TasWater is normalised through the estimated occupancy rate for each Urban Centre locality as sourced from the ABS website through the 'quick stats' link on the 2011 Census page.



supplies, none exhibited concentrations of contaminants above any health related guideline value.

Temporarily elevated levels of lead were detected in the Lake Barrington water supply system. However, subsequent remedial action by TasWater and re-sampling of that drinking water showed that these lead levels had returned to an acceptable standard soon after.

Temporarily elevated levels of manganese and lead were detected in the Forth water supply system. However, subsequent remedial action by TasWater and re-sampling of that drinking water confirmed that the manganese levels had returned to acceptable levels soon after.

Temporarily elevated levels of cadmium were detected in the Avoca water supply system. However, subsequent remedial action by TasWater and re-sampling of that drinking water showed that these cadmium levels had returned to an acceptable level soon after. The Avoca water supply system has been operating on a Public Health Warning 2012 because of persistent and elevated levels of lead and cadmium.

Temporarily elevated nickel and lead were detected in the Burnie water supply system. However, subsequent remedial action by TasWater and re-sampling of that drinking water showed that these lead levels had returned to an acceptable standard soon after.

Temporarily elevated levels of lead and nickel were detected in the Rosebery water supply system. However, subsequent remedial action by TasWater and re-sampling of that drinking water showed that these lead levels had returned to an acceptable standard soon after.

The Rossarden and Winnaleah water supply systems showed persistent and elevated levels of lead resulting in Public Health Alerts being issued in July 2014 and December 2014 respectively.

At Whitemark (Flinders Island) and Pioneer, Public Health Alerts issued in 2012 remain in place owing to persistent elevated lead levels detected in that water supply. The Public Health Alert advises residents that the water is not intended for consumption and TasWater has made an alternative source of drinking water available for the residents. Temporarily elevated levels of disinfection by-products were detected in water supply systems at Colebrook, Hamilton, Ouse, Tunbridge, Rosebery, Grassy and Wayatinah.

In each of the above cases, human health risk assessments indicated that the risk to public health was low. The health based guideline values are conservative and incorporate a range of safety factors that err on the side of caution so as to protect public health. For most parameters, intermittent exceedances of guideline limits do not result in adverse health effects. This is because the guidelines represent the maximum allowable concentration of a chemical constituent that would not result in any significant risk to the health of the consumer over a *lifetime* of consumption.

The Gretna, Jacksons Road Franklin, Judbury and Mountain River water supply systems did not have the adequate number of samples taken to statistically validate the system performance and hence the compliance could not be determined. In the samples that were taken, no exceedances of the health related guideline values were detected.

## 6.5 Drinking water quality management plans

The requirement for water suppliers to develop and implement drinking water quality management plans for their drinking water systems was established in the Tasmanian DWQG under the Public Health Act and follows the national water quality risk management approach prescribed in the ADWG. The drinking water quality management plans outline the identified public health risks of each drinking water supply system and TasWater's corresponding systematic and preventative measures to minimise and manage those risks.

The intent is to ensure water quality and protect the public through continuous improvement in the water supply system (whether through capital improvements or improved operational procedures) so that public health risks can be eliminated or reduced to acceptable levels.

TasWater has a Drinking Water Quality Management Plan for all of its public drinking water supply systems.

## 6.6 Public disclosure of water quality

The requirement for public disclosure of the performance of TasWater's drinking water supply systems aims to demonstrate transparency and accountability to the community, government and regulators. The performance of each drinking water supply system can be disclosed by providing it on a public website or in a report which is available to the public.

TasWater submitted its Annual Drinking Water Report for 2013-14 to the Director of Public Health. This Report is available to the public from TasWater. The Director of Public Health publicly releases an annual report on drinking water quality of public water supplies which discloses the compliance of each individual drinking water supply system in Tasmania.<sup>3</sup>

## 6.7 Fluoridation of public drinking water supply systems

In nature fluoridation of water can occur 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 carried out to adjust the level of fluoride in the water to a level considered safe and effective in preventing tooth decay.

Over 100 studies in more than 20 countries have shown that fluoridation reduces tooth decay<sup>4</sup> and this has recently been re-affirmed by the National Health and Medical Research Council in 2011.<sup>5</sup> Furthermore, water fluoridation has been proven

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<sup>3</sup> Reports available at <http://www.dhhs.tas.gov.au/peh/water>

<sup>4</sup> A Systematic Review of the Efficacy and Safety of Fluoridation – Part A: Review of Methodologies and Results. National Health and Medical Research Council, Australian Government, 2007. [www.nhmrc.gov.au/guidelines/publications/eh41](http://www.nhmrc.gov.au/guidelines/publications/eh41).

<sup>5</sup> [www.nhmrc.gov.au/guidelines/publications/eh41](http://www.nhmrc.gov.au/guidelines/publications/eh41)

to be the most effective and socially equitable means of achieving community wide exposure to the cavity prevention effects of fluoride.<sup>6</sup>

### 6.7.1 Fluoridation compliance

Fluoridation of Tasmanian public drinking water supply systems commenced in 1953 (in Beaconsfield), making Tasmania the first Australian jurisdiction to do so. 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. Included in this Ministerial Direction is the need to monitor the level of fluoride in drinking water on a daily basis.

TasWater is wholly responsible for the operation and maintenance of fluoridation systems and is obliged under the Fluoridation Act to fluoridate the drinking water.

Under the *Fluoridation (Interim) Regulations 2009* the fluoridation concentration range required in the drinking water supply (to achieve optimum tooth decay prevention) is 0.8 to 1.2 milligrams per litre (mg/L) of fluoride whilst the maximum level of fluoride allowed in the water is 1.5 mg/L (ie the maximum level specified in the ADWG). In 2014-15 there were 39 fluoridation systems in operation throughout the State servicing 47 of the reported 88 water supply systems.

Of the 39 fluoridation systems that operated throughout 2014-15, 38 maintained an average fluoride dose within the required fluoride concentration range<sup>7</sup>. The non-compliant fluoridation system at Leven River (0.78 mg/L) achieved fluoride concentration doses below the optimum range. This water supply system was largely non-compliant owing to operational issues with the dosing equipment such as pump failures and blocked lines.

The *Tasmanian Code of Practice for Fluoridation of Public Water Supplies (2007-10)* recommends a compliance level of 90 per cent. This means that the fluoridation system is producing fluoridated water within the target range of 0.8 to 1.2mg/L for 90 per cent or greater of all daily readings taken.

Of the 39 fluoridated supply systems 28 had a compliance level of 90 per cent or greater in 2014-15 which equates to approximately 69 per cent of the Tasmanian population receiving a fully-compliant fluoridated supply (ie 69 per cent of the population receive daily fluoride concentrations that fall within the target range at least 90 per cent of the time). This is a significant improvement on what was reported for 2013-14 in which only 21 systems were compliant resulting in only 50 per cent of the population receiving compliant fluoridated water.

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<sup>6</sup> The Efficacy and Safety of Fluoridation. National Health and Medical Research Council, Australian Government Public Statement, 2007. [www.nhmrc.gov.au/guideline/publications/eh41](http://www.nhmrc.gov.au/guideline/publications/eh41)

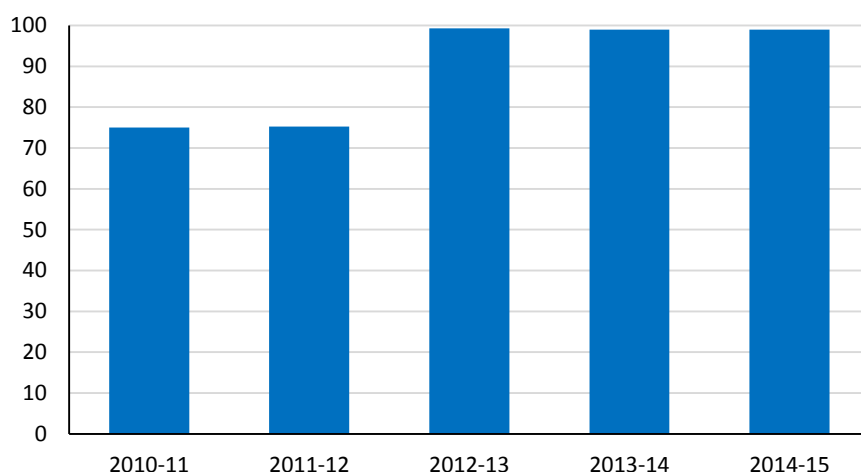
<sup>7</sup> All daily fluoride samples are averaged over a 12 month period to result in a yearly fluoride average against which compliance is assessed.

### 6.7.2 Population receiving water from systems with compliant average fluoridation concentrations

The widespread fluoridation of water in Tasmania is conducted in accordance with the *Australian National Oral Health Plan 2015-2024* which advocates water fluoridation of public water supplies for communities across Australia with populations of 1 000 or more. In Tasmania, fluoridation of public water supplies has been achieved in all communities of 1000 or more apart from Bicheno and Scamander which were fluoridated in November 2015.

Figure 6.2 shows the percentage of the Tasmanian population serviced by compliant fluoridation systems, in terms of average fluoridation concentration, between 1 July 2010 and 30 June 2015. In 2014-15, 97 per cent of Tasmanians receiving a reticulated water supply received fluoridated water of which 99 per cent received fluoridated water with an average concentration within the prescribed range of 0.8 to 1.2 mg/L. The fluoride level in the drinking water for the population which did not receive fluoridated water with an average concentration within the prescribed range was below the optimum range.

**Figure 6.2 Tasmanian population serviced by fluoridation systems with an average concentration within the prescribed range (per cent)**



Note: Population figures based on property connection data provided by TasWater.

Figure 6.2 also shows that the percentage of the population receiving optimally dosed fluoridated water was the same as was reported in 2012-13 and 2013-14 and is a significant improvement on previous years.

## 7 ENVIRONMENT

The Environment Protection Authority (EPA) regulates Level 2 wastewater treatment plants (WWTPs) in Tasmania under the *Environmental Management and Pollution Control Act 1994* (EMPCA) to protect Tasmania's environment from pollution.

In 2014-15 there were 81 Level 2 WWTPs operating in Tasmania, one less than in 2013-14 due to the decommissioning of the Taroona WWTP in June 2014. Of the 81 Level 2 WWTPs, three were operated by organisations other than TasWater. For the purposes of this Report, only the performance of the 78 Level 2 WWTPs operated by TasWater is assessed.

### ① Waste water treatment plants (WWTPs)

The information in this section does not extend to Level 1 WWTPs, which have a design capacity of less than 100 kilolitres per day and continue to be regulated by local government (Councils).

The level of compliance with discharge limits stipulated by the EPA for WWTPs is a key measure of overall environmental compliance. To demonstrate compliance, the EPA requires TasWater to regularly submit monitoring data in relation to the quality and quantity of effluent discharged by its Level 2 WWTPs. The information in this chapter is based on analysis of this source data. Most assessment results are reported on a state-wide basis for 2014-15. Where relevant, comparisons have been made between environmental performance achieved by TasWater and that achieved by the three previous regional water corporations.

In Tasmania, discharge limits for Level 2 WWTPs are specified in the environmental conditions issued for each facility by the Director, EPA. Considerable variation exists in relation to the range and restrictiveness of the specified discharge limits depending on the sensitivity of the receiving environment, the volume of discharge and the date the conditions were issued.

These environmental conditions reflect the regulatory framework in place at the time they were issued. Older conditions generally contain a small number of discharge limits determined without consideration of the specific characteristics of the receiving environment, other than differentiating between inland, estuarine/bay and coastal environments. These older conditions reflect the technological standard at the time the conditions were imposed, which has improved considerably over recent decades.

The Tasmanian regulatory framework has changed significantly in the last two decades, particularly as a result of the introduction and implementation of the *State Policy on Water Quality Management (1997)*.

The aim of the contemporary framework for the regulation of Level 2 WWTPs is to ensure that pollution discharged to the waterways is reduced to the maximum extent that is reasonable and practical having regard to best practice environmental management. In setting discharge limits and associated environmental requirements, environmental regulators take into account factors such as:

- potential toxicity of effluent contaminants;
- mass loads of nutrients and other pollutants, as well as the capacity of the receiving environment to accept these loads; and

- achievable current performance standards, as reflected in Acceptable Modern Technology (AMT) limits.

Contemporary environmental conditions for Level 2 WWTPs generally consist of a suite of 50<sup>th</sup> percentile, 90<sup>th</sup> percentile and maximum limits for a range of potential pollutants. Maximum limits provide the Director, EPA with an ability to issue penalty infringement notices or to pursue court prosecution for specific pollution events. Percentile limits allow for a defined degree of variability in performance which is expected within the operational context of a WWTP.

An outline of key issues which can have an impact on performance of wastewater treatment systems, and the regulatory context, are outlined in Appendix 2 of this Report.

The EPA Division's analysis of the performance of WWTPs operated by TasWater during 2014-15 can be found in Appendix 4 of this Report.

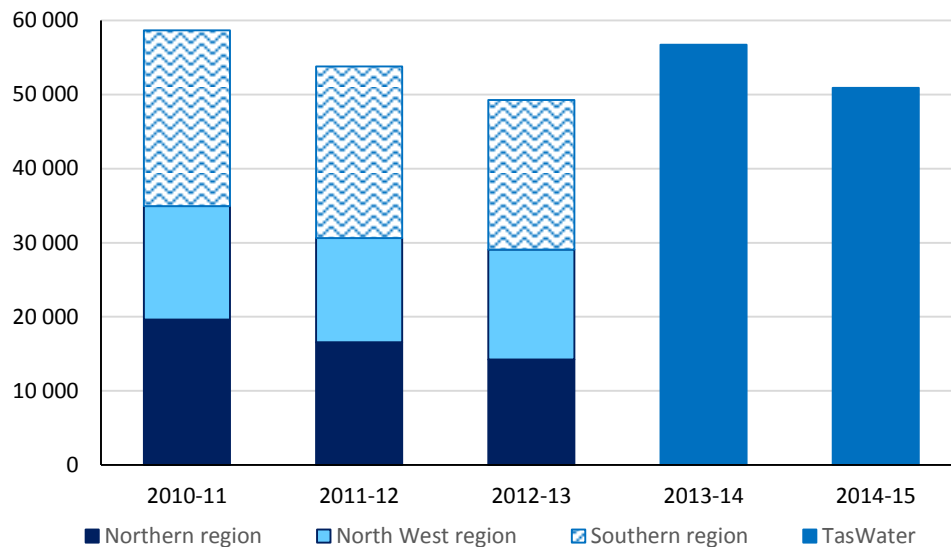
## **7.1 Effluent treatment**

Flow volumes discussed in this section are based on total inflows received by WWTPs, rather than flows discharged to waterways. These may be different due to effluent recycling reducing the volume discharged to waters, rainfall and evaporation effects on pond systems and flow measurement discrepancies in cases where both inlet flow and outlet flow are measured.

The accuracy and completeness of wastewater flow data was flagged as an area of concern in previous reports and continues to be an area where further improvements need to be made. Of the 78 WWTPs operated by TasWater, 68 reported measured flow data for 2014-15 (down from 71 in 2013-14). Of the 10 WWTPs for which measured flow data were not available, 4 WWTPs in and around Launceston were flagged as not having flow data available due to industrial action which resulted in operational staff not recording flow data. Where measured flow data was unavailable, wastewater volumes were estimated from surrogate indicators such as the number of connected residences, water consumption or the number of hours of operation for a sewage pumping station.

Figure 7.1 shows the volume of wastewater received by WWTPs on a regional basis over the past five years compared to the volume of wastewater now received by TasWater.

The total reported volume of wastewater treated by all TasWater Level 2 WWTPs combined was 50 876 ML in 2014-15, which represents a decrease of 10 per cent against the 56 718 ML of WWTP inflow reported in 2013-14.

**Figure 7.1 Volume of wastewater received / treated (ML/year)**

The reported total annual flow volume for 2014-15 is likely to be affected to some degree by climatic patterns for this period. Rainfall can increase inflow and infiltration of water into the sewer system, resulting in increased volumes being conveyed to WWTPs for treatment. Overall, 2014-15 can be classified as a “drier” year, with rainfall across the State classified as “below average” in the south-western, central-eastern, north-eastern and north-western parts of the State. Some areas within those areas were classified as having received “very much below average” rainfall. In contrast, 2013-14 was a “wetter” year, during which large areas of the State were classified as having received “above average” or “very much above average” rainfall, according to information provided by the Bureau of Meteorology. The influence of rainfall on wastewater flow patterns is particularly pronounced in the catchment of Launceston’s Ti Tree Bend WWTP, which includes significant areas of combined catchment carrying both sewage and stormwater.

Fifteen WWTPs reported annual inflows of more than 1 000 ML for 2014-15. Table 7.1 shows that, in keeping with the expected effect of climatic variations, inflows for a number of WWTPs significantly decreased in 2014-15 compared with inflows in the previous reporting period.

Most of the listed WWTPs service major urban catchments and/or accept large volumes of industrial wastewater (Smithton, Ulverstone, Pardoe Downs and Wynyard). The top five WWTPs remain unchanged from the previous year. Ti-Tree Bend WWTP remains the largest wastewater treatment plant by inflow volume in the State.

**Table 7.1 Tasmanian WWTPs with annual inflows exceeding 1 000 ML/year**

Premises name	Catchment area	Total flow 2013-14 ML/year	Total flow 2014-15 ML/year	Change from 2013-14 to 2014-15 (%)
Ti-Tree Bend	Launceston	9 250	8 007	-13
Pardoe Downs	Devonport	5 155	4 259	-17
Macquarie Point	Hobart	3 813	3 791	-1
Selfs Point	Hobart	3 238	3 525	9
Prince of Wales Bay	Hobart	3 431	2 942	-14
Rosny	Hobart	2 241	2 203	-2
Ulverstone	Ulverstone	2 060	2 184	6
Round Hill	Burnie	2 690	2 075	-23
Cameron Bay	Hobart	1 745	1 766	1
Queenstown	Queenstown	1 519	1 519	0
Blackmans Bay	Kingston	1 544	1 454	-6
Smithton	Smithton	1 328	1 233	-7
Wynyard	Wynyard	1 405	1 220	-13
Hoblers Bridge	Launceston	1 128	1 059	-6
Newnham Drive	Launceston	1 160	1 051	-9

## 7.2 Outfalls to the environment

Wastewater treatment plants discharge into inland, estuarine and marine (coastal) environments. These outfalls are differentiated as follows:

- inland outfalls are those with a discharge into an inland waterway i.e. a watercourse which is dominated by fresh water and where the water flow is predominantly in one direction;
- estuarine outfalls are those which discharge into the part of a watercourse which is dominated by saline water and where the flow direction is clearly influenced by tidal movements. For the purpose of this report, bays are also included in this category; and
- marine outfalls are those where the discharge is made into non-enclosed coastal waters.

The type of receiving environment provides an initial indication of the sensitivity of the receiving environment and its capacity to cope with pollutants.

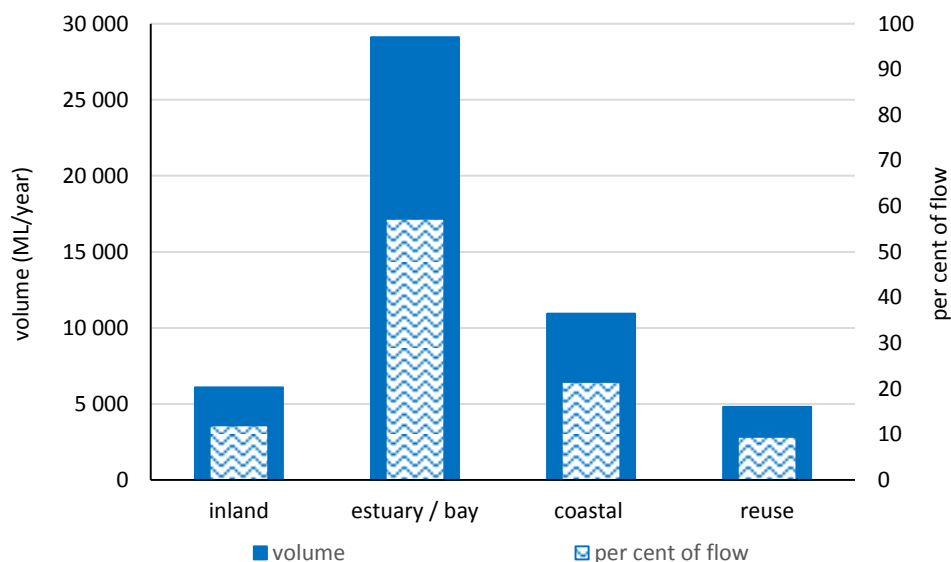
Of the 78 Level 2 WWTPs operated by TasWater during 2014-15, 13 were classified as marine discharge, 31 as estuarine or bay discharge and 34 as inland waters discharge.

Figure 7.2 shows the volume and percentage of wastewater discharged by Level 2 WWTPs during 2014-15, categorised by receiving environment. The

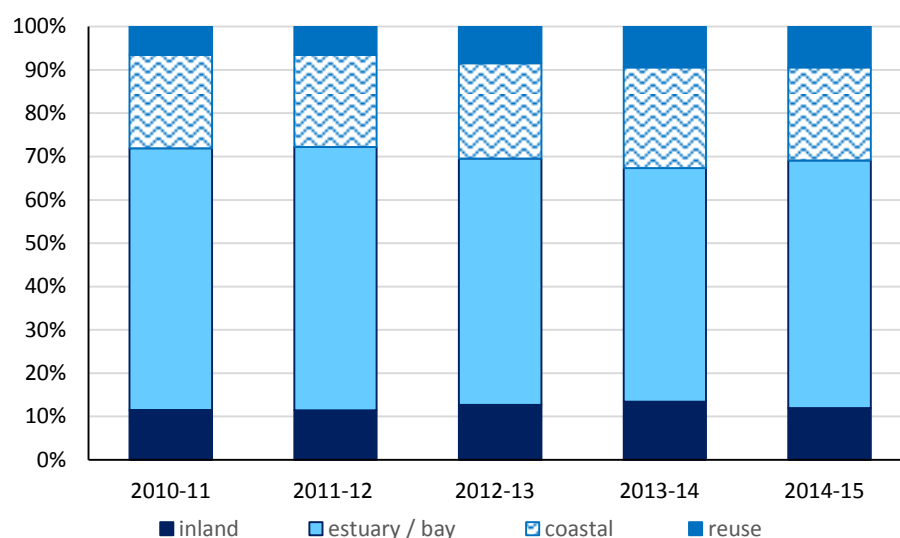


distribution of treated effluent by receiving environment remains largely unchanged from 2013-14, as illustrated in Figure 7.3.

**Figure 7.2 Discharge by receiving environment 2014-15 (ML/year; percentage of flow)**



**Figure 7.3 Discharge by receiving environment over time (percentage of flow)**



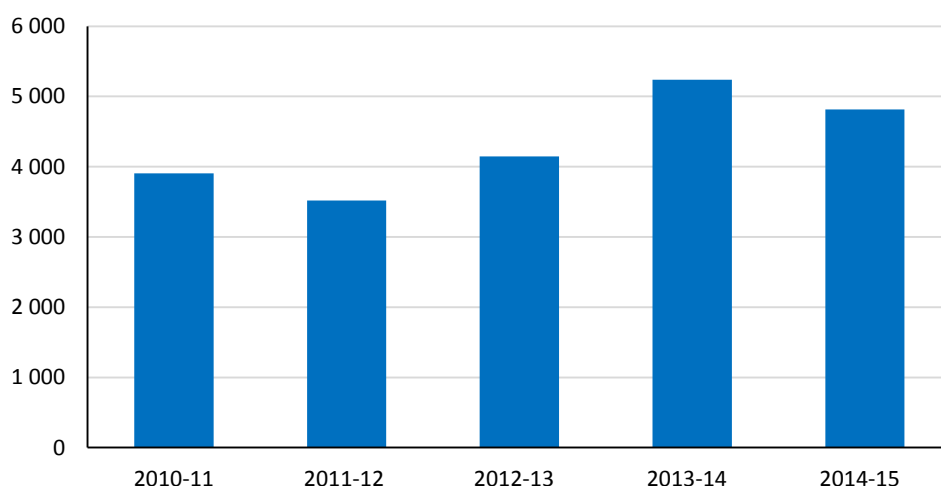
Of the total volume of effluent discharged to waterways, the majority was discharged to estuarine waters (29 112 ML or 57.1 per cent), followed by discharge to coastal waters (10 943 ML or 21.5 per cent) and inland waters (6 084 ML or 11.9 per cent). In addition, 4 814 ML (or 9.4 per cent) of effluent was beneficially reused.

Significant regional differences exist in relation to the receiving environment, in keeping with the geographical differences in each region. Discharges in the southern and northern regions of the State are predominantly to the Derwent and Tamar estuaries respectively, with smaller volumes to inland watercourses. In the north-western region coastal discharges are the dominant approach.

In 2014-15 the total volume of recycled water generated by Level 2 WWTPs was 4 814 ML, equivalent to 9.4 per cent of the total effluent discharged from these

WWTPs. While this represents a decrease in terms of volume when compared with 2013-14 (5 239 ML recycled), the percentage of recycled water remained steady at 9.4 per cent of total discharge. Figure 7.4 shows the trend in relation to volumes of effluent recycled for the period 1 July 2010 to 30 June 2015.

**Figure 7.4 Volume of effluent reused state-wide over time (ML/year)**



As effluent reuse schemes in Tasmania involve land irrigation, any fluctuations from year to year are generally expected to reflect climatic factors driving the demand for irrigation. Reuse volumes were reduced from the 2013-14. 2014-15 was characterised by drier conditions than the previous year, with below average rainfall recorded in most parts of the State. An analysis of monitoring data indicates that the downturn in reuse is predominantly related to problematic salinity concentrations in effluent produced at the Rosny WWTP (part of the Clarence Recycled Water Scheme), which led to a greater volume of effluent from this WWTP being discharged to the Derwent Estuary compared to previous years.

Despite this, the Clarence Recycled Water Scheme remains the largest reuse scheme in the State, followed by the Brighton/Bridgewater combined scheme. As a result of these two schemes, approximately 67 per cent of treated effluent generated at the associated WWTPs is diverted from the Derwent Estuary to sustainable reuse.

Table A4.3 in Appendix 4 provides an overview of effluent reuse (volume and proportion) for each Level 2 WWTP for the period 1 July 2009 to 30 June 2015 inclusive.

### 7.3 Comparative sewage treatment levels

As mentioned in Chapter 4 sewage treatment is divided into three categories indicating the degree to which sewage is treated.

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

Secondary treatment takes primary treated effluent, and with the aid of mechanical and 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.

Tertiary treatment involves further processing of secondary treated effluent using various techniques including flocculation, coagulation, clarification and filtration. The main aim is to remove nutrients such as nitrogen and phosphorus and further reduce the remaining organic material and harmful micro-organisms.

The level of treatment needs to be matched to the sensitivity of the receiving environment, the dilution achieved at the point of discharge, as well as mixing and dispersion characteristics. As a general rule, inland watercourses are considered to be more sensitive than estuarine environments. Coastal outfalls generally require the lowest level of treatment, especially if they are long outfalls discharging into high energy environments (ie environments in which the water is fast-moving and agitated) offering significant dilution.

Secondary treatment is usually sufficient for effluent discharged to ocean outfalls because residual pollutants are dispersed rapidly and effectively. Secondary treatment is also considered sufficient for effluent recycling schemes relying on 'Class B' quality effluent, provided that the specified disinfection limits can be reliably achieved.

Tertiary treatment is becoming a standard requirement for effluent discharged to waterways which are sensitive to nutrient enrichment, such as inland watercourses or poorly flushed bays. Additional treatment may be necessary to address specific contaminants of concern if effluent recycling is an end use (e.g. improved pathogen removal facilities).

As in previous years the vast majority of Level 2 WWTPs operated by TasWater (67 of 78) fell into the secondary treatment category, whilst 10 WWTPs provided full tertiary treatment. Pardoe Beach WWTP in Devonport continued to be the only Level 2 WWTP in Tasmania providing only primary treatment in 2014-15. Effluent from this WWTP is discharged via a long ocean outfall. Long-term ambient monitoring has not indicated any significant environmental impacts outside the mixing zone.

As a proportion of total treated effluent discharged to the environment, effluent subject to secondary treatment clearly outweighed the other categories.

During 2014-15 approximately 39 307 ML or 77.3 per cent of all wastewater was treated to secondary standard, including the majority of effluent discharged to reuse schemes. Tertiary treatment contributed 14.4 per cent of the total effluent volume (7 310 ML) and primary treatment 8.4 per cent (4 259 ML).

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

## **7.4 Sewage treatment plant compliance**

Sewage treatment plant compliance is achieved if treated effluent meets the limits prescribed by the EPA. Non-compliance occurs when the limits are not met.

Since 2013-14, compliance is calculated for TasWater as a single entity. Previously, compliance was calculated separately for the three Regional Water Corporations. Back calculations of compliance on a state-wide level for the period prior to 2013-14 provide a relevant baseline against which TasWater's compliance levels can be compared. The overall compliance assessment period now spans a period of six years and as such allows for the analysis of trends over time.

The state-based compliance calculation approach masks the considerable differences in performance evident in earlier reports and also means that in the National Performance Reporting context, TasWater is now being compared to major urban utilities rather than smaller utilities servicing regional areas.

Calculations and charts in this section are based on analysis of effluent monitoring data held in an EPA Division database. Data sets are significantly complete in relation to most parameters. If more than 50 per cent of samples are missing for any particular parameter, it is not assessed.

During 2014-15, comprehensive effluent monitoring datasets were submitted to the EPA by TasWater. However, the gaps identified in the data sets were greater than in the previous year. There were several occasions of sampling events being missed entirely or of specific parameters being omitted. As a result of these data gaps, compliance levels with some parameter limits could not be determined. This has a flow-on effect on the calculation of overall premises compliance. Significant gaps of this nature may skew flow-weighted client compliance. This is concerning and is an area requiring attention in future reporting periods.

If a facility has approval to discharge to waters as well as to an effluent recycling scheme, different limits usually apply to each discharge point. A facility is assessed against both sets of limits provided an adequate monitoring data set is available. This approach is used to reflect the fact that most effluent reuse schemes are operated on a seasonal basis and are reactive in terms of climatic conditions, with discharge patterns varying considerably from year to year.

Compliance is assessed for each parameter for which a regulatory limit is specified by determining the number of scheduled samples that complied with the specified limit as a percentage of the total number of scheduled samples analysed in the reporting period. Compliance percentages for all parameters are combined to provide one overall compliance figure for each WWTP. If both land-based and water-based discharge limits exist for a WWTP, compliance is assessed separately against each limit.

As only a small number of Level 2 WWTPs have been issued with percentile limits in addition to maximum limits, compliance assessment for this reporting period is based on maximum limits. An exception is the thermotolerant coliform limit for effluent recycling schemes which is generally specified as a 50<sup>th</sup> percentile limit. For 50<sup>th</sup> percentile limits, if the percentage of scheduled samples that comply is greater than 50 per cent, compliance is deemed to be 100 per cent.

There have been no significant methodology changes in compliance assessment since the previous reporting period, although recent modifications of the EPA database have resulted in minor adjustments to calculated client-based compliance levels. Compliance levels for past reporting periods illustrated in figures 7.5, 7.7 and 7.8 have been updated to show the adjustments. Compliance calculations performed by the EPA Division rely on a methodology that is different to those adopted internally by TasWater. The EPA Division believes that its current method, the independent

limits method<sup>1</sup>, provides a more representative picture of compliance in the current regulatory environment for the Tasmanian wastewater sector. In the interests of maintaining consistency with regards to longer term compliance assessment, the EPA will continue using the established method.

The assessment of compliance is complicated by emission limits to waters for WWTPs in older permits which do not reflect the achievable technology standards required under the contemporary regulatory framework. In these cases, discharge requirements are being progressively updated to become more stringent, especially with regards to nutrient emissions.

The assessment against Accepted Modern Technology (AMT) limits is provided as an additional tool to assess compliance against a benchmark which is theoretical (ie depending on the outcome of comprehensive ambient monitoring and investigations into reuse potential, not all WWTPs may eventually be required to upgrade to AMT standards) but provides a uniform basis for assessment.

Section 7.4.1 examines compliance against the limits currently in place, whilst compliance against potential future AMT limits is examined in section 7.4.2.

#### **7.4.1 Compliance with current discharge to waters limits**

New Environment Protection Notices (EPNs) issued for Electrona, Queenstown, Smithton, Stanley and Wynyard WWTPs in 2014-15 incorporate discharge limits set at levels reflecting current plant capacity under optimised operational practices. Those limits are interim in nature and where plant upgrades are required these limits will be replaced by more stringent limits. An EPN issued for Stieglitz WWTP specifies that treated effluent is only to be directed to a beneficial reuse scheme and must not be discharged to any watercourse. Discharge to waters limits for Stieglitz are therefore no longer included in this assessment. One WWTP (Tarroona) was decommissioned at the end of the 2013-14 reporting period and is no longer assessed.

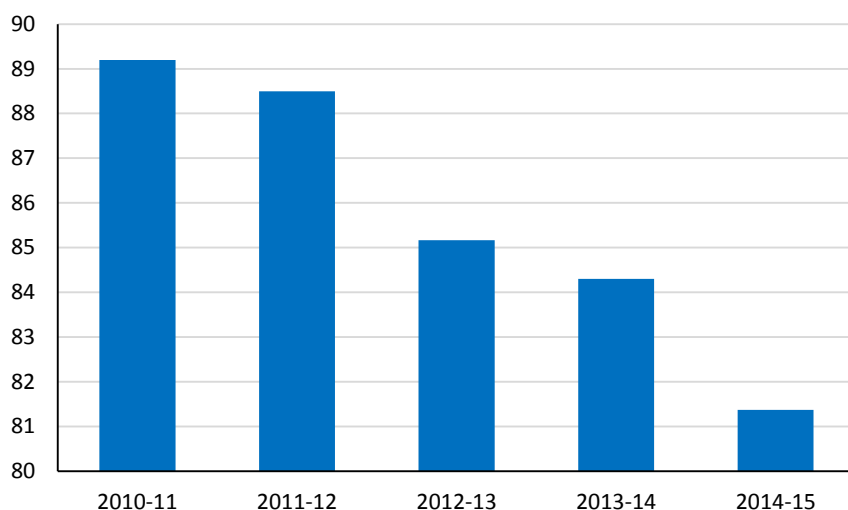
Several WWTPs had to be excluded from the analysis as data sets were too small to allow meaningful comparison with the relevant limits. Overall the number of assessed WWTPs in this category has reduced from 75 to 71.

Figure 7.5 shows TasWater's and the former regional water corporations' compliance against the specified discharge to waters limits over time. To account for WWTPs of varying hydraulic capacities, the flow weighted average of individual WWTP compliance is used as the value representing corporation compliance. In 2014-15, TasWater achieved approximately 81 per cent compliance with the regulatory discharge to waters limits. The chart illustrates that on a state-wide basis, compliance with regulatory discharge to water limits has gradually decreased since the hand-over of the sewerage infrastructure from local Councils to the water corporation(s) and, to date, TasWater's compliance record continues this trend.

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<sup>1</sup> The independent method assesses compliance against each individual limit (or parameter), whereas the alternative approach would be to assess compliance against a joint set of limits where one or more failed parameters (limits) for a sample means a failed sample.

**Figure 7.5 TasWater and combined regional water corporations' compliance against discharge to waters regulatory limits (per cent)**

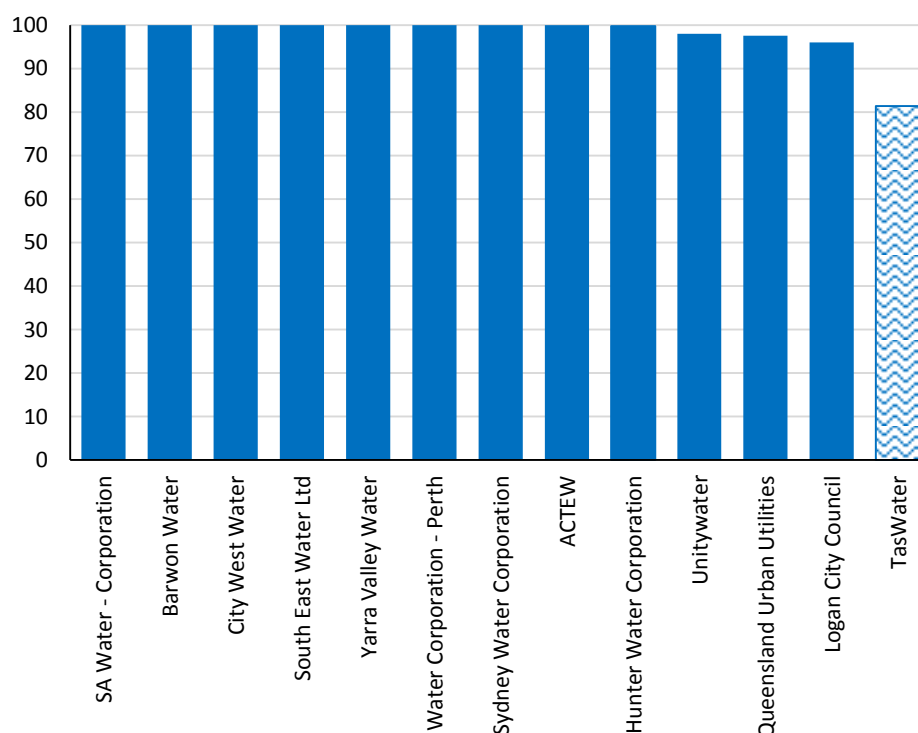


TasWater's performance in comparison to utilities in other states is shown in Figure 7.6. Since the merger of the regional Tasmanian water corporations into one utility TasWater is classified as a 'major utility – large'<sup>2</sup> under the National Performance Framework. From Figure 7.6, it is evident that TasWater lags significantly behind performance achieved by mainland utilities of a similar size.

TasWater's 2014-15 compliance percentage was lower than that of any other utility of comparable size reported in the context of the National Performance Framework (NPR), with the majority of the mainland utilities in the 'major utilities (large)' achieving 100 per cent and all others achieving over 95 per cent compliance.

However, as noted above, under the current NPR classification system TasWater is being compared with large utilities servicing predominantly metropolitan areas, which establishes a high benchmark. Prior to the merger into a single corporation, Southern Water and Ben Lomond Water were classified within 'major utilities (other)' and Cradle Mountain Water was categorised within 'non-major utilities (large)'. Utilities in these categories reported a greater range of compliance, including some that were lower than the result achieved by TasWater for 2014-15.

<sup>2</sup> The National Performance Framework defines utilities with 100 000+ customers as 'major utilities (large)'.

**Figure 7.6 Percentage of treated sewage volume that was compliant – Major utilities (large)**

Source: Data for utilities other than TasWater are derived from the Bureau of Meteorology, *2014-15 National Performance Report: urban water utilities*.

Compliance with discharge to waters limits, split into four compliance categories, is further illustrated in Table 7.2. In 2014-15, 20 Tasmanian WWTPs were classified as substantially non-compliant (ie less than 75 per cent compliant), unchanged from the previous two reporting periods. The number of WWTPs in the 75 - 90 per cent compliance category has remained fairly steady over the past five years. However, the continuing downward trend in the number of WWTPs in the highest compliance category over the years is concerning. The number of WWTPs in this category (more than 90 per cent compliant) was 22 in 2014-15, the lowest number reported to date.

Overall, it is evident that over the last five years there has been no tangible progress towards the goal of having the majority of WWTPs represented in the more than 90 per cent compliance group and on par with mainland utilities of a comparable size.

**Table 7.2 Number of WWTPs by compliance category (regulatory limits)**

	2010-11	2011-12	2012-13	2013-14	2014-15
>90% compliance	30	29	33	25	22
>75 - 90% compliance	21	29	23	30	29
>50 - 75% compliance	16	12	11	15	15
<50 % compliance	9	5	9	5	5

Table 7.3 shows those WWTPs which demonstrated 50 per cent or less compliance against the discharge to waters limits in 2014-15. In total, five WWTPs across the State fell into this category during this reporting period, the same number as in the previous year. Longford WWTP recorded improved performance from the previous year (from 44 per cent to 54 per cent) and is therefore no longer included in this group. Ulverstone WWTP which was not assessed in the previous reporting period due to lack of representative monitoring data, re-appeared in this category with a compliance score of 33.3 per cent. The common characteristic between the remaining WWTPs in Table 7.3 (Kempton, Campania, Oatlands and Port Sorell) is that these are lagoon systems with significant sludge accumulation. Desludging has been recently completed for Oatlands WWTP and is scheduled for Kempton, Campania and Port Sorell WWTPs in 2015-16. An improvement in performance is expected of these four WWTPs once desludging has been completed.

**Table 7.3 WWTPs with 50 per cent or less compliance against discharge to waters limits**

WWTP	Limit type	Number of limits assessed	Compliance (per cent)
Kempton <sup>1,2</sup>	Max	4	33.3
Ulverstone <sup>1</sup>	Max	1	33.3
Port Sorell	Max	4	35.4
Campania <sup>1,2</sup>	Max	4	39.6
Oatlands <sup>1</sup>	Max	4	50.0

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

2. Indicates full reuse in 2014-15.

## 7.4.2 Compliance against potential future discharge to waters limits

The limits adopted for the analysis in this section represent Accepted Modern Technology (AMT) standards contained in the *Emission Limit Guidelines for Sewage Treatment Plants* (DPIPWE, 2001). AMT limits, which differentiate between fresh water and marine receiving environment, incorporate stringent nutrient emission limits. To achieve nutrients concentrations/loads suitable for discharge to fresh water, tertiary treatment will typically be required. As indicated earlier, most wastewater in Tasmania is currently treated to a secondary level only.

As an alternative to AMT limits, site-specific discharge limits which reflect the assimilative capacity of the receiving environment may be adopted in the future. However, the determination of sustainable, evidence-based effluent management practices requires comprehensive ambient monitoring to be carried out as a first step. Until such information becomes available, AMT limits are adopted as an approximation of likely future limits for the purpose of this report.

This analysis provides an indication of future compliance within a regulatory framework characterised by the phasing in of stricter regulatory limits. The adoption of more rigorous limits, aimed at bringing about improvements in overall wastewater treatment performance and a reduction in pollutants discharged to the environment, will make the achievement of specified performance limits more challenging.

As in previous years, the data set in relation to AMT-relevant parameters was substantially complete, with some qualifications as noted in section 7.4 above



regarding data set limitations. Accordingly, the EPA considers that the 2014-15 AMT compliance assessment can be viewed with a high degree of confidence.

**Figure 7.7 Compliance with regulatory and AMT discharge to waters limits (per cent)**

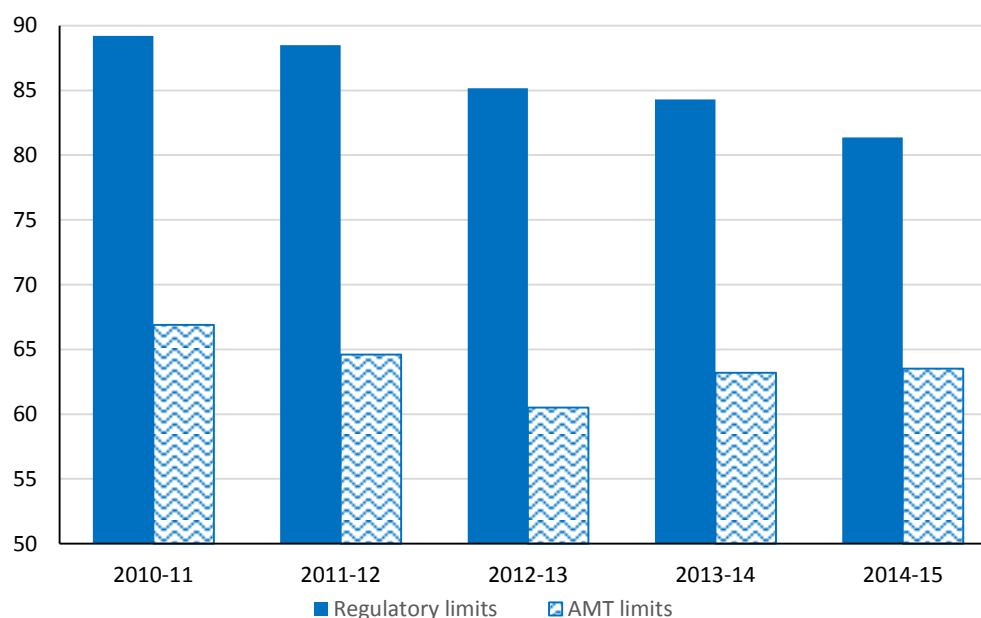


Figure 7.7 shows TasWater's compliance with regulatory limits versus AMT limits as a time series. Not surprisingly, compliance against AMT limits is significantly lower than compliance with regulatory limits for each of the five reporting periods. Whilst in terms of compliance with regulatory limits the trend has been consistently downward (81.4 per cent in 2014-15 from a baseline of 89.5 per cent in 2010-11), AMT compliance showed some fluctuations over the same time period. As client compliance is weighted according to volumes discharged by each WWTP, low compliance levels achieved by large WWTPs can influence state-wide performance. For example, the low client compliance level achieved in 2012-13 may be in part attributed to the poor compliance score at Ulverstone WWTP in that year, while other years are impacted to various degrees by lack of comprehensive, representative data sets for some WWTPs (as indicated in Appendix 4).

Table 7.4 below shows a significantly different pattern compared with the compliance distribution for existing regulatory limits.

**Table 7.4 WWTPs by compliance category (AMT limits)**

	2010-11	2011-12	2012-13	2013-14	2014-15
>90% compliance	9	10	7	7	9
>75 - 90% compliance	12	12	14	13	8
>50 - 75% compliance	29	33	32	38	39
<50 % compliance	28	23	25	19	17

In 2014-15 there were:

- 17 WWTPs in the less than 50 per cent compliance category compared to five WWTPs in this category based on existing regulatory limits;

- 39 WWTPs achieving between 50 and 75 per cent compliance. This clearly remains the dominant category for AMT limit compliance, in contrast with regulatory limit compliance which has 15 WWTPs in this percentage bracket;
- 8 WWTPs in the 75 to 90 per cent compliance category compared to 29 WWTPs in this category based on existing regulatory limits; and
- only 9 WWTPs in the more than 90 per cent compliance category compared to 22 WWTPs in this category based on existing regulatory limits.

The AMT compliance category distribution indicates that performance has improved little over the past five reporting periods, with representation in the >90 per cent category remaining around 9 WWTPs although minor fluctuations occurred within that period. The only positive effect observed is a reduction in WWTPs in the <50 per cent category, with a corresponding increase in the second-lowest category.

Table A4.1 and Figures A4.1 to A4.2 in Appendix 4 show compliance with regulatory limits and AMT limits for each WWTP.

### **7.4.3 Summary of discharge to waters limits compliance**

The analysis shows that compliance with regulatory discharge to waters limits has steadily declined since July 2009, when responsibility for the management of wastewater infrastructure was transferred firstly to regional corporations and subsequently to TasWater in 2013.

In relation to AMT limits, the overall observation is that performance has stagnated over the same time period. Whilst AMT limits are not currently binding, compliance with these limits is in some respects a better indicator of performance over time, as they have remained unchanged over the last five years.

The observed trend is disappointing as it was expected that WWTPs upgrades and better operational practices would be reflected in improved performance.

Significant compliance improvements will in most cases be linked to major infrastructure upgrades or maintenance works. The regional corporations' strategic approach and environmental improvement initiatives designed to improve compliance to acceptable levels is documented in the three regional Wastewater Management Plans (WWMPs) developed in 2011. Following the merger of the regional corporations, these WWMPs were replaced by the state-wide TasWater 2014-18 WWMP.

The EPA's evaluation of the progress made by TasWater (and the previous regional corporations) with respect to projects identified in the WWMP highlighted significant delays against original timeframes and capital expenditure not reaching the amount originally planned. To some degree, this might explain the ongoing compliance issues documented in this Report.

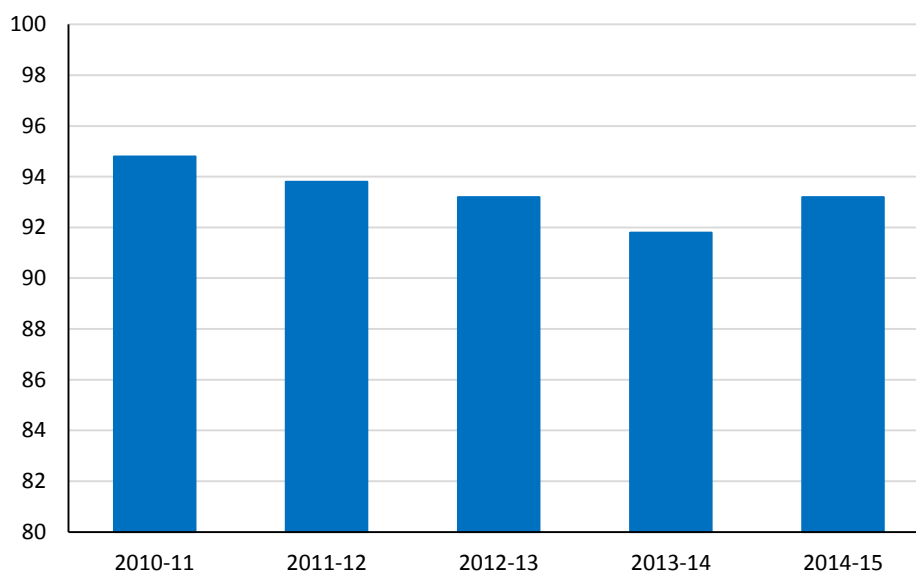
The EPA's assessment of progress against commitments provided in the WWMP can be found in section 9.1.1.1 of this Report.

#### 7.4.4 Compliance with discharge to land limits

This section assesses the levels of compliance reported for effluent recycling schemes which utilise treated effluent generated by Level 2 WWTPs. Effluent recycling schemes operated during the reporting period were generally required to comply with 'Class B' quality standards (as outlined in the EPA Division's *Environmental Guidelines for the Use of Recycled Water in Tasmania*).

This assessment was therefore undertaken against standard 'Class B' quality expectations rather than specified limits. This approach was adopted to provide a consistent basis for performance comparison, as there is some variance amongst older WWTP conditions with regards to the specified limits. The EPA Division intends to remove this anomaly in the future by reissuing EPNs incorporating modern operating standards.

**Figure 7.8: Compliance with 'Class B' discharge to land limits (per cent)**



The chart illustrates that reuse compliance in 2014-15 was identical to 2012-13 (93.2 per cent), an improvement compared to the previous year (91.5 per cent compliance in 2013-14). It is also evident that over the course of the last five years compliance against 'Class B' quality expectations initially declined but has now begun to recover. This indicates compliance is trending in the right direction, an improvement over previous years.

It is emphasised that achieving compliance with the specified discharge limits is not a sufficient indicator of the sustainability of effluent recycling schemes. To make a determination on the level of sustainability achieved, comprehensive monitoring of ambient conditions and impacts on the environment (ie soils, groundwater, odour emissions and surface waters) is required. Such monitoring programs are required under the environmental conditions in the WWTP permit, and resulting reports are reviewed by EPA to ensure schemes are operated in a sustainable manner.

## **7.5 Number of wastewater treatment plants compliant at all times**

The number of Level 2 WWTPs complying with their respective environmental requirements for treated effluent discharge at all times during 2014-15 gives an indication of the overall performance of TasWater's WWTPs and, if problems exist, whether the problems are localised or widespread. This indicator, together with other compliance indicators, provides information on how well TasWater is managing its treatment facilities.

In 2014-15 only one WWTP, Somerset, achieved 100 per cent compliance with the regulatory discharge limits and is considered fully compliant for 2014-15. In this context it is relevant that Somerset WWTP has relatively old environmental conditions with a limit specified for a single parameter (total suspended solids). Each of the Riverside, Cygnet and Midway Point WWTPs which had recorded 100 per cent compliance in 2012-13 experienced a slight downturn in performance in 2014-15.

## **7.6 Public disclosure of wastewater treatment plant performance**

Public disclosure of WWTP performance demonstrates transparency and accountability to the community, government and regulators.

Public disclosure is demonstrated by publishing WWTP performance information, including detailed results for key parameters in the treatment plant permit.

Contemporary environmental conditions for Level 2 WWTPs require the preparation of publicly available Annual Environmental Review (AER) reports. AERs must be signed off by TasWater's Chief Executive Officer. TasWater provided AERs for all Level 2 WWTPs in 2014-15. Current EPA policy is to make AERs available to the public upon request.

The EPA has therefore assessed TasWater as having satisfied this requirement.

## **7.7 Compliance with the Director, Environment Protection Authority's requirements**

The purpose of this section is to report on actions taken by the environmental regulator with respect to significant non-compliances for Level 2 WWTPs or pollution events arising from the operation of associated sewerage infrastructure.

For the purpose of this Report, 'non-compliance' is defined as having occurred when the operator, during the reporting period:

- failed to meet the conditions prescribed by the environmental regulator in the permit (or equivalent instrument such as an EPN issued under section 44(1) of the EMPCA);
- received a formal written warning from the Director in relation to the activity;
- received an infringement notice in relation to the activity; or
- was successfully prosecuted by the environmental regulator or its representative.

As discussed in previous sections, TasWater failed to achieve full compliance with the specified discharge limits in relation to Level 2 WWTPs under its control (with one exception). The environmental regulator has required the development and implementation of a Wastewater Management Plan by TasWater designed to improve compliance to acceptable levels. However, incidents with the potential to cause environmental harm at WWTPs or associated sewerage infrastructure can trigger a more immediate response.

TasWater received three Environmental Infringement Notices (EINs) as well as three formal Written Warnings in 2014-15. The EINs related to the Perth WWTP sewerage reticulation (uncontrolled discharge from sewage pumping station), Legana WWTP sewerage reticulation (uncontrolled discharge) and the Cameron Bay WWTP (bypassing of untreated effluent).

The formal written warnings were issued in relation to the failure to comply with Regulation 8(1) of the EMPCA (*Waste Management) Regulations 2010* (Ranelagh reticulation system; contravention of a requirement of an Environment Protection Notice (Ti-Tree Bend WWTP / odour abatement requirement); and failure to classify biosolids in accordance with *the Approved Management Method for Biosolids Reuse 2006* and Regulation 6 of the EMPCA (*Waste Management) Regulations 2010*.

## 7.8 Biosolids reuse

The purpose of this section is to report on the level of reuse of biosolids, being the stabilised organic solids that result from sewage treatment processes.

Reuse involves managing biosolids safely and sustainably to beneficially utilise their nutrient, energy or other values. This may include biosolids beneficially used for agriculture (eg fertiliser), soil conditioning, mine rehabilitation and other applications recognised as reuse.

According to the *National Performance Framework: Urban performance reporting indicators and definitions handbook*<sup>3</sup>, the information reported should incorporate:

- mechanical or other sewage treatment processes where the biosolids are available for reuse within a short time frame (e.g. less than one month). In this case, the volumes produced for the financial year are included; and
- wastewater treatment processes where the removal of biosolids occurs only infrequently (eg sewage every 10-30 years). In this case, the accumulation of biosolids which occurred over the financial year should be reported.

Accordingly, the reuse proportion can be calculated on the basis of:

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

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<sup>3</sup> National Water Commission, *National Performance Framework: Urban performance reporting indicators and definitions handbook*, July 2014

TasWater provided estimates of sludge quantities (converted to 'dry solid tonnes') and information regarding the end use of this material in AER reports. The level of detail provided in the AERs was sufficient to calculate the amount of biosolids generated at most WWTPs, along with the proportion beneficially reused. Estimates regarding the volume of sludge accumulated within sewage lagoons were not sufficiently detailed for inclusion in this Report.

In 2014-15, approximately 15 000 dry solid tonnes were beneficially reused, while just under 7 000 dry solid tonnes were stored on site, taken to landfill or used for landfill capping. Significant volumes of biosolids stockpiled at the end of the previous reporting period were also utilised. Overall the proportion of the biosolids material beneficially reused was approximately 91 per cent of the volume generated in 2014-15. This represents a significant improvement from previous years, with reuse proportions of 56 per cent and 16.4 per cent respectively in 2013-14 and 2012-13.

This improvement can be attributed to the commencement or expansion of biosolids reuse schemes associated with the Longford, Prospect Vale, Ti-Tree Bend and Smithton WWTPs, all major generators of biosolids. An overview of the WWTPs generating the greatest volumes of biosolids in 2014-15 and associated reuse/management practices is shown in Table 7.5 below.

Significant sludge accumulation in some lagoon systems was identified through audits carried out previously by the regional corporations. Desludging is likely to enhance the treatment capacity of these lagoon systems which are generally characterised by poor performance.

In 2014-15 progress was made with the de-sludging of several lagoons, including Brighton (primary lagoon), Longford (ongoing operation), Oatlands, Richmond, Ridgley and Smithton. In the case of Smithton, significantly improved compliance levels were reported post de-sludging (see Appendix 4).

During 2014-15 TasWater also continued its work on a state-wide de-sludging and biosolids strategy, with the aim of improving lagoon performance and reducing environmental risk.

Table 7.5 Biosolids – major volumes generated and reuse percentage in 2014-15

WWTP Name	Biosolids generated (dry solid tonnes / year)	Biosolids beneficially reused (dry solid tonnes / year)	End use / purpose	Biosolids reused (%)	Comments
Ti-Tree Bend	~ 9 400	~ 4 400	Ti-Tree Bend WWTP generates significant volumes of biosolids at the premises as well as receiving additional material from other WWTPs (Hoblers, St Helens and Riverside).  Just over half of the material generated in the reporting period remained stockpiled at the WWTP premises. The remainder was beneficially reused on farmland.	47%	In addition to material generated in 2014-15, a stockpile of 3600 DST which remained at the end of 2013-14 was also managed.
Longford	~2 400	~1 400	Over half of the volume produced was beneficially reused on agricultural land. The remainder was either stockpiled in the sludge lagoon or drying beds.	58%	In addition to material generated in 2014-15, a stockpile of 1590 DST which remained at the end of 2013-14 was also managed.
Prospect Vale	1 744	1 744	The sludge volume generated in 2014-15 was beneficially reused on farms in the Carrick area	100%	
Smithton	~ 1 600	1 600	The sludge volume generated in 2014-15 was beneficially reused on five surrounding farms.	100%	Similar reuse percentage as in previous years.  Further desludging scheduled for 2015-16; following further sludge profiling.
State-wide (TasWater) total	16 865	15 363	Material removed from the treatment system but not the premises is counted as generated but not reused.  Composted sewage sludge is counted as beneficially reused if the end product is used in accordance with the relevant definition in the <i>Tasmanian Biosolids Reuse Guidelines</i> (1999). Note composted material used for landfill capping is not considered to be beneficially reused.  Stockpile from previous reporting periods not counted in biosolids generated.	91.1%	This represents a significant increase from previous years reuse proportions (56 and 16.4%).

## 7.9 Net greenhouse gas emissions

The purpose of this section is to report on the impact of water and sewerage activities on greenhouse gas emissions. In doing so, 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.

TasWater collated information regarding greenhouse gas emissions for the purpose of reporting under the National Performance Framework, consistent with the *Tasmanian Water and Sewerage Industry Performance and Information Reporting Guideline* (September 2011).

In 2014-15 TasWater's total net greenhouse gas emissions were 32 903 tonnes CO<sub>2</sub>-equivalents (CO<sub>2</sub>e) or an average of 164 tonnes produced per 1 000 properties. Greenhouse gas emissions categorised into water and sewerage related operations are provided in Table 7.6.

As the quality and accuracy of the data reported to date is low, the only observation that can be made is that sewerage related operations produce a higher volume of CO<sub>2</sub>e compared to water treatment operations due to the nature of WWTPs and the production of nitrous oxide and methane through sewage processing.

**Table 7.6 Volume of greenhouse gases produced by TasWater (CO<sub>2</sub>-equivalent)**

	Water-related operations		Sewerage-related operations	
	CO <sub>2</sub> e (tonnes)	CO <sub>2</sub> e (per 1 000 properties)	CO <sub>2</sub> e (tonnes)	CO <sub>2</sub> e (per 1 000 properties)
2013-14	8 888	44.3	25 433	145.4
2014-15	9 786	48.8	21 697	123.0

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

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



## 8 PRICING AND FINANCE

This Chapter discusses water and sewerage pricing and provides an overview of TasWater's financial performance for 2014-15 including factors affecting the cost and affordability of water and sewerage services.

Further detail on price regulation and TasWater's approved pricing structures for 2014-15 can be found in the Economic Regulator's *2015 Price Determination Investigation – Regulated water and sewerage services in Tasmania – Final Report, May 2015*.

### 8.1 Pricing

Residential water and sewerage tariffs are generally made up of:

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

#### ① Equivalent tenements (ETs)

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

In 2014-15 price regulation arrangements applied to TasWater's tariffs as customers continued to transition to regulated target tariffs.

#### 8.1.1 Average bills

Prices were set on a regional level for 2014-15 under the price determinations made in May 2012. Table 8.1 shows the components that make up the typical residential bill for customers in each region based on average consumption and applicable target tariffs.

**Table 8.1 Components of average annual customer charges in 2014-15 by region**

Component	North	North West	South
Water fixed charge (\$/property)	322.00	431.92	305.96
Water usage charge (c/kL)	94.74	94.74	94.74
Average annual residential water use (kL/property)	177	156	176
Typical residential bill - water (\$)	489.58	579.60	473.03
Sewerage fixed charge (\$/property)	469.00	500.96	549.08
Typical residential bill - water and sewerage (\$)	958.58	1 080.56	1 022.11

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

Compared to other large utilities nationally, TasWater's fixed water charges are notably high, with the mainland charge averaging around \$180 per property. However, TasWater's usage charges are significantly less than those charged by mainland utilities, whose high usage charges (around 250 cents per kL) reflect priorities to encourage efficient water use. For example, many mainland utilities have inclining block tariff structures for water, with usage charges rising to around 300 cents per kilolitre. This difference in pricing reflects the fact that Tasmania does not typically experience significant issues with the water supply available for urban use.

### 8.1.2 Concession customers

To be eligible for a concession discount, 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:

- Centrelink Health Care Card;
- Centrelink Pensioner Concession Card; or
- Department of Veterans' Affairs Repatriation Gold Card.

Eligible customers were entitled to an annual water and sewerage concession discount of up to \$179 (\$89.50 each for water and sewerage). In 2014-15, 51 369 customers received the benefit of a concession discount.

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 Government to allow for the provision of a good and/or service at less than total cost. In 2014-15, TasWater received a total of \$8.13 million from State Government CSO payments to cover the cost of providing these concessions.

## 8.2 Financial performance

This section presents TasWater's financial performance against a range of indicators to provide an analysis of its financial efficiency and longer term sustainability. Where shown, 2011-12 and 2012-13 data is the sum of the previous regional corporations' aggregated results.

### 8.2.1 Revenue

Table 8.2 shows TasWater's total income and the revenue collected from the provision of regulated water and sewerage services. It should be noted that total income includes revenue from other sources<sup>1</sup> but does not include revenue from third

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<sup>1</sup> See the 2013-14 National Performance Framework: Urban performance reporting indicators and definitions handbook for definitions.

parties (ie CSOs) or investments. It should also be noted that regulated water and sewerage revenue comprises an increasing proportion of total income, rising from 85.5 per cent in 2011-12 to 98.7 per cent in 2014-15.

**Table 8.2 Revenue (\$'000s)**

	2011-12	2012-13	2013-14	2014-15
Water	110 387	121 844	129 071	150 070
Sewerage	99 574	109 993	121 519	146 389
Total income	245 607	263 460	268 617	300 314

Higher sales revenue boosted total income in 2014-15, which increased by 11.8 per cent on the previous year, due to underlying increases in regulated target tariffs and arrangements to transition customers up to these tariffs.

The 2012 determinations included revenue limits consistent with the NWI prescribed pricing principles under which TasWater should recover revenue that is at least equal to the lower limit, which represents the minimum required to achieve sustainability, but not greater than the upper revenue limit, which represents full cost recovery. In 2014-15 TasWater's total revenue was between the (combined) lower revenue limit and the statutory revenue limit.

## 8.2.2 Asset values

The written down replacement cost (WDRC) of TasWater's water and sewerage infrastructure assets (excluding plant and equipment) is shown in Table 8.3. TasWater is required to report on a WDRC basis rather than on the basis required for financial statements.<sup>2</sup>

**Table 8.3 Fixed Asset values (\$'000s)**

	2011-12	2012-13	2013-14	2014-15
Water assets	1 379 749	1 441 614	1 383 105	1 378 227
Sewerage assets	1 357 729	1 369 638	1 307 119	1 316 010

As at 30 June 2015 TasWater held water and sewerage assets worth just under \$2.7 billion. Despite significant capital expenditure over recent years there has been no consistent increase in asset values.

## 8.2.3 Operating costs

Operating costs (Opex) include any costs associated with the operation and maintenance of the infrastructure assets used to provide water and sewerage services plus the associated administration costs. Opex includes salaries and wages, chemicals and raw materials and energy costs. Table 8.4 shows TasWater's Opex and the breakdown between water and sewerage operations.

<sup>2</sup> See Note 9 of TasWater's 2014-15 Financial Statements (attachment to *TasWater 2014-15 Annual Report*).

**Table 8.4 Operating costs (\$'000s)**

	2011-12	2012-13	2013-14	2014-15
Water	68 706	73 181	71 061	80 655
Sewerage	73 368	80 849	82 559	85 796
Water and Sewerage	142 075	154 030	153 620	166 451

TasWater's Opex rose by 8.4 per cent in 2014-15 compared to the previous year due, in part, to increased wage expenses and higher other operating costs such as chemicals and sampling.

TasWater's Opex per property is shown in Table 8.5. TasWater's operating costs per property for water and sewerage services in 2014-15 was higher than those reported by comparable mainland service providers<sup>3</sup> which typically range between \$760 and \$820 per property.

**Table 8.5 Operating costs per property (\$)**

	2011-12	2012-13	2013-14	2014-15
Water supply	342	372	354	402
Sewerage	411	465	472	486
Water and Sewerage	754	836	826	888

In addition, it should be noted that TasWater's Opex is based on its current level of regulatory non-compliance meaning that these costs are not directly comparable to mainland providers with relatively higher levels of regulatory compliance ie increased regulatory compliance generally leads to increases in operating costs.

#### 8.2.4 Capital expenditure

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

Table 8.6 shows TasWater's Capex for water and sewerage. Note that gifted assets and developer charges have been excluded.

**Table 8.6 Capital expenditure (\$'000s)**

	2011-12	2012-13	2013-14	2014-15
Water capital expenditure	87 670	55 390	36 571	50 284
Sewerage capital expenditure	31 728	45 573	37 590	52 197
Total capital expenditure for water and sewerage	119 398	100 962	74 161	102 481

TasWater's Capex during 2014-15 was substantially more than the previous year owing to TasWater's increased capacity as a single corporation to carry out its capital

<sup>3</sup> Major Utilities (Large) with 100 000 or more customers.

program. Approximately \$41 million was spent on dedicated water assets and \$42 million on dedicated sewerage assets, with the balance relating to both water and sewerage assets. During the year \$0.5 million was spent on unregulated assets.

Table 8.7 shows Capex categorised between new works, renewals or replacements, gifted assets and other capital expenditure for both water and sewerage infrastructure.

**Table 8.7 Water and Sewerage Capex by category (\$'000s)**

	2011-12	2012-13	2013-14	2014-15
<b>Water:</b>				
New works	64 935	38 881	4 798	6 399
Renewals or replacements	21 807	8 939	16 683	17 272
Other	928	7 569	15 090	26 613
<b>Sewerage:</b>				
New works	8 323	17 050	4 932	6 284
Renewals or replacements	19 679	20 920	17 148	16 071
Other	3 726	7 602	15 510	29 842

The key drivers for capital expenditure in 2014-15 were compliance and renewals, with expenditure on new works declining sharply for both water and sewerage. The amount spent on 'other' Capex has doubled each year since 2011-12 for both water and sewerage.

In 2014-15 TasWater did not receive any capital works grants from State or Commonwealth governments to undertake specific capital works.

Chapter 9 outlines some of the major capital expenditure projects underway or completed by TasWater during 2014-15, together with expected future capital investment in water and sewerage assets.

### 8.2.5 Economic rate of return

The Economic Rate of Return (ERR) is a ratio used to determine how efficiently a business is using its total assets to generate profits (ie full cost recovery).

The ERR is calculated as follows:

<b>Economic rate of return:</b>		
Revenue from water and sewerage business operations	less	Operating expenses (operation, maintenance and administration expenses) and current cost depreciation
Written down replacement cost (WDRC) of operational assets		

Table 8.8 shows the average ERR reported by each of the previous regional corporations in 2011-12 and 2012-13 and TasWater's ERRs for 2013-14 and 2014-15.

**Table 8.8 Economic rate of return (%)**

	2011-12	2012-13	2013-14	2014-15
Water	-	-	0.75	1.25
Sewerage	-	-	-1.21	-0.10
Water and sewerage	0.91	1.05	-0.20	0.65

TasWater's ERR is expected to remain relatively low as it continues to work towards meeting its regulatory compliance obligations while, at the same time, reforming prices and transitioning customers to a rational tariff structure.

### 8.2.6 Net profit after tax

Net profit after tax (NPAT) is disclosed in TasWater's annual financial statements. NPAT includes accounting depreciation but excludes dividend payments and can vary significantly from year to year. Table 8.9 shows TasWater's NPAT and profit ratio including calculated combined ratios of the previous regional corporations.

The NPAT ratio shows how much profit the entity makes for every dollar of revenue earned and is therefore a useful indicator of the effectiveness of an organisation's pricing strategy and how well it controls costs. The NPAT ratio is calculated as follows:

<b>NPAT ratio:</b> $\frac{\text{Net Profit less income tax equivalents}}{\text{Revenue from water or sewerage business operations}}$
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**Table 8.9 Profits and profit ratios**

	2011-12	2012-13	2013-14	2014-15
Net profit after tax(\$'000)	19 557	22 439	27 236	33 155
Profit ratio (%)	8.0	8.5	10.1	11.0

In 2014-15 TasWater's NPAT ratio increased slightly compared to the previous year and was comparable to that of mainland utilities.

### 8.2.7 Dividends

The level of dividends indicates the amounts a utility returned to its shareholders or, alternatively, the amounts it has retained for reinvestment in the business.

In TasWater's case, the dividend amounts are determined by TasWater's Board in line with the provisions of the *Water and Sewerage Corporation Act 2012* and are paid having regard to the Shareholders' Letter of Expectations.

Table 8.10 shows the dividends payable and the dividend payout ratio (relative to NPAT) over the last four years. Dividends do not reflect all returns to council owners; returns to owners also include income tax equivalents and guarantee fees (refer to section 1.6 of this Report for information regarding total returns to owners).

**Table 8.10 Dividends and dividend payout ratios**

	2011-12	2012-13	2013-14	2014-15
Dividends (\$000s)	11 041	12 640	18 647	22 120
Dividend payout ratio (%)	56.5	56.3	68.5	66.7

TasWater returned \$22.1 million to its shareholders in 2014-15 which represented almost 67 per cent of its profit after tax. Dividend payout ratios of comparable mainland utilities were around 60 per cent.

### 8.2.8 Debt and Interest

Debt and interest ratios are useful tools in determining the financial sustainability and viability of a business.

The net debt to equity (NDTE) ratio indicates the extent to which a business is funding its activities from external debt sources, rather than from its shareholders (ie through equity).

The NDTE ratio is calculated as follows:

<b>Net debt to equity:</b>	
$\frac{\text{Net Debt}}{\text{Equity}}$	or $\frac{\text{Short term debt} + \text{long term debt} - \text{cash} - \text{other investments}}{\text{Total assets (based on WDRC)} - \text{Total liabilities}}$

The interest cover ratio indicates how easily a business can meet its debt obligations and pay interest on outstanding debt.

The interest cover ratio is calculated as follows:

<b>Interest cover:</b>	
$\frac{\text{EBIT}}{\text{Net Interest Expense}}$	or $\frac{\text{Revenue from operations} - \text{operating expenses} - \text{depreciation}}{\text{Total interest expenses} - \text{Interest income}}$

Specifically, the interest cover ratio is a measure of the number of times a business could make the interest payments on its debt with its earnings before interest and tax (EBIT). EBIT is a measure of a business' profit that does not take into account interest and income tax expenses.

**Table 8.11 Net debt to equity and interest cover ratios**

	2013-14	2014-15
Net debt to equity (%)	21.0	22.8
Interest cover (times)	5.3	6.4

In 2014-15 TasWater reported a NDTE ratio of 23 per cent and an interest cover ratio of 6.4 times. The NDTE ratio is very low compared to the ratio for comparable mainland service providers where the ratio averaged around 76 per cent.





## 9 PRIORITIES FOR IMPROVING PERFORMANCE

This Chapter sets out the key priorities for improving the Tasmanian water and sewerage industry's performance.

Opportunities to improve performance have been identified with reference to the customer service standards and through general monitoring of regulatory compliance. It includes issues related to physical assets through to administrative and management practices.

While the primary focus of this Chapter is on TasWater as a service provider, the activities of other participants and stakeholders in the industry such as State Government agencies and local government are also addressed. As such, this Chapter provides:

- an overview of the approach taken by environmental, public health and water and dam safety regulators in identifying future capital expenditure priorities;
- a summary of actions taken by TasWater during 2014-15; and
- future capital expenditure priorities.

Other factors such as demographic and development outlooks are also likely to inform future assessments of opportunities for improving industry performance.

### 9.1 Framework for the identification of priority future projects

The following sections examine the processes and considerations adopted by key industry regulators in identifying priorities for future capital expenditure across the water and sewerage sector.

#### 9.1.1 Environment Protection Authority

##### 9.1.1.1 *Wastewater management plan update*

Under the terms of their respective interim operating licences, the previous regional water corporations were each required to develop a Wastewater Management Plan (WWMP) for the approval of the Director, EPA. The three regional WWMPs provided detailed information regarding wastewater related projects including cost break -downs and implementation schedules over a medium-term planning horizon to July 2015. Accordingly, the plans continue to have relevance for the 2014-15 reporting period.

In February 2015 TasWater submitted its first draft of an amalgamated 2014-18 WWMP to the Director, EPA to satisfy the requirements of its Water and Sewerage Licence (effective 1 July 2013). The 2014-18 WWMP outlined TasWater's strategic approach and environmental improvement initiatives to be undertaken over the

second regulatory period (1 July 2015 – 30 June 2018) and incorporated an annual progress review process.

In addition to guiding decisions taken by TasWater regarding priorities and project funding, the WWMP also serves as a reference document. Information contained in the WWMP is, for example, referred to by the EPA during the development of specific environmental conditions for wastewater treatment plants (WWTPs) and therefore assists with the roll-out of Environment Protection Notices (EPNs).

The EPA's review of the 2014-18 WWMP document concluded that, overall:

- capital expenditure proposed by TasWater should lead to increased regulatory compliance and improved environmental outcomes;
- EPA priorities relating to wastewater treatment plant upgrades had largely been incorporated into the WWMP; and
- a strategic approach is being adopted to address broader wastewater management issues such as reticulation integrity, incident response and desludging.

However, the EPA's review also flagged that the past record of implementation of projects to improve environmental performance indicated significant delays against original timeframes; capital expenditure not reaching the amount originally planned; and state-wide compliance for wastewater treatment plant discharges showing a downward trend over the past five years. Significant compliance improvements will in most cases be linked to major infrastructure upgrades or maintenance works.

The EPA is expecting much improved performance through implementation of the plan in the coming years, and accordingly, that compliance levels will also improve.

#### **9.1.1.2 Environmental conditions updating**

A priority project for the EPA is ensuring that all WWTPs are regulated under a contemporary suite of environmental conditions. The aim is to achieve greater consistency and to phase in modern environmental requirements with regards to technical standards, monitoring practices, reporting arrangements and plant management. The EPA is also gradually removing "legacy" conditions, originally issued to Councils as the former operators of the WWTPs. These legacy conditions contain timeframes and requirements that have been superseded by more recent agreements, including the WWMPs.

During 2014-15, the EPA continued updating environmental conditions on a plant by plant basis. New EPNs for six WWTPs (Electrona, Smithton, Stanley, Stieglitz, Queenstown and Wynyard) were issued during this period. In addition, a new WWTP to be constructed at Rosebery was assessed and issued with environmental conditions that were incorporated into the Land Use Planning Permit in November 2014. The Rosebery WWTP was not yet fully commissioned at the end of the 2014-15 reporting period.

New EPNs incorporate a suite of standardised conditions which are designed to be consistent with the principles outlined in relevant policy documents, including:

- *State Policy on Water Quality Management* (1997);

- *Environmental guidelines for the reuse of recycled water in Tasmania* (Department of Primary Industries, Water and Environment (DPIPWE), 2001);
- *Emission limit guidelines for sewage treatment plants that discharge pollutants into fresh and marine waters* (DPIPWE, 2001); and
- *National water quality management strategy* (a suite of documents relating to wastewater management).

#### **9.1.1.3     *Ambient monitoring*<sup>1</sup>**

The EPA has previously identified the lack of comprehensive ambient monitoring around wastewater treatment plant outfalls, and the resulting inability to properly characterise the associated level of risk, as a key issue for environmental regulation in the wastewater sector. Properly designed ambient monitoring programs can provide important information regarding the impacts of past practices, and the results of such monitoring are crucial for the determination of site-relevant, cost-effective solutions consistent with the *State Policy on Water Quality Management 1997*.

Ambient monitoring programs, prioritised according to environmental considerations, were included as projects in the regional corporations' respective WWMPs. The EPA expects TasWater to continue progressing these commitments. Corresponding requirements are incorporated into EPNs with timeframes determined for each WWTP according to priority.

During 2014-15, the EPA Division assessed and approved Ambient Monitoring Plans (AMPs) submitted by TasWater for a number of locations, while other ambient monitoring programs moved into the implementation and / or analysis phase. Noteworthy milestones are:

- Ambient Monitoring Program (AMP) for the Tamar / North Esk region assessed and approved. This AMP relates to the Tamar/ North Esk region which covers five WWTPs servicing the urban Launceston catchment. As part of this process, ambient monitoring requirements were refined and clarified. Monitoring in accordance with the Tamar / North Esk AMP commenced in April 2015.
- In the southern region, a major project was completed in 2014-15 with the ambient monitoring of seven WWTPs discharging to the Derwent Estuary (Cameron Bay, Prince of Wales Bay, Green Point/Bridgewater, East Risdon, Macquarie Point, Selfs Point and Rosny WWTPs) concluding in May 2015. The findings of this comprehensive program are currently being analysed and will provide crucial input into the further upgrade strategies for these WWTPs.
- Reports outlining the finding of comprehensive ambient monitoring undertaken in relation to the New Norfolk and Bicheno were submitted to the EPA.
- Some smaller scale monitoring programs at Blackmans Bay, Deloraine, Electrona, Fingal, Margate and Prospect Vale continued through 2014-15.

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<sup>1</sup> Monitoring the surrounding area or receiving environment, commonly aquatic for WWTPs.

#### **9.1.1.4 Sustainable water recycling**

The EPA continues to participate in the National Recycled Water Regulator's Forum (NRWRF) which provides an important opportunity for state and territory government agencies to discuss the development, implementation and evaluation of strategies to ensure that water recycling schemes protect both public health and the environment.

The NRWRF also provides the opportunity to improve communication between state and territory regulatory agencies regarding health-related and environmental regulatory requirements for safe and sustainable recycled water schemes.

Whilst the Tasmanian guideline - *Environmental Guidelines for the Use of Recycled Water in Tasmania, December 2002* remains a key document for guiding recycled water developments, the more recent risk-based approach of the *Australian guidelines for water recycling: Managing health and environmental risks (Phase 1) - 2006* is also being adopted for recycling in the wastewater sector, particularly for higher risk, Class A recycled water schemes.

#### **9.1.1.5 Biosolids management**

During 2014-15, TasWater continued its work on a state-wide desludging and biosolids strategy, with the aim of improving lagoon performance and reducing environmental risk.

The EPA continued its review of the *Tasmanian Biosolids Reuse Guidelines*. Since publication of the original guidelines in 1999, significant research into biosolids has been undertaken both nationally and internationally to:

- investigate the constituent contaminants of concern present in biosolids;
- investigate the risks associated with those contaminants in respect to end use of this material; and
- develop a scientific basis for the regulation and monitoring of biosolids reuse activities.

The outcome of the review will be a contemporary guideline to ensure sustainable biosolids reuse in Tasmania and guide appropriate commitments to expenditure on biosolids management.

The EPA Division is a member of the Australian and New Zealand Biosolids Partnership (ANZBP), which is a collective of utilities, consultants, academics and government agencies with an interest in ensuring the sustainable reuse of biosolids. The Division is contributing to the research being undertaken by the ANZBP and has access to the outcomes of that work, as well as a number of useful references. The EPA is utilising ANZBP resources, references and tools in its review of the Biosolids Guidelines.

### 9.1.3 Public health

As at 30 June 2015, of the 88 Tasmanian drinking water supply systems, 78 were adequately monitored for bacteriological and 84 for chemical quality. The Department of Health and Human Services (DHHS) works closely with TasWater to maintain and improve compliance with this legislative requirement.

During 2014-15 TasWater continued to work towards addressing the priority capital works list agreed with DHHS as part of the corporation's respective interim operating licence. An ongoing role for DHHS is to incorporate emerging public health issues and associated risks (which have been identified with the improved monitoring of drinking water supply systems) into TasWater's decision-making processes when prioritising capital works. In this regard, DHHS issued a revised priority listing to TasWater in early 2014 to assist with the development of forward capital investment for the second regulatory period.

DHHS also intends implementing an independent auditing framework for the verification and validation of TasWater's drinking water quality management plan. This has been achieved through the issuing of the updated *Tasmanian Drinking Water Quality Guidelines (2015)* which were issued in November 2015.

It is expected that the revised Tasmanian Code of Practice for the Fluoridation of Drinking Water Supplies will be finalised during 2015-16. However, in the interim, TasWater has agreed to implement the Code as best practice until a final version of the Code is issued.

DHHS has reiterated its commitment to working with TasWater to ensure that matters of public health are given due consideration in this process now that the water and sewerage sector's activities are managed by a single water corporation.

### 9.1.4 Water allocations/licences and dam safety

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

Before water can be taken directly from a stream or stored in a dam for supply to urban water systems, an allocation licence must be obtained from DPIPWE. The Department, along with TasWater, is continuing a review of all current urban water allocations and licences which were initially transferred to the regional corporations and now TasWater. The review has focussed on ensuring that the extraction points of water allocations endorsed on licences are correctly designated in terms of the extraction location and the specific resource from which the water is taken, and that the quantum of the allocation reflects the historical entitlement. In the context of expected and emerging future urban water demand and supply scenarios, allocations may be varied to maximise the quality and reliability of allocated water and to better reflect actual, and expected future, demand.

DPIPWE is also responsible for assessing applications for dam works (including new and significant repairs or modifications) and for the regulation of dam safety to ensure the owners of existing dams meet their statutory safety responsibilities.

TasWater's recent dam works activities have been focused mostly within the repairs and modifications area, specifically works associated with meeting its dam safety

obligations. However, TasWater has decommissioned two high risk dams at Queenstown and rehabilitated each dam site, removing public safety risks.

All applications to undertake dam works must include a range of information, including engineering designs, for review by departmental staff who advise the Assessment Committee for Dam Construction (as of 1 January 2016, the approval Committee requirements under the *Water Management Act 1999* has been rescinded, the approval requirements under the *Water Management Act 1999* are now undertaken by the Minister or delegate). The Minister then decides whether or not to grant approval for an application and to issue the terms and conditions of this approval. This is to ensure that all dam works are undertaken in a manner that ensures they avoid environmental harm and do not present a risk to the Tasmanian population (as required under the *Water Management Act 1999* and the *Water Management (Dam Safety) Regulations 2011* (as of 1 January 2016 the *Water Management (Dam Safety) Regulations 2011* have been rescinded and replaced with the *Water Management (Dam Safety) Regulations 2015*).

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. The three regional corporations and, more recently, TasWater have been required to undertake a portfolio risk assessment (PRA) of all of its dams to ensure the risk that these dams may present to society are mitigated to within modern tolerable risk standards as outlined in the various Australian National Committee on Large Dams Inc (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 Inc; and
- that they are implemented to an agreed schedule as outlined in their PRA.

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.

## **9.2 Major projects completed or undertaken during 2014-15**

This section provides an overview of the major projects completed or undertaken by TasWater during 2014-15. TasWater's capital expenditure during the year totalled around \$102 million.

### **Fingal Water Treatment Plant (WTP)**

Fingal had been on a permanent boil water alert for a number of years, with untreated and un-chlorinated water supplied to the town. The newly constructed 0.6 ML/day Fingal WTP was completed and now provides fully treated water to the township (\$3.7 million project).

### **Bracknell Water Treatment Plant (WTP)**

Bracknell had historically experienced regular temporary boil water alerts owing to high levels of turbidity which are experienced after heavy rainfall events. The new Bracknell WTP has been completed and is operational (\$2.6 million project).

### **Ringarooma Water Supply Scheme**

The towns of Branhholm, Derby, Legerwood and Ringarooma were all previously subject to boil water alerts or do not consume notices and were on the DHHS priority project list. The proposed solution requires a new WTP along with interlinking trunk water pipelines, to provide fully treated water to ADWG standard to these towns. Significant progress was made during 2014-15 with the commencement of the construction of the pipelines and a contract was awarded for the design and construct of the WTP (\$13.9 million project).

### **Margate Water Supply Scheme**

The project involves the duplication of the existing pipeline to Margate from Ridgeway Dam. The \$12 million project, to be carried out in three stages, is designed to ensure the water supply continues to meet the growing needs of customers in Blackmans Bay and Margate. Significant progress was made on this project during the year with the commencement of construction of the pipelines (stage 3). A total of \$3.1 million had been spent by 30 June 2015.

### **Rosebery Wastewater Treatment Plant (WWTP)**

Construction progressed during the year on the pump stations, pipelines and new treatment plant. A total of \$7.2 million had been spent by 30 June 2015. The progress will enable TasWater to cease discharge to the existing sewage treatment lagoons that are co-located with MMG's tailing storage facility (\$10.4 million project).

### **WTPs at Rosebery, Ringarooma, Mole Creek, Flinders Island**

Contracts were awarded for the design and construction of the treatment plants. By the end of the financial year the design was well progressed and site establishment had commenced (\$20 million project).

### **Burnie WWTP and network upgrade to receive trade waste**

The pump station, pipeline construction and treatment plant improvements progressed during the year. A total of \$1.6 million had been spent by the end of the financial year (\$7.1 million project).

### **Ouse Hamilton Water Supply Scheme**

Both Ouse and Hamilton were supplied by chlorination-only systems drawing raw water from uncontrolled catchments. Contracts were awarded for the design and construction of a new WTP, pump station and pipeline and construction was progressed over the course of the year. The scheme was substantially completed during the year (\$4.2 million).

### **Parker Street Odour Control (Devonport)**

A contract was awarded for the design and construction of an odour control system for the Devonport CBD pump station. A total of \$1 million had been spent by the end of the financial year (\$1.9 million project).

### **Tunbridge Water Quality Improvement Project**

Tunbridge's water supply previously included limited water treatment and the town has been on a temporary boil water alert owing to historically poor bacteriological quality. A contract was awarded for the design and construction of a new WTP and the plant was substantially completed during the year. A total of \$1.5 million had been spent by the end of the financial year (\$1.7 million project).

### **Ti Tree Bend Wastewater Treatment Plant (WWTP) Odour Management**

Ti Tree Bend WWTP is an activated sludge STP that caters for both sewage and stormwater inflows from the Launceston combined system. The existing sludge digestion system is performing poorly with partially treated (odorous) sludge discharged to the sludge drying lagoons. Stage 1 of the Odour Abatement Plan for the site was completed during the year, involving the construction of an iron salts dosing unit to dose into each of the two rising mains entering the plant to prevent the release of odour (\$2 million project).

## **9.3 Ongoing projects during the 2015-16 financial year**

TasWater is planning capital expenditure of \$110 million during 2015-16.

### **9.3.1 State-wide Programs**

During 2014-15 TasWater commenced a series of state-wide programs which will extend over a number of years. A budget of \$57 million has been allocated for these programs for 2015-16. A brief summary of the main programs is provided below.

#### **Sewer Pump Station (SPS) Renewals**

The SPS renewal program has an allocated budget of \$5.6 million for the 2015-16 financial year. This program will continue the upgrade of SPS installations as part of a multi-year program to address ageing and failing assets, to improve health and safety and to reduce overflow risk.

#### **Water Main Renewals Program**

This state-wide program of works involves renewing water mains via a planned program. Allowance has also been made for unplanned works. A budget of \$4.5 million has been allocated for this program in 2015-16.

The objective of the program is to:

- Improve supply reliability for customers through proactive, planned renewals targeting failing and critical assets
- Improve water quality and pressure through targeted renewals



- Create efficiencies by undertaking renewals in conjunction with programs of other authorities where there is a net economic benefit.

### **Sewer Main Renewals Program**

This is an annual state-wide program of sewer and manhole renewals applied to assets that are either at the end of their economic life or represent unacceptable risks to TasWater's customers or receiving environments. The objective of the program is to improve the performance of TasWater's sewer networks. A budget of \$4 million has been allocated for this program in 2015-16.

### **Meter Program**

This is a state-wide program to replace meters or to install new meters on unmetered connections including sporting grounds, council parks, and residential, commercial and industrial properties. A budget of \$3.5 million has been allocated for 2015-16.

### **Supervisory Control and Data Acquisition (SCADA) Upgrade Program**

Work is being undertaken to develop a centralised SCADA system which will consolidate the different systems operated by the former regional corporations into a single state-wide system. This program will unfold over a number of years and \$7.5 million has been allocated for 2015-16. This will improve overall asset performance through improved visibility of asset performance and improved alarm response. The SCADA program is further a key link to the development of a network operations centre from which we will remotely monitor assets and undertake alarm management.

### **CCTV Inspection Program**

The objective of this program is to generate high quality data on the condition of sewerage assets. This will enable targeted and cost effective planned maintenance and renewals programs. The state-wide CCTV sewer condition inspection program commenced in 2014-15 and CCTV of more than 300 km of sewer mains was completed during the year at a cost of \$2.4 million. The CCTV work is continuing and a budget of \$2.6 million has been allocated for 2015-16.

### **Electrical assets condition assessments, upgrades and renewals**

A budget of \$1.5 million has been allocated for the 2015-16 to carry out an audit of electrical assets within TasWater to determine the condition of the assets and rectify key electrical safety. A further \$5 million has been allocated for electrical upgrades and renewals largely aimed at switchboard upgrades.

### **Asset Safety Rectification Program and Machine safety Audit and Upgrade**

In addition to the Electrical Assessment Condition Program, a budget of \$1 million has been allocated for 2015-16 for unplanned rectification of assets due to safety requirements. A further amount of \$1.25 million is earmarked for machine safety audits and upgrades. The objective is to provide a safe work environment for TasWater's employees.

### **9.3.2 Major projects**

A range of major projects that will be continued or commenced in 2015-16, including the forecast expenditure for 2015-16 and the project budget, is set out in Table 9.1.

**Table 9.1 Capital projects to be continued or commenced in 2015-16**

<b>Project</b>	<b>2015-16 Forecast (\$'000)</b>	<b>Project budget (\$'000)</b>	<b>Project description</b>
Ringarooma Water Treatment Plant (WTP) and pipelines	8 248	13 987	As per section 9.2.
Burnie Sewage Treatment Plant (STP) and network upgrades (trade waste)	3 000	7 100	As per section 9.2.
Rosebery STP - new plant	2 872	10 448	As per section 9.2.
Bridport STP Improvement Program	3 680	6 133	Construction of a full reuse scheme to address problems with capacity during peak flow periods and issues with discharge location due to the poor condition and location of the existing outfall. The project will enable compliance with licence requirements and allow for future system growth.
Flinders Island water supply	5 094	9 101	Construction of a new water treatment plant (WTP) to address water quality issues for the towns of Whitemark and Lady Barron on Flinders Island both of which are consistently non-compliant with Australian Drinking Water Guidelines (ADWG) and are subject to permanent boil water alerts.
Asset Management Information System	2 500	11 513	Installation of commercial off the shelf, fit for purpose AMIS that interfaces with relevant corporate systems.
Kingborough Sewerage Strategy– network	8 000	44 290	Construction of pipelines to allow rationalisation of existing STPs at Margate, Electrona and Blackmans Bay. The project will contribute to achieving compliance for the upgraded Blackmans Bay STP.
Rosebery Water Treatment Plant	4 959	5 866	Construction of a new WTP for the town of Rosebery to replace the current plant and address issues experienced with lead concentrations that exceed ADWG limits.
Tolosa Dam replacement infrastructure (tanks)	7 067	23 970	Construction of concrete tank reservoirs as service replacement of Tolosa Dam which will be decommissioned. The dam has been the subject of water quality issues for many years and is also an Extreme consequence category dam with a risk rating above the Australian National Committee on Large Dams (ANCOLD) limit of tolerability. The project will address these issues.
King Island treated water	7 000	16 423	Works include construction of WTP at Grassy, pipeline installation from Grassy to Currie and construction of new reservoir at Currie.
Avoca fully treated water supply	3 865	4 790	Pipeline from the newly constructed Fingal WTP to the existing Avoca Reservoir to supply the township of Avoca with ADWG compliant water.

Project	2015-16 Forecast (\$'000)	Project budget (\$'000)	Project description
Mole Creek water supply	2 845	4 581	Construction of a WTP at the top end of the existing water system including associated pipe and network upgrades. This forms part of the small towns water strategy. This will achieve compliance to the ADWG for the township of Mole Creek.
Prince of Wales primary digester roof replacement	2 500	3 500	The works include replacement of the digester roof and refurbishment of the primary digester. This is a significant job which will require the use of two small cranes.
Ti Tree Bend WWTP Biosolids Dewatering Facility	2 000	8 509	As per section 9.2.
Margate water main upgrade stage 2	2,035	4,685	As per section 9.2.
Triabunna Water Supply Reticulation Reservoir Project	2 000	4 030	Project involves construction of a new 2ML reservoir and demolition of the existing tank.
Burnie Cam pipeline	1 710	2 873	The Cam WTP has been identified as requiring refurbishment to continue to achieve compliance with the <i>Public Health Act 1997</i> and maintain structural integrity of existing structures. The approved works include construction of a pipeline allowing the delivery of water from an under-utilised plant at Burnie to the Wynyard/Cam reticulations.
Gretna/Bushy Park/Glenora water supply upgrade	1 500	3 337	The works include an upgrade to the Gretna scheme and supply to Glenora and Bushy Park.
Huonville Main Road Sewage Pump Station (SPS) replacement	1 875	2 835	Works include replacement of the Main Road SPS and rising main to the Ranelagh STP and construction of a new to accommodate a new residential development.
Cambridge wet weather emergency storage capacity (1-2ML) and Cambridge plant process improvements	3 600	3 600	Construction of a detention storage and process plant upgrade to reduce the risk of sewage spills occurring that result in extended shutdowns of nearby aquaculture leases.

## APPENDIX 1 PERFORMANCE INDICATORS

Performance indicators used in this report are a subset of those defined in the *National Performance Framework: 2013-14 urban performance reporting indicators and definitions handbook*, July 2014. Data was requested from TasWater and other regulators for the report in relation to the performance indicators listed below.

Indicator	NPR reference
<b>WATER RESOURCES</b>	
<b>Sources of Water</b>	
Volume of water sourced from surface water (ML)	W1
Volume of water sourced from groundwater (ML)	W2
Volume of water sourced from desalination (ML)	W3
Volume of water sourced from recycling (ML)	W4
Volume of water received from bulk supplier (ML)	W5
Volume of bulk recycled water purchased (ML)	W6
Total sourced water (ML)	W7
<b>Uses of Water Supplied</b>	
Volume of water supplied - Residential (ML)	W8
Volume of water supplied - Commercial, municipal and industrial (ML)	W9
Volume of water supplied - Other (ML)	W10
Total urban water supplied (ML)	W11
Average annual residential water supplied (kL per property)	W12
Volume of water supplied - Environmental flows (ML)	W13
Volume bulk water exports (ML)	W14
Volume bulk recycled water exports (ML)	W15
<b>Sewerage collected</b>	
Volume of sewage collected - Residential sewage, non-residential sewage and non-trade waste (ML)	W16
Volume of sewage collected -Trade waste (ML)	W17
Total sewage collected (ML)	W18
Sewage collected per property (kL per property)	W19

Indicator	NPR reference
<b>Uses of recycled water</b>	
Volume of recycled water supplied - Residential (ML)	W20
Volume of recycled water supplied - Commercial, municipal and industrial (ML)	W21
Volume of recycled water supplied - Agricultural (ML)	W22
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
<b>ASSETS</b>	
<b>Water treatment plants</b>	
Number of water treatment plants providing disinfection only	
Number of water treatment plants providing further treatment	
Number of water treatment plants providing full treatment	A1
<b>Other water assets</b>	
Number of water pumping stations	
Length of water mains (km)	A2
Properties served per km of water main (No. per km)	A3
Number of water distribution storage facilities	
<b>Sewerage assets</b>	
Number of Level 1 sewage treatment plants	(A4)
Number of Level 2 sewage treatment plants	(A4)
Number of sewage pumping stations	
Length of sewerage mains and channels (km)	A5
Properties served per km of sewer main (No. per km)	A6
<b>Recycled water assets</b>	
Number of recycled water treatment plants	A7
<b>Water supply</b>	
Water main breaks (No. per 100 km of water main)	A8
<b>Water loss</b>	
Infrastructure leakage index (ILI)	A9
Real losses (L per service connection per day)	A10
Real losses (kL per km of water main per day)	A11

Indicator	NPR reference
<b>Sewer main breaks and chokes</b>	
Sewer main breaks and chokes (No. per 100 km sewer main)	A14
Property connection sewer breaks and chokes (No. per 1 000 properties)	A15
<b>CUSTOMERS</b>	
<b>Connected properties and population</b>	
Population receiving water supply services	C1
Connected Residential properties - water supply	C2
Connected Non-residential properties - water supply	C3
Total connected properties – water supply	C4
Population receiving sewage services	C5
Connected Residential properties – sewerage	C6
Connected Non-residential properties – sewerage	C7
Total connected properties – sewerage	C8
<b>Complaints</b>	
Water quality complaints (No. per 1 000 properties)	C9
Complaints meaningfully responded to within ten days (%)	
Water service complaints (No. per 1 000 properties)	C10
Sewerage service complaints (No. per 1 000 properties)	C11
Billing and account complaints – water and sewerage (No. per 1 000 properties)	C12
Total water and sewerage complaints (No. per 1 000 properties)	C13
Average call wait time (seconds)	
Per cent of calls answered by an operator within 30 seconds (%)	C14
Average duration of an unplanned interruption- water (minutes)	C15
Average sewerage interruption (minutes)	C16
Number of sewer spills	
Average break/choke repair time – sewerage (minutes)	
Average frequency of unplanned interruptions – water (No. per 1 000 properties)	C17
Number of restrictions applied for non-payment of water bill (No. per 1 000 properties)	C18
Number of legal actions applied for non-payment of water bill (No. per 1 000 properties)	C19

Indicator	NPR reference
<b>ENVIRONMENT</b>	
Percentage of sewage treated to a primary level (%)	E1
Percentage of sewage treated to a secondary level (%)	E2
Percentage of sewage treated to a tertiary or advanced level (%)	E3
Percentage of sewage volume treated that was compliant (%)	E4
Number of sewage treatment plants compliant at all times	E5
Public disclosure of your sewage treatment plant's performance	E6
Compliance with environmental regulator – sewerage (yes/no)	E7
Percentage of biosolids reused (%)	E8
Greenhouse gas emissions - Water (tonnes CO <sub>2</sub> -equivalents per 1 000 connected water properties)	E9
Greenhouse gas emissions - Sewerage (tonnes CO <sub>2</sub> -equivalents per 1 000 connected sewerage properties)	E10
Total Net Greenhouse gas emissions (tonnes CO <sub>2</sub> -equivalents per 1 000 connected water properties)	E12
Sewer overflows reported to environmental regulator (No. per 100 km of main)	E13
<b>FINANCE</b>	
Total revenue – water (\$)	F1
Total revenue – sewerage (\$)	F2
Total revenue for whole of utility (\$)	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
Revenue per property for whole of utility (\$ per property)	F7
Revenue from Community Service Obligations (%)	F8
Nominal written down replacement cost of fixed water supply assets (\$)	F9
Nominal written down replacement cost of fixed sewerage assets (\$)	F10
Operating cost – water (\$)	F11
Operating cost – sewerage (\$)	F12
Combined operating cost - water and sewerage (\$ per property)	F13
Total water supply capital expenditure (\$)	F14
Total sewerage capital expenditure (\$)	F15
Total capital expenditure for water and sewerage (\$)	F16
Water supply capital expenditure (\$ per property)	F28



Indicator	NPR reference
Sewerage capital expenditure (\$ per property)	F29
Economic real rate of return – water (%)	F17
Economic real rate of return – sewerage (%)	F18
Economic real rate of return – water and sewerage (%)	F19
Dividend (\$)	F20
Dividend payout ratio (%)	F21
Net debt to equity (%)	F22
Interest cover (times)	F23
Net profit after tax (NPAT)	F24
NPAT ratio (%)	F30
Community Service Obligations (\$)	F25
Capital works grants – water (\$)	F26
Capital works grants – sewerage (\$)	F27
<b>PUBLIC HEALTH</b>	
Water quality guidelines	H1
Number of zones where microbiological compliance was achieved	H2
% of population where microbiological compliance was achieved	H3
Number of zones where chemical compliance was achieved	H4
Risk-based drinking water management plan externally assessed (yes/no)	H5
Risk-based drinking water management plan/s in place (eg ISO9001, HACCP, ADWG quality assessment)	H6
Public disclosure of drinking water quality performance (yes/no)	H7
<b>PRICING</b>	
<b>Water</b>	
Tariff Structure (description) - water	P1
Free Water Allowance (kL) - water	P1.1
Fixed Charge (basis for charge) - water	P1.2
Usage Charge 1 <sup>st</sup> Step (kL range and \$)	P1.3
Usage Charge 2 <sup>nd</sup> Step (kL range and \$)	P1.4
Usage Charge 3 <sup>rd</sup> Step (kL range and \$)	P1.5
Usage Charge subsequent steps (kL range and \$)	
Special Levies (\$) - water	P1.12
Income from Special Levies Retained by Utility? (Yes/No) - water	P1.13

Indicator	NPR reference
Annual bill based on 250kL per annum - water	P2
Average Residential Consumption - water	P2.1
Typical Residential Bill - water	P3
Number of Meter Readings per annum - water	P3.1
Billing/rating frequency	P3.2
<b>Sewerage</b>	
Tariff Structure - sewerage	P4
Fixed Charge - sewerage	P4.1
Usage Charge - sewerage (kL range and \$)	P4.2
Special Levies (\$) - sewerage	P4.3
Income from Special Levies Retained by Utility? (Yes/No) - sewerage	P4.4
Annual bill based on 250kL per annum - sewerage	P5
Typical Residential Bill - sewerage	P6
Number of Bills per annum - water/sewerage	P6.1
<b>Water and Sewerage</b>	
Annual bill based on 250kL per annum (water & sewerage)	P7
Typical Residential Bill (water & sewerage)	P8

## APPENDIX 2 WASTEWATER MANAGEMENT ISSUES

This Appendix presents the Environment Protection Authority's (EPA) overview of some of the environmental management issues associated with Tasmania's wastewater treatment systems. These issues should be adequately dealt with provided the implementation of wastewater management plans is satisfactorily progressed and the ongoing management and maintenance of each system is put on a more sustainable footing.

### Blue-green algae blooms

Blue-green algae (BGA) blooms are a relatively common occurrence in sewage lagoons. Unlike mechanical-biological wastewater treatment plants (WWTPs), sewage lagoons provide a calm, stable water environment high in nutrients which, coupled with suitable climatic conditions, provides a perfect environment for BGA populations to increase. Blooms typically occur in summer and autumn, particularly during periods of prolonged stable weather. Under favourable conditions, blooms can persist into the winter months and, as BGA can survive over winter in spore or vegetative forms, they may seasonally disappear but re-establish once suitable conditions return.

Experience with Tasmanian sewage lagoons has shown that BGA are often present at sufficient concentrations to pose a potential risk to stock and human health if toxins are produced and the affected water is released into streams or recycled irrigation. This emphasises the need for caution in managing affected effluent. Not all species of BGA are toxic, or toxic all the time. The production of toxins is influenced by environmental conditions as well as species composition.

The management of BGA is a complex issue and presents a challenge to all managers of sewage lagoons. Various measures can be used in conjunction and should ideally be based on a contingency management plan specific to each lagoon system.

The majority of Tasmanian sewage lagoons (approximately 40 Level 2 WWTPs have a lagoon component) have been affected by BGA blooms at some point.

The publication of the *Guidelines for Managing Blue-Green Algae (Cyanobacteria) Blooms in Sewage Treatment Lagoons* in March 2011 assists with the preparation of appropriate Contingency Management Plans. The guidelines are accessible via the EPA's webpage at: <http://epa.tas.gov.au/regulation/blue-green-algae-guidelines>

## Reuse scheme management

A large degree of variability exists in relation to the management of effluent reuse schemes around the State. This is partially due to the differences in supplier – user arrangements; the type of end use (e.g. golf course versus agricultural application); and type of user (e.g. corporate body or user cooperative versus single user). Historical differences in management approaches originally adopted by different councils for reuse schemes are another factor.

The EPA assesses and reviews wastewater reuse schemes associated with Level 2 WWTPs but does not directly regulate these schemes. Environmental regulation of these schemes is largely the domain of local government. Environmental conditions for reuse schemes typically require adherence to an approved management plan and compliance with specified discharge limits.

Prior to the July 2009 reform, information required by the EPA in relation to reuse schemes often remained outstanding, suggesting inadequate performance monitoring and management practices at the time. This situation is gradually being addressed by TasWater, with a number of schemes having been audited, and comprehensive monitoring and reporting regimes being implemented for several schemes.

Determining whether the rate of uptake of effluent recycling is sufficient requires closer examination of data for most Level 2 WWTPs. Whilst there may be valid technical or climatic reasons preventing or minimising reuse, the feasibility of effluent reuse needs to be more fully considered, consistent with the *State Policy on Water Quality Management*. Under the policy, effluent reuse needs to be pursued in order to minimise discharge to waters, unless there are valid reasons not to do so. A range of factors, including practical considerations, environmental outcomes and financial implications will be considered by TasWater to determine whether effluent reuse is viable.

Under the suite of contemporary environmental conditions currently being rolled out to all WWTPs, the preparation of an effluent reuse feasibility study is a standard requirement where it has not previously been investigated. This will ensure that effluent recycling is considered as an alternative option to simply discharging treated effluent into waterways.

## Biosolids

The EPA has previously identified considerable knowledge gaps in relation to the management of sewage sludge of Tasmanian WWTPs. The EPA identified the importance of:

- adequate reporting in relation to the volume of sewage sludge produced at a site and, where material is transported off site, information regarding its destination and end use;
- thorough investigation of sustainable management options for existing biosolids stockpiles;
- consideration of beneficial reuse in preference to disposal methods wherever feasible; and

- progressing the desludging of sewage lagoons to maintain or enhance operational capacity.

Significant progress has been made over the years, in particular 2014-15 with regards to improving biosolids management (see section 7.8). Desludging of some lagoon systems identified as high priority has been progressed and is a continuing project for TasWater.

### **Conflict with other land or water uses**

A number of Tasmanian WWTPs discharge effluent to waters used for domestic and industrial water supplies, recreational purposes, aquaculture or agricultural irrigation. Conflict with other water users or uses can occur depending on the quality of the effluent discharged, the dilution received at the point of discharge and any exacerbating circumstances such as the presence of harmful substances or organisms. Generally, such situations are managed by TasWater by notifying affected water users, effluent discharge management procedures and the development of improvement options for affected WWTPs. In some cases, the proximity of WWTPs has resulted in odour impacts on adjacent land uses such as residential and recreational areas.

An analysis of the environmental sensitivity of existing wastewater treatment and discharge arrangements has been incorporated into the previous regional corporations' respective Wastewater Management Plans and will feed into the development of TasWater's Wastewater Management Plan (see section 9.1.1 of this Report).

### **Lack of ambient monitoring**

Information collected through ambient monitoring (the monitoring of impacts in the receiving environment) is an essential aspect for the determination of management and upgrading decisions for WWTPs. Such programs primarily aim to detect and quantify impacts of current WWTP discharge practices, identify mixing zones associated with outfalls and assist with the determination of required improvement measures. In addition, these programs are likely to enhance the general understanding of our waterways, especially when co-ordinated with existing water quality monitoring programs.

Prior to the July 2009 reform only limited ambient monitoring of a satisfactory standard was conducted in relation to Tasmanian Level 2 WWTPs.

Environmental conditions progressively being issued by the EPA contain a suite of requirements in relation to ambient monitoring. As a result, several ambient monitoring programs commenced in 2013-14 and others continued to be rolled out throughout 2014-15. Some of the programs, which generally have a practical monitoring component of 12 months' duration, were substantially completed during the current reporting period. Collation and interpretation of the monitoring results is currently underway and will play a significant role in informing strategic decisions for the future of Level 2 WWTPs. The progress of these programs is detailed in Chapter 9 of this report.

## **Flow monitoring and control**

As outlined in section 7.1 of this Report, the continuing roll-out of flow meters by the corporations and TasWater has resulted in significant improvements in monitoring and controlling flows in areas previously identified as a concern. Further progress is required to ensure that flow meters are regularly serviced, to ensure ongoing accuracy of measurements.

## **Capacity restrictions**

As outlined in section 3.6 of this Report, several WWTPs had average flows that significantly exceeded average dry weather flow limits. This may be indicative of issues with hydraulic flow capacity at the WWTP. Operating at or over the hydraulic capacity limit restricts the ability of the system to cope with existing loads. Where seasonally fluctuating loads or trade waste inputs are an additional concern, such capacity issues are further compounded. Operating outside the hydraulic capacity limits may translate to poor compliance and may therefore restrict the potential for further residential or industrial development in a sewerage catchment.

The reticulation network delivering wastewater to the treatment plants may also be subject to capacity concerns. One common concern reported in relation to the Tasmanian wastewater industry is that of inflow and infiltration into the reticulation system. Inflow and infiltration relates to the ingress of water (either stormwater or groundwater) into the sewerage system, thereby increasing the volume transported to the plant for treatment. This may result in overflows of raw or diluted sewage from points in the reticulation system (e.g. manholes, dedicated emergency overflow pipes and pumping stations) or at the WWTP itself. Alternatively, wastewater may only receive partial treatment during, for example, peak wet weather flow periods. Those areas with old or poorly maintained reticulation systems are particularly affected, as well as those which commonly experience prolonged wet weather periods. The depth of the reticulation infrastructure (i.e. whether it comes into contact with groundwater) is another factor.

The impacts of sewage overflows from failed or under-capacity reticulation are potentially serious in terms of public and environmental health. Contamination of oysters by sewage (such as happened at Dunalley in early 2013) or overflows in the vicinity of popular swimming areas are two scenarios which can have significant public health consequences.

## **Trade waste**

Several wastewater treatment systems in Tasmania receive major trade waste inputs from one or more trade waste generators. Often these generators, particularly in the food processing industry, contribute not only a significant hydraulic load but also a sizeable organic and nutrient load.

While some councils had entered into trade waste agreements with trade waste generators during the period councils operated the WWTPs, compliance was not always achieved due to the difficulties in reducing loads at the source, lack of effective trade waste monitoring procedures and disagreements between client and service providers over interpretation.

There are a number of important considerations related to trade waste in the sewerage system:

- trade waste inputs into the sewerage system can cause fluctuations in wastewater quality and quantity which can be difficult to deal with at the wastewater treatment plant;
- odour issues reported in relation to some Tasmanian WWTPs are often associated with plants receiving major trade waste inputs; and
- plants receiving high trade waste loads generate substantial volumes of sludge which needs to be managed and regularly removed to maintain system efficiency.

Additionally, highly saline trade waste inputs into the reticulation system can make effluent unsuitable for reuse applications, as irrigation with saline effluent can have detrimental effects on soil structure and plant growth.

### **Lagoon systems**

In Tasmania, sewage lagoons or systems incorporating sewage lagoons account for almost half of the Level 2 WWTPs, especially in the northern region which has a proportion of over 50 per cent. The southern region, due to a greater number of urban WWTPs, has a slightly lower proportion of lagoons as does the north-west region.

Sewage lagoon systems represent a simple method of treating wastewater, characterised by low level of technical complexity and low power consumption. They are a popular treatment system in rural areas where the cost of land is not prohibitive and where the limited availability of trained staff to design or operate complex mechanical-biological plants may be an impediment. They provide secondary level treatment, which is generally sufficient in combination with effluent reuse applications and/or the receiving waterways provide sufficient dilution. In many cases, these lagoon systems are operated in conjunction with an effluent reuse scheme.

However, some issues have been identified with Tasmanian sewage lagoons which have at times had a negative impact on performance. These issues include:

- the periodic growth of algae, including blue-green algae, is a common occurrence in lagoons. Apart from presenting a potential environmental risk in the case of blue-green algae blooms, prevalence of algae in the system may impact on oxygen transfer into the system and increase the turbidity of the effluent;
- accumulation of sludge in sewage lagoons can significantly reduce treatment efficiency. In a number of lagoon systems, sludge has accumulated to such a degree that treatment capacity is significantly affected and desludging options need to be urgently progressed;
- lagoon liners should be designed and maintained to prevent leaking of sewage into the underlying groundwater. Where liners were not installed to the required specification, or subsequently damaged, groundwater contamination is a potential issue requiring consideration; and
- sewage lagoons can also be prone to flooding and sludge wash-out depending on location.





## APPENDIX 3 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). (Refer to Table 4.2)

**Consequence of Dam Failure** – the result of a dam failure in terms of loss of life and damage to infrastructure, services and the environment.

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

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

**Dam Safety Emergency Management Plans (DSEMP)** – A DSEMP is prepared for use in a situation where there is a dam safety emergency; it is the Department of Primary Industries, Parks, Water and Environment’s (DPIPWE’s) policy that all dams which have a “Significant” consequence category rating or higher require a DSEMP where a population at risk have been identified. As a minimum a DSEMP 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.

**Five Year Dam Safety Surveillance Reports** – TasWater is required to undertake a dam safety surveillance review every five years for each of its dams that have a “Significant” or higher consequence category rating, and report to the Dam Safety Regulator (DPIPWE) in its annual Dam Safety Management Plan. The plan sets out the condition of the dam and outlines any planned remedial works required to maintain or upgrade the dam.



## APPENDIX 4 WASTEWATER TREATMENT PLANT (WWTP) PERFORMANCE SUMMARY

As outlined in Chapter 7 of this report, unsatisfactory compliance levels achieved by Level 2 wastewater treatment plants (WWTPs) in relation to specified emission limits imposed by the EPA remained an issue for TasWater during 2014-15, continuing the trend established under the previous regional corporations.

The information in Chapter 7 aggregates compliance results on a state-wide level. As it may also be important to understand how the performance of individual WWTPs contributes to corporation-wide performance, more detailed compliance information is provided in this Appendix.

Table A4.1 and Figures A4.1 to A4.2 show compliance with regulatory limits and AMT limits for each WWTP.

Table A4.2 lists the compliance reported for each recycling scheme which utilises treated effluent generated by Level 2 WWTPs. Compliance is measured against 'Class B' quality expectations (as outlined in the Environment Protection Authority Division's *Environmental Guidelines for the Use of Recycled Water in Tasmania*) for each of the 2009-10 to 2014-15 financial years.

Table A4.3 lists the proportion of effluent reused and reuse flow per year for each Level 2 WWTP with associated effluent reuse for each of the 2009-10 to 2014-15 financial years.

Table A4.4 2014-15 Licensed flow limit and actual average annual inflow per WWTP (kL/day and per cent proportion)

Table A4.1 Summary of WWTP discharge to waters Regulatory Limits and AMT Limits compliance results, 2009-10 to 2014-15

Premises name	2014-15		2013-14		2012-13		2011-12		2010-11		2009-10	
	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)
Beaconsfield	93.4	55.7 <sup>1</sup>	83.6	57.4 <sup>1</sup>	90.7	53.1 <sup>1</sup>	84.6	50.4	74.5	57.4	66.7	60.4
Beauty Point	93.1	64.4 <sup>1</sup>	91.7	63 <sup>1</sup>	91.7	62.0 <sup>1</sup>	84.1	59.6	94.8	63	89.6	60.2
Bicheno	89.6	68.9 <sup>1</sup>	68.8	57.4 <sup>1</sup>	83.4	59.1 <sup>1</sup>	80.8	59.3	95.9	58.3	72.9	47.6
Blackmans Bay	90.0	58.3 <sup>1</sup>	86	58.5 <sup>1</sup>	95	64.8 <sup>1</sup>	91.5	57.9	95.1	57.9	93.8	59.3
Boat Harbour	55.6	51.5 <sup>1</sup>	66.4	69.1 <sup>1</sup>	84.5	77.4 <sup>2</sup>	78.1	76	83.3	82.4	77.8	73.1
Bothwell	85.9	74.5 <sup>1</sup>	88.9	75 <sup>1</sup>	91.4	77.1 <sup>1</sup>	89.6	68.9	81.3	58.3	88.1	65.5
Bridgewater	86.0	61.7 <sup>1</sup>	76.4	54.6 <sup>1</sup>	91.6	61.7 <sup>1</sup>	97.2	67.6	97.2	63.2	97.2	64.8
Bridport	50.8	50.8 <sup>1</sup>	54.5	54.5 <sup>1</sup>	47.7	47.7 <sup>1</sup>	44.9	44.9	48.2	48.2	52.8	52.8
Brighton	-	-	77.5	33.3 <sup>1</sup>	74	39.3 <sup>1</sup>	70.8	37	80.4	39.4	91.9	46.5
Cambridge/Airport	83.3	90.4 <sup>1</sup>	81.5	88 <sup>1</sup>	77.8	92.9 <sup>1</sup>	83.9	93.1	91.8	93.4	93	97.7
Cameron Bay	89.1	74.8 <sup>1</sup>	82.2	66.7 <sup>1</sup>	84.3	62.0 <sup>1</sup>	81.5	65.8	75.9	55.8	88.1	60.7
Campania	39.6	41.5 <sup>1</sup>	35.4	45.4 <sup>1</sup>	42	43.9 <sup>1</sup>	33.9	48.2	42.3	35.2	41.7	36.9
Campbell Town	80.2	56.9 <sup>1</sup>	86.3	54.2 <sup>1</sup>	89.6	56.5 <sup>1</sup>	87.5	57.4	75	47.2	78.1	50.9
Carrick	82.8	60.6 <sup>1</sup>	80.2	54.7 <sup>1</sup>	87.6	57.1 <sup>1</sup>	76	50.9	54.2	34.5	44.7	48.2
Cradle Mountain	98.7	99.0 <sup>1</sup>	94.7	96.5 <sup>1</sup>	99.3	99.8 <sup>1</sup>	99	99.5	86.9	96.4	-	-
Cressy	91.6	51.4 <sup>1</sup>	91.6	47.7 <sup>1</sup>	84.4	40.7 <sup>1</sup>	88.4	43.6	88.5	44.4	86.5	51.9
Currie	90.3	72.4 <sup>1</sup>	97.6	72.3 <sup>1</sup>	87.4	59.8 <sup>1</sup>	78.4	50.5	76.1	42.6	76.7	43.5
Cygnets	97.9	77.6 <sup>1</sup>	100	85.2 <sup>1</sup>	91.5	73.0 <sup>1</sup>	96.2	82.6	96.2	80.4	93.9	70.1
Deloraine	66	66.0 <sup>1</sup>	66	52.4 <sup>1</sup>	73.5	63.7 <sup>1</sup>	68.9	56.6	84.3	71.3	87.9	74
Dover	96.3	88.0 <sup>1</sup>	89.8	82.4 <sup>1</sup>	85.3	66.4 <sup>1</sup>	87.7	67	66.7	35.7	72	34.7
East Strahan	90.5	69.1 <sup>2</sup>	90.1	72.5 <sup>1</sup>	95.1	83.2 <sup>1</sup>	99.1	84	94.4	85.2	93.5	84.3
Electrona	85.6	27.4 <sup>1</sup>	31.3	37 <sup>1</sup>	37.5	37.9 <sup>1</sup>	42	31.9	50	42.6	72.9	53.7

Premises name	2014-15		2013-14		2012-13		2011-12		2010-11		2009-10	
	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)
Evandale	72.9	34.3 <sup>1</sup>	72.2	29.4 <sup>1</sup>	67.4	29.9 <sup>1</sup>	71.9	35.2	69.4	37.0	71.3	34.3
Exeter	87.1	36.6 <sup>1</sup>	93.6	51.2 <sup>1</sup>	95.7	41.5 <sup>1</sup>	93.8	38	94.8	39.8	97.9	44.4
Fingal	73.9	46.4 <sup>1</sup>	79.4	47.7 <sup>1</sup>	52.4	47.5 <sup>2</sup>	44.7	45.8	45.8	47.2	30.2	43.1
Geeveston	74.2	73.2 <sup>1</sup>	83.9	77.8 <sup>1</sup>	91.7	84.2 <sup>1</sup>	97.9	84.6	92.9	77.5	49.1	29
George Town	83.3	62.5 <sup>1</sup>	88.7	74.1 <sup>1</sup>	94.5	82.4 <sup>1</sup>	91.3	65.4	85.7	81.5	92.5	81.3
Hoblers Bridge	86.2	64.6 <sup>1</sup>	97.5	72.2 <sup>1</sup>	95.9	64.8 <sup>1</sup>	91.7	66.7	97.9	69.4	97.9	67.6
Kempton	33.3	32.1 <sup>1</sup>	45.8	46.3 <sup>1</sup>	31.3	35.2 <sup>1</sup>	36.8	34.3	35.9	22.3	45.8	35.7
Latrobe	80.4	54.7 <sup>1</sup>	73.9	58.5 <sup>1</sup>	71.7	51.0 <sup>1</sup>	85.4	57.4	77.1	63.9	91.7	63.6
Legana	84.0	34.9 <sup>1</sup>	85.1	45.5 <sup>1</sup>	81.4	36.1 <sup>1</sup>	87.1	34.4	95.2	55.6	87.3	77.1
Lilydale	92.0	67.0 <sup>1</sup>	90.8	70.4 <sup>1</sup>	90.7	57.0 <sup>1</sup>	92.6	63	90.7	60.2	90.7	56.5
Longford	54.4	35.0 <sup>1</sup>	44.1	28.6 <sup>1</sup>	57.3	32.4 <sup>1</sup>	65.6	39.8	65.6	48.1	55	41.1
Macquarie Point	78.9	50.9 <sup>1</sup>	87.8	50.5 <sup>1</sup>	93	42.9 <sup>1</sup>	82.2	25.7	90.7	41	100	36.1
Margate	73.3	52.8 <sup>1</sup>	70.3	49.1 <sup>1</sup>	79.2	50.5 <sup>1</sup>	66.7	46.9	61.1	36.6	68.8	46.3
Midway Point	97.9	69.8 <sup>1</sup>	100	78.3 <sup>1</sup>	100	73.7 <sup>1</sup>	97.9	81.7	100	79.8	97.9	76.8
New Norfolk	85.8	57.4 <sup>1</sup>	85.5	56.5 <sup>1</sup>	89.6	53.7 <sup>1</sup>	85.4	41.7 <sup>2</sup>	73.3	32	91.4	41.8
Newnham	85.9	58.5 <sup>1</sup>	84.8	56.5 <sup>1</sup>	95.8	61.1 <sup>1</sup>	97.9	60.7	97.9	64.8	97.9	67.8
Norwood	96.4	82.0 <sup>1</sup>	94.1	78.7 <sup>1</sup>	97.9	77.8 <sup>1</sup>	97.8	70.8	93.8	69.4	100	77.6
Oatlands	50.0	44.3 <sup>1</sup>	39.6	41.7 <sup>1</sup>	29.2	39.1 <sup>1</sup>	54.2	48	44.6	37.7	57.7	42.9
Orford	86.8	59.4 <sup>1</sup>	93.5	66.7 <sup>1</sup>	93.5	68.5 <sup>1</sup>	96.5	69.9	94	51.2	89	64.8
Pardoe	58.7	14.3 <sup>1</sup>	70	15.7 <sup>1</sup>	82.6	19.2 <sup>1</sup>	89.6	20.6 <sup>2</sup>	85.9	22.6	94.4	21.4
Perth	76.0	35.2 <sup>1</sup>	84.9	35.2 <sup>1</sup>	76.1	27.8 <sup>1</sup>	83.3	31.5	76.1	31.5	71.9	30.6
Port Sorell	35.4	28.9 <sup>1</sup>	52.1	36.3 <sup>1</sup>	39.6	15.5 <sup>2</sup>	51	16.5 <sup>2</sup>	70.8	21.4	68.8	25
Prince of Wales	83.0	55.1 <sup>1</sup>	89.6	62 <sup>1</sup>	87.5	59.4 <sup>1</sup>	93.8	64.4	95.9	68.3	100	61.9
Prospect Vale	89.9	71.7 <sup>1</sup>	82.4	69.5 <sup>1</sup>	88	66.7 <sup>1</sup>	86.1	60.2	47.9	43.5	74.2	59.5

Premises name	2014-15		2013-14		2012-13		2011-12		2010-11		2009-10	
	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)
Queenstown	70.2	72.6 <sup>2</sup>	62.5	59.7 <sup>2</sup>	74.5	76.2 <sup>1</sup>	80.0	79.0	75.0	81.2	61.5	69.2
Railton	-	-	89	65.8 <sup>1</sup>	91.2	68.0 <sup>1</sup>	94.7	69.8	87.5	68.5	91.7	75.9
Ranelagh	95.0	100.0 <sup>1</sup>	86	93.6 <sup>1</sup>	47.4	47.4 <sup>1</sup>	59.6	59.6	53.6	53.6	54.9	54.9
Richmond	-	44.3 <sup>1</sup>	-	42.6 <sup>1</sup>	-	41.7 <sup>1</sup>	-	46.8	-	46	-	-
Ridgley	90.9	90.7 <sup>1</sup>	87.7	88.1 <sup>1</sup>	93	85.5 <sup>2</sup>	85.4	90.5	76.6	78.6	83.4	78.6
Risdon Vale	96.1	93.8 <sup>1</sup>	97.9	89.8 <sup>1</sup>	100	93.3 <sup>1</sup>	97.3	91.6	97.9	94	100	92.9
Riverside	97.0	58.4 <sup>1</sup>	100	63.9 <sup>1</sup>	91.7	57.4 <sup>1</sup>	80.8	51.4	63.5	39.7	60.4	36.5
Rokeby	82.2	81.4 <sup>1</sup>	99.1	99.1 <sup>1</sup>	87.4	85.2 <sup>1</sup>	93.3	93.6	97.1	97.1	97.6	98
Rosny	85.9	65.5 <sup>1</sup>	88.3	67.6 <sup>1</sup>	100	68.8 <sup>1</sup>	99.3	66.7	98.9	67	98.5	61.8
Round Hill	90.6	90.6 <sup>1</sup>	85.6	85.6 <sup>1</sup>	93.5	93.5 <sup>1</sup>	98.1	98.1	91.7	93.6	88	88.9
Scamander	-	64.7 <sup>1</sup>	-	69.4 <sup>1</sup>	-	69.6 <sup>1</sup>	-	67.3	-	53.8	-	-
Scottsdale	94.3	64.3 <sup>1</sup>	91.7	65.7 <sup>1</sup>	95.5	70.7 <sup>1</sup>	97.1	70.1	97.1	73.9	96.9	72.2
Selfs Point	87.4	93.8 <sup>1</sup>	94.2	97.8 <sup>1</sup>	86.4	93.6 <sup>1</sup>	93.9	98	92.7	99	95	98.7
Sheffield	98.0	98.0 <sup>1</sup>	97.2	97.2 <sup>1</sup>	94.3	94.3 <sup>1</sup>	66.7	90.7	86.1	92.6	97.2	97.2
Sisters Beach	88.0	88.0 <sup>1</sup>	95.7	95.7 <sup>1</sup>	85.9	89.4 <sup>2</sup>	87.5	94.8	75	86.1	58.3	69.5
Smithton	88.2	56.8 <sup>1</sup>	57.6	36.6 <sup>2</sup>	43.7	35.1 <sup>1</sup>	67.8	61.1	56	45.4	64	57.1
Somerset	100.0	58.5 <sup>1</sup>	100	67.9 <sup>1</sup>	100	77.8 <sup>2</sup>	91.7	79.2	100	67.6	43.7	52.8
Sorell	89.6	78.7 <sup>1</sup>	97.9	78.8 <sup>1</sup>	91.7	66.3 <sup>1</sup>	93.8	67.3	89.8	61.9	90.4	63.2
St Helens	96.0	100.0 <sup>1</sup>	96.2	98.1 <sup>1</sup>	97.2	98.1 <sup>1</sup>	99.1	99.1	97.2	99.1	96.3	98.2
St Marys	-	-	83.3	47.2 <sup>1</sup>	77	45.0 <sup>1</sup>	58.3	2.8 <sup>2</sup>	84.9	58.5	82.4	58.3
Stanley	75.0	43.1 <sup>1</sup>	69	50.7 <sup>1</sup>	66.2	48.7 <sup>1</sup>	82.5	61.8	87.9	65.3	73.2	55
Stieglitz	-	-	100	73.2 <sup>1</sup>	100	64.5 <sup>2</sup>	100	64.3 <sup>2</sup>	100	61.4	100	72.9
Swansea	81.1	44.3 <sup>1</sup>	83.3	52.8 <sup>1</sup>	74.5	42.7 <sup>1</sup>	79.2	45	81	51.2	91.3	60.7

Premises name	2014-15		2013-14		2012-13		2011-12		2010-11		2009-10	
	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)	Reg limits (%)	AMT limits (%)
Ti-Tree Bend	96.5	89.6 <sup>1</sup>	95.8	83.3 <sup>1</sup>	97.9	73.1 <sup>1</sup>	95.8	84.3	97.9	88.0	100	87.6
Triabunna	73.6	52.8 <sup>1</sup>	79.6	50.9 <sup>1</sup>	78.2	54.5 <sup>1</sup>	76.1	51.3	82.4	46.2	81	57.1
Tullah	93.9	68.8 <sup>2</sup>	93.3	75.42	95.4	84.7 <sup>1</sup>	91.9	82.7	60	73.2	31.9	49.9
Turners Beach	74.0	43.3 <sup>1</sup>	78.4	55.7 <sup>1</sup>	71.2	42.3 <sup>1</sup>	76.9	49.1	79.6	47.2	81.5	63.9
Ulverstone	33.3	11.1 <sup>3</sup>	-	<sup>3</sup>	12.5	12.5 <sup>2</sup>	58.3	88.1 <sup>2</sup>	100	86.1	100	90.3
Westbury	72.8	72.8 <sup>1</sup>	58.5	58.5 <sup>1</sup>	89.7	89.7 <sup>1</sup>	84	84	92.6	92.6	96.3	91.7
Wynyard	79.7	63.6 <sup>1</sup>	84.8	46.5 <sup>1</sup>	100	71.8 <sup>2</sup>	100	73.3	91.7	69.8	75	63.9
Zeehan	68.2	75.3 <sup>2</sup>	71.9	76.82	76.1	81.6 <sup>1</sup>	79.1	83.7	72.9	82.4	69.4	63.4

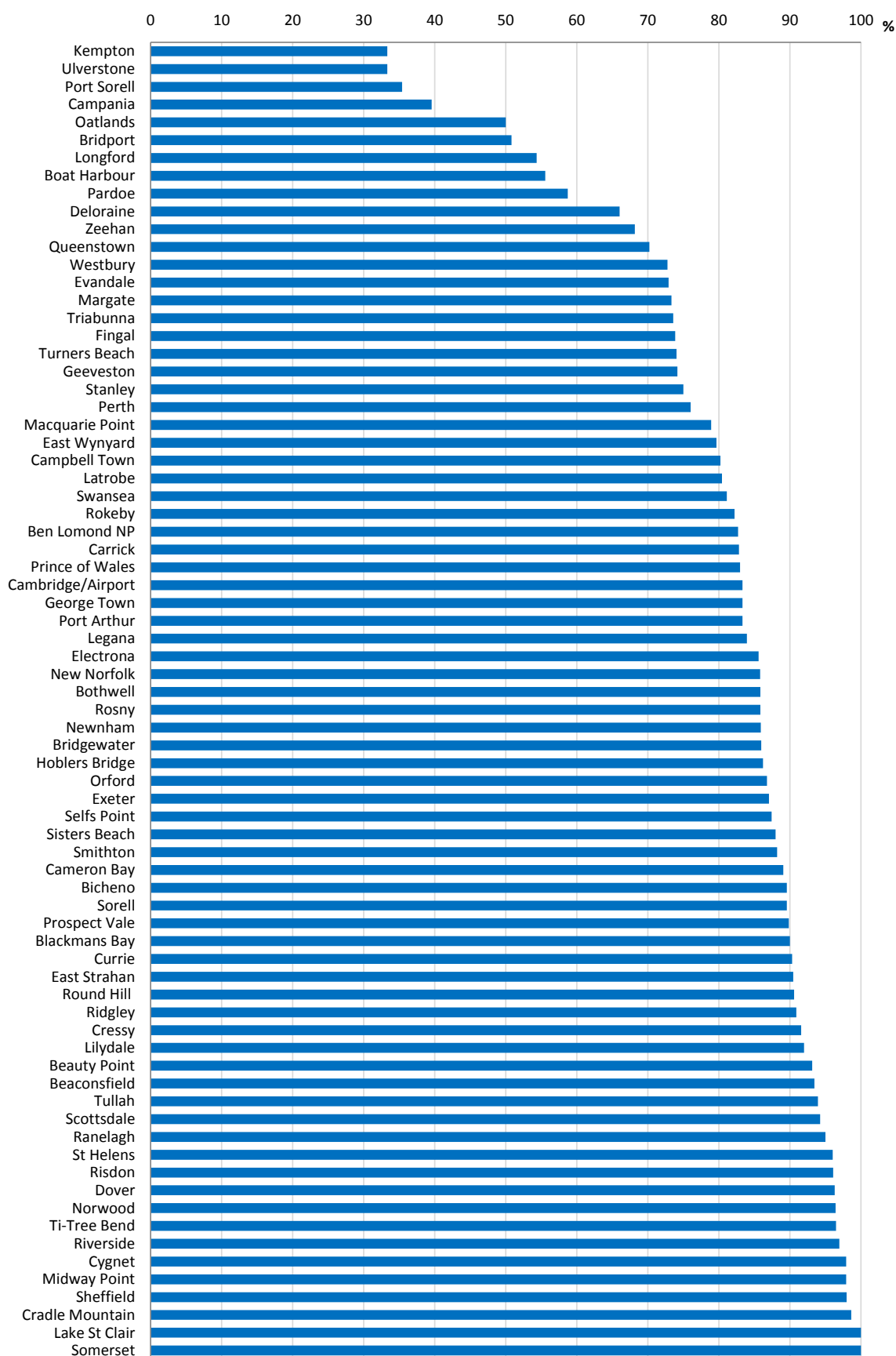
AMT dataset completeness:

<sup>0</sup> cannot be assessed

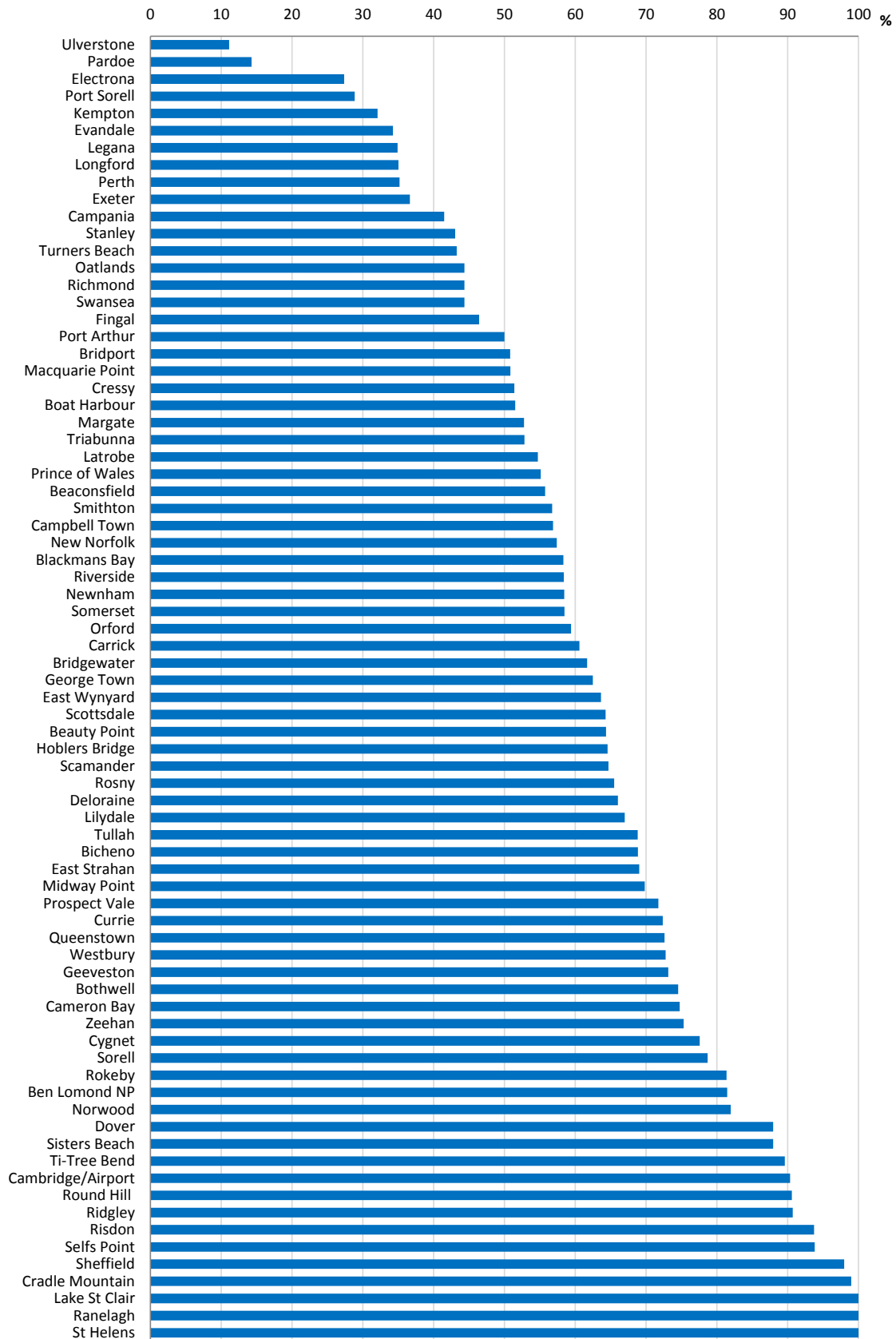
<sup>1</sup> essentially complete

<sup>2</sup> substantially complete (some gaps)

<sup>3</sup> substantially incomplete (large gaps)

**Figure A4.1 WWTP compliance with regulatory discharge to waters limits, 2014-15 (per cent)**



**Figure A4.2 WWTP compliance with AMT discharge to waters limits, 2014-15 (per cent)**

**Table A4.2 WWTP compliance with 'Class B' reuse limits**

WWTP	2014-15	2013-14	2012-13	2011-12	2010-11	2009-10
Beaconsfield	*	*	88.9	--	--	--
Beauty Point	92.1	93.3	91.7	87.3	98.3	88.3
Bicheno	94.8	83.3	93.3	93.4	100	100
Bothwell	93.1	90	94.6	93.1	89.6	100
Bridgewater	96.6	75	96.7	100	100	100
Bridport	87.9	100	91.7	95.2	96.7	98.3
Brighton	86.4	83.1	81.7	86.7	85.5	93.7
Cambridge/Airport	100.0	95	100.0	99.0	100	100
Cameron Bay	98.3	98.3	100.0	96.9	98.0	100
Campania	77.6	80	85.5	78.6	76.9	80.6
Campbell Town	87.1	90	95.0	91.7	80.0	80.0
Carrick	87.3	80	91.4	89.3	-	-
Cressy	91.5	90	81.7	90.0	91.7	91.7
Evandale	61.7	59	65.0	63.3	65.0	65.0
Exeter	87.3	94.1	96.6	78.3	98.3	98.3
Kempton	51.7	71.7	61.7	63.8	72.9	83.3
Latrobe	87.9	75.9	65.5	76.7	61.7	81.7
Legana	88.8	89.7	93.5	96.4	93.3	96.7
Lilydale	92.9	94.3	93.3	96.7	91.7	91.7
Macquarie Point	98.3	89.7	94.3	100	100	-
Oatlands	79.3	81.7	75.0	94.0	78.6	89.7
Orford	89.7	100	96.7	96.7	97.2	100
Penna	95.0	91.4	85.7	91.1	98.3	-
Perth	86.4	87.9	80.0	76.7	83.3	76.7
Railton	81.5	78.8	88.9	86.2	91.7	91.7
Richmond	87.9	76.7	80.0	84.4	90.4	-
Riverside	100.0	100	100.0	96.5	80.0	91.7
Rokeby	98.4	100	100.0	99.0	-	-
Rosny	98.4	100	100.0	100	100	100
Scamander	95.0	96.7	93.3	92.1	77.6	78.3
Selfs Point	99.7	100	100.0	99.3	99.5	100
St Marys	71.4	83.3	86.0	61.1	87.9	88.3
Stieglitz	88.7	98.2	96.7	95.0	100	95.6
Swansea	82.8	88.3	79.0	79.7	88.9	96.3
Triabunna	77.6	85	83.9	77.1	94.9	94.4

\* Insufficient number of samples provided

Table A4.3 Reuse proportion per WWTP (per cent proportion and ML/year) 2009-10 to 2014-15

Premises name	2014-15		2013-14		2012-13		2011-12		2010-11		2009-10	
	Reuse proportion (%)	Reuse flow ML/year	Reuse proportion (%)	Reuse flow ML/year	Reuse proportion (%)	Reuse flow ML/year	Reuse proportion (%)	Reuse flow ML/year	Reuse proportion (%)	Reuse flow ML/year	Reuse proportion (%)	Reuse flow ML/year
Beaconsfield	87.1	62.3	79.4	100.0	69.6	40.4	-	-	-	-	-	-
Beauty Point	67.5	107.7	62.0	124.9	73.4	85.7	55.0	82.7	53.0	102.3	78.0	151.5
Bicheno	88.3	88.5	51.9	63.7	43.3	45.8	22.9	28.2	10.5	13.0	74.0	118.0
Bothwell	100	42.4	76.9	33.2	100.0	41.1	58.0	26.5	100.0	45.8	89.0	40.6
Bridgewater (Green Point)	56.0	499.1	63.6	538.6	54.9	433.4	50.1	455.3	66.0	588.1	72.0	630.7
Bridport	15.9	13.0	8.5	7.6	0.5	0.5	0.0	0.0	0.5	0.5	1.4	1.4
Brighton	100	207.9	100.0	281.3	86.5	226.0	74.8	204.4	94.7	253.6	100.0	304.0
Cambridge (Airport)	7.2	10.2	4.9	5.9	3.9	3.7	5.2	6.0	5.3	6.2	8.0	9.1
Cameron Bay	2.4	43.1	2.7	46.5	4.3	74.8	3.2	63.7	3.8	79.1	4.0	89.8
Campania	100	16.7	100.0	30.4	100.0	29.5	100.0	29.5	100.0	33.8	100.0	33.6
Campbell Town	100	69.3	98.4	73.7	100.0	62.7	33.6	29.3	98.7	92.2	100.0	95.3
Carrick	23.1	39.5	13.7	28.3	36.5	70.6	9.0	16.0	0.0	-	0.0	-
Cressy	100	60.7	80.0	59.2	97.8	49.8	57.9	36.8	97.0	70.5	82.0	57.0
Evandale	99.6	93.3	64.1	58.9	88.7	59.6	60.2	42.5	86.0	67.2	75.0	64.4
Exeter	53.0	29.0	44.2	31.9	58.2	13.2	49.9	8.3	47.0	13.9	87.0	37.9
Kempton	100	25.5	100.0	43.6	100.0	43.0	100.0	42.5	100.0	42.0	100.0	42.3
Legana	62.5	222.3	52.6	188.2	60.7	172.5	45.2	150.1	64.0	234.5	72.0	53.0
Lilydale	86.0	33.7	63.8	20.8	41.0	8.3	60.0	19.0	85.0	31.4	95.0	39.0
Macquarie Point	-	-	2.7	102.2	5.8	225.8	3.8	160.2	2.1	99.4	-	-
Midway Point	69.9	118.9	67.5	117.4	67.4	108.4	63.0	81.9	71.8	97.6	56.0	121.4
Oatlands	99.8	49.9	100.0	61.5	72.0	57.8	58.0	46.6	97.8	77.3	86.0	68.1
Penna	100	246.1	100.0	237.7	100.0	279.9	100.0	208.0	100.0	170.0	100.0	202.9
Perth	84.7	175.3	74.3	143.8	72.9	143.9	55.3	130.9	47.0	116.5	91.0	243.0
Railton	100	148.9	43.1	112.1	43.0	73.5	82.9	141.8	18.0	45.0	63.0	115.0

Premises name	2014-15		2013-14		2012-13		2011-12		2010-11		2009-10	
	Reuse proportion (%)	Reuse flow ML/year	Reuse proportion (%)	Reuse flow ML/year	Reuse proportion (%)	Reuse flow ML/year	Reuse proportion (%)	Reuse flow ML/year	Reuse proportion (%)	Reuse flow ML/year	Reuse proportion (%)	Reuse flow ML/year
Richmond	91.2	60.4	87.6	63.1	82.4	55.0	100.0	72.0	100.0	66.5	100.0	0.0
Riverside	11.1	59.2	14.1	89.9	8.1	40.0	22.2	111.4	2.0	11.4	18.0	110.7
Rokeby	98.5	700	98.4	620.4	65.3	393.8	44.2	298.2	-	-	-	-
Rosny	56.3	1251.6	75.2	1684.6	52.2	1170.8	31.0	771.9	50.0	1 348.1	40.0	1 096
Scamander	100	43.8	100.0	50.9	100.0	17.1	81.5	87.5	23.0	18.2	67.0	27.4
Selfs Point	3.2	115.8	0.4	14.5	0.4	10.7	2.3	83.7	1.4	51.8	1.5	55.0
Sorell	76.8	157.6	65.7	134.9	68.7	169.3	64.0	104.8	73.1	91.3	56.0	74.9
St Marys	84.6	34.1	92.9	52.0	100.0	47.4	47.0	25.8	27.0	15.4	39.0	20.4
Stieglitz	100	65.0	100.0	81.5	100.0	19.0	100.0	74.8	100.0	83.6	38.0	56.6
Swansea	86.7	66.4	77.7	64.2	98.0	77.2	36.0	28.1	23.0	19.4	81.0	93.7
Taroona	-	-	3.7	4.5	4.9	6.3	-	-	-	-	-	-
Triabunna	99.8	60.0	98.3	62.8	65.8	56.6	35.0	59.3	97.4	90.1	88.0	63.3
Westbury	18.7	43.0	11.9	42.1	6.9	14.0	-	-	-	-	-	-

**Table A4.4 2014-15 Licensed flow limit and actual average annual inflow per WWTP (kL/day and per cent proportion)**

Catchment area	Premises name	Licensed flow limit (kL/day)	2014-15 average annual inflow (kL/day)	Actual flow (per cent of licensed limit)
West Tamar	Beaconsfield	400	196	49
West Tamar	Beauty Point	540	436	81
Glamorgan/Spring Bay	Bicheno	450	328	73
Kingborough	Blackmans Bay	4 125	3 984	97
Waratah/Wynyard	Boat Harbour	170	22	13
Central Highlands	Bothwell	155	116	75
Brighton	Bridgewater	3 500	2 443	70
Dorset	Bridport	1 400	224	16
Brighton	Brighton	650	570	88
Clarence	Cambridge/Airport	800	379	47
Glenorchy	Cameron Bay	6 000	4 839	81
Southern Midlands	Campania	136	97	71
Northern Midlands	Campbell Town	325	190	58
Meander Valley	Carrick	624	561	90
Kentish	Cradle Mountain	500	267	53
Northern Midlands	Cressy	240	166	69
King Island	Currie	290	296	102
Huon Valley	Cygnets	400	292	73
Meander Valley	Deloraine	850	826	97
Huon Valley	Dover	360	213	59
West Coast	East Strahan	1 056	486	46
Kingborough	Electrona	450	306	68
Northern Midlands	Evandale	375	252	67
West Tamar	Exeter	150	150	100
Break O' Day	Fingal	125	56	45
Huon Valley	Geeveston	300	263	88
George Town	George Town	3 600	1 907	53
Launceston	Hobblers Bridge	4 500	2 901	64
Southern Midlands	Kempton	135	70	52
Latrobe	Latrobe	1 000	1 117	112
West Tamar	Legana	540	975	181
Launceston	Lilydale	135	106	79
Northern Midlands	Longford	2 700	2 014	75
Hobart	Macquarie Point	18 000	10 387	58
Kingborough	Margate	681	362	53
Sorell	Midway Point	810	466	57
Derwent Valley	Turiff Lodge	4 100	1 675	41
Launceston	Newnham Drive	3 920	2 880	73
Launceston	Norwood	4 050	1 941	48

Catchment area	Premises name	Licensed flow limit (kL/day)	2014-15 average annual inflow (kL/day)	Actual flow (per cent of licensed limit)
Southern Midlands	Oatlands	136	137	101
Glamorgan/ Spring Bay	Orford	473	157	33
Devonport	Pardoe	14 000	11 668	83
Sorell	Penna#	1400	674	48
Northern Midlands	Perth	450	566	126
Latrobe	Port Sorell	961	820	85
Glenorchy	Prince of Wales	9 900	8 060	81
Meander Valley	Prospect Vale	1 720	1 522	88
West Coast	Queenstown	1 100	4 163	378
Kentish	Railton	600	408	68
Huon Valley	Ranelagh	1 200	1 344	112
Clarence	Richmond	n/a	188	-
Burnie	Ridgley	110	163	148
Clarence	Risdon	1 000	725	73
West Tamar	Riverside	2 800	1 467	52
Clarence	Rokeby	4 000	1 813	45
Clarence	Rosny	7 500	6 036	80
Burnie	Round Hill	9 000	5 685	63
Break O' Day	Scamander	240	120	50
Dorset	Scottsdale	3200	453	14
Hobart	Selfs Point	13 000	9 657	74
Kentish	Sheffield	350	327	94
Waratah/Wynyard	Sisters Beach	585	65	11
Circular Head	Smithton	5 200	3 377	65
Waratah/Wynyard	Somerset	1200	1 063	89
Sorell	Sorell	810	562	69
Break O' Day	St Helens	1 500	469	31
Break O' Day	St Marys	190	111	58
Circular Head	Stanley	276	157	57
Break O' Day	Stieglitz	110	178	162
Glamorgan/ Spring Bay	Swansea	430	210	49
Launceston	Ti-Tree Bend	25 000	21 937	88
Glamorgan/ Spring Bay	Triabunna	253	165	65
West Coast	Tullah	243	113	46
Central Coast	Turners Beach	600	496	83
Central Coast	Ulverstone	7 500	5 983	80
Meander Valley	Westbury	600	608	101
Waratah/Wynyard	Wynyard	2 900	3 341	115
West Coast	Zeehan	214	315	147

Source: EPA Division database

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

## APPENDIX 5 CUSTOMER SERVICE CODE MINIMUM STANDARDS AND TRANSITIONAL SERVICE STANDARDS

Indicator	CSC minimum standard	2014-15 TasWater	North TSS	2014-15 North region	North west TSS	2014-15 NW region	South TSS	2014-15 South region
<b>Water:</b>								
Unplanned water supply interruptions (per 100 km of water main)	32	97	38	<u>79</u>	68	<u>133</u>	39	<u>93</u>
Average time taken to attend bursts and leaks – Priority 1 (minutes)	30	36	55	44	45	23	44	36
Average time taken to attend bursts and leaks – Priority 2 (minutes)	120	70	120	67	120	30	120	76
Average time taken to attend bursts and leaks – Priority 3 (minutes)	1440	673	1440	415	1440	209	4320	1073
Average frequency of unplanned water supply interruptions (number)	0.10	0.17	0.23	0.16	0.23	0.13	0.25	0.19
Average frequency of planned water supply interruptions (number)	0.10	0.03	0.20	0.01	0.20	0.01	0.20	0.01
Average unplanned customer minutes off water supply (minutes)	20	24	20	<u>22</u>	25	16	30	28
Average planned customer minutes off water supply (minutes)	15	9	30	8	30	12	30	10
Average duration of unplanned water supply interruption (minutes)	100	143	170	133	170	129	170	152
Average duration of planned water supply interruption (minutes)	180	292	280	175	200	195	280	<u>694</u>
Unplanned water supply interruptions restored within five hours (per cent)	98	97	80	98	95	97	80	97
Planned water supply interruptions restored within five hours (per cent)	95	95	78	93	91	94	55	99

Indicator	CSC minimum standard	2014-15 TasWater	North TSS	2014-15 North region	North west TSS	2014-15 NW region	South TSS	2014-15 South region
Number of customers receiving more than five unplanned water interruptions a year (number)^	0	N/A	250	N/A	250	N/A	250	N/A
Unaccounted for water (per cent)	10	22	25	N/A*	25	N/A*	25	N/A*
<b>Sewer:</b>								
Sewer breaks and chokes (per 100 km of sewer main)	28	57	55	44	55	27	61	<u>81</u>
Average time to attend sewer spills, breaks and chokes (minutes)	41	51	65	56	65	32	65	53
Average sewerage service interruption (minutes)	150	274	230	<u>300</u>	230	<u>277</u>	180	<u>256</u>
Sewerage spills contained within five hours (per cent)	99	98	90	92	97	99	93	100
Customers receiving more than three sewerage service interruptions per year^	0	N/A	250	N/A	250	N/A	250	N/A
<b>Customers:</b>								
Total water and sewerage complaints (per 1 000 properties)	9.00	11.59	9.00	9.35	9.00	6.88	9.00	15.01
Water and sewerage complaints to Ombudsman (per 1 000 properties)	0.50	0.03	0.50	0.02	0.50	0.02	0.50	0.05
Percentage of calls answered by an operator within 30 seconds	90	89	75	N/A*	70	N/A*	80	N/A*

Results highlighted as red and underlined indicates standard was not met for the year

^ Indicator not measurable

\* Indicator measured on a state-wide basis





