

TASMANIAN WATER AND SEWERAGE STATE OF THE INDUSTRY REPORT 2013-14



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Printed April 2015

Office of the Tasmanian Economic Regulator

ISBN 978-0-7246-5359-1

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Cover image: Kempton Reservoir (TasWater)

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ACRONYMS

Term	Meaning within the context of this report
ADWF	Average dry weather flow
ADWG	Australian Drinking Water Guidelines 2011
AER	Annual Environmental Review
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
NRWRF	National Recycled Water Regulator's Forum
NWC	National Water Commission
NWI	National Water Initiative
PRA	Portfolio risk assessment
SCADA	Supervisory Control and Data Acquisition
Water and Sewerage Corporation Act	<i>Water and Sewerage Corporation Act 2012</i>
WDRC	Written down replacement cost
WTP	Water treatment plant

Term	Meaning within the context of this report
WWMP	Wastewater Management Plan
WWTP	Wastewater treatment plant

Basic measures:

kL kilolitre = 1 000 litres or 1 m³ (cubic metre) and weighs 1 tonne

ML megalitre = 1 000 kL (or 1 000 m³)

GL gigalitre = 1 000 ML

TL teralitre = 1 000 GL or 1 km³ (cubic kilometre)

EXECUTIVE SUMMARY

Background

Under the *Water and Sewerage Industry Act 2008* (the Industry Act), the Economic Regulator has an obligation to prepare, in consultation with other industry regulators, an annual 'State of the Industry' report on the Tasmanian water and sewerage industry which includes an overview of the industry's performance and identifies key priorities for improving performance.

This Report, the *Tasmanian Water and Sewerage State of the Industry Report 2013-14*, fulfils this obligation for the period 1 July 2013 to 30 June 2014.

The availability of sustainable and reliable water and wastewater services is a key element of the State's economic development potential. In 2013-14 the water and sewerage industry continued to face significant change and challenges, with the formation of TasWater as a single entity following the amalgamation of the three previous regional corporations on 1 July 2013. TasWater's first year of operation has been one of establishment and implementing a new operating model to meet the challenges of operating a state-wide business servicing a highly dispersed population.

The quality of TasWater's performance data is relatively poor. Significant issues identified in an independent review of TasWater's performance indicators and associated processes, undertaken by Deloitte in July 2014, were still to be addressed when TasWater submitted its 2013-14 Water and Sewerage Performance Report to the Economic Regulator. The poor quality of some performance data creates a challenge for TasWater with respect to understanding the underlying performance and condition of its assets, many of which are also not meeting the standards required by the relevant regulators. This in turn impacts on TasWater's ability to optimise the operation of those assets and undertake targeted and cost effective capital investment and planned maintenance to improve performance.

Other industry regulators monitored TasWater's progress against key management and compliance plans and liaised with TasWater regarding priorities for major projects and funding.

In 2013-14 the environmental regulator, the Environment Protection Authority (EPA), continued its process of introducing contemporary environmental conditions for the State's wastewater treatment plants including ambient monitoring (in the receiving environment) requirements.

Drinking water quality continued to be a priority in 2013-14, with TasWater progressing projects against the priority capital works list agreed with the Department of Health and Human Services.

Tasmania's water resources remain well above demand, with the expansion of the State's recycled water schemes increasing the proportion on non-potable water

sourced from recycling (treated effluent) in 2013-14. Average annual household consumption of drinking water has stabilised at 179 kL following the introduction of volumetric pricing.

Although the volume from recycled water schemes is not large compared with total water use in the agricultural sector, it is an important source of irrigation water in some areas, as well as generating benefits in terms of wastewater treatment costs and environmental outcomes.

The need to improve customer service levels continues to be a key driver for TasWater as it was for the regional corporations. Many of the infrastructure assets TasWater inherited are ageing and still require significant investment over at least the next decade to ensure they meet contemporary health and environmental compliance requirements.

Customer service

The improvement in the performance of the previous regional corporations' call centres has continued in 2013-14 with TasWater's call centres answering an average of 92 per cent of calls within 30 seconds. Increased resourcing and investment in new systems and processes appears to have made a positive impact, lifting performance in this area to comply with standards in the Customer Service Code.

The level of customer complaints has increased slightly but at 6.5 complaints per 1000 properties is still well under the transitional service standard of nine complaints per 1000 properties. Water quality issues were responsible for the vast majority of complaints.

For complaints not resolved through TasWater's customer complaints process and referred to the Tasmanian Ombudsman, the Ombudsman advised that the quality of TasWater's investigations has improved compared to the previous regional corporations' performance in this area, providing better outcomes for complainants.

The number of Tasmanian households repaying a debt during 2013-14 was eight per cent lower than in 2012-13 although the average debt was around \$794, which was almost double that reported for 2012-13. A small percentage of customers had their water supply restricted for non-payment of their water bill, although this percentage declined in 2013-14.

Service and reliability was impacted by the age and condition of the water and sewerage network, with a high number of unplanned interruptions to the water supply. There was 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.

TasWater responded quickly to high priority bursts and leaks, with attendance times within or close to the approved service standards. Typically, customers had their water service interrupted for less than 30 minutes throughout the year, although TasWater did not meet some transitional service standards for planned and unplanned interruptions.

Water

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.

In 2013-14, 1.4 per cent of the Tasmanian population serviced with reticulated water received non-compliant drinking water. This is a small increase compared to last year (1.1 per cent) but still a vast improvement over the performance reported for 2011-12 (2.2 per cent). This significant reduction is largely due to 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 to TasWater.

Nineteen drinking water supply systems operated with a permanent boil water alert in 2013-14 and six temporary boil water alerts were issued. Public Health Warnings were also issued in relation to a number of systems due to the detection of elevated levels of metals.

The percentage of the population receiving optimally dosed fluoridated water is the same as was reported in 2012-13 and this was a significant improvement on previous years.

The proportion of water sourced from recycling (treated effluent) has increased in 2013-14 from 4 147 ML to 5 239 ML. The increase in recycling is understood to be due to structural improvements and expansion of some key schemes. For example, the Duckhole Dam storage became operational and the recently commissioned Beaconsfield reuse scheme operated for a full irrigation season. Better management of effluent storages may also have contributed to the higher effluent recycling proportion.

Sewerage

Disappointingly, environmental compliance has not improved. The environmental impact of wastewater on the State's rivers and coastal waters continues to be of concern, with effluent containing significant organic loads, elevated nutrients and faecal bacteria concentrations discharged to the environment.

Compliance with treated effluent against regulated discharge to waters limits has steadily declined since July 2009, when responsibility for the management of wastewater infrastructure was transferred firstly to the previous regional corporations and subsequently to TasWater. TasWater lags well behind its mainland counterparts in relation to regulated discharge limits.

Significant compliance improvements will in most cases be linked to major infrastructure upgrades or maintenance works. A range of projects were proposed by each of the previous regional corporations in the context of the strategic, five-year Wastewater Management Plans (WWMPs), which received approval from

the Director, EPA, in 2011 and in subsequent WWMP reviews undertaken by the water corporations¹.

An evaluation of the progress made by TasWater and the previous regional corporations with respect to projects identified in the original WWMPs highlighted significant delays against original timeframes and overall capital expenditure not reaching the amount originally planned.

In addition to concerns about the quality of treated effluent discharged by the State's wastewater treatment plants (WWTPs), instances of raw sewage being released through sewer breaks and overflows are having a negative impact on the receiving environment.

Pricing and finance

In 2013-14 price reforms continued to transition customers to target tariffs for water and sewerage charges, with regulated caps limiting annual increases in prices to minimise price shocks to customers. However, significant further reform is required to achieve the objective of all customers paying the same price for the same service.

The typical annual household bill in 2013-14 ranged between \$967 and \$1 037 (depending on region), with fixed (network) charges making up around 80 per cent of the bill. At 92 cents per kilolitre (target tariff), water usage charges in Tasmania are relatively low compared to prices charged by mainland providers. This results from the relativities between fixed and variable charges and also reflects the fact that, in most areas of Tasmania, water is not in short supply.

TasWater received total revenue of \$268.6 million during 2013-14, representing a two per cent increase from 2012-13. Of this total revenue, \$7.58 million related to funding for Community Service Obligations. TasWater paid \$18.65 million in dividends to owner councils representing around 68 per cent of its net profit after tax (NPAT) of \$27.24 million. Since the establishment of the previous regional corporations on 1 July 2009, council owners have received, on a cash basis, returns totalling over \$113 million in the form of dividends, guarantee fees and income tax equivalents.

Operating costs decreased slightly in 2013-14 whilst capital expenditure decreased substantially in 2013-14 compared to 2012-13, due to delays to major infrastructure upgrades and maintenance works, the impact of the amalgamation and the associated review of the Capex program.

TasWater reported an economic rate of return for 2013-14 of slightly below zero. However, TasWater's poor rate of return is not unexpected in light of the price reforms that are underway and the competing requirement to address regulatory compliance issues.

¹ TasWater was required to submit an updated WWMP for the EPA's review and approval during 2014-15.

Conclusion

Industry regulators have provided an overview of their priorities for the current regulatory period and a review of TasWater's activities against agreed management plans. During 2013-14 regulators were concerned with the lack of progress against some important infrastructure upgrades and maintenance works. TasWater considers that it and its previous regional corporations were overly optimistic in estimating the timeframes required to deliver the major capital works projects necessary.

In the short term, industry regulators will continue to focus on ensuring improvements in regulatory compliance are realised, whilst updating and streamlining compliance standards to ensure that they reflect contemporary practices.

Not unexpectedly, TasWater has continued to face a number of significant challenges similar to that of the previous regional corporations with respect to its infrastructure and customer service. In 2014-15, with its restructure now consolidated, it is expected that TasWater will improve its delivery of the major capital works that are required to meet the industry regulators' compliance expectations. The financial and environmental sustainability of the industry, in addition to the quality of Tasmania's drinking water, will largely depend on TasWater's ability to efficiently operate and improve the management of its water and sewerage infrastructure.

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 performance framework is designed 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 an annual 'state of the industry report', which includes an overview of the industry's performance and identifies key priorities for improved performance. The State of the Industry Report (the Report) is prepared in consultation 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).

In carrying out its functions, 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. Health, public safety and monitoring with respect to the supply of drinking water are regulated by the Director of Public Health whilst relevant environmental and dam safety obligations are regulated by the Director, EPA, and DPIPWE respectively. More information on the regulatory framework and the respective roles and responsibilities of the various industry regulators can be found in Chapter 2.

The Report is a comprehensive, independent review of the industry's performance. This is the seventh annual report on the 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 2013-14 across a number of key performance measures. This Report is the first to assess the performance of TasWater as a single entity following the amalgamation of the three previous regional corporations into one corporation, TasWater, in July 2013.

Much of the data provided by TasWater for 2013-14 has not been independently audited and, therefore, the reliability and accuracy of the data cannot be assured. Where possible, TasWater has provided some indication of data confidence and has been given 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 Framework¹ and 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;
- pricing and finance – tariff structures, revenue from water and sewerage operations and expenditure;
- priorities for improving performance – strategic planning and initiatives; and

¹ National Water Commission, *2013–14 urban water performance report indicators and definitions handbook, and auditing requirements*, 2014.

- historical performance – including comparisons with last year's data where possible.

This report does not include information on private water and sewerage systems, irrigation or drainage as these systems and water uses are not regulated under the Industry Act.

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), has provided performance data used in this Report.

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 TasWater's performance to be monitored 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.

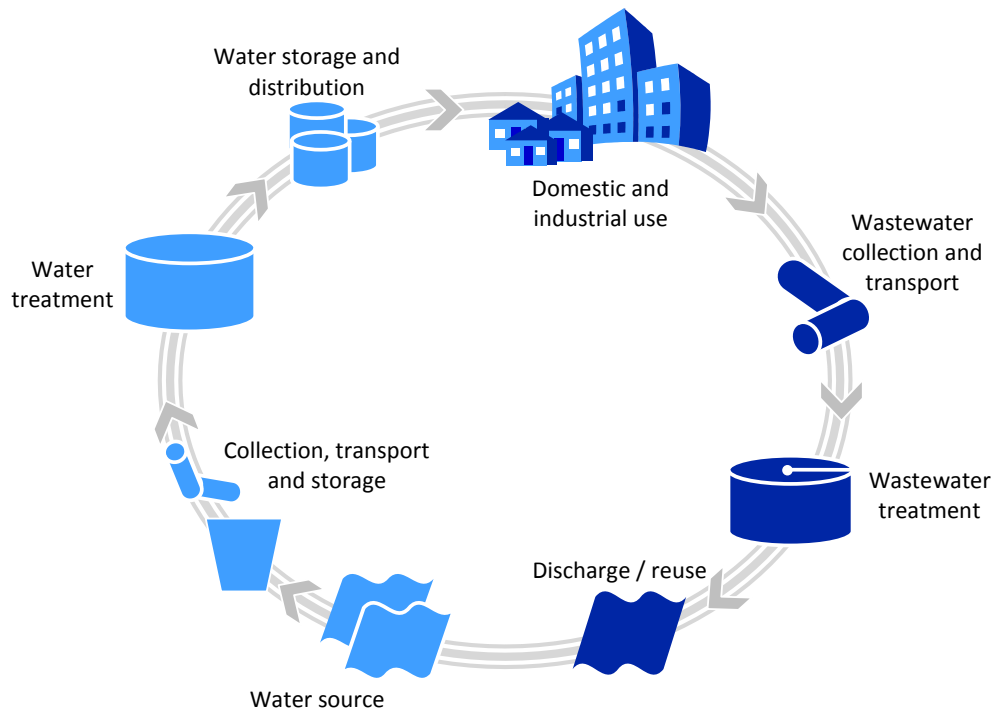
In most cases, the Economic Regulator has not been in a position to verify the accuracy of the data contained in this report and has therefore relied on the information provided to it. This should be considered when interpreting the data and commentary presented in the report.

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 it is returned to the environment.

As shown in Figure 1.1, water is collected from the environment in a catchment then transported via rivers and pipes to water storage dams. Water is then cleansed and purified before being transported through water supply mains to suburban 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 then returned to the environment or further 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 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 2014 TasWater was the sole licensed water and sewerage service provider in Tasmania.² TasWater is responsible for the control, ownership and operation of the water supply and sewerage system in Tasmania. TasWater is vertically integrated, providing wholesale, distribution and retail services for both water and sewerage. 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;

² The water and sewerage licences held by the three regional water corporations were surrendered 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.

- 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:

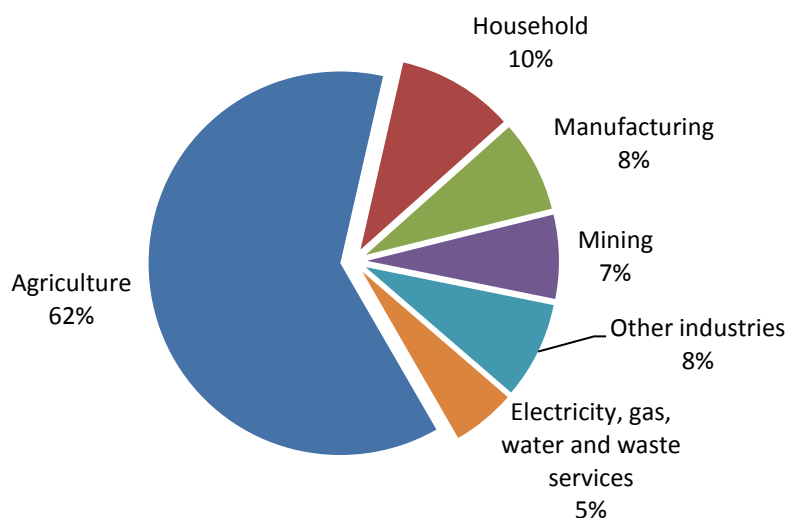
- promote the efficient delivery of water supply and provision of sewerage services; and
- to encourage water conservation, demand management of water and the re-use of water on an economic and commercial basis.

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.³ 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.

³ 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 (2012-13)

Source: *Water Account Australia*, 2012-13 (ABS Cat No 4610.0), November 2014⁴

Notes: 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. The availability and quality of the State's freshwater resources are closely linked to these growth areas.

Tasmania has the highest proportion nationally of agricultural land area under irrigation, which places increased pressure on water resources during periods of low rainfall. Lower than average rainfall in 2012-13 across the State led to an increase in the share of water resources used by the agricultural industry as farmers experienced dry weather conditions. Water use by the agricultural industry increased from 56 per cent to 62 per cent of the total State water consumption between 2011-12 and 2012-13 and totalled 246 GL.

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

⁴ *Water Account Australia*, 2013-14 will not be available until the end of 2015.

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 billion⁵ as at 30 June 2014.

In 2013-14 TasWater reported a net profit after tax of \$27.24 million, up from \$22.44 million⁶ the previous year.

Table 1.1 summarises the number of employees, net profit after tax and returns to council owners for TasWater in 2013-14.

Table 1.1 Summary indicators - TasWater as at 30 June 2014⁷

Number of employees FTEs	Net profit after tax \$'000	Returns to council owners \$'000^{Note 1}
788.3	27 236	29 000

Note 1: Total of dividends, guarantee fees and income tax equivalents from Statement of Cash Flows.

Since the establishment of the previous regional corporations on 1 July 2009, council owners have received, on a cash basis, returns totalling over \$113 million in the form of dividends, guarantee fees and income tax equivalents.

The merger of the former regional corporations has contributed to a six per cent reduction in full-time equivalent employees from 840.9 FTE as at 1 July 2013 to 788.3 FTE as at 30 June 2014. By the end of 2013-14 the structural changes from the merger were largely complete and the regional distribution of employees across the State remained similar to the distribution before the merger.

⁵ Based on the written down replacement cost methodology.

⁶ The combined net profit after tax of the three previous regional corporations for 2012-13.

⁷ TasWater, *Annual Report 2013-14*, October 2014.

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

On 1 July 2013 Ben Lomond Water, Cradle Mountain Water, Southern Water and Onstream were amalgamated to form a new, single entity, the Tasmanian Water and Sewerage Corporation Pty Ltd (TasWater). TasWater owned, controlled and operated water supply and sewerage systems in Tasmania. TasWater managed 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 was subject to various public health, environmental and customer service regulatory requirements.

Across Tasmania, TasWater serviced 200 512 properties with a water connection and over 174 939 properties with a sewerage connection.

2.2 Economic regulatory framework

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.

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).

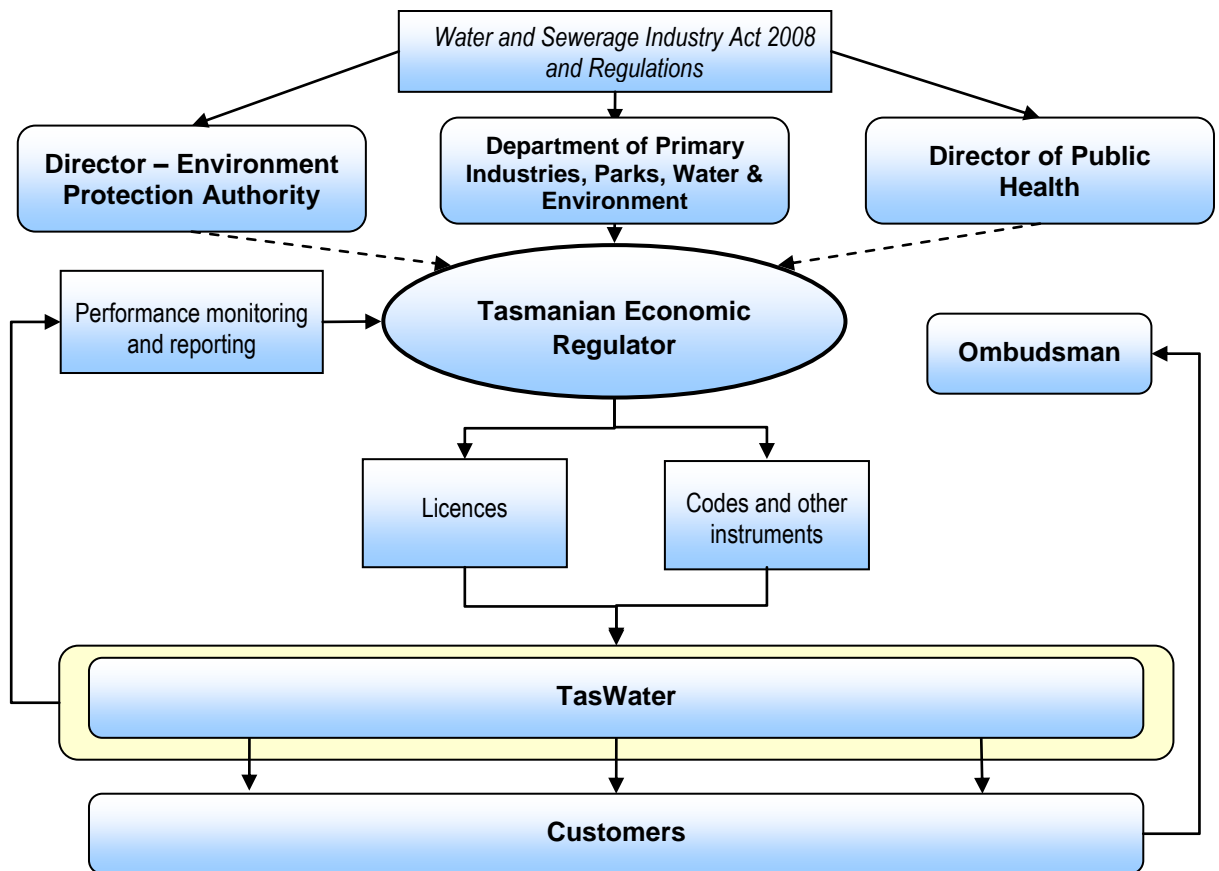
The regulatory framework does not cover:

- 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

2.3 Changes to the regulatory framework during 2013-14

During 2012-13, agreement to move to a single state-wide water and sewerage corporation was reached after discussions between owner councils and the Chairman of the regional water and sewerage corporations' boards prompted a review of the potential benefits of such a move.

The *Water and Sewerage Corporation Act 2012* implemented the amalgamation of the three previous corporations from 1 July 2013. The Act received Royal Assent on 11 December 2012 and provided for:

- the establishment of a single water and sewerage corporation with the provision of water and wastewater services on a state-wide basis as its primary focus;
- the transfer of the assets, liabilities and employees of the existing water and sewerage businesses - Ben Lomond Water, Cradle Mountain Water, Southern Water and Onstream – to the new corporation from 1 July 2013;
- the corporation to be owned by the State's Local Government councils and any dividends, tax equivalents payments and guarantee fees will be payable to the owner councils;

- the implementation of new governance arrangements which are suitable for the new single entity structure; and
- transitional provisions which, amongst other things, allowed the three Price Determinations that applied to the previous corporations to continue to apply to the single amalgamated corporation until the end of the first pricing period on 30 June 2015.

The new corporation, the Tasmanian Water and Sewerage Corporation Pty Ltd, was registered as a proprietary limited company under *Corporations Act 2001* (Cth) on 5 February 2013 and trades as TasWater.

2.4 Industry Regulators

2.4.1 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 Act.

2.4.2 Director of Public Health

With respect to drinking water, the Director of Public Health's 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 2005), the *Fluoridation Act 1968*, the *Fluoridation (Interim) Regulations 2009* and the Australian Drinking Water Guidelines 2011;
- 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.

2.4.3 Director, Environment Protection Authority

The Director, Environment Protection Authority (EPA) is one member of the EPA Board.

The EPA administers and enforces the provisions of the *Environmental Management and Pollution Control Act 1994* (EMPCA). The functions of the EPA, with respect to the water and sewerage sector, include the assessment and regulation of significant wastewater treatment plants (WWTPs), defined as 'Level 2' WWTPs (ie plants discharging greater than 100 kilolitres of sewage per day).

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

- undertaking environmental impact assessments, under EMPCA, in relation to proposals for new WWTPs or significant changes to existing WWTPs;
- developing legally binding environmental conditions for approved WWTPs, which are included as part of the planning permit or as a stand-alone environment protection notice;
- applying the Tasmanian policy framework in relation to water quality management as is relevant for 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 the impacts on the receiving environment.

The EPA also offers advice and guidance in relation to a broad range of wastewater issues including pumping stations, wastewater reuse, trade waste and biosolids reuse through the provision of policies and guidelines.

The EPA has released environmental guidelines governing the use of recycled water and biosolids and the recycling of wastewater and biosolids in Tasmania. The guidelines provide a framework for the sustainable reuse and recycling of water, wastewater and biosolids in a manner which is not only practical and safe for agriculture, the environment and the public but consistent with industry standards and best practice environmental management.

2.4.4 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 that 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.

2.4.5 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); 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.

2.4.6 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 fire fighting and prevention.

2.4.7 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.

2.5 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.

2.5.1 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.¹

¹ <http://www.nwc.gov.au>. Whilst the NWC has closed the NWI is continuing.

2.5.2 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.

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.

2.5.3 Other government bodies

2.5.3.1 *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.²

2.5.3.2 *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).

2.5.3.3 *National Water Commission*

The NWC, which 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 provides advice to the Council of Australian Governments (COAG) and the Australian Government on national water issues.

The NWC is responsible for overseeing progress towards the sustainable management and use of Australia's water resources as required under the NWI.

² 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.

The NWC assesses progress on water reform against the NWI commitments through its biennial assessments and national performance reports on urban and rural water utilities. The NWC also publishes position statements on major water reform issues.

The Australian Government announced the abolition of the NWC as part of its 2014-15 Budget. The *National Water Commission (Abolition) Bill 2014* was introduced into the Senate on 24 September 2014. The Bill did not pass during the Spring 2014 session of Parliament and, at the time of writing, is expected to be reintroduced in the sitting period commencing in February 2015. The NWC closed in November 2014.

2.5.3.4 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* (Cth) under Part 7 - Water Information. These functions are supported by the *Water Regulations 2008* (Cth).

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 Report for 2013-14.

2.6 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 Plans³, 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.

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 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.

³ As part of the 2012 Price Determination Investigation for regulated water and sewerage services in Tasmania.

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.

2.7 Performance and regulatory reporting

2.7.1 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)⁴, 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

⁴ Available from the Regulator's website www.economicregulator.tas.gov.au.

performance measures. TasWater's performance in meeting those requirements will be monitored by the Economic Regulator.

2.7.2 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 will be reviewed during 2014-15, with the third and final tranche being reviewed during 2015-16.

TasWater will be required to undertake independent reviews of its compliance and emergency management plans during 2014-15, whilst its asset management plan is scheduled for independent appraisal by 31 August 2015.

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.

3.1 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 mega litres (ML)¹ and up to 2 500 000 ML of water is potentially available each year from groundwater.² The overwhelming majority of urban water supplied in Tasmania is sourced from surface water, with only minor amounts extracted from groundwater.

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.

3.2 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 2013-14 were:

- Irrigation 689 848 ML;
- Aquaculture³ 419 954 ML;
- Urban Water 208 039 ML;
- Commercial⁴ 71 924 ML; and
- Mining 31 156 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 2012-13⁵ 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 2012-13 was as follows:

- Agriculture 245 636 ML;
- Aquaculture⁶ 177 ML;
- Urban Water 59 147 ML;
- Commercial⁷ 31 872 ML; and
- Mining⁸ Not Reported.

¹ Tasmanian Planning Commission 2009, *State of the Environment Tasmania* 2009.

² ABS 4602.0.55.003, *Environmental Issues: Water Use and Conservation*, March 2010.

³ The majority of water extracted for Aquaculture use is returned to the water source.

⁴ Excludes mining.

⁵ ABS 4610.0 *Water Account, Australia 2012-13*, November 2014.

⁶ The Tasmanian aquaculture industry used 314 495 ML but almost all of this water was used in-stream. The industry consumed only 177 ML of water during 2012-13.

⁷ Commercial is made up of self-extracted water usage figures for the manufacturing and "other" industry classifications from the *Water Account, Australia 2012-13*.

⁸ 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.

Whilst the ABS consumption figures are not directly comparable with DPIPWE's allocation figures, they do provide a useful comparison point. The water consumption for 2012-13 shows that the level of state-wide demand for water is adequately covered by the volumes of water allocated; only the aquaculture sector (around 84 per cent) used more than 60 per cent of its allocation. 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 16 per cent of the estimated total use of surface water in the State (including water used for irrigation and industry).

Urban use of groundwater accounts for only a very small portion of the estimated total groundwater usage and less than 0.2 per cent of reticulated drinking water.

During 2013-14 only 108 ML of groundwater was extracted for use in reticulated supplies, all of which was utilised in the northern region of the State. The 2013-14 total represents a decrease of 167 ML from 2012-13 (275 ML) in the use of groundwater for reticulated supplies. The significant reduction in the extraction of groundwater for reticulated supplies represents the impact of the detection of heavy metals in the town water supply of a number of small towns in the north east of the State. Water supplies for these towns were transferred from groundwater to surface water sources in response to this issue.

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.⁹ 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 the most dispersed of all jurisdictions and it may, therefore, be expensive to provide reticulated water services to some areas.

During 2013-14 virtually all urban water in Tasmania was supplied by TasWater, sourcing 65 912 ML. Urban water in Tasmania was not sourced from desalination or recycled water, although TasWater did use recycled water for some non-drinking uses (see Section 3.5 of this report).

During 2013-14 TasWater sourced surface water from a number of catchments spread across all three regions of the State. The largest allocated volumes by region were as follows:

- the Cam River catchment (12 484 ML) in the north west;
- the North Esk River catchment (17 000 ML) in the north; and
- the Derwent River catchment (45 000 ML) in the south.

⁹ ABS 201303, Environmental Issues: Water Use and Conservation, March 2013.

For this report, the uses of water supplied do 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 2013-14 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 customers¹⁰ for 2013-14 as follows:

- residential customers were supplied with 33 164 ML of water; and
- non-residential customers were supplied with 20 107 ML of water.

The total amount of urban water supplied in 2013-14 was 53 934 ML, which is a total of residential and commercial customer consumption with the remaining 663 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 2013-14 was 269 kilolitres (kL). This was a significant decline from the average for 2012-13, when the average annual consumption was 307 kL. The decline in average consumption per connection reflects a consistent downward trend since 2007-08 when the average annual consumption was 368 kL.

The average annual consumption per residential connection across the State stayed relatively stable, with consumption falling marginally from 182 kL in 2012-13 to 179 kL in 2013-14. The level of residential consumption has fallen significantly over the last four years from 225 kL in 2010-11 to 179 kL in 2013-14.

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 roll-out of water meters state-wide 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.

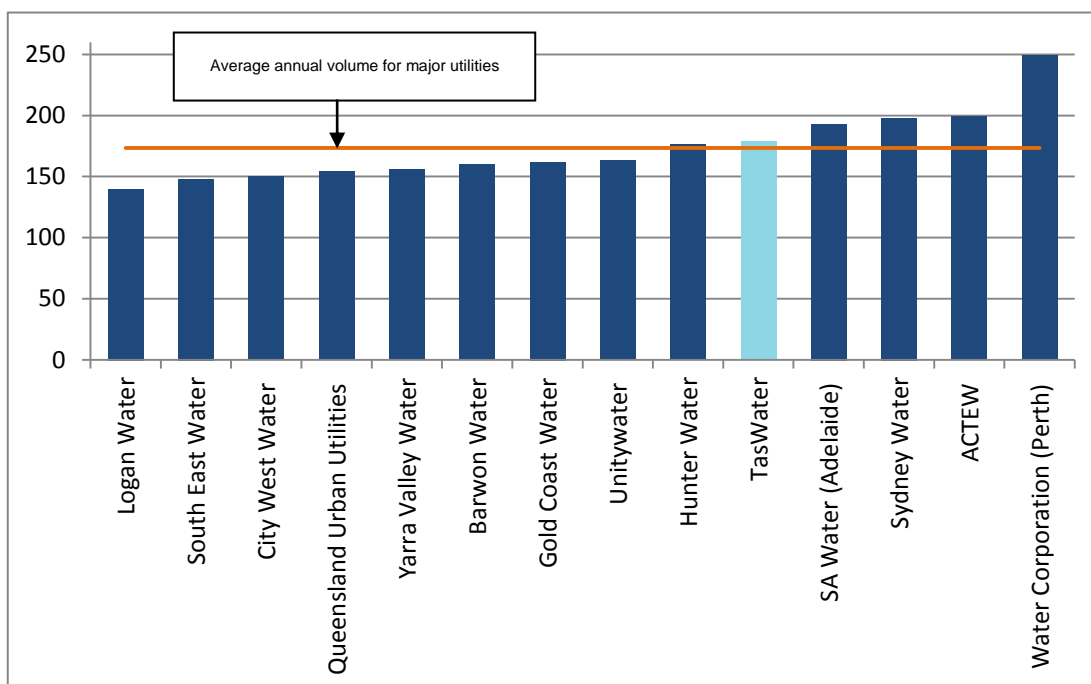
Figure 3.1 shows the annual volumes of residential water supplied by major utilities (large) (100 000 or more connected properties) across Australia during 2012-13 together with the average volume of water supplied by providers in this category¹¹.

¹⁰ Non-residential customers include all commercial, industrial and municipal users.

¹¹ At the time of writing, the *2013-14 Urban Utilities National Performance Report* had not been released. TasWater's 2013-14 performance has therefore been compared to the 2012-13 performance of comparable mainland providers.

TasWater's average residential consumption of 179 kL per residence was very similar to the average residential consumption of 173 kL for major utilities with greater than 100 000 connections.

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



Source: National Water Commission, 2012-13 National Performance Report database – Urban water utilities

3.3 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 only in Tasmania 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 the least secure. In 2013-14, 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 rolled out to virtually 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.

Whilst this analysis suggests that water supply generally exceeds 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 2013-14

Year	Total allocation (ML)	Total consumption (ML)	Percentage consumed
2011-12	192 991	54 538	28
2012-13	192 991	60 423	31
2013-14	192 991	53 934	28

3.4 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 (approximately nine per cent) recycled for agricultural and municipal uses. Section 3.5 contains further information about recycled water.

Tasmania has 82 Level 2 waste water treatment plants (WWTPs) with 79¹² operated by TasWater and three¹³ operated privately or by State Government 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 2013-14.

In addition to the Level 2 WWTPs, there are 32 Level 1 (flow rate <100 kL/day) WWTPs which service small urban centres throughout regional and rural areas of the State. These assets are further discussed in Chapter 4. Level 1 WWTPs are currently regulated by local government and there are no reporting requirements to State Government agencies. The number of connections and customers serviced by Level 1 WWTPs is currently not recorded.

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

¹³ 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 permitted maximum licence limits, 2011-12 to 2013-14

Year	Total permitted maximum licensed limits (kL/day) (ADWF) ^{Note 1}	Total actual flows (kL/day)	Total number of WWTPs ^{Notes 3,4}	No. of WWTPs reporting flow data	Proportion of WWTPs exceeding their licence 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

Source: EPA WWTP database.

- Notes:
1. Combined maximum licensed limits for all WWTPs.
 2. Percentage of combined actual flow to combined maximum licensed flow limits for those WWTPs for which measured flow data was available.
 3. Penna WWTP is excluded as it is classified as a holding lagoon not a treatment plant.
 4. Tarroona WWTP decommissioned during 2013-14.

TasWater advised that, prior to the commencement of the industry reforms, former owner-councils did not measure the volume of sewage collected at their facilities and some councils only provided performance data for some of their treatment plants. Since management of water and sewerage services was transferred from councils the collection and provision of inflow data has improved markedly, with 2012-13 being the first time that data was provided for every WWTP. This compares favourably to 2008-09 when 26 WWTPs failed to provide inflow data.

In 2013-14 the total volume of sewage collected across the State was 63 245 ML. The average volume of sewage collected (residential and non-residential) was 362 kL per property, which is higher than the volume reported for 2012-13 (294 kL).

Whilst the average volume of sewage collected per connection increased compared with the previous year, there is generally significant variation year to year in the average volume of sewage collected per property. 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.

3.5 Recycled water uses

Recycled water is water that has been extracted through the process of treating wastewater. Recycled water can be utilised for on-site reuse, or 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 significant water shortages in recent years, 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 and the percentage of treated effluent volume which has been recycled each year. Table 3.3 also shows that there has been a steady increase in the volume of recycled water supply over the last four years, rising from 3 906 ML in 2010-11 to 5 239 ML in 2013-14.

Table 3.3 Volume of Recycled Water and percentage of 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	9.24

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. The volume of treated effluent supplied through the scheme has increased significantly from 1 569 ML in 2012-13 to 2 311 ML in 2013-14.

The second largest scheme was the Brighton/Bridgewater scheme, which provided 820 ML of recycled water during 2013-14, up from 669 ML in 2012-13. The third largest recycled water scheme in the State was the Sorell/Midway Point scheme which supplied 252 ML during 2013-14, a slight decrease in volume from the 280 ML supplied by the scheme in 2012-13.

TasWater also operated an effluent recycling scheme at the Legana WWTP where 188 ML was supplied for irrigation in 2013-14, a slight increase from 172 ML in 2012-13. Additionally, the Beaconsfield re-use scheme, which commenced operating in late 2012, supplied 80 ML in 2013-14.

3.6 Supply and demand balance of wastewater

This section assesses the current supply and demand balance for wastewater in Tasmania, within the constraints of the available data. A balance can be determined by assessing the regulated supply capacity of the WWTPs and demand for sewerage services as measured by the sewage flow data.

Demand for sewerage services by those connected to the system can be determined by measuring the sewage flow. However, there are limitations to this approach.

The limits specified in the environmental conditions for the WWTP relate to ADWF conditions. ADWF excludes water ingress during peak flow conditions, which are experienced during or after periods of precipitation and result in groundwater infiltration or stormwater ingress into the reticulation system. Reporting of treatment plant flow generally does not differentiate between flow conditions (average flow

versus peak flow) and a true comparison against the specified limit is therefore not possible. However, it is the best indicator available at this time and has been utilised to highlight key supply and demand conflicts.

Appendix 4 provides a list of all WWTPs operated by TasWater, their respective kL per day licensed flow limit and measured actual flow for 2013-14 (also measured on a kL per day basis) together with the actual flow as a percentage of the licensed limit for each WWTP.

The data indicates that flows for 27 WWTPs exceeded their regulated capacity in 2013-14. This means that demand exceeds supply for the systems in which those plants operate. Of those plants, three exceeded their regulated ADWF limits by more than 100 per cent. The remaining 24 WWTPs which exceeded their discharge limits were distributed across all regions of the State, and exceeded their respective regulated capacity by between one per cent and 82 per cent.

Of the remaining WWTPs, which were not exceeding their ADWF limits, 14 operated at more than 75 per cent of their regulated capacity with four of those plants reporting daily flows at or above 90 per cent of their regulated daily flow limit. There were 25 WWTPs which operated at between 50 per cent and 75 per cent of their regulated capacities whilst the remaining 12 WWTPs reported daily flow rates of less than half their regulated capacity.

Whilst data availability has restricted the nature of the analysis that can be undertaken, this assessment of the supply-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 2013-14.

Table 4.1 Number of water treatment plants in Tasmania

Disinfection only WTPs	Further treatment WTPs	Full treatment WTPs	Total WTPs
21	1	38	60

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

During 2013-14 TasWater operated 88 water supply schemes¹, supplying a total of 444 703 customers.

TasWater spent around \$36.6 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 the period included the:

- construction of a new pipeline from the East Tamar trunk main to deliver treated water to Lilydale;
- construction of the Westbury WTP supplying the communities of Westbury, Hagley and Exton; and
- upgrading all fluoride installations in the north-western region of the State.

Major projects commenced by TasWater during 2013-14 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 2011*.

Under the law, owners of dams must 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.

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

The guidelines are based on the relative risk posed by a particular dam if there was to be a catastrophic failure of the dam, known as the consequence category rating of the dam. 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 rating for storage dams

Population at Risk	Severity of damage and loss			
	Negligible	Minor	Medium	Major
0	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
101 to 1 000	Note 1	High B	High A	Extreme
greater than 1 000	Note 1	Note 1	Extreme	Extreme

Adapted from Table 3 of the ANCOLD Guidelines on Assessment of the Consequence Categories for Dams (2012).

Note 1: Where the population at risk exceeds 100 it is unlikely that damage will be negligible; where the population exceeds 1 000 it is unlikely that damage will be minor.

Note 2: Change to High C where there is potential of more than one fatality.

All dams for which there is a potential loss of life resulting from failure (ie dams with a rating of “Significant” or higher) require comprehensive surveillance and emergency management.

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 which 27 are identified as having a consequence category rating of “Significant” or higher, due to their size and/or proximity to the population they service, with the remaining dams and storages 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 the Dam Safety Regulator 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. The DSMP was provided to the Dam Safety Regulator in July 2014 for review and approval.

During 2013-14 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 rating of significant or higher.

Of particular note, TasWater applied, and received approval from DPIPWE, for dam works permits to decommission two high risk dams (both rated as High C) located at Queenstown, the Roaring Meg and Cutten Street No. 3 dams. The works to decommission and remediate these dam sites are scheduled to be undertaken during 2014-15. 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 rating and are no longer operationally required by TasWater.

Table 4.3 details TasWater's storage dams with significant or higher consequence ratings as set out in TasWater's DSMP.

Table 4.3 Significant and High consequence category rating storage dams in Tasmania

Dam name	Consequence category rating
Flagstaff Gully	Extreme
Knights Creek	Extreme
Limekiln Gully	Extreme
Tolosa Reservoir	Extreme
Lower Reservoir	High A
Meredith Reservoir	High A
Ridgeway Reservoir	High A
Upper Reservoir	High A
Pet Dam	High B
Risdon Brook	High B
Lake Isandula	High B
Lake Mikany	High B
Conglomerate Dam	High C
Curries Dam	High C
Cutten Street No.3	High C
Duckhole Rivulet	High C
Illabrook Dam	High C
Lower Prosser	High C
Roaring Meg Dam	High C
Westbury Dam	High C
Bicheno Dam	Significant
Blackmans #1	Significant
Blackmans #2	Significant
Coles Bay	Significant
Grey Mountain No.1	Significant
Guide Dam	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 2014

Number of water pumping stations	Number of water distribution storage facilities	Length of water mains (km)
208	399	5 943

A reduction of 499 km in the recorded length of the water mains was driven by the findings of an independent audit conducted by Deloitte in July 2014. The audit found that previous reporting was not in line with NPR definitions such that outfalls and disused pipes are no longer included in the reported figure. Comparisons with previous years should therefore not be made in gauging network growth or reduction.

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. An average of 33.7 properties were served per kilometre of water main across the State in 2013-14. Customer density in Tasmania is similar to the average for the mainland water networks, which serve around 34 properties per kilometre of water main.²

4.2 Sewerage assets

Sewerage assets include wastewater treatment plants (WWTPs), pumping stations³, sewer mains and effluent outfalls⁴. 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 that were operated by TasWater during 2013-14.

Table 4.5 Sewerage assets operated by TasWater at 30 June 14

Sewage pumping stations	Length of sewerage mains and channels (km)	Level 1 WWTPs	Level 2 WWTPs	Total number of WWTPs
724	4 802	33	79	112

² National Performance Report 2012–13: urban water utilities.

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

⁴ 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.

In addition to the 79 Level 2 WWTPs operated by TasWater during 2013-14, three Level 2 WWTPs are owned by private operators or government agencies, 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 \$37.6 million in capital works on its sewerage infrastructure during 2013-14, with major projects focusing on upgrading plants and complying with environmental requirements.

Major capital projects completed during the period included:

- a new Taroona to Sandy Bay pipeline and decommissioning of Taroona Sewage Treatment Plant; and
- an upgrade to Brighton's sewage pump station.

Major projects commenced by TasWater during 2013-14 are outlined in Chapter 9.

Table 4.6 provides a breakdown of the Level 2 WWTPs that were operated in Tasmania during 2013-14 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 level⁵)

Primary	Secondary	Tertiary
1	68	10

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

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 2013-14, there were 39 properties serviced per kilometre of sewer main. This is slightly higher than for mainland utilities, which service around 34 properties per kilometre of sewer main.⁶

⁵ 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.

⁶ *National Performance Report 2012–13: urban water utilities.*

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, in the event the treatment plant has a dual purpose (used both as a sewage treatment plant and as a recycled WTP) then 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, requiring the wastewater to meet 'Class B' quality standard as specified in the *Tasmanian environmental guidelines for the use of recycled water in Tasmania*.⁷

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 where WWTPs needed to be retrofitted with special helminth⁸ filters to complement existing treatment processes before discharge to reuse – Rokeby and Rosny WWTPs.

Whilst 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 they fully reused, partially reused or didn't reuse treated wastewater 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.

⁷ '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 (eg 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.

⁸ 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)
	Partial		Partial		
	Full	(>50% recycled)	(<50% recycled)	None	
2009-10	6	17	8	47	23
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

As shown in Table 4.7, the number of WWTPs without associated reuse schemes has declined slightly over the years as additional schemes have been commissioned. However, considerable fluctuation exists from year to year between the full, > 50 per cent and < 50 per cent categories. Whilst the increase in 2012-13 can be attributed to favourable climatic conditions, the 2013-14 increase is more likely to be due to expansion of some schemes and improved storage, indicating a structural change leading to lasting improvements in terms of reuse.

Table A4.3 in Appendix 4 lists the proportion of effluent reused and reuse flow per year for each Level 2 WWTP for each of the 2009-10 to 2013-14 financial years.

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.

The majority of regional transitional service standards for water indicators were achieved during 2013-14. In a number of cases this also resulted in TasWater meeting the Customer Service Code minimum standards.

However, 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 2013-14 the average rate of bursts and leaks across the State was 9.1 per 100 kilometres of water main which compares very favourably with average burst and leak rates of recent years.

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

	Water main breaks (per 100 km of water main)
2010-11	56
2011-12	34
2012-13	48
2013-14	9.1

The southern region, in particular, improved markedly from 58 breaks per 100 kilometres in 2012-13 to 7.4 breaks per 100 kilometres in 2013-14. For comparative purposes the average water main breaks for mainland major water utilities was 18 per 100 kilometres of water main. The performance of both the northern and north western regions in 2013-14 also improved considerably compared with the previous period.

While performance in this area may have improved due to TasWater's recent prioritisation of water infrastructure renewals and replacements, TasWater has concerns about the reliability of the 2013-14 data in this area, particularly given Table 4.9 shows that the number of unplanned interruptions to water supply has increased (an unplanned interruption is often the result of a water main break).

Table 4.9 Unplanned water interruptions

	Number of unplanned interruptions	Number of customers affected
2012-13	3 513	23 382
2013-14	4 451	28 286

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 28 286 customers in 2013-14, with more than half of these customers (14 797 customers) located in the southern region where there is a greater population density.

While Table 4.9 shows that the number of unplanned interruptions appears to have increased significantly, TasWater believes that northern region data in 2012-13 was significantly under-reported.

4.3.2 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 4.10.

Bursts and leaks that had the potential to cause substantial damage or harm (classified as 'priority 1') were generally attended to in 45 minutes or under in all regions, which was within the applicable transitional service standard.

For priority 2 bursts and leaks the average response time varied between regions, with the north western and northern regions reporting 26 and 66 minutes respectively. The southern region reported 102 minutes on average to attend to priority 2 bursts and leaks, which is still within the transitional service target of 120 minutes that applies to all three regions.

Priority 3 bursts and leaks have less stringent attendance targets, and all three regions were within the applicable transitional service standards in 2013-14. The performance of the southern region's Priority 3 bursts and leaks response time has declined from 2 783 minutes in 2012-13 to 3 023 minutes in 2013-14. The performance of the northern region's Priority 3 bursts and leaks response time also declined to 732 minutes in 2013-14 (response time was 457 minutes in 2012-13).

Table 4.10 Bursts and leaks

	Average time taken to attend bursts and leaks (minutes)			2012-13 transitional service standard (minutes)		
	Priority 1	Priority 2	Priority 3	Priority 1	Priority 2	Priority 3
2013-14	31	95	1 930	44 - 55	120	1 440 – 4 320
2012-13						
Ben Lomond Water	27	58	457	60	120	1 440
Cradle Mountain Water	35	53	552	49	120	1 440
Southern Water	48	154	2 783	45	120	4 320

Priority 1: is a burst or leak that causes, or has potential to cause, substantial damage or harm to customers, water quality, flow rate, property or environment.

Priority 2: is a burst or a leak that causes, or has the potential to cause, minor damage or harm to customers, water quality, flow rate, property or environment

Priority 3: is a burst or leak that causes no discernible impact on customers, property or the environment

The southern region's transitional service standard of 4 320 minutes for priority 3 bursts and leaks was set at a high level given the expectation that more leaks would occur due to the installation of water meters (ie during the installation of new water meters, infrastructure can be disturbed and/or instances of poor quality workmanship by the installing party can lead to leaks).

Identification of low priority leaks from water metering data can only be achieved by TasWater once its knowledge of its assets improves.

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 Customer Service Code and the regionally based transitional service standards approved as part of the 2012 Price Determinations is listed in Appendix 5.

4.3.3 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 112 litres per service connection per day and 4.1 kilolitres per kilometre of water main per day. This level of water loss equates to around 14 per cent of the total water sourced by TasWater.

4.3.4 Sewer main breaks and chokes

The number of breaks and chokes in the sewer main is an indicator of 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 2013-14, TasWater reported 2 244 sewer main breaks and chokes, which is considerably fewer than the 2 669 breaks and chokes was reported by the three previous regional corporations in 2012-13. However, TasWater believes that inaccurate data reported for the northern region for 2012-13 is likely to explain, at least in part, the difference in performance between the two periods.

Reliability of the sewerage network is measured by the frequency of service failure, as indicated by the rate of sewerage breaks and chokes per 100 kilometres of sewer main (Table 4.11). This measure does not include sewer breaks and chokes that occur within property connections.

TasWater's performance of 50 breaks and chokes per 100 kilometres during 2013-14 was better than the 2012-13 performance (56) but was poor compared to the national average of 25 breaks and chokes per 100 kilometres of sewer main for similarly sized utilities interstate⁹.

Table 4.11 Sewerage mains breaks and chokes (per 100km sewer main)

Sewerage mains breaks and chokes (per 100km sewer main)	
2010-11	56
2011-12	57
2012-13	56
2013-14	50

TasWater reported a rate for the southern region of 69 breaks and chokes per 100 kilometres of sewer main. This relatively poor result is not surprising given the age and condition of the sewer infrastructure in the southern region, particularly in the Greater Hobart area.

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

4.3.5 Property connection sewer breaks and chokes

TasWater also measures breaks and chokes in property connections and report it as a measure per 1 000 connected properties. 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.

The rate of property connection sewer breaks and chokes reported for 2013-14 was 7.9 per 1 000 property connections. This compares with a rate of property connection sewer breaks and chokes for the north western region of 3.2 per 1 000 property connections in 2012-13 and 13.4 per 1 000 property connections for the southern region in 2012-13. Results for 2012-13 in the northern region against this measure were unavailable.

The 2013-14 rates of property connection sewer breaks and chokes are slightly higher than the national average for all urban water utilities of around six breaks per 1 000 properties¹⁰.

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

⁹ National Performance Report 2012–13: urban water utilities.

¹⁰ *ibid*

4.4 Sewer overflows

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.

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.

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 any incident including an emergency, accident or malfunction if this release causes or may cause an environmental nuisance.¹¹

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 4.12.

Table 4.12 Sewer overflows per 100 km of sewer main

	Sewer overflows (per 100 km of sewer main)
2010-11	5.7
2011-12	3.7
2012-13	3.9
2013-14	14.3

In 2013-14, TasWater reported a considerable increase in the frequency of overflows on its sewer network, with 645 overflows reported to the EPA, a rate of 14.3 per 100 km of sewer main. TasWater attributes this increase to under-reporting by the previous corporations.

The rate of sewer overflows to the environment across Tasmania is very high compared to the national average of around 1.5 per 100 kilometre of sewer main in 2012-13.¹²

¹¹ Section 32(2) of the EMPCA relates to Level 2 activities.

¹² *National Performance Report 2012–13: urban water utilities.*

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.

5 CUSTOMER SERVICE

This chapter outlines performance with respect to TasWater's call centre and in terms of the number of customer complaints TasWater received and the number and duration of water service and sewerage service interruptions.

The Economic Regulator's Customer Service Code (the Code) specifies TasWater's standards and conditions of service and supply. In particular, the Code currently specifies that TasWater is required to meet the standards by the end of the second regulatory period (30 June 2018).

As part of its 2012 Price Determination Investigation, the Economic Regulator approved annual transitional service standards for the three previous regional corporations. TasWater is also required to comply with the relevant transitional service standards for each year of the first regulatory period (1 July 2012 to 30 June 2015).

5.1 Call centre performance

Call centres provide an important link between customers and TasWater. TasWater's call centre performance is measured in terms of the time it takes an operator to answer a customer's call. 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. During 2013-14, TasWater's call centre received 134 479 calls, with 92 per cent answered within 30 seconds ie the 90 per cent target was met.

The Economic Regulator also requires TasWater to report on the number of abandoned calls. The Economic Regulator introduced this requirement due to unsatisfactory levels of service provided by the three previous regional corporations' call centres during mid-2012. During 2013-14, TasWater reported 3 001 abandoned calls which is a significant improvement on the 15 130 abandoned calls reported for 2012-13.

5.2 Complaints

The number of customer complaints¹ received by TasWater provides an indication of overall customer satisfaction and is also a useful tool for identifying issues of concern to customers. TasWater has a target of less than nine complaints per 1 000 properties. During 2013-14, TasWater received 1 313 complaints or

¹ The Australian Complaint Handling Standard (AS ISO 2006) defines a complaint as 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."

6.5 complaints per 1 000 properties which is under the target. However, the number of complaints increased from the previous year by 9 per cent.

Table 5.1 summarises the complaints received by TasWater, most of which related to water quality (64 per cent).

Table 5.1 Comparison and summary of complaints received by the regional corporations (2012-13) and TasWater (2013-14)

Type of complaint	2012-13	2013-14
Water quality	60	834
Water service	544	11
Sewerage service	83	294
Billing and accounts - water and sewerage	513	115
Other	-	59
Total water and sewerage	1 200	1 313

TasWater has explained that the differences between 2012-13 and 2013-14 in terms of the issues being complained about were due to inconsistent definitions of complaints and disparate recording of complaints. To address these issues, TasWater advised that it had developed a policy and delivered staff training on capturing and managing complaints and had also created a Complaints Management Tracker in February 2014 to improve the accuracy of the split up of complaints between topics.

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 (Ombudsman). During 2013-14, TasWater reported that there were 63 complaints referred to the Ombudsman which equates to 0.31 complaints per 1 000 properties which is below the target in the Code.

However, during 2013-14, the Ombudsman reported that it received eight complaints in relation to Southern Water, and 134 in respect of TasWater ie 142 complaints in total. In comparison, during 2012-13, the Ombudsman received 182 complaints about the three previous regional corporations.

TasWater has advised that the difference in the number of recorded complaints is due to the Ombudsman recording as complaints, matters that were handled internally, informal complaints which were answered via email and formal complaints where the response is signed by the Ombudsman. In contrast, TasWater's complaint numbers relate only to the latter ie formal complaints.

The complaints referred to the Ombudsman related to the following issues:

- accounts in general;
- service charges;
- metering of strata title units; and

- the calculation of equivalent tenements.

According to the *Ombudsman Tasmania Annual Report 2013-2014*, there was a recurring theme where TasWater failed to respond to a complaint until the complainant had referred it to the Ombudsman. The Ombudsman did, however, note that "... significant advancements have been made in this area with a noticeable improvement in the quality of investigations and responses and, consequently, better outcomes for complainants." (p.17)

For the 2012-13 report, the previous regional corporations reported on the percentage of complaints which were resolved within 10 days. TasWater failed to collect data and report on this measure for 2013-14. TasWater has notified the Economic Regulator that it will collect data and report on this measure in 2014-15.

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.

Table 5.2 shows the number of planned and unplanned water supply interruptions that occurred during 2013-14, including the frequency of interruptions per customer against the transitional service standard for 2013-14 and against the minimum service standard which TasWater is required to meet by 30 June 2018. The table shows that TasWater met the transitional service standard for the frequency of both planned and unplanned interruptions.

Table 5.2 Frequency of water supply interruptions – 2013-14

	Number of Interruptions	interruption frequency (per customer)	2013-14 transitional service standard (interruptions per customer)	Target minimum service standard (interruptions per customer)
Planned	395	0.05	0.25	0.10
Unplanned	4 451	0.14	0.25	0.10

Table 5.3 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 2013-14 and for comparison, the minimum service standards targets for Tasmania which are required to be met by 30 June 2018.

Table 5.3 Duration of water supply interruptions – 2013-14

	Tasmania		North		North-west		South	
	2017-18 Target ²	2013-14 Actual	2013-14 Target ³	2013-14 Actual	2013-14 Target	2013-14 Actual	2013-14 Target	2013-14 Actual
<i>Planned interruptions</i>								
Average duration (minutes)	180	244	280	214	200	349	280	263
Average customer minutes off supply	15	11	30	18	30	6	30	9
Interruptions restored within 5 hours (%)	95	81	78	82	91	96	55	54
<i>Unplanned interruptions</i>								
Interruptions (per 100 km of water main)	32	75	38	64	68	80	39	78
Average duration (minutes)	100	131	170	120	170	216	170	123
Average customer minutes off supply	20	18	20	22	25	14	30	8
Interruptions restored within 5 hours (%)	98	98	80	98	95	98	80	97

Note: **Bolded** figures reflect those measures where TasWater has met the relevant target and **shaded** figures reflect where the target has not been met.

As shown in Table 5.3, the transitional target for the average duration of planned water interruptions in the north-western region was not met. In the southern region, the percentage of planned interruptions restored within five hours was below the 2013-14 transitional targets. The average minutes off supply target for planned interruptions was met in all regions.

For unplanned interruptions to water supply, the target of restoring service within five hours for unplanned interruptions during 2013-14 was below or at the limit in each region. However, TasWater did not meet:

- the transition targets for the average number of interruptions per 100 km of water main in any region;
- the unplanned customer minutes off water supply in the northern region; and
- the duration of unplanned interruptions in the north-west region.

5.3.1 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

² Customer Service Code Minimum Standard.

³ Regional Transitional Service Standard for 2013-14.

sewerage services are no longer available and ends when normal service is restored.

As noted in Chapter 4 of this report, during 2013-14, there were 2 244 sewer main blockages (breaks and chokes). In comparison, there were 2 669 sewer main blockages (breaks and chokes) during 2012-13.

Table 5.4 shows the average duration of interruptions and customer minutes off supply for sewerage interruptions, together with the transitional service standards for 2013-14 and for comparison, the minimum service standards targets which TasWater is required to meet by 30 June 2018.

Table 5.4 Sewerage service interruptions (total and by region) – 2013-14

	Tasmania		North		North-west		South	
	2017-18 Target ⁴	2013-14 Actual	2013-14 Target ⁵	2013-14 Actual	2017-18 Target	2013-14 Actual	2013-14 Target	2013-14 Actual
Sewer breaks and chokes per 100 km of main	28	109	55	70	55	36	61	170
Average time to attend breaks and chokes (minutes)	41	61	65	73	65	39	65	60
Average duration (minutes)	150	118	230	139	230	145	180	103
Interruptions restored within 5 hours (%)	99	99	90	97	97	98	93	99

Note: **Bolded** figures reflect those measures where TasWater has met the relevant target and **shaded** figures reflect where the target has not been met.

Table 5.4 shows that the transitional limit for the time to attend breaks and chokes was not met in the northern region. Additionally, the number of sewer breaks and chokes were almost three times the target in the southern region. The average duration and the interruption restored within five hours targets were met for each region, as were the minimum service standards targets TasWater is required to meet by 30 June 2018.

5.4 Customers with payment difficulties

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

Table 5.5 shows data for residential customers who have had difficulty paying their accounts over the last three years.

⁴ Customer Service Code Minimum Service Standards to be met by 2017-18.

⁵ Regional Transitional Service Standards for 2013-14.

Table 5.5 Residential customers with payment difficulties

Category	2011-12	2012-13	2013-14
Residential customers repaying a debt	10 620	10 501	9 654
Average debt for residential customers	\$562	\$433	\$794
Customers on hardship program (Concession customers)	173 (46)	181 (73)	159 (73)
Restrictions applied for non payment (Concession customers)	0	241 (19)	174 (35)
Restrictions removed within seven days of being applied (Concession customers)	0	147 (12)	108 (18)
Customers to which legal action applied for non-payment of water bill	0	1	28

The number of residential customers (including concession customers) repaying a debt declined slightly during 2013-14 compared to the previous year. However, the average debt almost doubled to \$794 compared to 2012-13 (\$433). The number of customers on the hardship program has also declined, however 73 concession customers were on the hardship program during 2013-14, which was unchanged from 2012-13.

In certain circumstances, the *Water and Sewerage Industry (Customer Service Standards) Regulations 2009* allow TasWater to 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. The number of restrictions declined during 2013-14 compared to 2012-13, from 241 to 174. However, the number of concession customers to whom restrictions were applied almost doubled from 19 during 2012-13, to 35 during 2013-14.

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 2013-14 TasWater instituted legal proceedings due to non-payment against 28 customers. Legal proceedings were instituted against just one customer during 2012-13.

6 PUBLIC HEALTH

The Department of Health and Human Services (DHHS) is responsible for drinking water quality and safety. DHHS undertakes this function through monitoring and enforcing compliance with drinking water guidelines and policies for fluoridation of drinking water. Under the *Public Health Act 1997* 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 2005* (DWQG) issued under the Public Health Act 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 2014, are the current version of the ADWG.

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 2013-14.

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 that 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 2013-14, 19 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. 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.¹ 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

¹ 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.

temperature or below before drinking and/or use, so as to inactivate pathogenic bacteria, viruses and protozoa.

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 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.

Three per cent of all water supplies (three systems in total) operated under a Public Health Alert, which is put in place when non-compliant water is detected that cannot be rendered safe by boiling. These alerts affected 0.2 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.

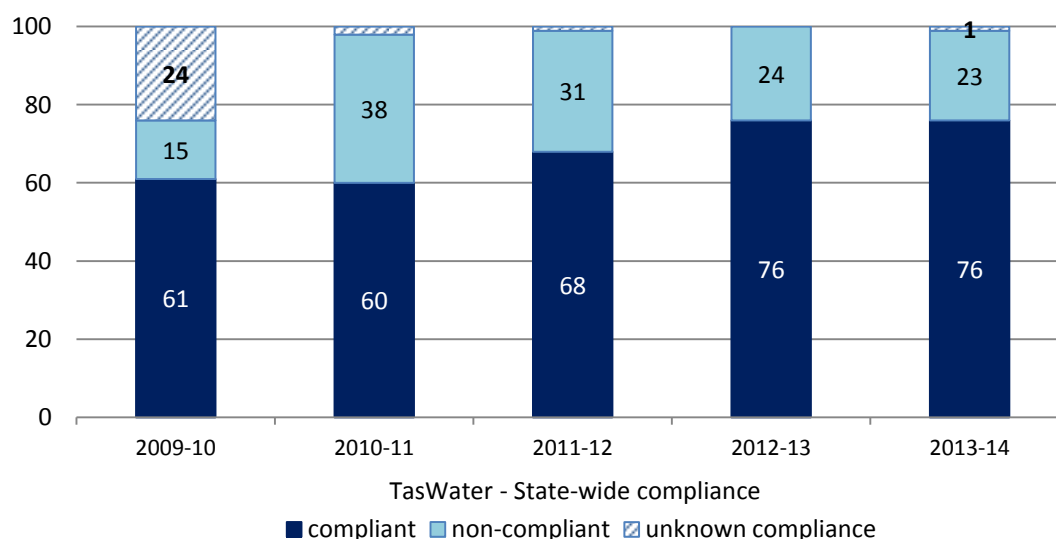
The determination of the bacteriological compliance of a drinking water supply system is dependent on the collection of sufficient and appropriate microbiological samples. Water suppliers must sample and test drinking water from their drinking water systems in accordance with the sampling requirements 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.

In 2013-14 TasWater adequately monitored 99 per cent of their systems to enable the level of compliance to be determined. The exception was the Gormanston water supply which services approximately 80 people (the compliance of this system was unknown).

Of TasWater's 88 public drinking water supply systems, 67 were considered by the DHHS to be bacteriological compliant (76 per cent).

Figure 6.1 compares the level of compliance, non-compliance and unknown compliance (due to insufficient sampling) from 2009-10 to 2013-14 for the State. As shown in Figure 6.1, there was a significant improvement in bacteriological compliance in both 2012-13 and 2013-14 compared to previous years.

Figure 6.1 Bacteriological compliance of drinking water supply systems (per cent of systems), 2009-10 to 2013-14



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 key projects, such as the Ringarooma Valley, 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 2014.

During 2013-14 there were 19 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 2012-13. It should be noted that two systems are currently operating on a Public Health Alert (Whitemark and Pioneer) 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 Lilydale water supply had its boil water alert removed during 2013-14 following provision of fully treated water via pipeline from a water treatment plant located in Launceston.

Table 6.1 Incidence of boil water alerts: 2009-10 to 2013-14

	2009-10	2010-11	2011-12	2012-13	2013-14
Temporary Boil Water Alerts	16	12	10	6	6
Permanent Boil Water Alerts	24	22	22	22	19

In 2013-14 a total of six drinking water supply systems operated with one or more temporary boil water alerts, which is the same as was reported in 2012-13 and is a decrease from 10 systems reported in 2011-12. 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. Avoca has been placed on a Public Health Alert since November 2012 due to persistent and elevated levels of lead and cadmium and its supply system has not been included in the overall number of temporary boil water alerts shown in Table 6.1.

6.3 Population receiving bacteriologically compliant reticulated water

Approximately 87 per cent of Tasmanians² receive their drinking water from a public drinking water supply system. Approximately one per cent of the population is serviced by the 19 small supply systems that operate with a permanent boil water alert.

In 2013-14, 1.4 per cent of the Tasmanian population serviced with reticulated water received non-compliant drinking water. This is a small increase compared to last year (1.1 per cent) but still a vast improvement since 2011-12 (2.2 per cent). This significant reduction is largely due to 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).

² 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.

Temporarily elevated levels of lead were detected in the Fingal, Ringarooma and Rosebery water supply systems. 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 were detected in the Distillery Creek 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.

At Whitemark (Flinders Island) and Pioneer, Public Health Warnings issued in 2012 remain in place owing to persistent elevated lead levels detected in that water supply. The Public Health Warning advises residents that the water is not intended for consumption and TasWater has made an alternative source of drinking water available for the residents whilst investigations into the source of the lead contamination are undertaken.

The Avoca water supply system showed persistent elevated levels of cadmium and lead resulting in a Public Health Warning also being in place since 2012.

Temporarily elevated levels of disinfection by-products were detected in water supply systems at Colebrook, Hamilton, Ouse, Tunbridge, Rosebery, Geeveston, Kermadie, Currie and Wayatinah.

In each of the above cases, human health risk assessments indicated that the risk to public health was low once residents were made aware of the status of their water quality. The health based guideline values are very conservative and incorporate a range of safety factors that err on the side of caution and are considered to be protective of public health. Whilst regular exceedance of a health based guidelines is undesirable, temporary exceedances are unlikely to 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.

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 public disclosure of the performance of TasWater's drinking water supply systems demonstrates 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. The public is able to request from TasWater a copy of the report. Furthermore, 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.³

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 decay⁴ and this has recently been re-affirmed by the National Health and Medical Research Council.⁵ Furthermore, water fluoridation has been proven to be the most effective and socially equitable means of achieving community wide exposure to the cavity prevention effects of fluoride.⁶

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

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

⁴ 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.

⁵ www.nhmrc.gov.au/guidelines/publications/eh41

⁶ The Efficacy and Safety of Fluoridation. National Health and Medical Research Council, Australian Government Public Statement, 2007. www.nhmrc.gov.au/guideline/publications/eh41

the ADWG). In 2013-14 there were 39 fluoridation systems in operation throughout the State servicing 47 of the reported 88 water supply systems.

Of the 47 fluoridated supply systems that operated throughout 2013-14, 42 maintained an average fluoride dose within the required fluoride concentration range⁷. Three non-compliant fluoridation systems at Rosebery – Stirling Valley (0.78 mg/L), Strahan (0.70 mg/L) and St Marys (0.76 mg/L) achieved fluoride concentration doses below the optimum range. These water supply systems were largely non-compliant owing to operational issues with the dosing equipment such as pump failures and blocked lines. A further two water supplies were reported to have their fluoridation equipment offline during the 2013-14 period (Westbury and Rosebery – Howard St).

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 47 fluoridated supply systems 21 had a compliance level of 90 per cent or greater in 2013-14 which equates to approximately 50 per cent of the Tasmanian population receiving a fully-compliant fluoridated supply (ie 50 per cent of the population receive daily fluoride concentrations that fall within the target range at least 90 per cent of the time).

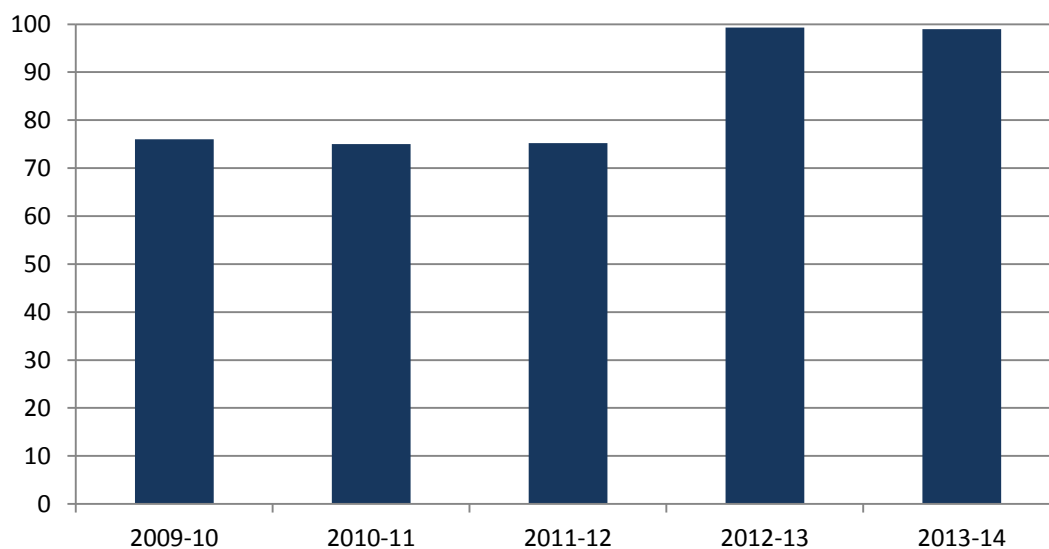
6.7.2 Population receiving water from systems with compliant average fluoridation concentrations

The widespread fluoridation of water in Tasmania is conducted in accordance with the *Australian National Oral Health Plan 2004-13* 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 500 or more apart from Bicheno and Scamander.

Figure 6.2 shows the percentage of the Tasmanian population serviced by compliant fluoridation systems, in terms of average fluoridation concentration, between 1 July 2009 and 30 June 2014. In 2013-14, 96 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.

⁷ All daily fluoride samples are averaged for each calendar month and then the monthly averages are averaged again over a 12 month period to result in a yearly fluoride average against which compliance is assessed.

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 is a significant improvement on previous years.

7 ENVIRONMENT

The Environment Protection Authority (EPA) is responsible for administering and enforcing the *Environmental Management and Pollution Control Act 1994* (EMPCA). The EMPCA provides the regulatory framework to protect Tasmania's environment from pollution. The EPA's Board and Director have statutory functions under the EMPCA and are supported by the EPA Division, which is part of the Department of Primary Industries, Parks, Water and Environment (DPIPWE).

The EPA regulates Level 2 wastewater treatment plants (WWTPs) in Tasmania. In 2013-14 the number of Level 2 WWTPs operating in Tasmania was 82, unchanged from the previous year. Taroona WWTP is included in the assessment for the 2013-14 period, although it was decommissioned towards the end of the reporting period in June 2014. Of the 82 WWTPs, three were operated by organisations other than TasWater. For the purposes of this report, only the performance of the 79 WWTPs operated by TasWater is assessed.

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

The level of compliance with the 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 which is held in EPA databases. Most assessment results are reported on a state-wide basis for the 2013-14 period. Where relevant, comparisons have been made to the three previous regional water corporations' performance.

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. They reflect the technological standard at the time the conditions were imposed, which has improved considerably over the last decade.

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 50th percentile, 90th percentile and maximum limits for a range of potential pollutants. Maximum limits provide the EPA Director with the ability to issue penalty infringement notices or to pursue Court prosecution for specific pollution events which may occur. Percentile limits allow for a defined degree of variability in performance which is expected within the operational context of a WWTP.

The EPA Division's analysis of the performance of WWTPs operated by TasWater during 2013-14 can be found in Appendix 4 of this Report.

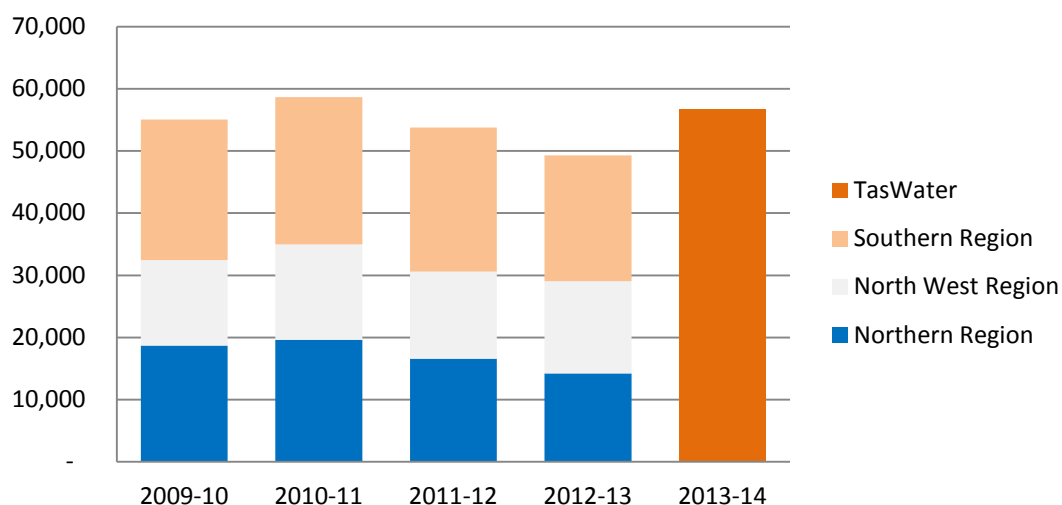
7.1 Effluent treatment

Flow volumes discussed in this section are based on total inflows received by WWTPs, rather than flows discharged to waterways which may be different due to effluent recycling reducing the volume discharged to waters.

The accuracy and completeness of wastewater flow data was flagged as an area of concern in previous reports. Although minor improvements to flow reporting were implemented during the past reporting period, further improvements are required. Of the 79 WWTPs operated by TasWater, 71 reported measured flow data for 2013-14 (unchanged from 2012-13). 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 years compared to the volume of wastewater now received by TasWater.

The total volume of wastewater treated by all TasWater Level 2 WWTPs combined was 56 718 ML in 2013-14, which represents an increase of 15 per cent against the 49 264 ML reported for 2012-13 by the three regional corporations.

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

The reported total annual flow volume for 2013-14 is likely to be affected to some degree by rainfall patterns for this period. Rainfall can lead to increased inflow and infiltration of water into the sewer system, resulting in increased volumes being conveyed to WWTPs for treatment. During 2013-14, rainfall across the State was classified as “above average” in central, northern and north western parts of the State, with some areas, including urban Launceston, classified as having received “very much above average” rainfall. The east coast of Tasmania from St Helens to south of Dover was classified as having received “average” rainfall in 2013-14. In contrast, for the 2012-13 reporting period large areas of the State were classified as “below average” or “very much below average” according to information provided by the Bureau of Meteorology. The influence of rainfall on wastewater flow patterns is particularly pronounced in parts of Launceston which have a combined catchment (carrying both sewage and stormwater).

Table 7.1 shows that a number of WWTPs experienced significantly increased inflows in 2013-14, with most of these located in the northern part of the State. Sixteen WWTPs (two more than in 2012-13) reported annual inflows of more than 1 000 ML for 2013-14.

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, with Ti-Tree Bend WWTP again the largest wastewater treatment plant in the State. Newnham Drive and Norwood WWTPs, two urban Launceston WWTPs, also exceeded the 1 000 ML threshold in 2013-14.

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

Premises name	Catchment area	Total flow 2012-13 ML/year	Total flow 2013-14 ML/year	Increase from 2012-13 to 2013-14 (%)
Ti-Tree Bend	Launceston	7 157	9 250	+29
Pardoe Downs	Devonport	4 164	5 155	+24
Macquarie Point	Hobart	3 913	3 813	-3
Prince of Wales Bay	Hobart	3 102	3 431	+11
Selfs Point	Hobart	3 070	3 238	+5
Round Hill	Burnie	2 232	2 690	+21
Rosny	Hobart	2 244	2 241	0
Ulverstone	Ulverstone	1 676	2 060	+23
Cameron Bay	Hobart	1 739	1 745	0
Blackmans Bay	Kingston	1 449	1 544	+7
Queenstown	Queenstown	1 618	1 519	-6
Wynyard	Wynyard	1 503	1 405	-7
Smithton	Smithton	1 125	1 328	+18
Newnham Drive	Launceston	949	1 160	+22
Hobblers Bridge	Launceston	1 101	1 128	+2
Norwood	Launceston	806	1 055	+31

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 ie 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 79 Level 2 WWTPs operated by TasWater during 2013-14, 13 were classified as marine discharge, 32 as estuarine or bay discharge and 34 as inland waters discharge. This categorisation was unchanged from 2012-13.

Figure 7.2 shows both the volume and percentage of wastewater discharged by Level 2 WWTPs during 2013-14, categorised by receiving environment. The distribution of treated effluent by receiving environment remains largely unchanged from the situation that existed in 2012-13, as illustrated in Figure 7.3.

Figure 7.2 Discharge by receiving environment (ML/year; percentage of flow)

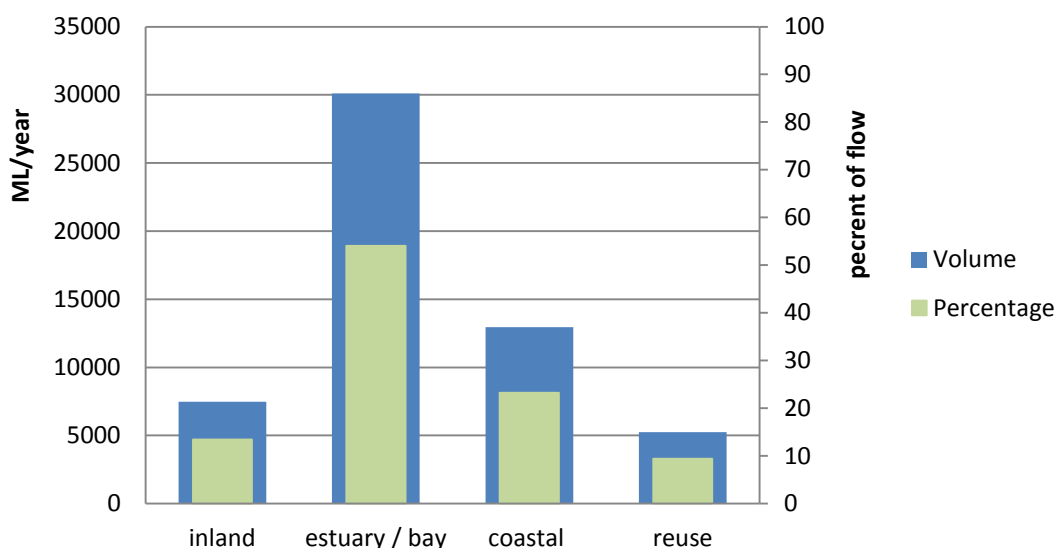
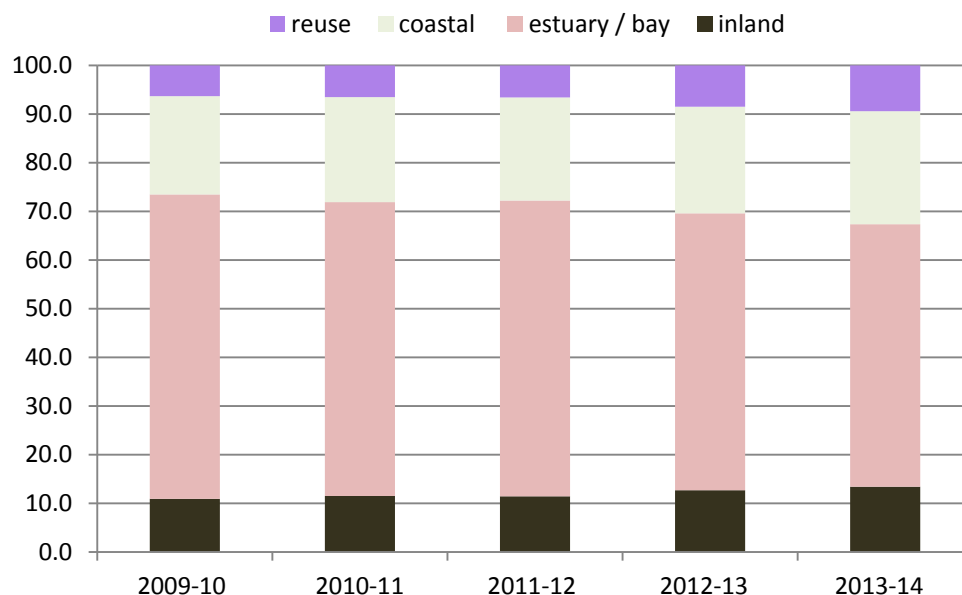


Figure 7.3 Discharge by receiving environment over time (percentage of flow)

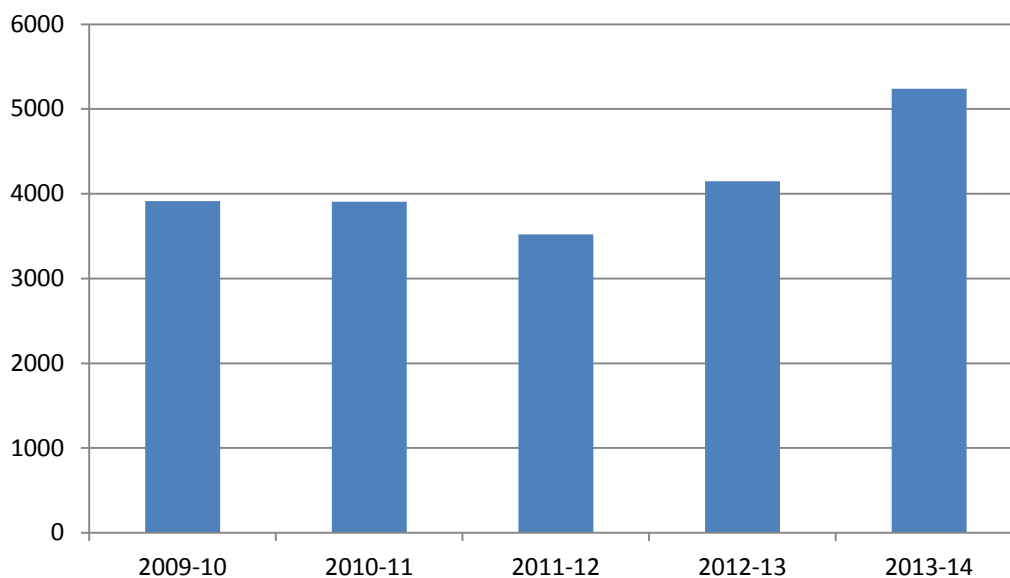


Overall, of the total volume of effluent discharged to waterways, the majority was discharged to estuarine waters (30 092 ML or 54.1 per cent), followed by discharge to coastal waters (12 951 ML or 23.2 per cent) and then inland waters (7 476 ML or 13.4 per cent). In addition 5 239 ML (or 9.4 per cent) of effluent was beneficially reused.

Significant regional differences exist in relation to the receiving environment, in keeping with the different geographical conditions present 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.

Figure 7.4 shows the trend in relation to volumes of effluent recycled for the period 1 July 2009 to 30 June 2014 inclusive.

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



In 2013-14 the total volume of recycled water generated by Level 2 WWTPs was 5 239 ML, equivalent to 9.4 per cent of the total effluent discharged from these WWTPs. This represents an increase, both in terms of volume and percentage, when compared to 2012-13 when 4 147 ML of water was recycled, equivalent to 8.5 per cent of total discharge.

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. When compared to longer term trends, 2013-14 can be regarded as a wet year particularly for the central, northern and north-western areas of the State. Given this, the increase in recycling proportion is likely to be due to structural improvements and expansion of some key schemes. For example, the Duckhole Dam storage became operational and the recently commissioned Beaconsfield reuse scheme operated for a full irrigation season. In addition, better management of effluent storages may have contributed to the higher effluent recycling proportion.

The Clarence Recycled Water Scheme and Brighton/Bridgewater combined scheme, which are both located in the south of the State, continued to utilise the largest volume of recycled effluent. As a result of these two schemes operating, a significant volume of treated effluent 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 2014 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 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 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, where 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 where effluent recycling is an end use (eg improved pathogen removal facilities).

As in previous years the vast majority of Level 2 WWTPs operated by TasWater (68 of 79) fell into the secondary treatment category, whilst ten 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 2013-14. Effluent from this WWTP is discharged via a long ocean outfall and 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 as shown in Figure 7.5.

During 2013-14 approximately 43 866 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 13.6 per cent of the total effluent volume (7 696 ML) and primary treatment 9.1 per cent (5 155 ML).

These 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 where the treated effluent meets the limits prescribed by the EPA. Non-compliance occurs when there are instances of the limits not being met.

For 2013-14, compliance has been calculated for TasWater as a single entity. This approach masks the considerable differences in performance evident in earlier reports, with the north-western region lagging behind the other two regions. Back calculations of performance on a state-wide level provide a relevant baseline against which TasWater's 2013-14 compliance levels can be compared. The compliance assessment period now spans a period of over five years and as such allows for the analysis of longer-term trends.

During 2013-14, comprehensive and in most instances complete effluent monitoring datasets were submitted to the EPA by TasWater.

However, there were occasions of sampling events being missed or of specific parameters being omitted. In one case, sampling was undertaken at a location not agreed to by the EPA as being representative of the final effluent quality. Sampling results for that WWTP (Ulverstone) were not included in compliance calculations for 2013-14.

In other instances, one or more sampling events were missed. While this resulted in incomplete datasets, there was still sufficient data for inclusion in analysis. These were mostly WWTPs associated with the north-western region (ie Strahan, Turners Beach, Tullah and Zeehan).

Across the State, improvements are still required with regards to field measurements of parameters such as chlorine and pH. Flow monitoring remains an area where identified deficiencies are being addressed progressively through installation and calibration of flow meters.

The data set for 2013-14 is less complete than for the previous year.

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. Where more than 50 per cent of samples are missing the relevant parameter is not assessed.

Where 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 the discharge to waters limits as long as those limits are specified in the environmental conditions, even though there may not have been a discharge to waters in that particular year. 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 measuring 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. Where both land-based and water-based discharge limits exist, 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 50th percentile limit. For 50th percentile limits, where the number of samples complying as a percentage of the total number of scheduled samples is greater than 50 per cent, compliance is deemed to be 100 per cent.

There have been no significant methodology changes since the previous reporting period (ie 2012-13).

Compliance calculations performed by the EPA Division rely on a different methodology to those adopted internally by TasWater and therefore produce different results.

The EPA Division believes that the current method it employs, the independent limits method¹, 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 has decided to continue with the established method unless there are compelling reasons not to do so.

The assessment of compliance is made more difficult by the fact that emission limits to waters for WWTPs with older permits do not adequately reflect the modern technology standards required under the contemporary regulatory framework. In these cases, discharge requirements are to be updated to become more stringent, especially with regards to nutrient emissions.

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

¹ 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.

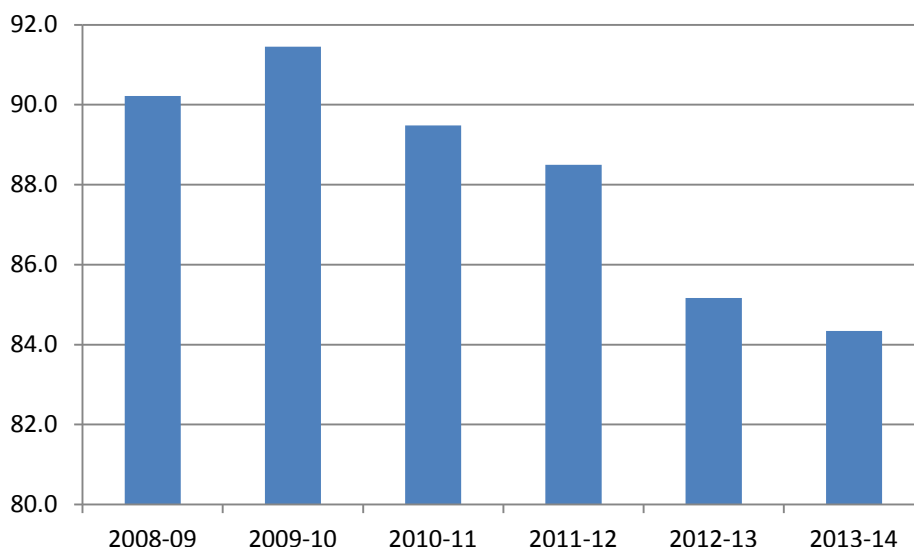
Section 7.4.1 examines compliance against the limits currently in place, whilst compliance against potential future AMT limits is examined in section 7.4.2.

7.4.1 Compliance with current discharge to waters limits

New Environment Protection Notices (EPNs) issued for Macquarie Point and Orford WWTPs in 2013-14 incorporate discharge limits set at levels reflecting current plant capacity under optimised operational practices. Those limits are to be considered as interim limits and may be replaced by more stringent limits once plant upgrades are introduced in line with the longer term strategic considerations. Similar considerations apply to discharge limits incorporated in EPNs issued for Hoblers Bridge, Newham, Norwood, Riverside and Ti-Tree Bend WWTPs in June 2013.

Figure 7.5 shows TasWater's 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. 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 regional water corporations and then TasWater. In 2013-14, TasWater achieved approximately 84 per cent compliance with the regulatory discharge to waters limits.

Figure 7.5 TasWater compliance against discharge to waters regulatory limits (per cent)



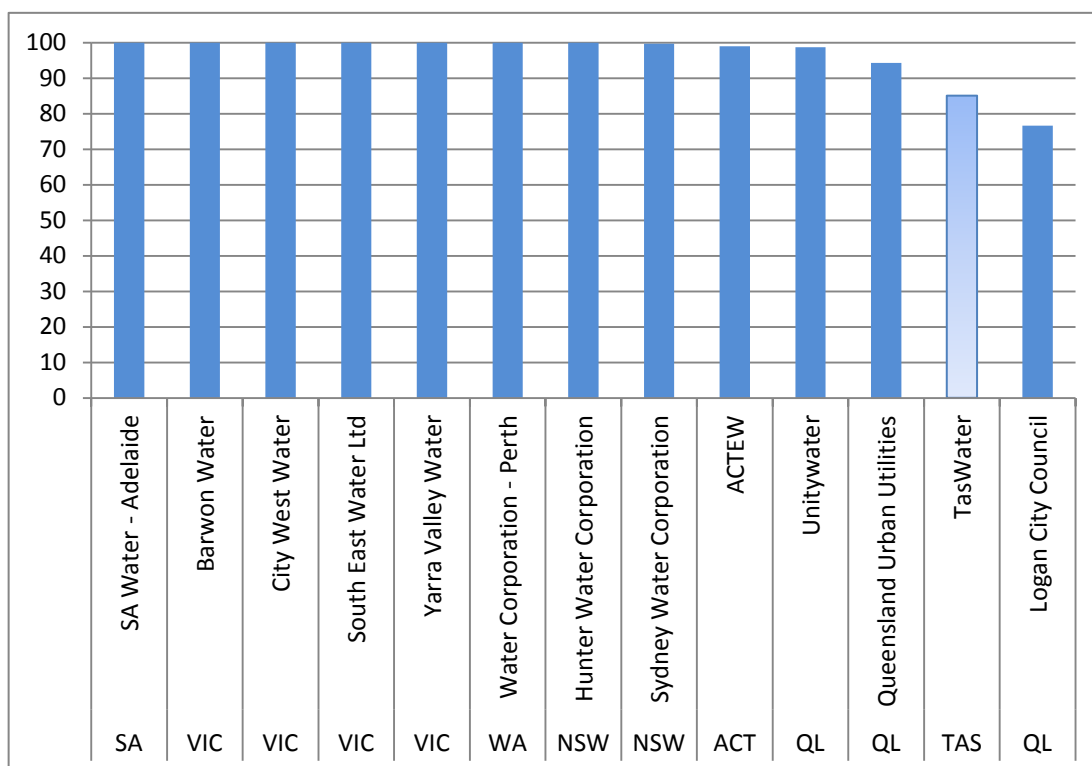
TasWater's performance in comparison to utilities in other states is shown in Figure 7.6. Due to the merger of the regional Tasmanian water corporations into one utility, TasWater is now classified as a 'major utility – large'² under the National Performance Framework. From Figure 7.6, it is evident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

Amongst the mainland utilities of comparable size reporting under the National Performance Framework, in 2012-2013 only one reported a compliance percentage

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

lower than TasWater (Logan City Council, 76.6 per cent), whereas eleven utilities performed better, with most reporting close to 100 per cent compliance.

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



Source: Water Services Association of Australia, 2012-13 National Performance Report - Urban water utilities - Database

Compliance with discharge to waters limits, split up into four compliance categories, is further illustrated in Table 7.2. In 2013-14, 20 Tasmanian WWTPs were classified as substantially non-compliant (ie less than 75 per cent compliant), unchanged from 2012-13. During the same time period, the number of WWTPs in the 75 - 90 per cent compliance category increased from 23 to 30 WWTPs. However, this positive development was offset by a significant drop in the number of WWTPs in the highest compliance category (ie the number of WWTPs more than 90 per cent compliant dropped from 33 to 25).

Overall, it is evident that over the last five years there has been little real progress towards the goal of having the majority of WWTPs represented in the more than 90 per cent compliance group.

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

	2009-10	2010-11	2011-12	2012-13	2013-14
>90% compliance	32	30	29	33	25
>75 - 90% compliance	15	21	29	23	30
>50 - 75% compliance	21	16	12	11	15
>90% compliance	7	9	5	9	5

Table 7.3 shows those WWTPs which demonstrated less than 50 per cent compliance against the discharge to waters limits in 2013-14. In total, five WWTPs across the State fell into the < 50 per cent category during this reporting period, four less than in the previous year. Of those included in 2012-13 but not in 2013-14, Ranelagh WWTP had been subject to plant upgrading works, whilst Bridport and Smithton were partially de-sludged, demonstrating that minor upgrading works and plant optimisation can deliver significant performance improvements. Ulverstone WWTP, which had reported very low compliance levels in 2012-13, could not be assessed in 2013-14 due to lack of relevant monitoring data.

Table 7.3: WWTPs with less than 50 per cent compliance against discharge to waters limits

WWTP	Limit type	Number of limits assessed	Compliance (per cent)
Electrona ¹	Max	4	31.3
Campania ^{1,2}	Max	4	35.4
Oatlands ^{1,2}	Max	4	39.6
Kempton ^{1,2}	Max	4	45.8
Longford	Max/Min	8	44.1

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

2. Indicates full reuse in 2012-13.

With the exception of the Electrona WWTP, which is to be de-commissioned in the near future, the remaining WWTPs in Table 7.3 are lagoon systems which are most likely compromised by significant sludge accumulation affecting treatment performance.

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.

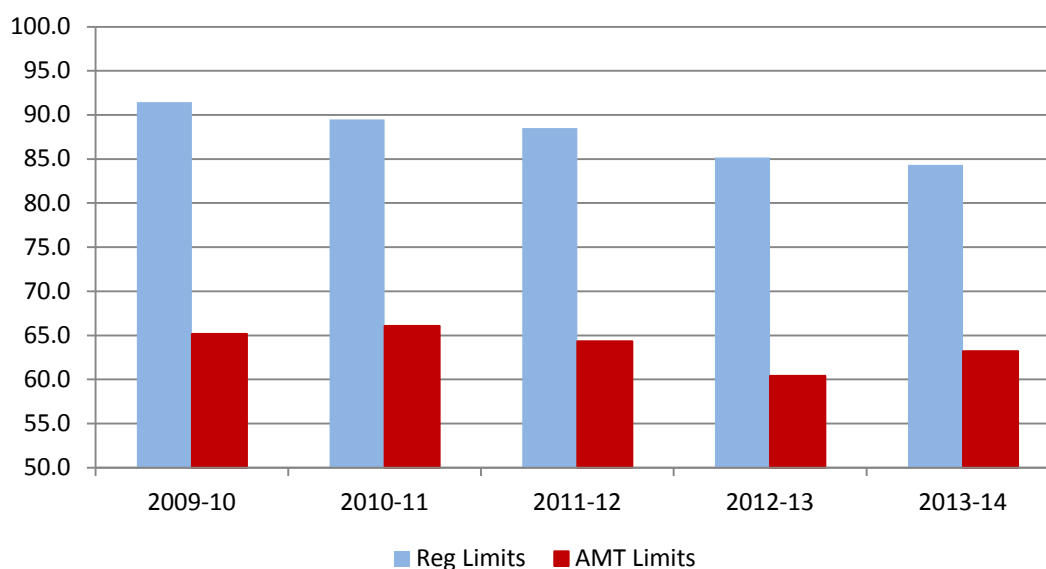
As an alternative to AMT limits, site-specific discharge limits which reflect the assimilative capacity of the receiving environment may be adopted in the future. However, the determination of sustainable, evidence-based effluent management practices requires comprehensive ambient monitoring to be carried 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 likely 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 2012-13 the data set in relation to AMT-relevant parameters was substantially complete (with the exception of Ulverstone WWTP and some other minor limitations), and the EPA considers that the 2013-14 AMT compliance assessment can be viewed with a high degree of confidence.

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 last five financial years. Whilst the trend in terms of compliance with regulatory limits has been consistently downward over the last five financial years (84.3 per cent in 2013-14), AMT compliance improved in 2013-14 (63.2 per cent) compared to 2012-13. However, this effect is likely to be associated with the exclusion of the Ulverstone WWTP from calculations in 2013-14. Ulverstone contributes a significant proportion of overall flow (see Table 7.1 above) and had a very low level of AMT compliance in 2012-13.

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



Distributing AMT compliance into four categories adopted (see Table 7.4 below) shows a significantly different pattern when compared to the compliance distribution for existing regulatory limits.

Table 7.4 WWTPs by compliance category (AMT limits)

	2009-10	2010-11	2011-12	2012-13	2013-14
>90% compliance	8	9	10	7	7
>75 - 90% compliance	9	12	12	14	13
>50 - 75% compliance	37	29	33	32	38
>90% compliance	21	28	23	25	19

In 2013-14 there were:

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

- 38 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;
- 13 WWTPs in the 75 to 90 per cent compliance category compared to 30 WWTPs in this category based on existing regulatory limits; and
- only 7 WWTPs in the more than 90 per cent compliance category compared to 25 WWTPs in this category based on existing regulatory limits.

The AMT compliance category distribution indicates that performance has stagnated over the last five financial years, with representation in the >90 per cent category reduced slightly compared to earlier reporting periods (2009-10 and 2010-11). There was a slight reduction in WWTPs in the <50 per cent category, whilst both middle categories recorded a slight increase in numbers.

Table A4.1 and Figures A4.1 to A4.3 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 in since July 2009, when responsibility for the management of wastewater infrastructure was transferred firstly to regional corporations and subsequently to TasWater.

A similar trend is noticeable in relation to AMT limits when considering performance over the last five financial years. 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 some improved compliance at this point in time.

Significant compliance improvements will in most cases be linked to major infrastructure upgrades or maintenance works. A range of projects were proposed by each of the previous regional corporations in the context of the strategic, five-year Wastewater Management Plans (WWMPs), which received approval from the Director, EPA, in 2011 and in subsequent WWMP reviews undertaken by the water corporations³.

An evaluation of the progress made by TasWater and the previous regional corporations with respect to projects identified in the original WWMPs highlighted significant delays against original timeframes and capital expenditure not reaching the amount originally planned.

The EPA's assessment of progress against commitments provided in the WWMPs can be found in Chapter 9.

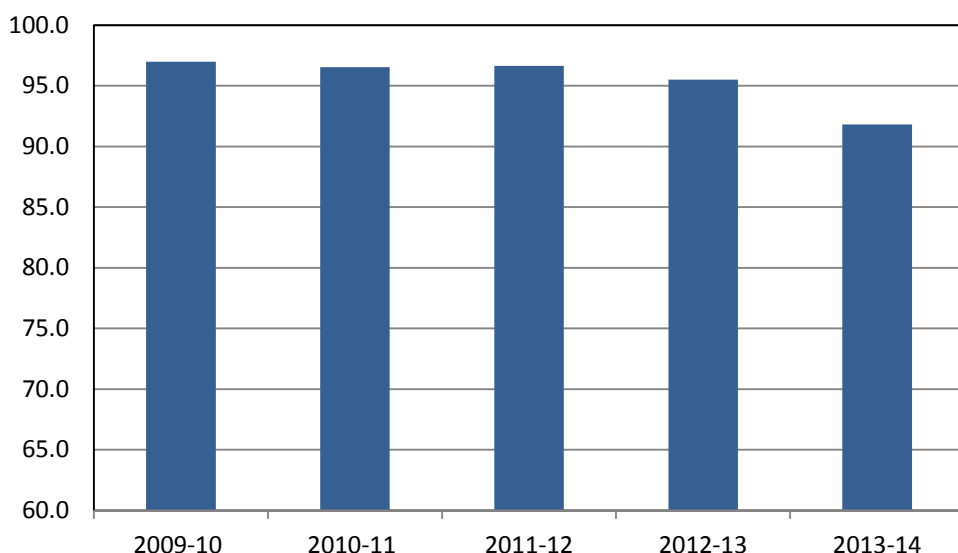
³ TasWater was required to submit an updated WWMP for the EPA's review and approval during 2014-15.

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)



A comparison of compliance against 'Class B' quality expectations over time shows that compliance levels have declined by approximately five per cent over the course of the last five financial years. Whilst compliance remains above 90 per cent (91.8 per cent in 2013-14), the downward trend in performance is concerning.

It is also emphasised that simple 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 (regulatory limits), 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 2013-14 gives an indication of the overall performance of each of TasWater's WWTPs and, if

problems exist, whether they are localised or widespread. This indicator therefore provides information on how well the TasWater is managing its treatment facilities.

Table 7.5 shows that five WWTPs achieved 100 per cent compliance with their respective regulatory discharge to waters limits during 2013-14, one less than in 2012-13. Within this group, Midway Point, Riverside and Stieglitz are also assessed against Class B reuse limits in addition to discharge to waters limits. Midway Point and Stieglitz were not fully compliant with these reuse limits.

Only three WWTPs were considered fully compliant with all limits - Riverside (with both reuse and discharge to waters limits), Cygnet and Somerset (discharge to waters limits only).

Table 7.5: WWTPs with 100 per cent compliance with discharge limits

WWTP name	Discharge to waters limits	Limit type	Number of limits assessed	Compliance with reuse limits?
Cygnet	100 % compliant	Max	4	n/a (no reuse scheme)
Midway Point	100 % compliant	Max	4	~91 % compliant (at outlet from storage dam)
Riverside	100 % compliant	Max	8	100 % compliant
Somerset	100 % compliant	Max/Min	1	n/a (no reuse scheme)
Stieglitz	100 % compliant	Max	1	~ 98 % compliant

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 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 2013-14. Current EPA policy is to make AERs available to the public upon request although in the future the reports may be made accessible to general public through the EPA website.

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 whether the compliance requirements of the environmental regulator (ie the Director, EPA) for Level 2 WWTPs were met for all wastewater treatment plants.

For the purpose of this report, 'non-compliance' is defined as the situation where, during the reporting period, the operator:

- 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);
- has received a formal written warning from the Director in relation to the activity;
- has 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 all Level 2 WWTPs under its control. Consequently, TasWater was not compliant with permit / EPN requirements and, given this, failed to meet the benchmark outlined in the first dot point above.

With regards to the second dot point, TasWater received a formal written warning due to its failure to provide prompt notification consistent with section 32(3) of the *Environmental Management and Pollution Control Act 1994*, following several raw sewage spills from the reticulation system which occurred in the Tarroona area during March 2014.

There were not any infringement notices issued to TasWater during 2013-14. Similarly there weren't any prosecutions instituted during 2013-14.

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*⁴, the information reported should incorporate:

⁴ National Water Commission, *National Performance Framework: Urban performance reporting indicators and definitions handbook*, July 2014

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

The reuse proportion can then be calculated on the basis of:

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

TasWater provided estimates of sludge quantities (converted to 'dry solid tonnes') and information regarding the end use of this material in the context of 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. Where sludge was removed from a treatment component and stockpiled on site, it was included in the 'volume generated' calculations. Sludge sent to commercial composting facilities is not recognised as beneficial reuse unless confirmation regarding the material's final destination / use has been provided to the EPA.

It is noted that estimates regarding the volume of sludge accumulated within sewage lagoons were not sufficiently detailed for inclusion in this report.

Table 7.6 below summarises biosolids management during 2013-14. Approximately 6,700 tonnes of biosolids were stockpiled on site at various WWTP premises, awaiting determination of options for their end use. However, the proportion of stockpiled material decreased in 2013-14 from the previous year, whilst the proportion of material beneficially reused has increased, from around 16 per cent in 2012-13⁵ to 56 per cent in 2013-14.

This change can be attributed to the commencement of beneficial reuse of stockpiled material from the Ti-Tree Bend WWTP and Wynyard WWTPs.

Significant sludge accumulation in some lagoon systems was identified through audits carried out previously by the regional corporations. These lagoon systems are generally characterised by poor performance.

Limited progress was made in 2013-14 with the de-sludging of lagoons, particularly Smithton and Longford.

De-sludging of several lagoon systems previously earmarked as high priority (Beaconsfield, Beauty Point, Brighton, Campania, Margate, Oatlands, Prospect) was either postponed to 2014-15 or to a date to be specified.

⁵ A state-wide figure was calculated for this report using information provided by the previous regional corporations with respect to 2012-13.

Table 7.6 Biosolids - volume removed, end use and reuse percentage in 2013-14

Corporation	Biosolids removed (dry solid tonnes / year)	Biosolids beneficially reused (dry solid tonnes / year)	End use / purpose	Biosolids reused (%)	Comments
Northern region (ex Ben Lomond Water)	~ 13 000	6 410	The volume of sludge generated in the reporting period was equally divided up into volumes stockpiled either at the point of generation or at an external premises, and volumes beneficially reused on agricultural land.	49%	The proportion beneficially reused represents a large increase from the previous year (2%). Approximately half of the material generated in the reporting period remained stockpiled at several WWTP premises. Some lagoon systems were identified as requiring de-sludging in the near future.
North-western region (ex Cradle Mountain Water)	2 357	1 246	Approximately half of the volume produced was beneficially reused on agricultural land. The remainder was either taken to landfill, composted (with no specified end use) or stockpiled.	53%	This represents a large increase from the previous year's reuse proportion (19%). However, the volume removed from WWTPs was only appr. 1/3 rd of the volume removed in the previous year. Significant build-up of sludge in some lagoons (eg Smithton) will require removal in years to come. Sludge levels in most other lagoon systems remain to be assessed.
Southern region (ex Southern Water)	3 484	2 908	Various agricultural reuse applications, incorporation into commercial composting; landfilling of Class 3 sludge.	83%	Similar reuse percentage as in previous years. In 2013-14, sludge generated at a number of WWTPs did not meet 'Class 2' quality limits and was therefore not beneficially reused. Cygnet, Electrona, Geeveston, Margate & Ranelagh sludge did not meet the stabilisation grade requirements. Prince of Wales Bay sludge had elevated Chromium content.
State-wide (TasWater) total	18 877	10 564		56%	This represents a significant increase from previous year's reuse proportion (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 2013-14, TasWater reported that it generated the following volumes of greenhouse gases:

- 8 888 net tonnes (CO₂-equivalents) as part of its water-related operations (44.3 tonnes per 1000 properties); and
- 25 433 net tonnes (CO₂-equivalents) as part of its sewerage-related operations.

Table 7.7 Volume of greenhouse gases produced by TasWater (CO₂-equivalent), 2013-14

	CO ₂ -equivalent (in tonnes)	CO ₂ -equivalent (in tonnes / 1 000 properties)
Water-related operations	8 888	44.3
Sewerage-related operations	25 433	145.4

TasWater did not trigger the 50 000 tonnes CO₂-equivalent per facility reporting threshold under the *National Greenhouse and Energy Reporting Act 2007* (Cth).

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 prices and provides an overview of TasWater's financial performance for 2013-14.

In previous state of the industry reports, the Economic Regulator has made comparisons between the performance of the Tasmanian regulated entities and the performance of mainland service providers. However, at the time of writing, the *Urban Utilities National Performance Report* for 2013-14 had not been released (release is scheduled for late April 2015)¹.

Since the national data for 2013-14 data was not available, the Economic Regulator has compared TasWater's 2013-14 performance with the performance of comparable providers for 2012-13 based on the *Urban Utilities 2012-13* report. In previous reports, each regional corporation's number of customers determined which other service providers they were compared to. For this report, TasWater is compared to the Major Utilities (Large) (100 000 customers or more).

In some cases, TasWater's performance is compared to the three previous regional corporations' performance for 2012-13. Care should, therefore, be exercised in drawing conclusions based on these comparisons.

8.1 Pricing

The Economic Regulator's *2012 Price Determination Investigation – Regulated water and sewerage services in Tasmania – Final Report, May 2012* together with Price Determinations made on 28 May 2012, outline the approved target tariffs and pricing structures the three previous regulated entities were required to comply with for the first regulatory period (1 July 2012 to 30 June 2015). The Economic Regulator also required the regulated entities to adopt a single pricing zone for each region, so that there was a consistent set of target tariffs across each region.

For the majority of residential customers the following price regulation arrangements applied during 2013-14:

- customers whose 2011-12 prices were above the approved target tariffs had their prices frozen for the first two years of the first regulatory period (2012-13 and 2013-14) with prices reducing by five per cent in the final year of the first regulatory period (2014-15);
- customers whose 2011-12 prices were equal to the applicable target tariff, faced annual increases of six per cent per year over the course of the first regulatory period; and

¹ When released, the report will be available on the Bureau of Meteorology's website: www.bom.gov.au

- customers whose 2011-12 prices were below the target tariff, faced annual price increases capped at the greater of 10 per cent or \$50 per service per year (ie a maximum increase of the greater of 10 per cent or \$100 where a customer has both a water and sewerage connection) until they reach the target tariff.

For the second regulatory period, the Economic Regulator's price and service plan guideline requires TasWater to prioritise the following pricing objectives which include:

- continuing to transition customers to a rational price structure consistent with National Water Initiative (NWI) pricing principles;
- transitioning customers paying above the target tariff to the target tariff;
- continuing to transition all other customers to the target tariff; and
- managing the impact of price changes on customers.

8.1.1 Average bills

The water and sewerage bills for customers receiving services from TasWater had the following three components:

- a fixed charge water 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 (ET²) assessed for each property).

Since the prices were set on a regional level for 2013-14 under the price determinations made in May 2012, Table 8.1 shows the components that make up the average residential bill for each region.

Table 8.1 Components of average annual customer charges in 2013-14 by region

	North	North West	South
Water fixed Charge (\$)	302.06	403.28	289.21
Average consumption (KL)	187	156	200
Variable Charge (\$0.9234/KL)	172.29	143.91	184.42
Sewerage fixed charge (\$)	492.32	489.86	507.17
Total (\$)	966.67	1 037.05	980.80

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 level of water usage.

² 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;

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 \$159 (\$79.50 each for water and sewerage). In 2013-14, 50 271 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 2013-14 TasWater received a total of \$7.58 million from State Government CSO payments to cover the cost of providing these concessions.

8.2 Financial performance

The Economic Regulator assesses TasWater's financial performance on the basis of a range of indicators TasWater reports on as part of its Urban Water National Performance Framework reporting obligations.

All values presented are based on the *2013-14 National Performance Framework: Urban performance reporting indicators and definitions handbook* (Handbook). Due to differences in definitions and reporting criteria, the values shown may differ from the values presented in TasWater's 2013-14 Financial Statements.

8.2.1 Revenue

Table 8.2 includes the total revenue collected and the revenue collected from providing water and sewerage services by TasWater during 2013-14, together with the same details on an aggregated basis for the previous regional corporations for 2012-12 and 2012-13. Note that the total revenue is not necessarily the sum of water and sewerage revenue as total revenue includes other income³.

Table 8.2 Revenue (\$'000s) – 2011-12 to 2013-14

	NPR Indicator	2011-12	2012-13	2013-14
Total Revenue	F3	245 607	263 460	268 617
Water services	F1	110 387	121 844	129 071
Sewerage	F2	99 574	109 993	121 519

³ See the *2013-14 National Performance Framework: Urban performance reporting indicators and definitions handbook* for definitions.

8.2.2 Asset values

Table 8.3 includes the written down replacement cost (WDRC) of TasWater's water and sewerage infrastructure assets (excluding plant and equipment). The value of assets declined in 2013-14, due to TasWater reducing the accounting value of its assets. In accordance with the Handbook, TasWater is required to report on a WDRC basis rather than on the basis required for financial statements.⁴

Table 8.3 Fixed Asset values (\$'000s) – 2011-12 to 2013-14

	NPR Indicator	2011-12	2012-13	2013-14
Water Assets	F9	1 379 749	1 441 614	1 383 105
Sewerage Assets	F10	1 357 729	1 369 638	1 307 119

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 for 2013-14 together with the sum of the previous regional corporations' Opex for the previous two financial years.

Table 8.4 Operating costs (\$'000s) – 2011-12 to 2013-14

	NPR Indicator	2011-12	2012-13	2013-14
Water	IF11	68 706	73 181	71 061
Sewerage	IF12	73 368	80 849	82 559
Water and Sewerage	IF13	142 075	154 030	153 620

The Economic Regulator has also used the Opex per property in the past to assess and compare the three previous regional corporations' performance. TasWater's Opex per property is shown in Table 8.5.

Table 8.5 Operating costs per property (\$)

	NPR Indicator	2013-14
Water supply	F11	354
Sewerage	F12	472
Water and Sewerage	F13	826

TasWater's operating costs per property for water and sewerages in 2013-14 was within the range reported for 2012-13 by comparable mainland service providers⁵ of between \$554 and \$988.

⁴ See Note 9 of TasWater's 2013-14 Financial Statements (attachment to *TasWater 2013-14 Annual Report*).

⁵ Major Utilities (Large) with 100 000 or more customers.

However, 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. Increased regulatory compliance generally leads to an increase 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 2013-14 and the aggregate of the previous three regional corporations' Capex for 2011-12 and 2012-13. Note that gifted assets and developer charges have been excluded from all Capex.

Table 8.6 Capex (\$'000s) – 2011-12 to 2013-14

	NPR Indicator	2011-12	2012-13	2013-14
Total water supply capital expenditure	F14	87 670	55 390	36 571
Total sewerage capital expenditure	F15	31 728	45 573	37 590
Total capital expenditure for water and sewerage	F16	119 398	100 962	74 161

As shown in Table 8.7, Capex has been declining since 2011-12. TasWater has advised that, for 2013-14, the substantial reduction in Capex compared to 2012-13 was due to assumptions made by the previous regional corporations that were overly optimistic in terms of project timelines. A secondary contributing factor was the amalgamation process and the decision of TasWater to review the Capex programs of the previous regional corporations.

Table 8.7 also shows Capex for water and sewerage for the three previous regional corporations for 2011-12 and 2012-13 and for TasWater for 2013-14 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 – 2011-12 to 2013-14

	NPR Indicator	2011-12	2012-13	2013-14
Water				
New works	IF14.1	64 935	38 881	4 798
Renewals or replacements	IF14.2	21 807	8 939	16 683
Other	IF14.4	928	7 569	15 090
Sewerage				
New works	IF15.1	8 323	17 050	4 932
Renewals or replacements	IF15.2	19 679	20 920	17 148
Other	IF15.4	3 726	7 602	15 510

Table 8.7 also shows that expenditure on 'new works' declined sharply for both water and sewerage during 2013-14. However, the amount spent on 'other' Capex has doubled since 2012-13 for both water and sewerage.

In previous years there have been capital works grants from State or Commonwealth governments to undertake specific capital works. In 2012-13, \$7.2 million was received by the previous three corporations whereas in 2013-14, TasWater did not receive any funds from this source.

Chapter 9 outlines some of the major capital expenditure projects underway or completed by TasWater during 2013-14, 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.

As mentioned earlier in this Chapter, for National Performance Reporting (NPR) purposes, utilities are required to use asset values and, consequentially, depreciation, based on WDRC rather than the fair values reported in their respective financial statements.

The ERR is a measure of the profit a business generates as a percentage of the value of its total assets and is calculated as follows:

Economic rate of return:		
Revenue from water and sewerage business operations	less	Operating expenses (operation, maintenance and administration expenses) and current cost depreciation)
Written Down Replacement Cost of operational assets		

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

Table 8.8 Economic Rate of Return – water and sewerage combined – 2011-12 to 2013-14 (%)

	NPR Indicator	2011-12	2012-13	2013-14
Ben Lomond Water	F19	1.01	1.37	..
Cradle Mountain Water	F19	-0.24	1.23	..
Southern Water	F19	1.39	0.80	..
TasWater	F19	-0.20

Given that the Tasmanian water industry is in a transitional reform process, the low ERR for 2013-14 is not unexpected. It is reasonable to expect TasWater's ERR to remain relatively low as it continues to work towards meeting its regulatory compliance obligations whilst, 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.

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:

NPAT ratio:

$$\frac{\text{Net Profit less income tax equivalents}}{\text{Revenue from water or sewerage business operations}}$$

Table 8.9 shows NPAT and the profit ratio for each of the previous regional corporations for 2012-13 and for TasWater for 2013-14.

Table 8.9 Profits and profit ratios – 2012-13 and 2013-14

	NPR Indicator	Net profit after tax(\$'000)	NPR Indicator	Profit ratio (%)
2012-13				
Ben Lomond Water	F24	8 777	F30	12.10
Cradle Mountain Water	F24	5 215	F30	8.30
Southern Water	F24	8 447	F30	6.59
2013-14				
TasWater	F24	27 236	F30	10.14

TasWater's 2013-14 NPAT ratio was within the NPAT ratio range of comparable mainland providers for 2012-13 of between 4.5 per cent and 23.2 per cent.

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 Letter of Shareholder Expectations.

Table 8.10 shows the dividends payable and the dividend payout for the previous regional corporations for 2012-13 and by TasWater in respect of 2013-14. Dividends do not reflect all returns to council owners; ie as 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 – 2012-13 and 2013-14

	NPR Indicator	Dividends payable (\$'000)	NPR Indicator	Dividend payout ratio (%)
2012-13				
Ben Lomond Water	F20	1 335	F21	15
Cradle Mountain Water	F20	877	F21	17
Southern Water	F20	10 429	F21	123
2013-14				
TasWater	F20	18 647	F21	68

TasWater's dividend payout ratio of 68 per cent was above the 2012-13 dividend payout ratio for comparable mainland service providers of 57 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:

Net debt to equity:

$$\frac{\text{Net Debt}}{\text{Equity}} \quad \text{or} \quad \frac{\text{Short term debt} + \text{Long term debt} - \text{Cash} - \text{Other investments}}{\text{Total assets (based on WDRC)} - \text{Total liabilities}}$$

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:

Interest cover:

$$\frac{\text{EBIT}}{\text{Net Interest Expense}} \quad \text{or} \quad \frac{\text{Revenue from operations} - \text{Operating expenses} - \text{Depreciation}}{\text{Total interest expenses} - \text{Interest income}}$$

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 2012-13 and 2013-14

	Net debt to equity (%)	Interest cover (times)
2012-13		
Ben Lomond Water	5.57	3.94
Cradle Mountain Water	17.07	1.29
Southern Water	12.81	1.15
2013-14		
TasWater	21.0	2.96

For 2013-14 TasWater reported a NDTE ratio of 21 per cent and an interest cover ratio of 2.96 times. The NDTE ratio is very low compared to the ratio for comparable mainland service providers where the ratio averaged around 76 per cent for 2012-13. Additionally, TasWater's interest cover is above the comparable mainland service providers' interest cover ratio of 2.38 times.

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.

Whilst 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 2013-14; 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 required to each develop a Wastewater Management Plan (WWMP) for the approval of the Environment Protection Authority (EPA). These plans were submitted and approved by the Director, EPA. The three regional WWMPs provide detailed information regarding wastewater related projects including cost break-downs and implementation schedules over a medium-term planning horizon to July 2015. These regional WWMPs remain relevant for the 2013-14 reporting period.

In addition to guiding decisions taken by TasWater regarding priorities and project funding, the WWMPs also serve as reference documents. Information contained in the plans are, for example, referred to during the development of specific

environmental conditions for wastewater treatment plants (WWTPs) which assists with the roll-out of Environment Protection Notices (EPNs).

Considering the five-year planning horizon of these initial WWMPs, it was to be expected that deviations from the agreed version of the plan may become necessary due to additional developments, revised priorities or delays in project delivery. WWMP reviews were undertaken to assess progress in implementing these plans and identifying where changes to the WWMP were required.

There was limited progress during 2013-14 against the projected major project and compliance improvement timelines included in the regional WWMPs. The replacement of the three water corporations by TasWater on 1 July 2013 resulted in a focus on organisational restructure and a revisiting of priorities.

Evaluation of a WWMP review provided to the EPA by TasWater in early 2014 found significant delays with some key regional projects, with several projects being postponed from the first regulatory period to the second regulatory period (ie post July 2015). From its review the EPA identified the following key issues:

Northern region (formerly Ben Lomond Water)

- Deloraine WWTP stage 1 upgrade works were completed after significant delays occurred during the commissioning phase due to equipment problems.
- Interim operational improvements works at Longford WWTP (the highest ranking WWTP under the EPA's risk ranking matrix) including electrical and control system upgrades were completed. Further options assessments were undertaken to determine an upgrade strategy for this priority WWTP, however, a final strategy to bring this plant into compliance with environmental approval conditions has not yet been determined. Overall progress with the Longford WWTP upgrade was considered to be unsatisfactory.

North-Western region (formerly Cradle Mountain Water)

- Limited progress was made with the implementation of the original works schedule. Many of the works and programs committed to in the approved WWMP have been subject of significant delays, with a large number postponed to the second regulatory period or their status remains unclear. In particular, the EPA considered progress with projects related to Sheffield, Smithton, Wynyard, Stanley and Ridgley to be unsatisfactory.
- A commitment to carry out the first phase of ambient monitoring programs in relation to approximately half of the WWTPs in the north western region has not yet been implemented. Delays in ambient monitoring implementation have limited TasWater's ability to determine future upgrading works requirements.
- Unplanned events requiring capital spending were highlighted as a major factor causing delays in WWMP implementation.

Southern region (formerly Southern Water)

In the southern region, there have been significant delays with the implementation of some key projects.

- In particular, progress with the upgrading of Bicheno WWTP and decommissioning of Electrona WWTP was considered unsatisfactory. These WWTPs rank highly on the EPA's priority list.
- Delays with other key projects (Kingborough Centralisation strategy; closure of Margate WWTP) were also noted as not being consistent with the intent and detail of the original WWMP.
- In addition, there have been delays with the delivery of more routine works to achieve better compliance, such as the installation of inlet screens and lagoon de-sludging. Lagoon de-sludging has not been progressed in accordance with the original timelines. This continues to affect compliance levels of a number of lagoon WWTPs.

There have however, been some positive aspects:

- Ranelagh WWTP improvement works were delivered within an acceptable timeframe.
- Tarooma WWTP decommissioning works were progressed during the reporting period, with all sewage from this catchment being diverted to the Selfs Point WWTP from June 2014 onwards.
- 2013-14 saw the commencement of a comprehensive ambient monitoring program relating to seven WWTPs discharging to the Derwent River. Monitoring commenced in May 2014 and is scheduled to continue until May 2015. The program is expected to provide a strong rationale for the determination of suitable upgrading options for these WWTPs.

The EPA will continue to work with TasWater to ensure that a strategic WWMP is in place which sets an appropriately prioritised direction for TasWater. The EPA is expecting much improved performance in the implementation of the plan in the coming years given the disappointing progress to date.

9.1.1.2 *Environmental conditions updating*

A priority project of 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 which formerly operated the WWTPs, which contain timeframes and requirements that have been superseded by more recent agreements, including the WWMPs.

During 2013-14 the EPA continued updating environmental conditions on a plant by plant basis. New EPNs were issued during this period for Macquarie Point and Orford WWTPs.

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 monitoring¹*

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 in the context of environmental regulation in the wastewater sector.

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 2013-14 the EPA Division assessed draft Ambient Monitoring Plans submitted by TasWater for a number of different outfalls. As part of this process, ambient monitoring requirements were refined and clarified.

The Ambient Monitoring Plan for the Derwent Estuary WWTPs commenced in May 2014 for the Cameron Bay, Prince of Wales Bay, Green Point/Bridgewater, East Risdon, Macquarie Point, Selfs Point and Rosny WWTPs. Comprehensive ambient monitoring was also undertaken in relation to the New Norfolk, Bicheno, Blackmans Bay, Tullah and Cambridge WWTPs. Several other WWTPs, eg the Cradle Valley WWTP, are subject to regular ambient monitoring requirements which were generally complied with.

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*.

¹ Monitoring the surrounding area or receiving environment.

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 forum 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 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 2013-14 TasWater commenced work on a state-wide biosolids strategy, with the aim of finalising this by March 2015. The strategy included a program of de-sludging of sewage and sludge storage lagoons. TasWater also intends to liaise with landowners, and other potential end users, to determine safe and cost-effective biosolids management options.

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 result in a contemporary guideline to ensure sustainable biosolids reuse in Tasmania and appropriate commitment of expenditure to 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.

9.1.2 Public health

As at 30 June 2014, all Tasmanian drinking water supply systems were adequately monitored for both bacteriological and chemical quality, with the exception of one

small system. The Department of Health and Human Services (DHHS) worked closely with TasWater to ensure it complied with this key legislative requirement.

During 2013-14 TasWater continued to work towards addressing the priority capital works list agreed with DHHS as part of the regional corporations' respective interim operating licences. 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.

There have been some delays in finalising the review of the *Tasmanian Drinking Water Quality Guidelines* and the *Fluoridation (Interim) Regulations* (2009). It is anticipated that this work will be finalised by July 2015.

It is also expected that the revised Tasmanian Code of Practice for the Fluoridation of Drinking Water Supplies will be finalised during 2015-16.

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.

9.1.3 Water allocations/licences and dam safety

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

Before water can be taken directly from a stream or stored in a dam for supply to urban water systems, an allocation licence must be obtained from DPIPWE. 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 future urban water demand and supply scenarios, allocations may be adjusted where necessary as licences are renewed.

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.

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. The Assessment Committee then decide 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*).

DPIPWE is responsible for ensuring that owners of existing dams meet their safety responsibilities through mandatory on-going 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 the management plans for dams to ensure that the required maintenance and risk mitigation tasks are being carried out in accordance with assessed PRA priorities.

9.2 Major projects commenced or undertaken during 2013-14

This section provides an overview of the major projects commenced or undertaken by the TasWater during 2013-14. During 2013-14, TasWater's capital expenditure totalled an estimated \$78 million. More detail on these projects is available on TasWater's website.

9.2.1 Water

The main focus of TasWater's water infrastructure upgrade program during 2013-14 was to ensure that customers have a reliable source of high quality drinking water. TasWater is developing a state-wide monitoring and control framework for the water supply system ie centralised Supervisory Control and Data Acquisition (SCADA) system will replace the separate systems operated by the regional corporations.

The creation of a master SCADA system will ensure all instruments can report back and operators can respond immediately to any adverse changes in water quality. Online continuous monitoring of the water supply system is recommended under the Australian Drinking Water Guidelines.

The major water projects undertaken during 2013-14 were as follows:

Forth-Paloona treated water supply

A \$6.6 million project to deliver treated water to properties in Kelcey Tier, Melrose and Paloona.

The King Island water quality project

Refurbishment of the water treatment plant, dam and raw water main at Grassy and improvements to the water supply at Currie, at a total cost of \$4 million.

Fluoride and water treatment plant upgrades

Investment of \$1.8 million in upgrading water treatment plants in the north western region and a further \$1.5 million on fluoride installation upgrades and \$1.9 million on dam works.

Water meter rectification and new connections program

A \$3 million program, due for completion in 2015.

Westbury Water Treatment Plant

An \$8.3 million project which will deliver fully treated water to Westbury, Hagley and Exton. Construction works included the treatment plant, a reservoir and a \$1.3 million pipeline.

Bracknell water treatment plant

Construction of a new water treatment plant at Bracknell at a cost of \$2 million.

Fingal water treatment plant

Construction of the \$3.5 million Fingal water treatment plant to service customers in Fingal.

Ringarooma Valley Water Supply Scheme

Design work commenced for the \$9.6 million Ringarooma Valley Water Supply Scheme for residents of Ringarooma, Legerwood, Derby and Branxholm.

Mole Creek water treatment plant

Design work commenced for a \$2.8 million water treatment plant at Mole Creek.

Tunbridge water supply

Upgrade of the Tunbridge water supply at a cost of \$1.8 million to provide safe drinking water to the townships of Ouse, Hamilton and Tunbridge.

Extension of the Huon Valley Regional Water Scheme

The project connects north and south Geeveston, Nicholls Rivulet and Jacksons Road at a cost of \$1.5 million.

Switchboard upgrades

Renew switchboards in water and sewage pump stations across the south at a cost of \$7.3 million, and a further \$3.3 million for water quality monitoring and alarms.

Upgrade of the Ellendale water treatment plant

Improve the water quality and remove the permanent boil water alert for the Ellendale community, at a cost of \$0.14 million.

Ridgeway Dam

Investigation and design of Ridgeway Dam anchor replacement.

Lilydale

The \$7 million Lilydale water supply network was completed in December 2013, providing safe drinking water for 380 residents in the area.

9.2.2 Wastewater

The main focus of TasWater's wastewater infrastructure upgrade program during 2013-14 was to improve environmental outcomes and services to customers.

Among the problems to be addressed are sewerage issues associated with greater Launceston and the catchments of the North and South Esk rivers and the Tamar Estuary.

The major wastewater projects undertaken during 2013-14 were as follows:

Rosebery treatment plant

Development of a new \$9.3 million treatment plant and pipeline at Rosebery.

Cradle Valley

Improvements to the sewage treatment plant and collection systems servicing the Cradle Valley at a cost of \$2.6 million.

Replacement of switchboards

Replacement of switchboards across the north-western region to improve safety, reliability and functionality at a cost of \$3.4 million.

SCADA – north-west

Investment of \$7.2 million in the renewal and standardisation of the SCADA automated monitoring and control systems.

Wynyard wastewater treatment plant sewage lagoon

The safety of the main sewage lagoon at the Wynyard wastewater treatment plant has been upgraded following the development of the dam safety management plan which identified it as a priority issue. The future long-term management of sludge is being considered as part of an assessment and review of the operations of the Wynyard wastewater treatment plant.

Parker Street wastewater pump station

The Parker Street wastewater pump station in Devonport was upgraded in December 2013 to reduce odour issues.

Upgrade of the Bridport wastewater treatment plant

Preliminary design for the \$5.5 million upgrade of the Bridport wastewater treatment plant to reuse effluent.

Ti Tree Bend wastewater treatment plant

Construction of a chemical dosing facility at the Ti Tree Bend wastewater treatment plant at a cost of \$1.6 million to reduce odour emissions.

Deloraine wastewater treatment plant

Upgrade of the Deloraine wastewater treatment plant to improve capacity and performance at a cost of \$3.8 million.

Wastewater pump station upgrades

Wastewater pump station upgrades at St Helens, George Town, Hadsden, Launceston, Legana and Blackstone Height totalling \$2.3 million.

Gilbert Street pump station, Latrobe - north

Work has been undertaken to improve employee safety at the Gilbert Street pump station after a safety inspection identified a number of issues. New access stairs and platforms have been installed, along with lifting equipment for pump replacement and a ladder extension. The work ensures operators can work safely on the pumps in the dry and wet wells.

Brighton wastewater treatment plant

A three-year program to upgrade the Brighton wastewater treatment plant at a cost of \$8.5 million to cater for the projected growth of the Pontville and Brighton townships and ensure compliance with OH&S and environmental standards.

New Norfolk East Trunk Sewer

Augmentation of the New Norfolk East Trunk Sewer costing \$0.8 million to prevent wet weather spills and provide capacity for further growth.

Rosny wastewater treatment plant

Upgrade of the Rosny wastewater treatment plant and improvements to odour control to address the concerns of nearby residents.

Taroona wastewater treatment plant

The Taroona wastewater treatment plant was closed as part of a \$5.2 million project aimed at improving environmental outcomes. A new \$3 million sewer pipeline was constructed from Taroona to Sandy Bay to enable the old plant to be bypassed and closed down.

Cameron Bay

A \$1.2 million project to remedy digester problems at the Cameron Bay wastewater treatment plant has been implemented and is expected to be completed by early 2015.

Lauderdale Sewerage Scheme

The \$8.2 million Lauderdale Sewerage Scheme (central and northern) was activated in March 2014 with southern Lauderdale activated in June 2014, reducing the risk of environmental impact from septic tank deterioration.

9.3 Future capital expenditure approaches and projects

This section addresses TasWater's approach to capital management and its major future capital projects from 1 July 2014 onwards. It outlines TasWater's capital investment actions and plans. Based on TasWater's corporate plan, TasWater is forecasting \$90 million in capital expenditure in 2014-15.

9.3.1 Water

The following projects are currently being undertaken or proposed to be undertaken to improve compliance with drinking water quality standards or accommodate regional growth requirements.

Scottsdale – Bridport Pipeline

This project involves the construction of a new pipeline between Scottsdale and Bridport. The pipeline will allow for the decommissioning of the existing poorly performing Bridport water treatment plant and make use of surplus capacity at the Scottsdale water treatment plant. The project has an estimated cost of \$12 million.

Ringarooma Valley Treated Water Supply

This project is to provide a treated water supply in accordance with the ADWG for the towns of Ringarooma, Legerwood, Branxholm and Derby. The project may also incorporate the construction of a pipeline to the town of Winnaleah. The project is expected to cost \$10 million.

Avoca Treated Water Supply

The purpose of this project is to remove the Do Not Consume notice currently in place at Avoca. This will be achieved through capital improvement works, either through the construction of a new water treatment plant or a pipeline from Fingal. The estimated cost of this project is \$5 million.

Flinders Island Water Supply

The purpose of this project is remove permanent boil water alerts by constructing water treatment infrastructure for the towns of Whitemark and Lady Barron. The project is expected to cost \$11 million.

Rosebery water treatment plant

The purpose of this project is to provide a reliable water supply scheme for Rosebery producing water that complies with the ADWG by building a new water treatment plant for the town. The estimated project cost is \$6 million.

King Island Water Supply Upgrade

The King Island towns of Currie and Grassy are presently supplied from two separate water supply schemes. The Grassy scheme draws water from the Upper Grassy Dam and the water is treated at the Grassy treatment plant which is old and in need of upgrade works. The Currie scheme draws water from a groundwater scheme and the water is disinfected prior to distribution.

This project will involve the construction of a new water treatment plant and a pipeline between Grassy and Currie. The projected cost is \$16 million.

The project will improve both the quality and reliability of the water supply to residents.

Lake Mikany – Filter Buttress

The purpose of this project is to lower the operating risk associated with the dam through upgrading the existing dam. The estimated cost of the project is \$5 million.

Tolosa Dam

This project involves the decommissioning and replacement of the Tolosa Dam and construction of two reservoirs and connecting pipework. The cost of the project is estimated at \$24 million.

Ridgeway Dam – Upgrade Post Tensioned Anchors

This project provides for replacement of the existing post tensioned anchors to ensure the stability of the abutment blocks in the long-term. The upgrade works have an expected total project cost of \$15 million.

Margate Water Main – Stage 2

This project involves the installation of a pipeline to service fast growing areas in Kingborough. The project is estimated to cost \$6 million.

9.3.2 Wastewater

The following projects are currently being undertaken or proposed to be undertaken to improve compliance with wastewater standards or accommodate regional growth requirements.

Greater Launceston sewerage strategy

A strategy is being developed to address the long-term future of seven WWTPs in the Greater Launceston area.

Ti-Tree Bend centrifuge – biosolids reduction

The project involves the construction of a centrifuge and sludge handling at the Ti-Tree wastewater treatment plant, which is expected to cost \$9 million.

Legana wastewater treatment plant upgrade

The existing plant is hydraulically overloaded due to increased demand in the area. High volumetric loading causes discharge into the Tamar River. The project's estimated cost is \$9 million.

Evandale – Western Junction major wastewater treatment plant upgrades

The existing plants both perform poorly and could be rationalised into a single new wastewater treatment plant at the Evandale wastewater treatment plant. The project is expected to cost \$8 million.

Longford wastewater treatment plant process improvements

Upgrade to treatment process to handle high trade waste content from Swift abattoirs and relocate or upgrade existing outfall location. The project's cost is expected to be \$7 million.

Wynyard wastewater treatment plant improvements

The project involves a major upgrade of the Wynyard wastewater treatment plant to achieve compliance with AMP limits and rationalisation with the Somerset wastewater treatment plant. The project is expected to cost \$17 million.

Rosebery wastewater treatment plant

Rosebery sewage is currently being treated by the Minerals and Metals Group (MMG) under an agreement which ends on 30 June 2015, which involves wastewater being discharged into a tailings dam.

The project involves the construction of a new treatment plant and has an estimated cost of \$10 million.

Kingborough sewerage strategy – treatment

The project will involve the rationalisation of existing WWTP's at Margate, Electrona and Blackmans Bay. The existing plants are all high on the EPA priority list. The project's estimated cost is \$30 million.

Kingborough sewerage strategy – network

This project will allow the rationalisation of existing WWTPs at Margate, Electrona and Blackmans Bay via the construction of new pipelines. The project is estimated to cost \$14 million.

Wastewater Pump Station Electrical Switchboard Renewal

A number of switchboards have been identified as having exceeded their useful life and are failing. The project will replace a number of switchboards at wastewater pump stations across the southern region. The estimated cost of the project is \$12 million.

Brighton Wastewater Treatment Plant Rationalisation

This is a high priority plant on the EPA list, as the plant's flows exceed treatment capacity. The project is expected to cost \$9 million.

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 No.
WATER RESOURCES	
Sources of Water	
Volume of water sourced from surface water (ML)	W1
Volume of water sourced from groundwater (ML)	W2
Volume of water sourced from desalination (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
Uses of Water Supplied	
Volume of water supplied - Residential (ML)	W8
Volume of water supplied - Commercial, municipal and industrial (ML)	W9
Volume of water supplied - Other (ML)	W10
Total urban water supplied (ML)	W11
Average annual residential water supplied (kL per property)	W12
Volume of water supplied - Environmental flows (ML)	W13
Volume bulk water exports (ML)	W14
Volume bulk recycled water exports (ML)	W15
Sewerage collected	
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 No.
Uses of recycled water	
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
ASSETS	
Water treatment plants	
Number of water treatment plants providing disinfection only	
Number of water treatment plants providing further treatment	
Number of water treatment plants providing full treatment	A1
Other water assets	
Number of water pumping stations	
Length of water mains (km)	A2
Properties served per km of water main (No. per km)	A3
Number of water distribution storage facilities	
Sewerage assets	
Number of 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
Recycled water assets	
Number of recycled water treatment plants	A7
Water supply	
Water main breaks (No. per 100 km of water main)	A8
Water loss	
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 No.
Sewer main breaks and chokes	
Sewer main breaks and chokes (No. per 100 km sewer main)	A14
Property connection sewer breaks and chokes (No. per 1 000 properties)	A15
CUSTOMERS	
Connected properties and population	
Population receiving water supply services	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
Complaints	
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 No.
ENVIRONMENT	
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 ₂ -equivalents per 1 000 connected water properties)	E9
Greenhouse gas emissions - Sewerage (tonnes CO ₂ -equivalents per 1 000 connected sewerage properties)	E10
Total Net Greenhouse gas emissions (tonnes CO ₂ -equivalents per 1 000 connected water properties)	E12
Sewer overflows reported to environmental regulator (No. per 100 km of main)	E13
FINANCE	
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 No.
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
PUBLIC HEALTH	
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
PRICING	
Water	
Tariff Structure (description) - water	P1
Free Water Allowance (kL) - water	P1.1
Fixed Charge (basis for charge) - water	P1.2
Usage Charge 1 st Step (kL range and \$)	P1.3
Usage Charge 2 nd Step (kL range and \$)	P1.4
Usage Charge 3 rd 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 No.
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
Sewerage	
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
Water and Sewerage	
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 the 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; 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 with each other and should ideally be based on a contingency management plan specific for 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 assist 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; for example, the type of end use (eg golf course versus agricultural application) and type of user (eg corporate body or user cooperative versus single user). Historical differences in terms of varying 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 conditions for reuse schemes typically require adherence to an approved management plan and compliance with specified discharge limits. However, regular site inspections and premises management are not within the EPA's core function and environmental regulation of these schemes is largely the domain of local government.

Prior to the 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 a number of schemes over the past five years.

Whether the rate of uptake of effluent recycling is sufficient requires closer examination 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 to determine whether effluent reuse is viable.

Under the suite of contemporary environmental conditions currently being rolled out to all WWTPs, an effluent reuse feasibility study will be required to be undertaken within six months from the date of issue of an Environment Protection Notice. 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 that:

- better reporting is required in relation to the volume of sewage sludge produced at a site and, where material is transported off site, regarding its destination and end use;
- reuse or other management options for existing biosolids stockpiles need to be identified;
- consideration of beneficial reuse in preference to disposal methods wherever feasible needs to be demonstrated; and

- some lagoons systems need to be de-sludged to maintain or enhance operational capacity.

Some progress has been made in 2013-14 with regards to improving biosolids management (see Section 7.8). However, de-sludging of lagoon systems identified as high priority was not substantially progressed during 2013-14. While a portion of the significant stockpiles of sewage sludge accumulated in the northern region during 2012-13 was beneficially reused in 2013-14, formulation of a longer term strategy for state-wide biosolids management is still in the planning phase.

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

Ambient monitoring (the monitoring of impacts in the receiving environment) is a key strategy in determining future upgrade options for existing WWTPs. Such programs will 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.

In the past only limited ambient monitoring programs of a satisfactory standard were 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. In 2013-14, several ambient monitoring plans were being developed or implemented including plans for the Derwent Estuary.

Flow monitoring and control

As outlined in Section 7.1 of this Report, the continuing roll-out of flow meters by the corporations has resulted in significant improvements in terms of 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, of those WWTPs reporting on plant flow, 27 WWTPs had reached or exceeded their hydraulic flow limit and another 14 were operating at more than 75 per cent of their regulated capacity.

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 (eg 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 (ie 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 where councils operated the WWTPs, their enforcement was not always successful 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. The number of lagoon systems is greatest in the northern region, representing approximately 60 per cent of all Level 2 WWTPs. The southern region, due to a greater number of urban WWTPs, has a slightly lower proportion of lagoons as does the north-west region, with lagoons representing approximately 30 per cent and 50 per cent respectively of all Level 2 WWTPs in those regions.

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 where 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 were reflected in the compliance levels reported for 2013-14. 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 their treatment efficiency. In a number of lagoon systems, sludge levels have accumulated to a degree where treatment capacity is significantly affected and de-sludging 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 their 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 remained an issue for TasWater during 2013-14, continuing the trend established under the previous regional corporations.

The information in Chapter 7 aggregates compliance results on a regional or 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 2007-08 to 2013-14 financial years.

Table A4.3 lists the proportion of effluent reused and reuse flow per year for each Level 2 WWTP for each of the 2009-10 to 2013-14 financial years.

Table A4.1 Summary of WWTP discharge to waters compliance results, 2009-10 to 2013-14

Premises name	2013-14		2012-13		2011-12		2010-11		2009-10	
	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)
Beaconsfield	83.6	57.4 ¹	90.7	53.1 ¹	84.6	50.4	74.5	57.4	66.7	60.4
Beauty Point	91.7	63 ¹	91.7	62.0 ¹	84.1	59.6	94.8	63	89.6	60.2
Bicheno	68.8	57.4 ¹	83.4	59.1 ¹	80.8	59.3	95.9	58.3	72.9	47.6
Blackmans Bay	86	58.5 ¹	95	64.8 ¹	91.5	57.9	95.1	57.9	93.8	59.3
Boat Harbour	66.4	69.1 ¹	84.5	77.4 ²	78.1	76	83.3	82.4	77.8	73.1
Bothwell	88.9	75 ¹	91.4	77.1 ¹	89.6	68.9	81.3	58.3	88.1	65.5
Bridgewater	76.4	54.6 ¹	91.6	61.7 ¹	97.2	67.6	97.2	63.2	97.2	64.8
Bridport	54.5	54.5 ¹	47.7	47.7 ¹	44.9	44.9	48.2	48.2	52.8	52.8
Brighton	77.5	33.3 ¹	74	39.3 ¹	70.8	37	80.4	39.4	91.9	46.5
Cambridge/Airport	81.5	88 ¹	77.8	92.9 ¹	83.9	93.1	91.8	93.4	93	97.7
Cameron Bay	82.2	66.7 ¹	84.3	62.0 ¹	81.5	65.8	75.9	55.8	88.1	60.7
Campania	35.4	45.4 ¹	42	43.9 ¹	33.9	48.2	42.3	35.2	41.7	36.9
Campbell Town	86.3	54.2 ¹	89.6	56.5 ¹	87.5	57.4	75	47.2	78.1	50.9
Carrick	80.2	54.7 ¹	87.6	57.1 ¹	76	50.9	54.2	34.5	44.7	48.2
Cradle Mountain	94.7	96.5 ¹	99.3	99.8 ¹	99	99.5	86.9	96.4	-	-
Cressy	91.6	47.7 ¹	84.4	40.7 ¹	88.4	43.6	88.5	44.4	86.5	51.9
Currie	97.6	72.3 ¹	87.4	59.8 ¹	78.4	50.5	76.1	42.6	76.7	43.5
Cygnets	100	85.2 ¹	91.5	73.0 ¹	96.2	82.6	96.2	80.4	93.9	70.1
Deloraine	66	52.4 ¹	73.5	63.7 ¹	68.9	56.6	84.3	71.3	87.9	74
Dover	89.8	82.4 ¹	85.3	66.4 ¹	87.7	67	66.7	35.7	72	34.7
East Strahan	90.1	72.5 ¹	95.1	83.2 ¹	99.1	84	94.4	85.2	93.5	84.3
Electrona	31.3	37 ¹	37.5	37.9 ¹	42	31.9	50	42.6	72.9	53.7

Premises name	2013-14		2012-13		2011-12		2010-11		2009-10	
	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)
Exeter	93.6	51.2 ¹	95.7	41.5 ¹	93.8	38	94.8	39.8	97.9	44.4
Fingal	79.4	47.7 ¹	52.4	47.5 ²	44.7	45.8	45.8	47.2	30.2	43.1
Geeveston	83.9	77.8 ¹	91.7	84.2 ¹	97.9	84.6	92.9	77.5	49.1	29
George Town	88.7	74.1 ¹	94.5	82.4 ¹	91.3	65.4	85.7	81.5	92.5	81.3
Hoblers Bridge	97.5	72.2 ¹	95.9	64.8 ¹	91.7	66.7	97.9	69.4	97.9	67.6
Kempton	45.8	46.3 ¹	31.3	35.2 ¹	36.8	34.3	35.9	22.3	45.8	35.7
Latrobe	73.9	58.5 ¹	71.7	51.0 ¹	85.4	57.4	77.1	63.9	91.7	63.6
Legana	85.1	45.5 ¹	81.4	36.1 ¹	87.1	34.4	95.2	55.6	87.3	77.1
Lilydale	90.8	70.4 ¹	90.7	57.0 ¹	92.6	63	90.7	60.2	90.7	56.5
Longford	44.1	28.6 ¹	57.3	32.4 ¹	65.6	39.8	65.6	48.1	55	41.1
Macquarie Point	87.8	50.5 ¹	93	42.9 ¹	82.2	25.7	90.7	41	100	36.1
Margate	70.3	49.1 ¹	79.2	50.5 ¹	66.7	46.9	61.1	36.6	68.8	46.3
Midway Point	100	78.3 ¹	100	73.7 ¹	97.9	81.7	100	79.8	97.9	76.8
New Norfolk	85.5	56.5 ¹	89.6	53.7 ¹	85.4	41.7 ²	73.3	32	91.4	41.8
Newnham	84.8	56.5 ¹	95.8	61.1 ¹	97.9	60.7	97.9	64.8	97.9	67.8
Norwood	94.1	78.7 ¹	97.9	77.8 ¹	97.8	70.8	93.8	69.4	100	77.6
Oatlands	39.6	41.7 ¹	29.2	39.1 ¹	54.2	48	44.6	37.7	57.7	42.9
Orford	93.5	66.7 ¹	93.5	68.5 ¹	96.5	69.9	94	51.2	89	64.8
Pardoe	70	15.7 ¹	82.6	19.2 ¹	89.6	20.6 ²	85.9	22.6	94.4	21.4
Perth	84.9	35.2 ¹	76.1	27.8 ¹	83.3	31.5	76.1	31.5	71.9	30.6
Port Sorell	52.1	36.3 ¹	39.6	15.5 ²	51	16.5 ²	70.8	21.4	68.8	25
Prince of Wales Bay	89.6	62 ¹	87.5	59.4 ¹	93.8	64.4	95.9	68.3	100	61.9
Prospect Vale	82.4	69.5 ¹	88	66.7 ¹	86.1	60.2	47.9	43.5	74.2	59.5

Premises name	2013-14		2012-13		2011-12		2010-11		2009-10	
	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)
Railton	89	65.8 ¹	91.2	68.0 ¹	94.7	69.8	87.5	68.5	91.7	75.9
Ranelagh	86	93.6 ¹	47.4	47.4 ¹	59.6	59.6	53.6	53.6	54.9	54.9
Richmond	-	42.6 ¹	-	41.7 ¹	-	46.8	-	46	-	-
Ridgley	87.7	88.1 ¹	93	85.5 ²	85.4	90.5	76.6	78.6	83.4	78.6
Risdon Vale	97.9	89.8 ¹	100	93.3 ¹	97.3	91.6	97.9	94	100	92.9
Riverside	100	63.9 ¹	91.7	57.4 ¹	80.8	51.4	63.5	39.7	60.4	36.5
Rokeby	99.1	99.1 ¹	87.4	85.2 ¹	93.3	93.6	97.1	97.1	97.6	98
Rosny	88.3	67.6 ¹	100	68.8 ¹	99.3	66.7	98.9	67	98.5	61.8
Round Hill	85.6	85.6 ¹	93.5	93.5 ¹	98.1	98.1	91.7	93.6	88	88.9
Scamander	-	69.4 ¹	-	69.6 ¹	-	67.3	-	53.8	-	-
Scottsdale	91.7	65.7 ¹	95.5	70.7 ¹	97.1	70.1	97.1	73.9	96.9	72.2
Selfs Point	94.2	97.8 ¹	86.4	93.6 ¹	93.9	98	92.7	99	95	98.7
Sheffield	97.2	97.2 ¹	94.3	94.3 ¹	66.7	90.7	86.1	92.6	97.2	97.2
Sisters Beach	95.7	95.7 ¹	85.9	89.4 ²	87.5	94.8	75	86.1	58.3	69.5
Smithton	57.6	36.6 ²	43.7	35.1 ¹	67.8	61.1	56	45.4	64	57.1
Somerset	100	67.9 ¹	100	77.8 ²	91.7	79.2	100	67.6	43.7	52.8
Sorell	97.9	78.8 ¹	91.7	66.3 ¹	93.8	67.3	89.8	61.9	90.4	63.2
St Helens	96.2	98.1 ¹	97.2	98.1 ¹	99.1	99.1	97.2	99.1	96.3	98.2
St Marys	83.3	47.2 ¹	77	45.0 ¹	58.3	2.8 ²	84.9	58.5	82.4	58.3
Stanley	69	50.7 ¹	66.2	48.7 ¹	82.5	61.8	87.9	65.3	73.2	55
Stieglitz	100	73.2 ¹	100	64.5 ²	100	64.3 ²	100	61.4	100	72.9
Swansea	83.3	52.8 ¹	74.5	42.7 ¹	79.2	45	81	51.2	91.3	60.7
Taroona	56.8	36.4 ¹	62.5	38.8 ¹	61.2	38.5	51	34.9	75	45.4

Premises name	2013-14		2012-13		2011-12		2010-11		2009-10	
	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)	Regulatory limits (%)	AMT limits (%)
Triabunna	79.6	50.9 ¹	78.2	54.5 ¹	76.1	51.3	82.4	46.2	81	57.1
Tullah	93.3	75.42	95.4	84.7 ¹	91.9	82.7	60	73.2	31.9	49.9
Turners Beach	78.4	55.7 ¹	71.2	42.3 ¹	76.9	49.1	79.6	47.2	81.5	63.9
Ulverstone	-	-3	12.5	12.5 ²	58.3	88.1 ²	100	86.1	100	90.3
Westbury	58.5	58.5 ¹	89.7	89.7 ¹	84	84	92.6	92.6	96.3	91.7
Wynyard	84.8	46.5 ¹	100	71.8 ²	100	73.3	91.7	69.8	75	63.9
Zeehan	71.9	76.82	76.1	81.6 ¹	79.1	83.7	72.9	82.4	69.4	63.4

AMT dataset completeness

¹ 95-100% complete

² 76-94% complete

³ 0-75% complete

Figure A4.1 TasWater - WWTP compliance with regulatory discharge to waters limits, 2013-14 (per cent)

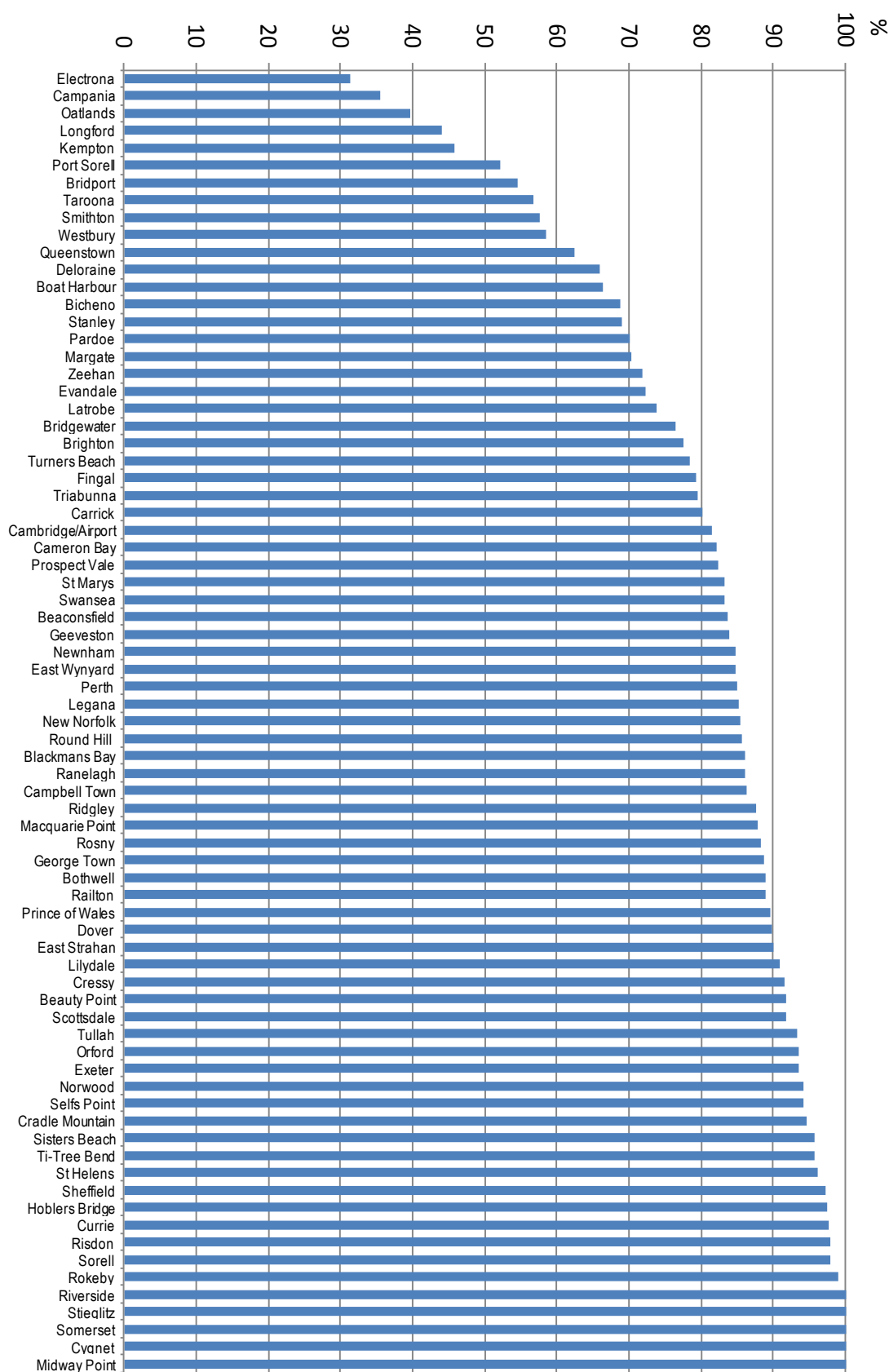


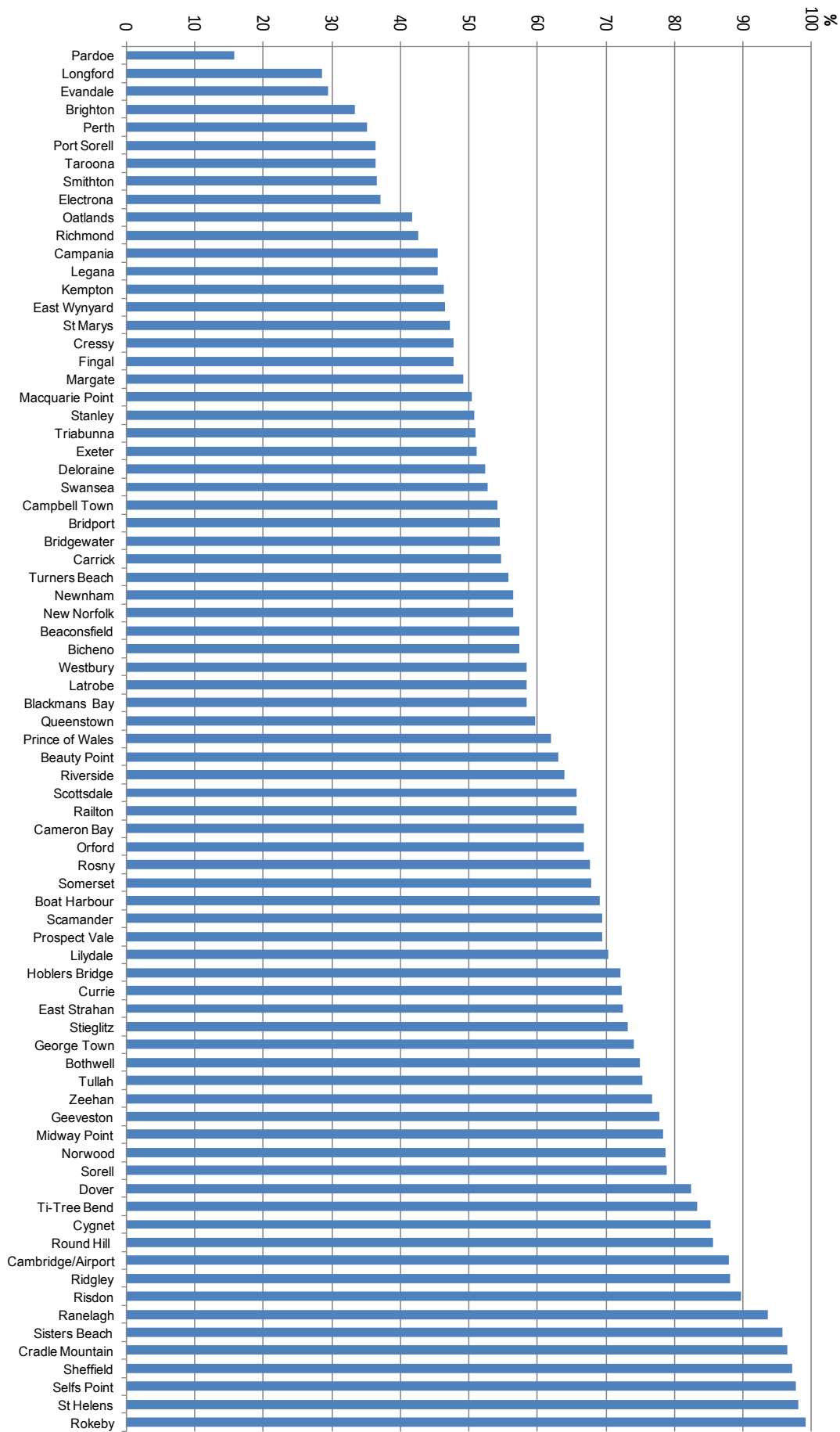
Figure A4.2 TasWater - WWTP compliance with AMT discharge to waters limits, 2013-14 (per cent)

Table A4.2 Compliance with 'Class B' reuse limits

Region	2013-14	2012-13	2011-12	2010-11	2009-10	2008-09	2007-08
Beaconsfi	*	88.9	--	--	--	--	--
Beauty	93.3	91.7	87.3	98.3	88.3	87.2	75.0
Bicheno	83.3	93.3	93.4	100	100	91.7	88.9
Bothwell	90	94.6	93.1	89.6	100	83.3	77.8
Bridgewater	75	96.7	100	100	100	100	100
Bridport	100	91.7	95.2	96.7	98.3	97.2	100
Brighton	83.1	81.7	86.7	85.5	93.7	89.3	88.6
Cambridg	95	100.0	99.0	100	100	-	-
Cameron	98.3	100.0	96.9	98.0	100	100	100
Campania	80	85.5	78.6	76.9	80.6	68.3	80.0
Campbell	90	95.0	91.7	80.0	80.0	63.9	72.2
Carrick	80	91.4	89.3	-	-	-	-
Cressy	90	81.7	90.0	91.7	91.7	94.5	63.9
Evandale	59	65.0	63.3	65.0	65.0	83.3	66.7
Exeter	94.1	96.6	78.3	98.3	98.3	89.7	94.4
Kempton	71.7	61.7	63.8	72.9	83.3	81.7	80.0
Latrobe	75.9	65.5	76.7	61.7	81.7	95.0	93.3
Legana	89.7	93.5	96.4	93.3	96.7	94.9	91.7
Lilydale	94.3	93.3	96.7	91.7	91.7	88.9	91.7
Macquarie	89.7	94.3	100	100	-	-	-
Oatlands	81.7	75.0	94.0	78.6	89.7	85.0	73.3
Orford	100	96.7	96.7	97.2	100	91.7	86.1
Penna	91.4	85.7	91.1	98.3	-	-	-
Perth	87.9	80.0	76.7	83.3	76.7	80.5	66.7
Railton	78.8	88.9	86.2	91.7	91.7	96.7	93.3
Richmond	76.7	80.0	84.4	90.4	-	-	-
Riverside	100	100.0	96.5	80.0	91.7	100	100
Rokeby	100	100.0	99.0	-	-	-	-
Rosny	100	100.0	100	100	100	100	100
Scamand	96.7	93.3	92.1	77.6	78.3	100	91.7
Selfs	100	100.0	99.3	99.5	100	99.2	100
St Marys	83.3	86.0	61.1	87.9	88.3	96.2	100
Stieglitz	98.2	96.7	95.0	100	95.6	100	100
Swansea	88.3	79.0	79.7	88.9	96.3	91.7	83.3
Triabunna	85	83.9	77.1	94.9	94.4	97.2	83.3

* Insufficient number of samples provided

Table A4.3 Reuse proportion per WWTP (per cent proportion and ML/year) 2009-10 to 2013-14

Premises name	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
Beaconsfield	79.4	100.0	69.6	40.4	-	-	-	-	-	-
Beauty Point	62.0	124.9	73.4	85.7	55.0	82.7	53.0	102.3	78.0	151.5
Bicheno	51.9	63.7	43.3	45.8	22.9	28.2	10.5	13.0	74.0	118.0
Bothwell	76.9	33.2	100.0	41.1	58.0	26.5	100.0	45.8	89.0	40.6
Bridgewater (Green Point)	63.6	538.6	54.9	433.4	50.1	455.3	66.0	588.1	72.0	630.7
Bridport	8.5	7.6	0.5	0.5	0.0	0.0	0.5	0.5	1.4	1.4
Brighton	100.0	281.3	86.5	226.0	74.8	204.4	94.7	253.6	100.0	304.0
Cambridge/ Airport	4.9	5.9	3.9	3.7	5.2	6.0	5.3	6.2	8.0	9.1
Cameron Bay	2.7	46.5	4.3	74.8	3.2	63.7	3.8	79.1	4.0	89.8
Campania	100.0	30.4	100.0	29.5	100.0	29.5	100.0	33.8	100.0	33.6
Campbell Town	98.4	73.7	100.0	62.7	33.6	29.3	98.7	92.2	100.0	95.3
Carrick	13.7	28.3	36.5	70.6	9.0	16.0	0.0	-	0.0	-
Cressy	80.0	59.2	97.8	49.8	57.9	36.8	97.0	70.5	82.0	57.0
Evandale	64.1	58.9	88.7	59.6	60.2	42.5	86.0	67.2	75.0	64.4
Exeter	44.2	31.9	58.2	13.2	49.9	8.3	47.0	13.9	87.0	37.9
Kempton	100.0	43.6	100.0	43.0	100.0	42.5	100.0	42.0	100.0	42.3
Legana	52.6	188.2	60.7	172.5	45.2	150.1	64.0	234.5	72.0	53.0
Lilydale	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	67.5	117.4	67.4	108.4	63.0	81.9	71.8	97.6	56.0	121.4
Oatlands	100.0	61.5	72.0	57.8	58.0	46.6	97.8	77.3	86.0	68.1
Penna	100.0	237.7	100.0	279.9	100.0	208.0	100.0	170.0	100.0	202.9
Perth	74.3	143.8	72.9	143.9	55.3	130.9	47.0	116.5	91.0	243.0
Railton	43.1	112.1	43.0	73.5	82.9	141.8	18.0	45.0	63.0	115.0
Richmond	87.6	63.1	82.4	55.0	100.0	72.0	100.0	66.5	100.0	0.0

Premises name	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
Riverside	14.1	89.9	8.1	40.0	22.2	111.4	2.0	11.4	18.0	110.7
Rokeby	98.4	620.4	65.3	393.8	44.2	298.2	-	-	-	-
Rosny	75.2	1684.6	52.2	1170.8	31.0	771.9	50.0	1 348.1	40.0	1 096
Scamander	100.0	50.9	100.0	17.1	81.5	87.5	23.0	18.2	67.0	27.4
Selfs Point	0.4	14.5	0.4	10.7	2.3	83.7	1.4	51.8	1.5	55.0
Sorell	65.7	134.9	68.7	169.3	64.0	104.8	73.1	91.3	56.0	74.9
St Marys	92.9	52.0	100.0	47.4	47.0	25.8	27.0	15.4	39.0	20.4
Stieglitz	100.0	81.5	100.0	19.0	100.0	74.8	100.0	83.6	38.0	56.6
Swansea	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	98.3	62.8	65.8	56.6	35.0	59.3	97.4	90.1	88.0	63.3
Westbury	11.9	42.1	6.9	14.0	-	-	-	-	-	-

APPENDIX 5 CUSTOMER SERVICE CODE MINIMUM STANDARDS AND TRANSITIONAL SERVICE STANDARDS

Indicator Name	CSC Minimum Standard	TasWater 2013-14	Northern Region TSS	2013-14	North- Western TSS	2013-14	Southern Region TSS	2013-14
Water								
Unplanned water supply interruptions (per 100km of water main)	32	<u>75</u>	38	<u>64</u>	68	<u>80</u>	39	<u>78</u>
Average time taken to attend bursts and leaks –Priority 1 (minutes)	30	<u>31</u>	55	45	45	24	44	33
Average time taken to attend bursts and leaks –Priority 2 (minutes)	120	95	120	66	120	26	120	102
Average time taken to attend bursts and leaks –Priority 3 (minutes)	1440	<u>1930</u>	1440	732	1440	490	4320	3023
Average frequency of unplanned water supply interruptions (per 1000 properties)	0.1	<u>0.1</u>	0.23	0.18	0.23	0.07	0.25	0.15
Average frequency of planned water supply interruptions (per 1000 properties)	0.1	0.05	0.2	0.08	0.2	0.02	0.2	0.04
Average unplanned customer minutes off water supply (minutes)	20	18	20	<u>22</u>	25	14	30	8
Average planned customer minutes off water supply (minutes)	15	11	30	18	30	6	30	9

Indicator Name	CSC Minimum Standard	TasWater 2013-14	Northern Region TSS	2013-14	North-Western TSS	2013-14	Southern Region TSS	2013-14
Average duration of unplanned water supply interruption (minutes)	100	<u>131</u>	170	120	170	<u>216</u>	170	123
Average duration of planned water supply interruption (minutes)	180	<u>244</u>	280	214	200	<u>349</u>	280	263
Unplanned water supply interruptions restored within 5 hours (per cent)	98	98	80	98	95	98	80	97
Planned water supply interruptions restored within 5 hours (per cent)	95	<u>81</u>	78	82	91	96	55	<u>54</u>
Number of customers receiving more than 5 unplanned water supply (number)^	0	N/A	250	N/A	250	N/A	250	N/A
Unaccounted for water (per cent)	10	<u>14</u>	25	N/A*	25	N/A*	24	N/A*
Sewerage								
Sewer breaks and chokes (and spills) per 100 km of main	28	<u>109</u>	55	<u>70</u>	55	36	61	<u>170</u>
Average time to attend sewer spills, breaks and chokes	41	<u>61</u>	65	<u>73</u>	65	39	65	60
Average sewerage service interruption	150	118	230	139	230	145	180	103
Sewerage spills contained within 5 hours (per cent)	99	99	90	97	97	98	93	99
Customers receiving more than 3 sewerage interruptions per year	0	N/A	250	N/A	250	N/A	250	N/A

Indicator Name	CSC Minimum Standard	TasWater 2013-14	Northern Region TSS	2013-14	North- Western TSS	2013-14	Southern Region TSS	2013-14
Customers								
Total water and sewerage complaints (per 1000 properties)	9	6.5	9	N/A*	9	N/A*	9	N/A*
Water and sewerage complaints to Ombudsman (per 1000 customers)	0.5	0.31	0.5	N/A*	0.5	N/A*	0.5	N/A*
Percentage of calls answered by an operator within 30 seconds	90	92	75	96	70	94	80	91

Notes: Results highlighted as bold and underlined indicates standard was not met for the year

^ TasWater is not yet able to capture this information

* Indicator measured on a state-wide basis

