Tasmanian
Audit Office

Report of the Auditor-General No. 2 of 2017-18

Water and sewerage in Tasmania: Assessing the outcomes of industry reform

November 2017

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THE ROLE OF THE AUDITOR-GENERAL

The Auditor-General's roles and responsibilities, and therefore of the Tasmanian Audit Office, are set out in the *Audit Act 2008 (Audit Act).*

Our primary responsibility is to conduct financial or 'attest' audits of the annual financial reports of State entities. State entities are defined in the Interpretation section of the Audit Act. We also audit those elements of the Treasurer's Annual Financial Report reporting on financial transactions in the Public Account, the General Government Sector and the Total State Sector.

Audits of financial reports are designed to add credibility to assertions made by accountable authorities in preparing their financial reports, enhancing their value to end users.

Following financial audits, we issue a variety of reports to State entities and we report periodically to the Parliament.

We also conduct performance audits and compliance audits. Performance audits examine whether a State entity is carrying out its activities effectively and doing so economically and efficiently. Audits may cover all or part of a State entity's operations, or consider particular issues across a number of State entities.

Compliance audits are aimed at ensuring compliance by State entities with directives, regulations and appropriate internal control procedures. Audits focus on selected systems (including information technology systems), account balances or projects.

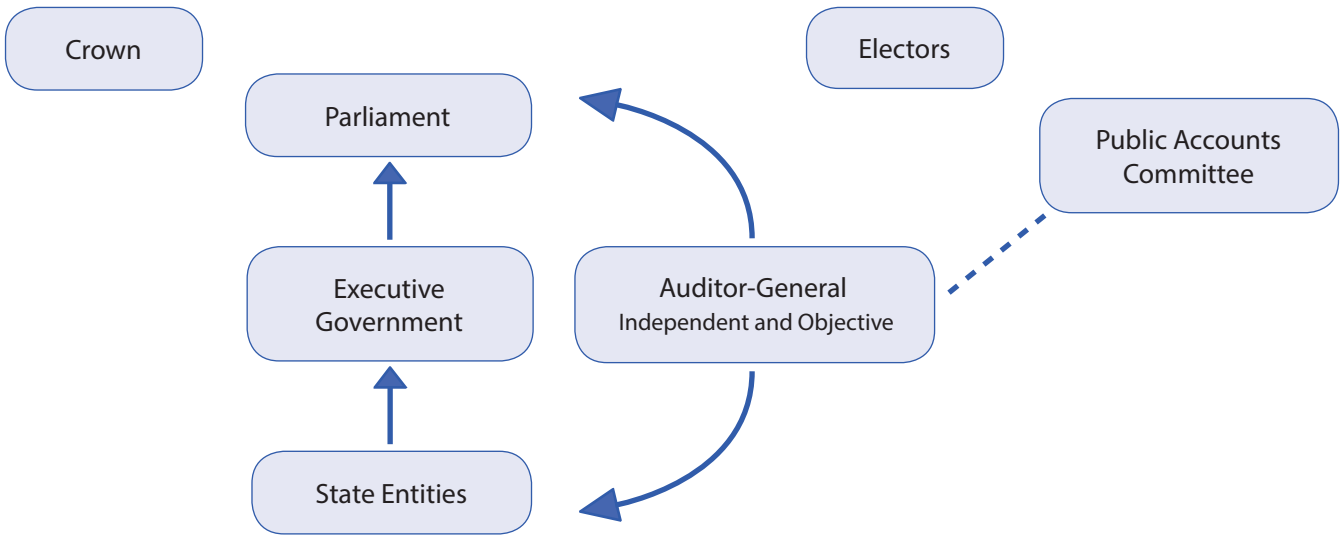
We can also carry out investigations but only relating to public money or to public property. In addition, the Auditor-General is now responsible for state service employer investigations.

Performance and compliance audits are reported separately and at different times of the year, whereas outcomes from financial statement audits are included in one of the regular volumes of the Auditor-General's reports to the Parliament normally tabled in May and November each year.

Where relevant, the Treasurer, a Minister or Ministers, other interested parties and accountable authorities are provided with opportunity to comment on any matters reported. Where they choose to do so, their responses, or summaries thereof, are detailed within the reports.

The Auditor-General's Relationship with the Parliament and State Entities

The Auditor-General's role as Parliament's auditor is unique.



2017
PARLIAMENT OF TASMANIA

Report of the Auditor-General
No. 2 of 2017-18

Water and sewerage in Tasmania: Assessing the outcomes of industry reform

November 2017

Presented to both Houses of Parliament in accordance with the requirements of Section 30 of the *Audit Act 2008*

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Tasmanian
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14 November 2017

President
Legislative Council
HOBART

Speaker
House of Assembly
HOBART

Dear Mr President

Dear Mr Speaker

REPORT OF THE AUDITOR-GENERAL

No. 2 of 2017–18: Water and sewerage in Tasmania: Assessing the outcomes of industry reform

This report has been prepared consequent to examinations conducted under section 23 of the *Audit Act 2008*. The objective of the performance audit was to form conclusions on the extent to which the intended outcomes arising from the reforms of the water and sewerage industry have been achieved.

Yours sincerely

Rod Whitehead
Auditor-General

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FOREWORD

Tasmania has a reputation for being 'clean and green' and therefore, the provision of high-quality drinking water and an effective sewerage system that does not harm the environment, is important not only to Tasmanian residents but also to visitors who choose Tasmania as a destination.

Achieving these two objectives across Tasmania has been challenging for those responsible for managing water and sewerage assets and has led to this responsibility passing from local government councils (councils) to three regional corporations (Southern Water, Cradle Mountain Water, Ben Lomond Water) in 2009 and to the Tasmanian Water and Sewerage Corporation Pty Ltd (TasWater) in 2013.

Each transfer of responsibility involved legislative reform and the establishment of a new economic regulatory framework for the water and sewerage industry. The second reading speeches for the Bills to implement the changes in 2009 and 2013 articulated intended outcomes of each structural change. The objective of this audit was to provide an assessment as to whether the Tasmanian Government's reforms have delivered intended outcomes.

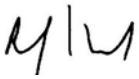
Each of the reforms envisaged a journey of improvement but also introduced a range of complexities that required addressing, such as:

- moving from a local to a region-focussed to a state-wide operating environment
- creating and implementing a new strategic environment and obtaining employee and customer support and engagement
- creating new, efficient and effective functionality whilst continuing to deliver services across a complex, multi-functional and highly regulated environment
- understanding the asset and resource base particularly where those elements had not been well managed previously
- bringing together a number of cultures and creating synergy within a new work environment
- understanding and leveraging the skills of inherited and new employees
- operating inherited water and sewerage facilities
- transitioning customers to a new way of operating and managing expectations within a landscape of delivering multifaceted change
- managing change both internally and externally.

With any restructure or consolidation, there is a period of transition for the new entity before the intended benefits of the changes materialise. In the case of TasWater, the transfer of state-wide knowledge was assisted by the common Chair of the Board of each of the regional corporations also becoming the Chair of the Board for TasWater. This ensured a level of continuity of governance and provided the foundation for an accelerated transition.

In March 2017, the Tasmanian Government announced its intention to transfer all TasWater's assets, rights, obligations, liabilities and employees to a newly created government business by 1 July 2018. In its announcement, the government made reference to the earlier reforms and stated 'there have been no significant inroads made in addressing the problems that gave rise to those reforms'.

This report provides independent verification as to whether the outcomes expected by the government as a result of the reforms have been achieved. This report does not attempt to address the question as to whether TasWater, or any new government business, is best placed to meet the water and sewerage services needs of the Tasmanian community.



Rod Whitehead
Auditor-General
14 November 2017

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AUDITOR-GENERAL'S INDEPENDENT ASSURANCE REPORT

This independent assurance report is addressed to the President of the Legislative Council and the Speaker of the House of Assembly. It relates to my performance audit (audit) on the benefits derived from the structural changes made to the Tasmanian water and sewerage industry since 2009.

AUDIT OBJECTIVE

The objective of the audit was to form conclusions on the extent to which the intended outcomes arising from the reforms of the water and sewerage industry have been achieved.

AUDIT SCOPE

The audit examined the performance of the regulated entities[1] responsible for the provision of water and sewerage services before and after the commencement of the *Water and Sewerage Corporations Act 2008* (the 2008 Act) and the *Water and Sewerage Corporation Act 2012* (the 2012 Act). Throughout this report, the structural, economic and regulatory changes to the water and sewerage industry initiated by these Acts, together with the *Water and Sewerage Industry Act 2008* (2008 Industry Act) and the *Water and Sewerage Industry Amendment Act 2012* (2012 Industry Act) are referred to as the 'reforms'.

Implementation of the 2008 reforms commenced from 1 July 2009 and implementation of the 2012 reforms commenced from 1 July 2013.

The audit commenced in October 2016 and examined information and data that was available up to and including the 2015-16 financial year. For currency and fairness, the scope of the audit has included 2016-17 information and data where appropriate. Where 2016-17 data is reviewed, amended (if required) and published according to a regulatory requirement by organisations such as the Department of Health and Human Services (DHHS) and the Office of the Tasmanian Economic Regulator (TER), I have chosen not to pre-empt their official reports by including that data in this report. Both DHHS and TER reports relevant to the water and sewerage industry for 2016-17 are due in the first quarter of 2018. However, commentary in respect of 2016-17 has been included where appropriate.

An examination of dams was not included in the scope of this audit as dams were not specifically mentioned in the intended outcomes of the reforms envisaged by the government.

AUDIT APPROACH

The audit was conducted in accordance with Australian Standard on Assurance Engagements ASAE 3500 *Performance Engagements,* issued by the Australian Auditing and Assurance Standards Board, for the purpose of expressing a reasonable assurance conclusion.

The audit assessed the extent of the intended outcomes delivered by the reforms by analysing data, examining and verifying internal and external reports, reviewing strategic and annual planning processes and documents and discussing industry performance with the appropriate regulators and stakeholders.

The audit examined the performance of councils up to 2009 as a baseline for comparison, the regional corporations between July 2009 and June 2013 and TasWater from July 2013.

AUDIT COST

The audit cost was $483 618.

MANAGEMENT RESPONSIBILITY

The regional corporations had responsibility for achieving the intended outcomes from the 2008 reform.

TasWater had responsibility for continuing the achievement of the intended outcomes from the 2008 reform as well as achieving the intended outcomes from the 2012 reform.

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1. Regulated entity in this report refers to any entity or entities established under an Act for the delivery of water and sewerage services.

AUDITOR-GENERAL'S RESPONSIBILITY

In the context of this audit, my responsibility was to express a reasonable assurance conclusion on the extent to which the intended outcomes arising from the reforms have been achieved.

FINDINGS AND RECOMMENDATIONS

The government envisaged many intended outcomes across the water and sewerage industry as a result of the reforms. These have been summarised into 40 separate elements, with the regional corporations required to contribute to the achievement of 28 and TasWater required to contribute to all 40. There were three intended outcomes we did not assess – two related to employee benefits and one related to economic benefits.

Table 1 draws together the intended outcomes of the reforms and the assessment as to whether they have been achieved. Further information on the assessment of each of the intended outcomes is contained in the relevant section of this report.

Table 1: Intended outcomes envisaged by the Tasmanian Government

	Regional corporations	TasWater	Report reference
2008 intended outcomes			
$1.0 billion of new water and sewerage infrastructure over the next 10 years	P	P	3.3
Condition assessments for assets	P	P	2.2
Adequate asset management plans	✓	✓	2.1
Improved financial return	✓	✓	3.5
Improved capacity to service debt	✓	✓	3.2
Wastewater (sewage)[1] treatment plants comply with licence conditions	P	P	1.2
Reduced number of permanent boil water alerts including in key tourism areas	✓	✓	1.1, 1.3
More robust regulatory framework comparable to other states[2]	✓	✓	4.3
Improved infrastructure standard	P	P	2.2, 2.3
Renewal over the coming decades	P	P	2.2
Augmentation over the coming decades	P	P	2.3
Created employee opportunities[3]	**Not assessed in this audit**		
Tourism operators, local businesses and the community receive services that are:			
• cost effective	P	✓	3.1, 3.4
• sustainable	✓	✓	3.2
• compliant with standards	P	P	1.1, 1.2
Significant long-term benefits:			
• public health	✓	P	1.1
• environmental benefits	✗	✗	1.2
Significant long-term economic benefits[4]	**Not assessed in this audit**		
Improved compliance with environmental standards for wastewater	✗	✗	1.2

	Regional corporations	TasWater	Report reference
Improved compliance with water quality standards	✓	P	1.1
Increased revenue flows into the sector to support self-sustaining investment and the appropriate use of debt funding	✓	✓	3.2
Minimum customer service standards have been:			
• established[2]	✓	✓	4.1
• achieved	P	P	4.1
Customer service standards drive business decision making	✓	✓	4.2
Customers pay for the services they receive	P	✓	3.4
Customers have a voice through a transparent regulatory process[2]	✓	✓	4.2
Institute strategic asset management planning	P	✓	2.1
Communication between technical and economic regulators[2]	✓	✓	4.3
2012 intended outcomes[5]			
State-wide infrastructure planning		✓	2.1
Consistent service delivery		P	4.2
Consistent customer relations		✓	4.2
Further integration of administrative systems creating cost savings and reduced reporting and administrative effort		P	3.5
Broader base of employee skills and experience[3]		**Not assessed in this audit**	
Stronger, more stable cash flow		✓	3.3
Better capacity to manage debt		✓	3.2
More flexibility to deal with a significant capital expenditure program		✓	3.3
Better services for customers		P	4.2
Quicker achievement of health and environmental standards:			
• water		P	1.1, 1.3
• sewerage		✗	1.2, 1.3
Deliver estimated savings of $5.0 million per annum after a period of time		P	3.5

✓— outcome realised, ✗ — outcome not realised, **P** — outcome partially realised

Notes:

1. Wastewater and sewage have been used interchangeably throughout this report depending on the terminology used by the relevant regulator.
2. Not the responsibility of the regulated entity to implement.
3. Outcomes involving employees were not included in the scope of this audit.
4. Economic modelling to determine the extent to which the reforms contributed to long-term economic benefits was not included in the scope of this audit.
5. Not applicable to the regional corporations.

Findings and recommendations for the audit criteria used to assess whether the intended outcomes were achieved are summarised below. Further details regarding the audit criteria are contained in Appendix 1.

Criterion 1 Have the reforms delivered improved public health and environmental benefits?

1.1 Has compliance with applicable water quality standards improved?

Findings

- Compliance with applicable water quality standards has improved since 2009 as evidenced by:
  - improvement in water supply treatment processes
  - improvement in microbiological* sampling compliance, although this has declined since 2013-14
  - improvement in microbiological compliance, although this has declined since 2013-14
  - improvement in the percentage of the population receiving fluoridated water
  - remediation of five of the six water supplies subject to public health alerts
  - an increase in the proportion of the population receiving compliant water from 96.0% in 2009-10 to 99.4% in 2016-17
  - Drinking Water Quality Management Plans for all ownership structures.
- The number of permanent boil water alerts reduced since 2009 and affect less of the population.
- Significant long-term health benefits have been achieved since 2009.
- Significant long-term health benefits have not been achieved more quickly since 2013 in microbiological sampling compliance and microbiological compliance.

Recommendation

1. TasWater investigates and remedies the decline in microbiological sampling compliance and microbiological compliance.

1.2 Has compliance with applicable environmental standards for wastewater improved?

Findings

- State-wide compliance with environmental standards for wastewater has not improved since 2009 as sewage treatment plants (STPs) have not complied with licence conditions and sewerage infrastructure has been under-performing compared to national averages.
- Significant long-term environmental benefits have not been achieved since 2009 and have not been achieved more quickly since 2013 as evidenced by:
  - ongoing non-compliance of STPs
  - no improvement in the percentage of compliant treated sewage volume, although this has reportedly improved since 2015-16
  - the high number of sewer mains breaks and chokes and breaks and chokes per 100 km
  - the high number of sewer overflows and overflows per 100 km.

Recommendation

2. TasWater improves its efforts in wastewater management compliance to meet community and regulatory expectations.

* Microscopic organisms

1.3 Have tourism operators, local businesses and the community been provided with improved water and sewerage infrastructure sooner?

Findings

- Tourism operators, local businesses and the community have benefited from quicker achievement of health standards since 2013 in water supply treatment processes, fluoridation and public health warnings but not in microbiological sampling compliance, microbiological compliance and the proportion of the population receiving compliant water.
- Tourism operators, local businesses and the community have not benefited from quicker achievement of environmental standards since 2013 as evidenced by ongoing STP non-compliance.

Criterion 2 Have the reforms improved strategic asset management?

2.1 Has improved strategic asset management planning been achieved?

Findings

- Improved strategic asset management planning has been achieved since 2009.
- The implementation of state-wide infrastructure planning has commenced since 2013 as evidenced by:
  - the development of a state-wide operating model planned for in the 2015 asset management plan
  - the development of a long-term strategic plan covering the period 2018-2037
  - a commitment to building a new state-wide asset management system as stated in the 2015 asset management plan
  - a solid theoretical framework underpinned by asset management strategies and associated management plans.

2.2 Has old and failing water and sewerage infrastructure been identified and renewed?

Findings

- The identification of old and failing water and sewerage infrastructure has occurred since 2009 as evidenced by the progress of asset condition assessments and the establishment of the Asset Criticality Framework to further improve knowledge of the condition of the state's infrastructure.
- The renewal of old and failing water and sewerage infrastructure has only occurred for some assets since 2009 due to:
  - budgeted capital expenditure for renewals or replacements being consistently less than actual expenditure
  - actual capital expenditure for renewals or replacements has not proceeded commensurate with the age and condition of the infrastructure and borrowing capacity available.
- Renewal over the coming decades has been planned for since 2009 but has not proceeded commensurate with the age and condition of the state's infrastructure.
- An improved infrastructure standard has occurred for some assets since 2009.

Recommendations

3. TasWater completes its work assessing the condition of infrastructure assets in the short term.
4. TasWater undertakes greater investment and prioritisation of capital expenditure to address old and failing infrastructure.

2.3 Has water and sewerage infrastructure been expanded or extended?

Findings

- Water and sewerage infrastructure has been expanded and extended since the commencement of the reforms.
- A structured approach to asset rationalisation is not in place as evidenced by the absence of a rationalisation strategy.

Recommendation

5. TasWater finalises its rationalisation strategy to support rationalisation projects.

Criterion 3 Have the reforms delivered the expected financial benefits?

3.1 Have pricing structures balanced revenue maximisation against equity within the regulatory environment?

Findings

- Pricing structures since 1 July 2009 have balanced revenue maximisation against equity in the regulatory environment as evidenced by:
  - the introduction of two-part pricing is financially appropriate and equitable for all customers
  - the proportion of fixed and variable price weighting is reasonable given the geographical location and number of infrastructure assets needed to service the population
  - a regulated pricing methodology providing an appropriate level of revenue flows as detailed in Section 3.2
  - the migration of customers to tariff rates over time to prevent 'bill shock'.

3.2 Have revenue flows increased to achieve self-sustaining investment and has an appropriate level of debt funding been utilised?

Findings

- Revenue flows have increased to support self-sustaining investment since 2009.
- Payment of dividends, guarantee fees and tax equivalents have been made to councils as required by the 2008 and 2012 Acts.
- There has been an improved capacity to service debt and meet debt repayment requirements since 2009 as evidenced by:
  - a strong interest cover ratio exceeding the target set in corporate plans and the long-term 10-year financial plan
  - low debt to total assets and debt to equity ratios demonstrating capacity to increase borrowings and fund infrastructure investment.
- An appropriate level of debt funding has not been utilised since 2009 as more capital expenditure could have been funded by debt to improve compliance with environmental standards for wastewater as outlined in Section 1.2.
- There has been a better capacity to manage debt since 2013.

Recommendation

6. TasWater investigates the acceleration of infrastructure investment by utilising additional debt funding.

3.3 Has more flexibility to deal with a capital expenditure program been achieved?

Findings

- Actual expenditure since 2009 is in line with the government's expected expenditure of one billion dollars over 10 years. However, this includes capital expenditure on non-infrastructure related capital items.
- More flexibility to deal with a capital expenditure program has been achieved since 2013 as evidenced by a stronger and more stable cash flow.

3.4 Do customers pay an appropriate amount for the services they receive?

Findings

- Customers had not paid an appropriate amount for water and sewerage services since 2009 but have paid an appropriate amount since 2013.
- Tourism operators, local businesses and the community received services that are cost effective since 2009. Refer also to Sub-Section 1.3.

3.5 Have cost savings and reduced reporting and administrative effort been achieved?

Findings

- Financial return has improved since 2009.
- Savings of $5m per annum after a period of time as a result of the merger have not been fully achieved since 2013 due to higher levels of asset compliance expenditure.
- Further integration of administrative systems creating cost savings and reduced reporting has partially occurred since 2013.

Criterion 4 Have the reforms provided improved customer service?

4.1 Have minimum customer service standards been established and achieved?

Findings

- Minimum customer service standards have been established since 2009.
- Not all minimum customer service standards have been achieved since 2009 despite concessions on transitional targets and performance.

Recommendation

7. TasWater works more diligently to achieve the minimum customer service standards as required by the *Tasmanian Water and Sewerage Industry Customer Service Code* (Code).

4.2 Have service delivery and customer relations improved across the state?

Findings

- Service delivery has improved across the state since 2009 but has not been consistent since 2013 as evidenced by:
  - improvement of reporting and achievement against the minimum customer service standards in accordance with TER requirements, although achievement has declined since 2014-15
  - full reporting against the measureable standards has been achieved before the due date required by TER.
- Customer relations have improved across the state since 2009 and have been consistent since 2013 as evidenced by:
  - customer charters in compliance with legislative requirements
  - implementation of state-wide initiatives for the purpose of improving customer relations
  - collection of customer satisfaction information
  - implementation of processes for handling customer complaints including targets.
- Customer service standards have driven business decision-making since 2009.

Recommendations

8. TasWater continues to develop measures to better monitor levels of customer satisfaction.
9. TasWater consistently and publicly reports service levels and customer satisfaction.

4.3 Has a more robust regulatory framework been achieved?

Findings

- The regulatory framework in Tasmania since 2009 has:
  - been strengthened by the implementation of the 2008 Industry Act
  - been as robust as the frameworks in other Australian states
  - provided customers with a voice through a transparent regulatory framework
  - facilitated communication between technical and economic regulators.

SUBMISSIONS AND COMMENTS RECEIVED

In accordance with Section 30(2) of the *Audit Act 2008*, a summary of findings, with a request for submissions or comments, was provided to the Treasurer, Minister for Planning and Local Government, the Board of Directors of TasWater and other persons who, in the opinion of the Auditor-General, had a special interest in the report. Responses, or a fair summary of them, are included in Appendix 2.

AUDITOR-GENERAL'S CONCLUSION

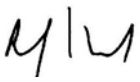
It is my conclusion that, with the exception of improved environmental outcomes in wastewater treatment, the intended outcomes of the reforms have either been fully or partially achieved.

The reforms have delivered improved public health benefits, but not the expected improved environmental benefits. This reflects the regulated entities focus on improving water quality over wastewater compliance and performance.

Strategic asset management has improved with increased maturity in strategic asset planning and state-wide infrastructure planning and an increased level of understanding of the criticality and condition of the infrastructure assets. Although there has been growth in, and renewal of, the water and sewerage network since the commencement of the reforms, the extent of renewal has not been at a rate commensurate with the age and condition of the infrastructure assets.

The reforms have largely delivered the expected financial benefits. The introduction of two-part pricing has provided customers with an equitable pricing approach and an appropriate charge for the water and sewerage services they receive. The reforms have provided the regulated entities with increased revenues and cash flows, greater flexibility to deal with the capital expenditure program and access to higher levels of debt funding. However, I have concluded that some regulated entities have not taken advantage of the improved capacity to service debt by drawing on additional borrowings to accelerate infrastructure investment.

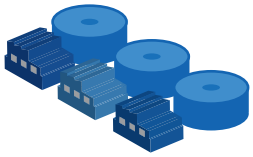
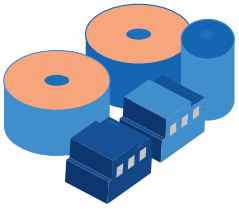
Customer service has broadly improved, assisted in part by the introduction of a more robust regulatory framework. This has facilitated the introduction of minimum customer service standards, which although not all achieved, have trended towards increased compliance. Service delivery and customer relations have similarly improved since the introduction of the reforms.



Rod Whitehead
Auditor-General
14 November 2017

CONTEXT

KEY FACTS

	Councils		
	Prior to 2009	**2009 to 2013**	**From July 2013**
	29 councils plus three bulk water authorities	Three regional corporations	Single, state-wide entity
	In 2009, average bill for 200 kL was $667[1]	In 2013, average bill for 200 kL was $1 015	In 2016, average bill for 200 kL was $1 085
	60 water treatment plants	59 water treatment plants	56 water treatment plants
	195 100 water connections	197 000 water connections	202 500 water connections
	78[2] sewage treatment plants	79[2] sewage treatment plants	79[2] sewage treatment plants
	176 000 sewerage connections	173 970 sewerage connections	174 939 sewerage connections

Notes:

1. TER price for 2010 based on average aggregated price of the three regional prices for 200 kL, as 2009 not available.
2. Level 2 STPs only, does not include Level 1 STPs.

kL – kilolitres
sewage – the waste matter that passes through sewerage
sewerage – the pipes and fittings conveying sewage

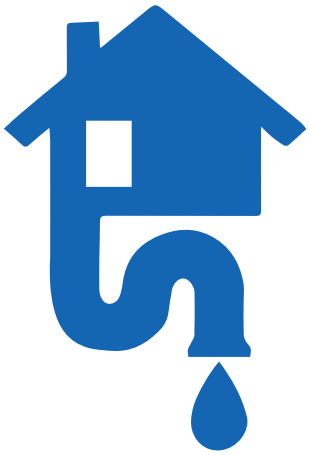
TASMANIA'S WATER AND SEWAGE JOURNEY[1]

Water catchments

Dams, intakes and weirs: 108

Reservoirs: 108

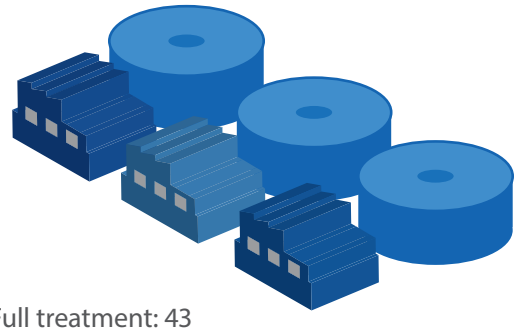
Homes & businesses



Water connections: 200 000+

Water mains: 6 242 km

Water treatment plants



Full treatment: 43

Disinfection only: 14

Pump stations: 219

Sewer connections 170 000+

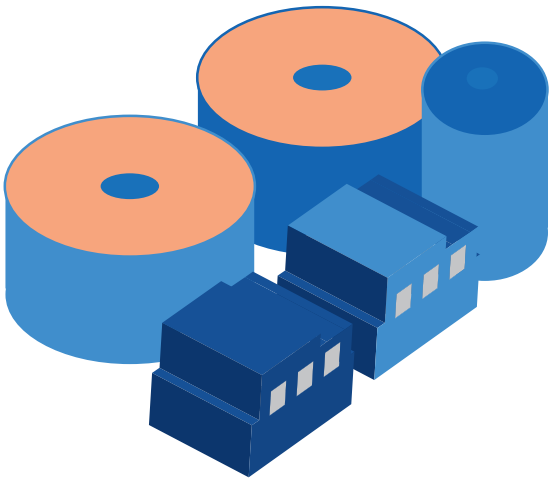
Sewer mains:

Gravity 4 288 km

Rising 380 km

Stormwater 61 km

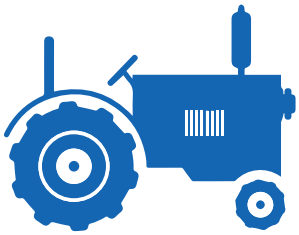
Sewage treatment plants



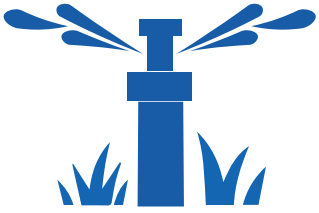
Level 1: 33 plants

Level 2: 79 plants

Bio solids: 12 300 tonnes



Recycled for irrigation: 10.4%



Returned to the environment: 89.6%

Notes:

1. Verifiable TER data as at 2015-16

HISTORY OF WATER AND SEWERAGE INFRASTRUCTURE OWNERSHIP

COUNCILS AND BULK WATER AUTHORITIES

From 1999, Tasmania's water and sewerage infrastructure was primarily owned and operated by the state's 29 councils and the three council owned bulk water authorities – Hobart Water, Esk Water and Cradle Coast Water. The bulk water authorities provided treated water to the larger population centres with individual councils responsible for reticulating water to residences and businesses as well as for the maintenance, repair and renewal of water and sewerage infrastructure. Many of the smaller councils struggled to maintain their water and sewerage infrastructure due to financial and expertise constraints resulting in many non-metropolitan areas being serviced by ageing and failing infrastructure.

WATER AND SEWERAGE INDUSTRY REFORMS – FIRST PHASE

The National Water Initiative (NWI) was Australia's blueprint for national water reform built on the previous Council of Australian Governments (COAG) framework for water reform in 1994. The NWI was a comprehensive agreement between the Australian Government and state/territory governments and was signed on 25 June 2004. The Tasmanian Government became a signatory to the NWI on 2 June 2005.

The NWI was aimed at, among other things:

- expanding water markets for greater permanent trade in water
- promoting more flexible and profitable water use
- increasing confidence for those investing in the water industry
- improving water planning and accounting
- improving the way water is allocated, used and managed for environmental outcomes
- improving the efficient management of water in urban environments.

Tasmania's specific obligations, and actions to achieve them, were outlined in the *Implementation Plan for the National Water Initiative Tasmania*, September 2006.

In conjunction with Tasmania's commitment to the NWI, the Tasmanian Government embarked on a process of reform in the state's water and sewerage industry with the objective of delivering significant long term benefits to public health, the environment and the economy.

In September 2006, the Premier announced the creation of a Ministerial Water and Sewerage Taskforce (Taskforce) comprising the Treasurer (Chair), the Minister for Primary Industries and Water and the Minister for Tourism, Arts and the Environment.

Through a collaborative approach with local government, the purpose of the Taskforce was to:

- secure the long term sustainability of Tasmania's water resources
- improve the quality of water and sewerage services to communities
- improve water and sewerage infrastructure and planning
- ensure that access to water and sewerage services is not a constraint on economic development
- achieve greater efficiency and improved pricing signals.

In December 2006, the Taskforce released a discussion paper noting that Tasmania faced significant challenges to enable its water and sewerage infrastructure to keep pace with demand and that in many areas, existing infrastructure was reaching capacity. It also noted that the Department of Primary Industries and Water had identified 33 town water supplies and 58 wastewater treatment systems operating below contemporary water and sewerage standards. The Taskforce stated that:

> Reform of Tasmania's water and sewerage sector needs to be consistent with the State's obligations under the NWI and reform outcomes would ideally ensure Tasmania is in the best position to access the Australian Government Water Fund.

The Taskforce further noted that the government preferred a single, state-owned entity to manage the state's water and sewerage infrastructure while the councils and bulk-water authorities preferred a structure comprising three regional water and sewerage entities with councils as shareholders/owners.

In responding to the discussion paper, many smaller councils expressed concern that they would not be financially viable if they lost the revenue they received from the provision of water and sewerage services.

Following Cabinet's assessment of the Taskforce's findings, Parliament passed the 2008 Act and the Industry Act 2008.

In the second reading speech to Parliament on the 2008 Act, the Treasurer stated that the Taskforce had identified the following:

- one billion dollars of new water and sewerage infrastructure was required over the next decade
- half of the 29 councils had not completed asset condition assessments and 70% did not have adequate asset management plans
- the financial returns of 2-3% had resulted in little capacity to service debt and an under-investment in infrastructure
- approximately 50% of wastewater treatment plants did not always comply with their licencing conditions
- permanent boil water alerts were in place for 23 water supply areas, including key tourism areas
- Tasmania's water and sewerage regulatory framework was light-handed compared to other Australian states.

The Treasurer went on to say that the water and sewerage 2008 reform would:

- bring the current infrastructure up to standard and provide for renewal and augmentation over the coming decades
- create enormous opportunities for employees in the sector
- ensure tourism operators, local businesses and the community receive cost-effective services on a sustainable basis and in line with appropriate standards
- deliver significant long-term public health, environmental and economic benefits to Tasmania and Tasmanian communities.

The *Water and Sewerage Industry Bill 2008* provided for the establishment of enhanced regulatory requirements for Tasmania's water and sewerage sector. In the second reading of the Bill, the Treasurer stated:

> Tasmania's water and sewerage service providers have not been subject to direct price regulation. This is inconsistent with our commitments under the NWI….Compliance with the NWI will improve Tasmania's position in securing Federal funding to assist the water and sewerage sector. Such price regulation will achieve more sustainable outcomes, thereby driving critical investment in areas in which it is most needed and valued.

The expected benefits of the 2008 reforms were further clarified in the government's submission to the Productivity Commission's inquiry into the Australian urban water sector in November 2010, being:

- improving compliance with environmental standards for wastewater
- improving compliance with water quality standards for drinking water
- increasing revenue flows into the sector to a level that supported self-sustaining investment and the appropriate use of debt funding
- ensuring that minimum customer service standards existed and drive business decision-making and that customers pay for the services they receive
- ensuring that customers have a voice through their explicit involvement in a transparent regulatory process
- instituting strategic asset management planning
- requiring communication between technical regulators and the economic regulator.

REGIONAL CORPORATIONS

Under the 2008 Act, and taking effect from 1 July 2009, the previously existing council-owned water and sewerage assets and liabilities were transferred to three new entities - Southern Water, Ben Lomond Water and Cradle Mountain Water (the regional corporations). A fourth entity, Onstream, was established to provide shared services (such as information and finance systems, billing, procurement and payroll) to the regional corporations. The geographical areas covered by the regional corporations are shown in Appendix 3.

Ownership and governance of the new entities was as follows:

- each council became an owner/shareholder in the regional corporation that serviced their local government area
- each regional corporation was comprised its own board of directors and management team
- Onstream was jointly owned by the regional corporations and comprised its own board of directors and management team
- the regional corporations and Onstream shared the same Chair of the Board
- three board directors were common across the regional corporations and one of those directors was also on the board of directors for Onstream
- the Onstream board included the chief executive officers of the regional corporations.

WATER AND SEWERAGE INDUSTRY REFORMS – SECOND PHASE

In September 2011, the common Chair of the Boards of the regional corporations and Onstream initiated discussions with councils about the potential benefits of moving to a single, council owned, state-wide water and sewerage entity.

A House of Assembly Select Committee report into the Tasmanian Water and Sewerage Corporations in 2012 noted, from evidence presented by the common Chair of the Boards and in the government's written submission, a single entity could provide:

- consistency in service delivery and customer relations across the state
- state-wide planning for infrastructure
- a greater ability to attract necessary skills and experience to the sector
- estimated potential savings of $5.0m per annum after a period of time.

In March 2012, TER issued its *Water and Sewerage Price Determination Investigation Report* where it stated that the recent reforms of the Tasmanian water and sewerage industry were undertaken to address a number of issues identified by a State Government review. From the start of their operations the regional corporations inherited a number of significant challenges, including:

- a general under-recovery of revenue meaning the regulated entities were not financially sustainable into the future at current revenue levels
- inadequate or unknown performance in relation to drinking water quality, with a number of permanent or temporary boil water alerts in place across the state
- widespread non-compliance of sewage treatment plants with their environmental permits
- inadequate, or non-existent asset management practices
- inadequate, or unknown customer service standards
- a myriad of different pricing structures across council areas, with prices often applied on an unfair basis without reflecting actual costs.

The report stated the above issues had been allowed to develop over years, if not decades and fully addressing these issues would require significant time and capital investment.

In June 2012, the councils resolved to support the formation of a single, council owned, state-wide water and sewerage entity. In December 2012, Parliament passed the 2012 Act enabling the move to a single entity, with the Treasurer stating in Parliament that the reforms would provide:

- state-wide planning for infrastructure
- consistency in service delivery and customer relations across the state
- further integration of administrative systems, which would create opportunities for cost savings and reduce reporting and administrative effort
- an ability to draw on a broader base of employee skills and experience
- a stronger and more stable cash flow, a better capacity to manage debt and more flexibility to deal with a significant capital expenditure program
- capacity to secure better services for customers and to achieve health and environmental standards sooner.

SINGLE CORPORATION

Under the 2012 Act, the regional corporations and Onstream were merged into a single corporation – TasWater, on 1 July 2013. The government envisaged that the newly created entity would better address the ongoing problems with ageing infrastructure, inconsistent water pricing, boil water alerts and sewage spills and that efficiencies would occur in governance and management costs compared with the previous structures. The new entity was expected to operate on a sound, sustainable, commercial basis that would provide a reasonable return to owners while positively impacting development of the Tasmanian economy.

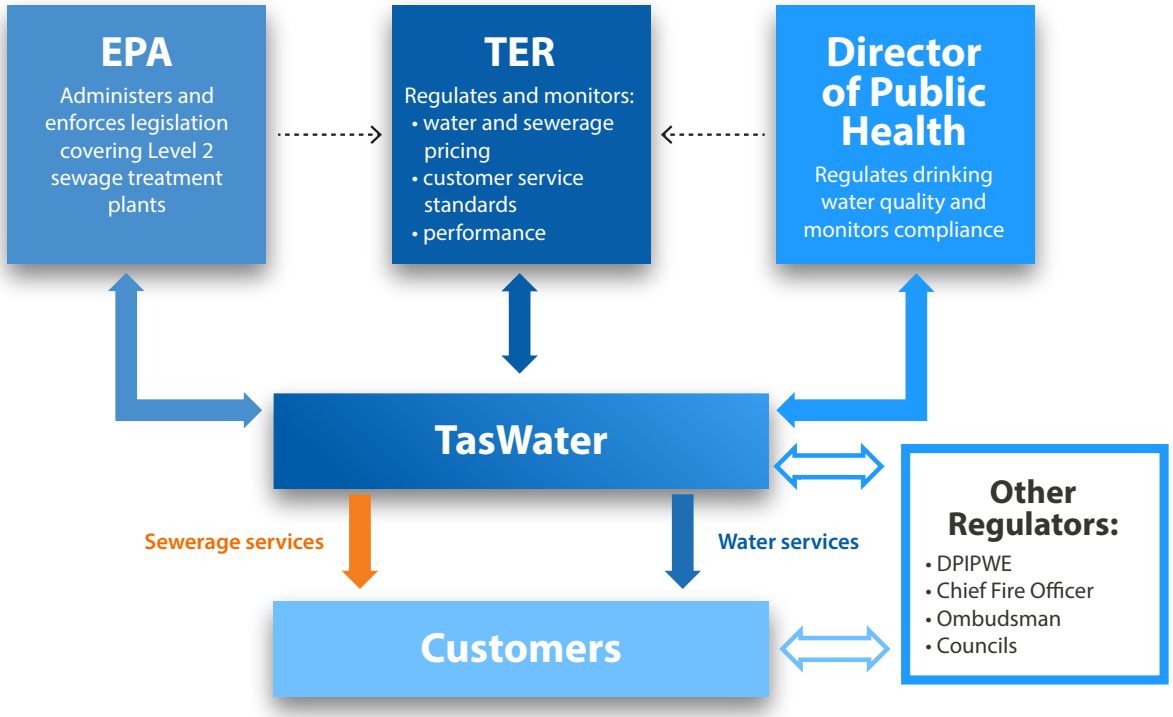
REGULATORY ENVIRONMENT FOR WATER AND SEWERAGE

The introduction of the reforms initiated changes to the water and sewerage regulatory environment. TasWater is subject to oversight by a number of regulators, with the primary regulators being the:

- Director of Public Health who administers the *Public Health Act 1997* and the *Tasmanian Drinking Water Quality Guidelines 2015* (Guidelines)
- TER, an independent statutory authority whose responsibilities include:
  - administering the licensing system for water and sewerage entities
  - administering the Code
  - regulating water and sewerage prices
  - monitoring and reporting the performance of the water and sewerage industry and entities.
- The Director and Board of the Environment Protection Authority (EPA), an independent statutory authority that administers and enforces the provisions of the *Environmental Management and Pollution Control Act 1994* (EMPCA) and regulates activities that may impact on the environment's quality . For example Level 2 STPs.

Other regulators include the Department of Primary Industries, Parks, Water and Environment (DPIPWE), the Chief Fire Officer, the Ombudsman and individual councils (for Level 1 STPs).

Figure 1: Regulatory environment for TasWater



Source: TAO

DETAILED FINDINGS

1. HAVE THE REFORMS DELIVERED IMPROVED PUBLIC HEALTH AND ENVIRONMENTAL BENEFITS?

In this section, we evaluate delivery of improved public health and environmental benefits by assessing whether:

- the 2008 intended outcomes have been achieved:
  - wastewater treatment plants (STPs) comply with licence conditions
  - the number of permanent boil water alerts has reduced including key tourism areas
  - tourism operators, local businesses and the community receive services that are compliant with standards
  - significant long-term public health and environmental benefits
  - improved compliance with environmental standards for wastewater
  - improved compliance with water quality standards
- the 2012 intended outcome of quicker achievement of health and environmental standards has been achieved.

In this section we define:

- 'significant' as results in excess of 10% greater than the previous ownership structure
- 'improved' as achieving a better result than the previous ownership structure
- 'quicker' as achievement of improvement of greater magnitude than the previous ownership structure.

1.1 HAS COMPLIANCE WITH APPLICABLE WATER QUALITY STANDARDS IMPROVED?

In this sub-section, we assess whether:

- compliance with water quality standards improved since 2009
- the number of permanent boil water alerts has reduced, including key tourism areas since 2009
- significant long-term public health benefits have been achieved since 2009 and have been achieved more quickly since 2013.

The supply of drinking water in Tasmania is regulated by the:

- *Public Health Act 1997*
- Guidelines
- *Australian Drinking Water Guidelines 2011* (ADWG)
- *Fluoridation Act 1968*
- *Fluoridation (Interim) Regulations 2009*
- *Tasmanian Code of Practice for the Fluoridation of Public Water Supplies 2016-2020.*

In addition, the Director of Public Health has an oversight role in ensuring water providers manage public water supplies to protect the public's health while meeting regulatory obligations and:

- directs state-wide public health policy and programs
- provides strategic and operational direction for public health services in Tasmania
- advises the Minister for Health on public health matters and emerging issues
- monitors population health trends
- fulfils legislative responsibilities under the *Public Health Act 1997* and other Acts.

As at 30 June 2017, around 486 000 people representing 94.0% of Tasmania's population of 518 500, received their water through a reticulated water supply. TasWater's water network is shown in Appendix 4. As at 30 June 2017, around 56 155 mega litres of drinking water were produced and delivered to consumers through TasWater's network of:

- 64 catchments
- 71 drinking water systems[1] servicing 87 drinking water supplies[2]
- 121 water supply reservoirs and weirs
- 219 water pump stations
- 204 949 water connections.

1.1.1 Water treatment

To ensure public safety, drinking water should be treated before being reticulated to consumers for consumption. A range of water treatment processes are used in Tasmania's reticulated drinking water supplies including:

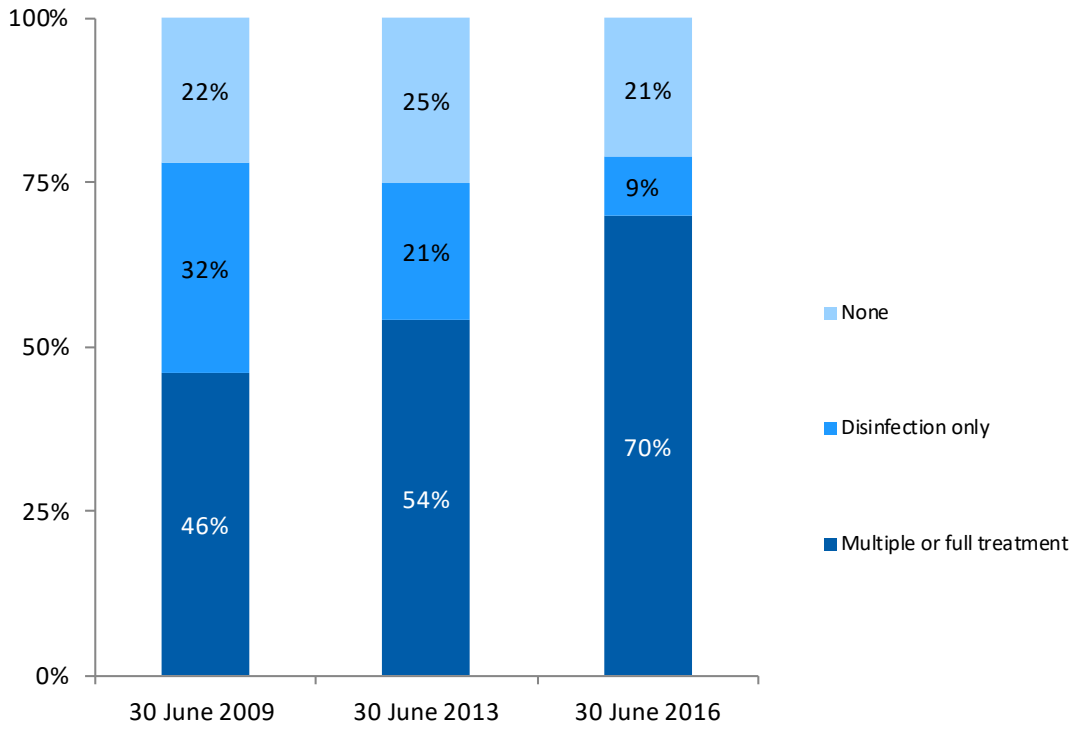
- disinfection only – one treatment barrier – e.g. chlorination – against all microbiological hazards
- multiple or full treatment.

Some water is not treated at all and remains 'raw' water.

Prior to the 2008 reforms, 54% of council-operated water supplies provided only untreated or partly treated (disinfection only) water. The bulk water authorities also did not apply full treatment to all their water supplies with four of the 16 water supply systems using disinfection only processes.

Using data published by DHHS, we compared water treatment processes for drinking water supplies following the 2008 reforms (effective in 2009), the 2012 reforms (effective in 2013) and as at 30 June 2016. The results of this comparison are shown in Figure 2.

Figure 2: Water supplies treatment processes as at June 2009, June 2013 and June 2016



Source: DHHS

Notes:

1. Water systems – the infrastructure associated with delivering a water supply including treatment plants, storage reservoirs and pipes in the ground. A water system may service only one water supply or various water supplies.
2. Water supplies – water provided for human consumption in a specific locality. A water supply may be a standalone water system or it may be supplied from a water system that also services other water supplies.

Figure 2 shows that since 2009, the number of:

- drinking water supplies that are fully treated has increased by 24% – 8% achieved by the regional corporations and 16% by TasWater
- disinfected only drinking water supplies has decreased by 23% – 11% achieved by the regional corporations and 12% by TasWater
- untreated drinking water supplies has decreased overall by 1% – 3% increase was incurred by the regional corporations and a 4% decrease by TasWater.

Comparable data for 2016-17 was not able to be supplied by TasWater.

1.1.2 Drinking water quality

Both the Guidelines (first developed in 2005 and last updated in 2015) and the ADWG (first developed in the 1980s and last updated in 2016), require regular testing of individual water systems by an accredited laboratory. *The Public Health Act 1997* requires that the Director of Public Health be notified by the regulated entity if the quality of drinking water is, or is likely to become, a threat to public health.

The regulated entity must collect microbiological samples and test drinking water from drinking water supplies in accordance with the sampling requirements prescribed by the Guidelines and the ADWG. The ADWG considers microbial contamination as the greatest risk to public health and covers the pathogenic (disease-causing) organisms of bacteria, viruses and protozoan (single-celled organisms).

It is not practical for the regulated entity to test for every organism so, in accordance with water industry standards, it tests for indicator bacteria called *Escherichia coli* (*E. coli*). *E. coli* is the primary indicator of bacterial contamination in water. Its presence is indicative of the potential presence of other more harmful bacteria or pathogenic organisms, such as faecal contamination, which are a danger to human health causing serious health problems, disease and even death. The regulated entity also tests the total number of coliforms (a type of bacteria found in animal and human waste as well as soil and water).

Until 2011, both the Guidelines and the ADWG required 98% of all samples to be free of *E. coli*. Since 2011, the ADWG requires 100% of all samples to be free of *E. coli* while DHHS, through its Guidelines, retained the 98% *E. coli* compliance measure.

Each year, TasWater collects in excess of 250 000 samples across its 70 water systems to verify that the treatment barriers within these systems are effective in removing pathogens that could pose a risk to public health. Samples are taken from hundreds of sites across the state to ensure they are representative of each supply zone. Both the correct number and frequency of samples are required to demonstrate that monitoring is sufficiently thorough and representative of the water provided to consumers throughout the year. In addition, TasWater uses automated monitoring to ensure its network provides safe and clean drinking water.

In this sub-section, we examine:

- microbiological sampling compliance
- microbiological compliance
- public health warnings – boil water alerts (temporary and permanent) and public health alerts
- fluoridation
- drinking water quality management plans.

Microbiological sampling compliance

Microbiological sampling compliance refers to whether the sampling undertaken (number and frequency) by the regulated entity complies with the Guidelines and the ADWG.

At present, the sampling required is at least one sample per week, per monitoring zone. Some of the larger population centres may require more samples to be taken. A monitoring zone is designed to be representative of the water quality at the point of supply to the consumers. A water system may comprise one or many monitoring zones depending upon its configuration.

In addition to the required sampling, TasWater also undertakes additional operational and event-based monitoring. Samples are sent to either TasWater's National Association of Testing Authorities (NATA) accredited testing laboratory in Hobart or to a similarly accredited laboratory interstate. The Director of Public Health is advised if any sample is non-compliant (i.e. contains any *E. coli*). DHHS reviews and verifies the data produced by the regulated entity's testing and annually publishes its drinking water quality report based on that data.

In analysing the data, we noted that DHHS had changed its methodology from time-to-time as follows:

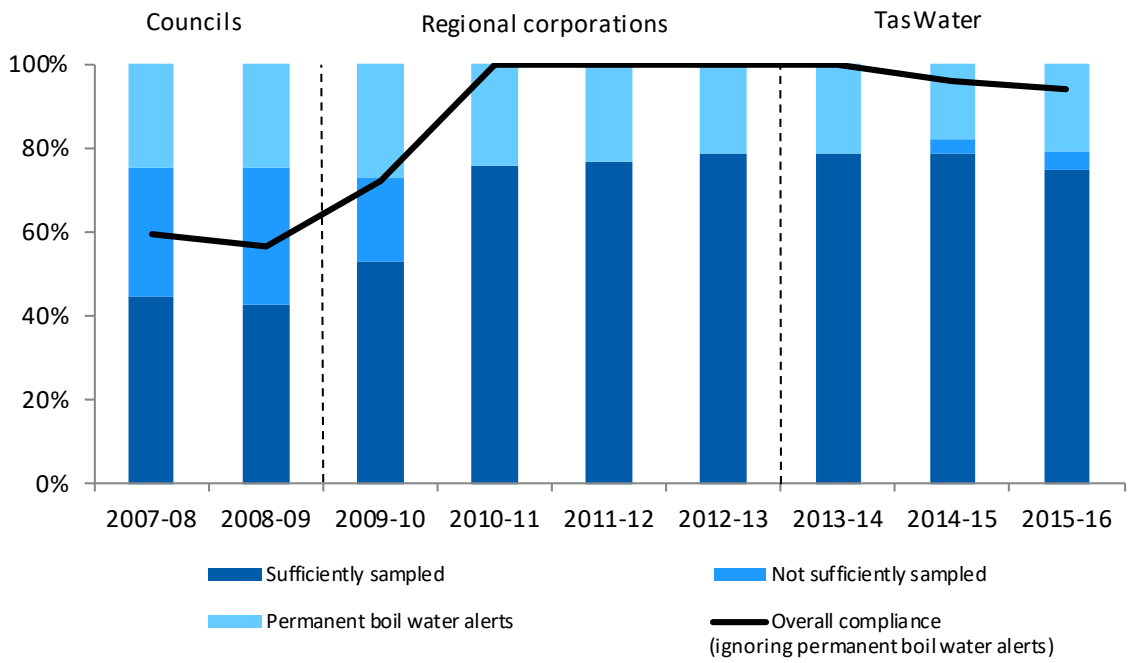
- prior to 2012-13, compliance reporting by DHHS excluded the nine bulk water supply systems as they serviced multiple supply systems and compliance was best assessed within a reticulation network rather than a bulk supply
- prior to 2012-13, water supplies with permanent boil water alerts were excluded for the purposes of assessing sampling compliance as it was assumed those systems were non-compliant. From 2012-13, water supplies with permanent boil water alerts have been included in testing and sampling compliance data. Health warnings, including boil water alerts, are detailed later in this sub-section
- prior to 2015-16, water supplies with missing samples (i.e. the required number of samples were not taken) were assessed as being 'unknown compliance'. From 2015-16, consideration has been given to the missing samples, assuming a worst case (sample assumed to be non-compliant) or best case (sample assumed as compliant) scenario to evaluate compliance.

Due to changes in the way testing had been undertaken over the period, we worked with DHHS to analyse and represent the information contained in DHHS reports for the period 2007-08 to 2015-16 to illustrate the degree to which the water supplies were:

- not sufficiently sampled
- sufficiently sampled
- subject to a permanent boil water alert.

The results of our analysis are shown in Figure 3.

Figure 3: Water supply microbiological sampling compliance 2007-08 to 2015-16



Source: TAO and DHHS

Notes:
To allow consistent comparison over the period we have excluded permanent boil water alerts from our analysis of overall sampling compliance. Water supplies with a public health alert in place have been added back into the assessment as public health alerts relate to non-microbiological performance. Public health alerts are separately addressed in the public health warnings sub-section below.

We have not included data for 2016-17 as DHHS had yet to review and publish that data.

The overall number of samples taken by TasWater is greater than the number of samples taken by councils and the regional corporations.

Figure 3 shows that the percentage of:

- sufficiently sampled water supplies increased from 45% in 2007-08 to 79% in 2012-13 under the regional corporations. Since 2013-14 the result declined to 75% in 2015-16 under TasWater
- water supplies not sufficiently sampled reduced from 30% in 2007-08 to 0% in 2010-11 under the regional corporations. The result was maintained for four years until 2014-15 when it increased to 3% and in 2015-16, it further increased to 5%, with both increases occurring under TasWater
- overall sampling compliance increased from 59% in 2007-08 to 100% in 2010-11 under the regional corporations. The result was maintained for four years until 2014-15 when it reduced to 96% and in 2015-16, it further reduced to 94%, with both reductions occurring under TasWater.

Comparable data for 2016-17 was not able to be supplied by TasWater.

Microbiological compliance

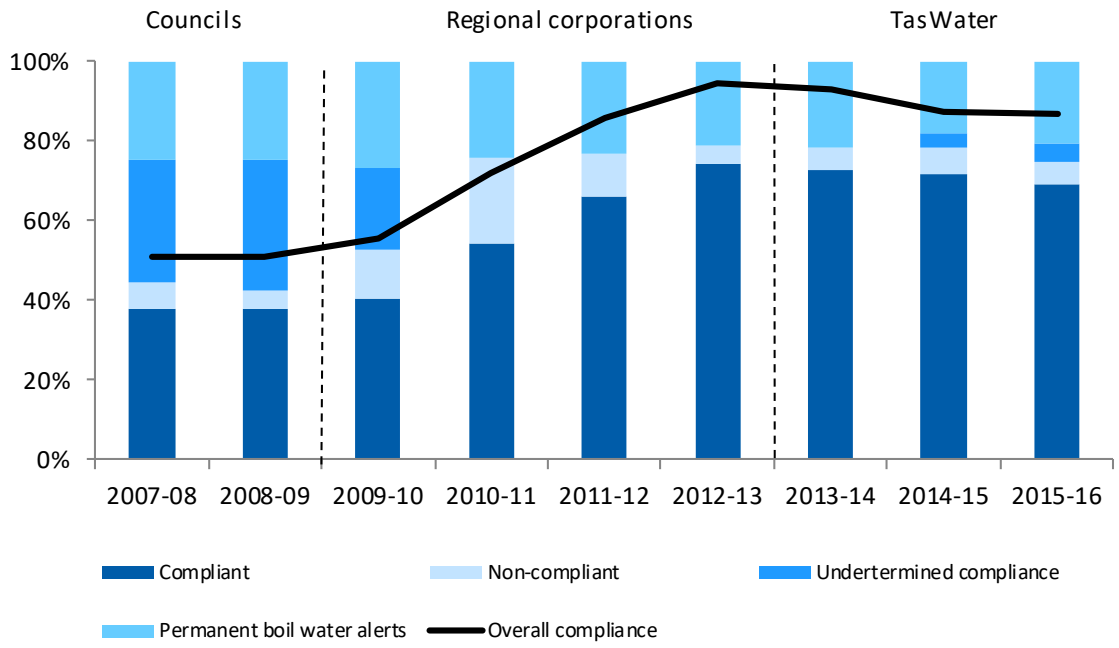
Microbiological compliance testing is undertaken to assess whether treatment barriers designed to remove pathogens from drinking water supplies had been effective or not . Drinking water supplies without any treatment steps to remove pathogens (and therefore operate with a permanent boil water alert) do not require the same level of sampling.

As noted above, due to changes in the way testing was undertaken over the period, we worked with DHHS to analyse and illustrate the degree to which water supplies were:

- compliant
- non-compliant (but sufficiently sampled)
- undetermined compliance – not sufficiently sampled
- subject to a permanent boil water alert.

The results of this analysis are shown in Figure 4.

Figure 4: Water supply microbiological compliance 2007-08 to 2015-16



Source: TAO and DHHS

Notes:

To allow consistent comparison over the period, we excluded permanent boil water alerts from our analysis of overall compliance. Further, permanent boil water alerts are not for the same water supply over time – alerts are imposed and removed from the relevant water supply. Water supplies with a public health alert in place have been added back into the assessment as public health alerts relate to non-microbiological performance.

We have not included data for 2016-17 as DHHS had yet to review and publish that data.

Historically, water supplies rated as 'undetermined compliance' may have been rated as 'non-compliant' when assessed with the required data – this would significantly increase the contribution of the regional corporations in reducing non-compliant water supplies.

As the overall number of samples taken by TasWater is greater than the number of samples taken by councils and the regional corporations, there is a greater chance of returning a non-compliant result which affects microbiological compliance.

Figure 4 shows the percentage of:

- compliant water supplies increased from 38% in 2007-08 to 74% in 2012-13 under the regional corporations. Since 2013-14, the result has been declining under Taswater and was 69% in 2015-16
- non-compliant water supplies reduced from 7% in 2007-08 to 4% in 2012-13 under the regional corporations. There were large fluctuations in the level of non-compliant water supplies under the regional corporations followed by significant effort to reduce non-compliance. Since 2013-14, the results have been deteriorating under TasWater and was 6% in 2015-16.
- overall compliance significantly improved from 51% in 2007-08 to 94% in 2012-13 under the regional corporations. Since 2013-14, the result has been declining under Taswater and was 87% in 2015-16.

As at 2016-17, TasWater advised 71 out of 87 water supplies were microbiologically compliant. We note the basis of calculation used by TasWater differs from the methodology we have applied.

Public health warnings

Public health warnings are issued by the Director of Public Health to protect the public when water quality testing indicates there is an increased risk associated with the use of the water supply. Public health warnings take the form of boil water alerts or public health alerts.

Boil water alerts

Boil water alerts are issued after non-compliance against the microbiological health related guideline values is detected or when disinfection is likely to be compromised. A boil water alert requires consumers to boil the water prior to use in order to inactivate bacteria. Boil water alerts issued are either temporary or permanent.

A regulated entity must take immediate corrective action when samples return as non-compliant (*E. coli* is detected) to ensure there is no threat to public health. The Director of Public Health must be notified of any threat (real or potential) to public health and uses discretionary powers to decide when a boil water alert is required.

Following notification of a failed microbiological result, the Director of Public Health will require:

- investigation, intervention and a re-sample (extreme cases may require a boil water alert on one failed result)
- a boil water alert to be issued if the re-sample is also non-compliant
- sampling to revert to the normal frequency as required by the ADWG if the re-sample is compliant.

It is possible that a risk is identified without any non-compliant results that may result in the Director of Public Health requiring a boil water alert be issued. For example, if the turbidity (opaque or muddy with particles of extraneous matter) of a water source reaches certain levels then disinfection may be compromised and contaminated water may be supplied to the customer. In this instance, the Director of Public Health requires a boil water alert to protect public health even if the threat is never realised.

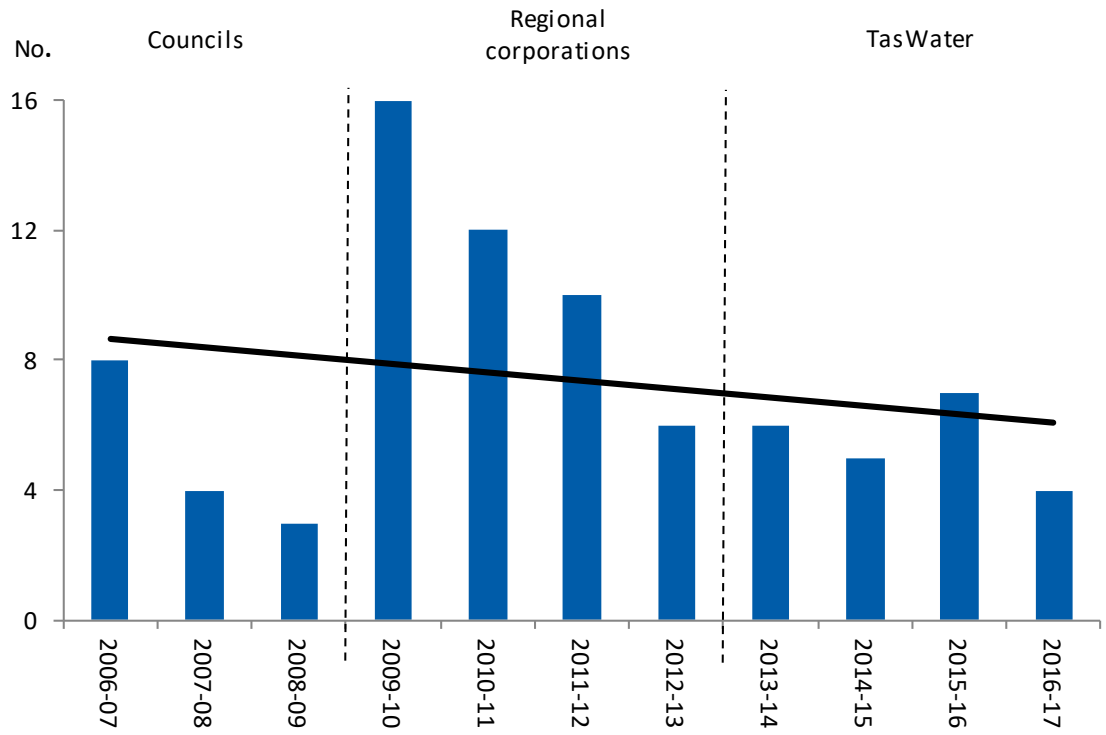
Temporary boil water alerts are issued where short-term contaminations that are largely outside of the control of the regulated entity occur including:

- heavy rain in the catchment area leading to discolouration and high turbidity levels in the water supply
- drought causing algae blooms
- microbiological contamination.

In Tasmania, the majority of temporary boil water alerts are issued as a result of naturally occurring, uncontrolled incidents. Temporary boil water alerts can generally be rectified by the regulated entity within three months but, if not, then the alert will become a permanent boil water alert.

Figure 5 shows the number of temporary boil water alerts in place for the period 2006-07 to 2016-17.

Figure 5: Number of temporary boil water alerts issued 2006-07 to 2016-17



Source: DHHS

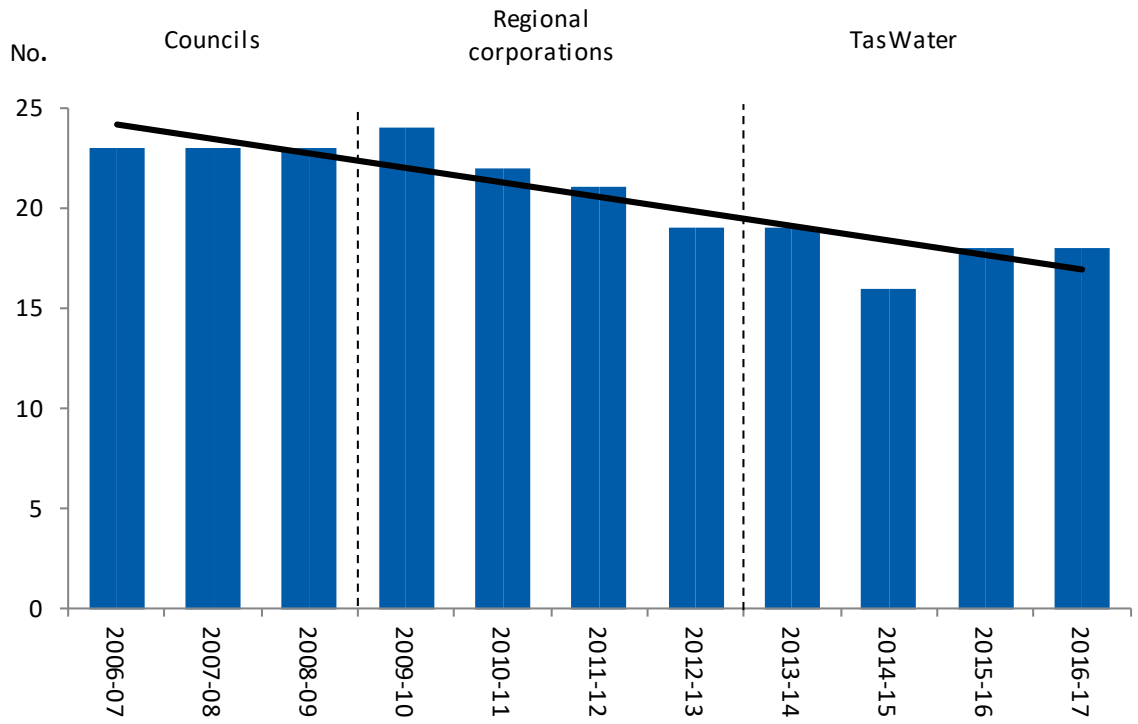
Figure 5 shows:

- the average number of temporary boil water alerts per annum for:
  - councils was five
  - regional corporations was 11
  - TasWater was 5.5
- a large spike in the number of temporary boil water alerts during 2009-10 as a result of:
  - eight northern drinking water supplies becoming non-compliant due to rising turbid flood waters caused by adverse weather events
  - a significant increase in testing by Southern Water resulting in more drinking water supplies being identified as non-compliant
- temporary boil water alerts since the establishment of TasWater have been relatively stable.

Permanent boil water alerts are issued for drinking water supplies where contamination from various environmental sources cannot be adequately dealt with by the existing treatment facilities. These alerts are usually only lifted when the water treatment facilities have been upgraded.

DHHS annually publishes details of permanent boil water alerts issued each year and Figure 6 shows the number of alerts in place during the period 2006-07 to 2016-2017. Further detail is included in Appendix 5.

Figure 6: Number of permanent boil water alerts as at 30 June 2006–07 to 2016–17



Source: DHHS

Figure 6 shows that:

- the average number of alerts per annum for:
  - councils was 23
  - regional corporations was 21
  - TasWater was 18
- the regional corporations achieved a 17% reduction in the number of permanent boil water alerts and TasWater a further 5% reduction comprising:
  - 2013-14, a decrease of three alerts by lifting one alert for Lilydale affecting 380 residents and a prime tourism route. In addition, two towns (Pioneer and Whitemark) had alerts lifted because they were also subject to public health alerts due to elevated levels of lead
  - 2014-15, a decrease of three alerts by lifting one alert for Ellendale as a result of an upgraded water treatment plant. In addition, two towns (Rossarden and Winnaleah) had alerts changed to public health alerts due to elevated levels of lead
  - 2015-16, an increase of two alerts by lifting two alerts for Fingal and Franklin (following the delivery of safe water via a complaint drinking water system). In addition, four towns (Scamander, Conara, Epping and Wayatinah) had alerts changed from temporary to permanent
  - 2016-17, no change in the number of alerts. One alert was lifted from Scamander and one alert was added to Bronte Park, which was a new supply transferred to the ownership and control of TasWater.

As at 25 September 2017, there had been a further decrease of four alerts with the lifting of seven boil water alerts for Branxholm, Derby, Lady Barron, Legerwood, Mole Creek, Mountain River and Ringarooma. In addition, three towns (Colebrook, National Park and Rocky Creek) had alerts imposed. There remained 14 towns with permanent boil water alerts in place.

While the total number of permanent boil water alerts reduced since 2006-07 from 23 to 18, two of the alert reductions in 2013-14 did not contribute to an improvement in drinking water quality as the towns were subject to both permanent boil water and health alerts before having the boil water alert lifted.

Comparing permanent alerts in place as at 30 June 2009 (the day before the commencement of the regional corporations) to those in place in 2015-16 (DHHS data), we noted that the number of Tasmanian residents receiving reticulated water in the areas affected had reduced from 4 545 to 4 270 and the percentage of the population affected reduced from 1.1% to 0.9%.

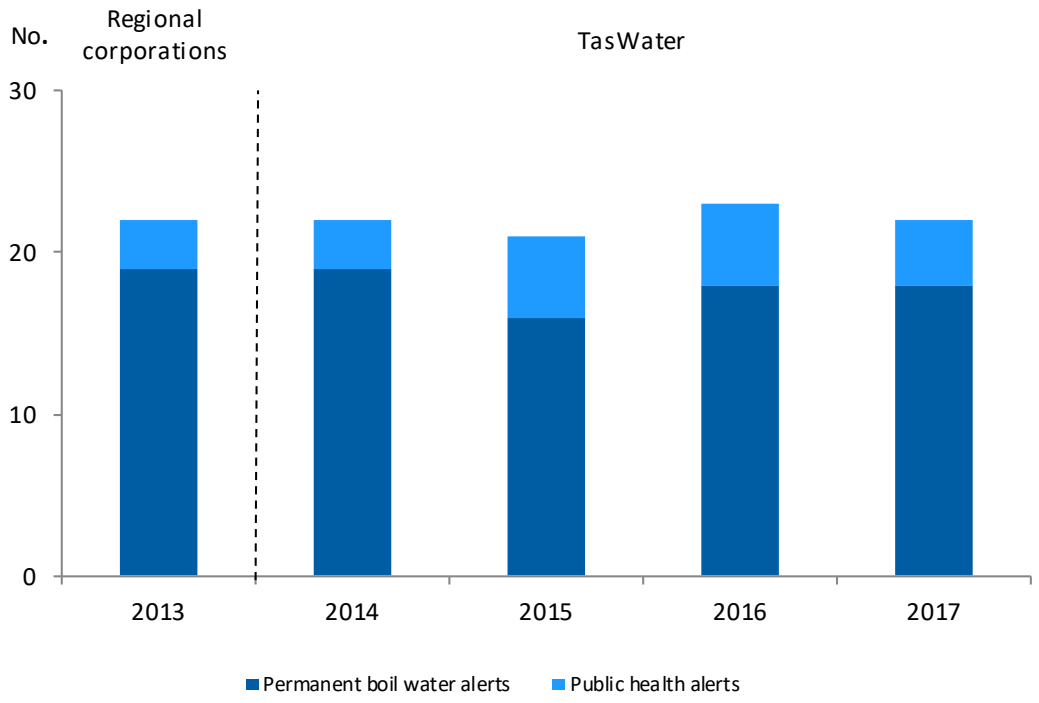
Public health alerts

Public health alerts are issued when the water is undrinkable even after boiling and are usually issued when the water supply is contaminated by metals such as cadmium and lead. Where a public health alert is in place, the regulated entity is required to provide an alternative source of drinking water in the location affected, usually a rainwater tank filled with safe drinking water at a publically accessible location.

Regulated entities have been testing for metal contamination for many years however, the information was not publicly shared. DHHS commenced publishing testing data for metal contamination in July 2012 and began publicly reporting water contamination after it began conducting independent water quality sampling twice a year across the state. DHHS determines the locations where it considers there is a need for additional independent testing based on risk (poor historical compliance, high tourism, vulnerable populations for example). The selection of a site within a targeted drinking water supply is based on publicly accessible facilities.

Figure 7 shows the number of public health alerts and permanent boil water alerts as at 30 June for the period 2012-13 to 2016-17.

Figure 7: Number of public health and permanent boil water alerts as at 30 June for 2013 to 2017



Source: DHHS

Figure 7 shows that drinking water supplies that did not meet drinking water quality requirements for a period of more than three months (i.e. excludes temporary boil water alerts), has remained relatively unchanged.

As at 25 September 2017, 14 drinking water supplies were subject to permanent boil water alerts affecting 2 386 people or 0.50%* of Tasmania's residents with reticulated water as shown in Table 2.

Table 2: Locations of permanent boil water alerts as at 25 September 2017

Water supply	Residents with reticulated water as at 30 June 2016	Water supply	Residents with reticulated water as at 30 June 2016
Bronte Park	47	Gretna	178
Colebrook	177	Herrick	32
Conara	166	Judbury	266
Cornwall	100	Mathiana	179
Epping Forest	53	National Park, Westerway, Fentonbury	418
Gladstone	119	Rocky Creek	473
Gormanston	40	Wayatinah	48

Since 2012, six drinking water supplies have at some stage been subject to public health alerts affecting 1 238 people or 0.26%* of Tasmania's residents with reticulated water as shown in Table 3.

Table 3: Locations of public health alerts since 2012

Water supply	Contaminant	Residents with reticulated water as at 30 June 2016	Date alert issued	Date alert removed
Avoca	Cadmium and Lead	245	8 November 2012	11 July 2017
Pioneer	Lead	19	6 November 2012	6 September 2017
Ringarooma	Lead	450	21 December 2012	24 May 2013
Rossarden	Lead	94	24 December 2014	Ongoing
Whitemark	Lead	330	11 May 2012	30 November 2016
Winnaleah	Lead	100	26 November 2014	10 August 2017

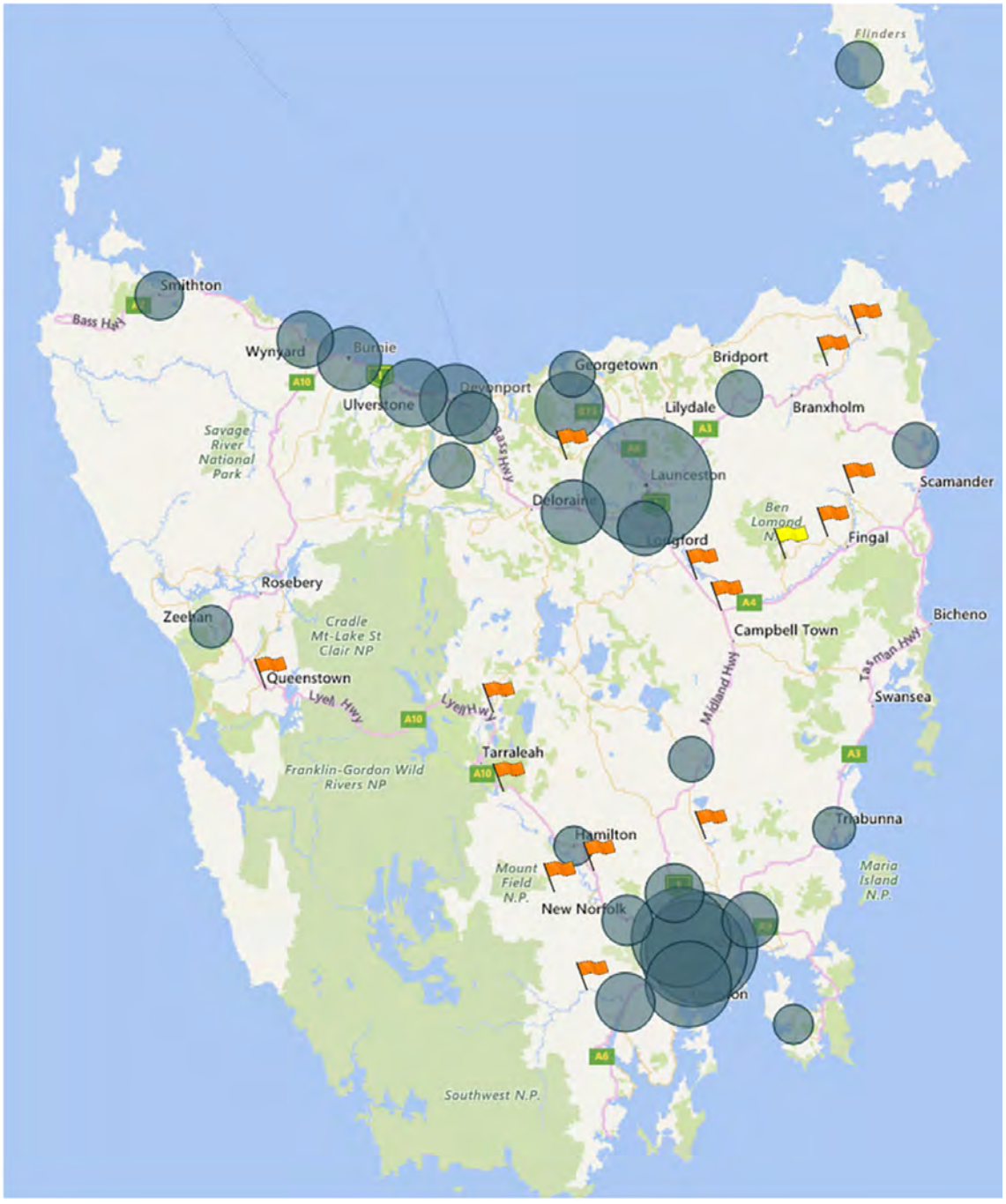
Source: DHHS

As at 25 September 2017, five of the six drinking water supplies subject to public health alerts had been remedied with one (Rossarden) still on a public health alert affecting 94 or 0.02%* of Tasmania's residents with reticulated water as shown in Table 3.

*Based on ABS 31 March 2016 census data and DHHS 2016 reticulation data.

As at 25 September 2017, only a small proportion of Tasmanian residents with reticulated water were affected by poor water quality, being 2 480 or 0.52%*. This is further evidenced by Figure 8 which shows the location of permanent boil water alerts and public health alerts in relation to Tasmania's main population areas.

Figure 8: Permanent boil water/public health alerts compared to population areas as at 25 September 2017



Source: TAO

location of a permanent boil water alert location of a public health alert

Note:

The size of the grey circles are in proportion to Tasmania's population centres on a local government area basis.

Figure 8 shows that the locations where permanent boil water or public health alerts are in place are low population areas.

*Based on ABS 31 March 2016 census data and DHHS 2016 reticulation data

Fluoridation

Fluoridation of Tasmania's drinking water supply dates back to 1953 when Beaconsfield became the first town in Australia to fluoridate its water supply. Despite some opposition to fluoridation, the vast weight of evidence suggests that a fluoridated water supply improves the dental health of communities by reducing the incidence of tooth decay. The *Fluoridation Act 1968* allows the government to direct the regulated entity to add fluoride to its public water supply systems. The amount of fluoride to be added is established under the *Fluoridation (Interim) Regulations 2009*.

While DHHS has been regulating fluoridation results provided by the regulated entities for a number of years, it only commenced publishing data in 2010–11. Table 4 shows the rate of fluoridation for the period 2010-11 to 2015-16.

Table 4: Fluoridation of water supplies 2010-11 to 2015–16

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Water supplies fluoridated	43	44	47	47	47	51
Population receiving fluoridated water	446 890	462 960	444 040	431 130	431 705	466 417
Population receiving water supply	461 865	477 700	458 525	447 330	446 785	475 624
% of population receiving fluoridated water supply	96.8%	96.9%	96.8%	96.4%	96.6%	98.1%

Source: DHHS

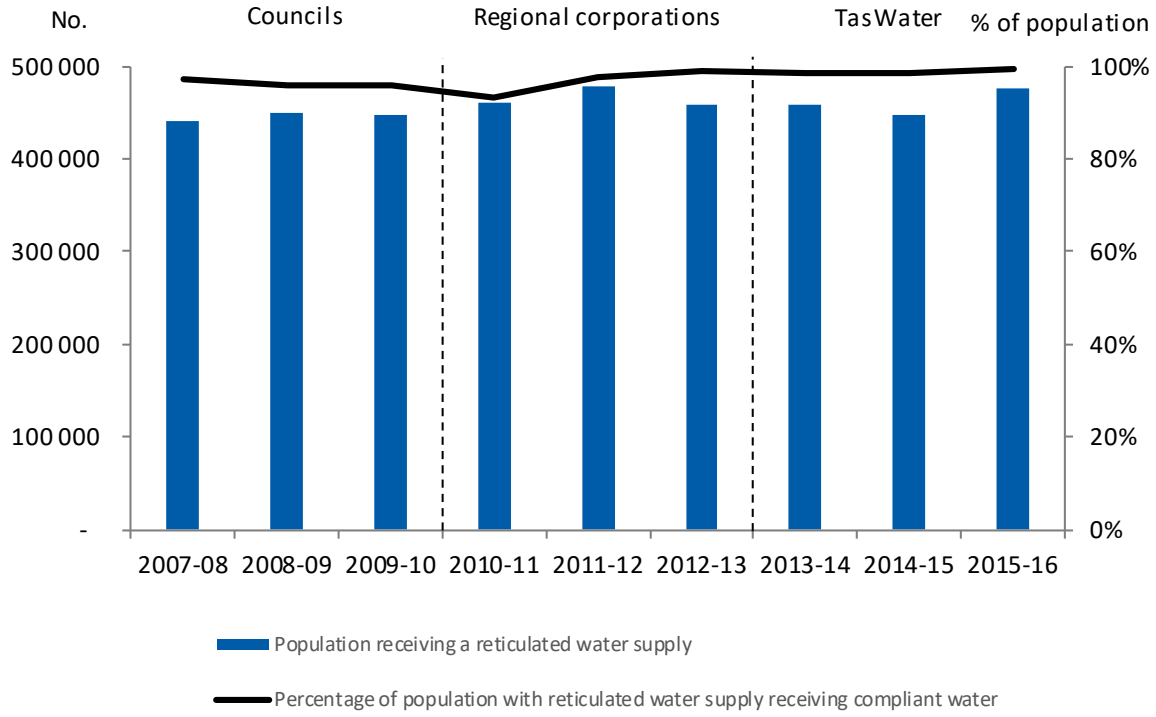
Table 4 shows that the:

- number of water supplies fluoridated increased by four under the regional corporations and by a further four under TasWater
- percentage of the population receiving a fluoridated drinking water supply has increased from 96.8% to 98.1% with all the improvement achieved by TasWater.

As at 2016-17, TasWater advised 50 water supplies are fluoridated and the population receiving a water supply is 486 061 of which 476 927 or 98.1% are receiving fluoridated water, which has shown that there has been no change from the previous year.

Figure 9 draws together the results shown in the above sub-sections, showing the percentage of the population receiving complaint water supplies.

Figure 9: Population receiving compliant water 2007-08 to 2015-16



Source: TER and TAO

Figure 9 shows:

- the number of people receiving reticulated water increased by 8.1% from 440 000 in 2007-08 to 475 000 in 2015-16
- the percentage of the population receiving reticulated water that was also compliant increased from:
  - 96% in 2009-10 to 98.9% in 2012-13 under the regional corporations
  - 98.6% in 2013-14 to 99.2% in 2015-16 under TasWater.

As at 2016-17, TasWater advised that the percentage increased to 99.4%.

In summary, there has been an overall improvement in drinking water quality since the commencement of the reforms. However, since the establishment of TasWater, some aspects of water quality have begun to decline, specifically, microbiological sampling compliance and microbiological compliance. We note the number of complaints to TasWater about water quality (as detailed in Sub-Section 4.2.3) decreased by 11% in 2015-16 before increasing by 23% in 2016-17.

We note that the most recent TER *State of the Industry Report* (SOIR) for 2015-16 stated the following in respect of water quality:

- it was not at the level expected or required for contemporary water networks even after eight years of the regulatory framework being in place and despite significant investment of both effort and expenditure
- improvements were not delivered as scheduled and continued to be below expectations due to delays in TasWater's capital works program
- water quality concerns were the highest source of complaints and accounted for 38% of all complaints received by TasWater
- performance outcomes will need to improve markedly to achieve the required regulatory standards.

DHHS stated that it does not agree that 'water quality was not at the level expected or required for contemporary water networks even after eight years of the regulatory framework being in place and despite significant investment of both effort and expenditure' because the SOIR is based on benchmarking performance (microbiological compliance only) against other Australian water corporations of a similar size and does not consider the immaturity of TasWater's formation compared with established mainland comparisons.

We note that the lifting of permanent boil water alerts and public health alerts during 2016-17 has positively impacted overall results and future planned works for 2017-18 are expected to further improve results. However, microbiological sampling compliance and microbiological compliance remain concerns.

Drinking Water Quality Management Plans

The Guidelines require all regulated water entities to develop and implement Drinking Water Quality Management Plans for each drinking water supply system in accordance with the ADWG.

We examined TasWater's – *Drinking Water Quality Management Plan 2015–18* and found it addressed all 12 elements required by the ADWG. We also noted that drinking water quality management plans had been prepared for all entities back to 2009, including councils and bulk water authorities, with the exception of Kingborough, which had not developed a plan for Bruny Island. Details of the 12 elements tested are shown in Appendix 6.

TasWater's plan is planned for external audit by a consultant in November 2017 with a report due in December 2017.

Section 1.1 Conclusions

- Compliance with applicable water quality standards has improved since 2009 as evidenced by:
  - improvement in water supply treatment processes
  - improvement in microbiological sampling compliance, although this has declined since 2013-14
  - improvement in microbiological compliance, although this has declined since 2013-14
  - improvement in the percentage of the population receiving fluoridated water
  - remediation of five of the six water supplies subject to public health alerts
  - an increase in the proportion of the population receiving compliant water from 96.0% in 2009-10 to 99.4% in 2016-17
  - Drinking Water Quality Management Plans for all ownership structures.
- The number of permanent boil water alerts reduced since 2009 and affect less of the population.
- Significant long-term health benefits have been achieved since 2009.
- Significant long-term health benefits have not been achieved more quickly since 2013 in microbiological sampling compliance and microbiological compliance.

Recommendation

1. TasWater investigates and remedies the decline in microbiological sampling compliance and microbiological compliance.

POINT OF INTEREST – BRYN ESTYN WATER TREATMENT PLANT

The Bryn Estyn water treatment plant just north of New Norfolk in Southern Tasmania was commissioned in 1964 and draws around 60% of Hobart's water supply directly from the River Derwent. A further 20% of Hobart's water supply is drawn from Lake Fenton and also passes through Bryn Estyn with the remainder sourced directly from Mount Wellington (Kunanyi).

Source: TAO

Bryn Estyn was originally commissioned in the early 1960's and was owned by Hobart Water. In July 2009, its ownership passed to Southern Water until TasWater took control in July 2013. Bryn Estyn treats the water before pumping it to Greater Hobart, including Margate, Sorell and Kempton.

1.2 HAS COMPLIANCE WITH APPLICABLE ENVIRONMENTAL STANDARDS FOR WASTEWATER IMPROVED?

In this sub-section we assess whether state-wide compliance with applicable environmental standards for wastewater has improved by assessing whether:

- STPs have complied with licence (permit) conditions since 2009
- significant long-term environmental benefits have been achieved since 2009 and have been achieved more quickly since 2013
- compliance with environmental standards for wastewater have improved since 2009.

Sewage in Tasmania is primarily regulated by the:

- EMPCA
- *Public Health Act 1997*
- 2008 Industry Act
- *Land Use Planning Approvals Act 1993* (LUPAA).

The legislation provides the operating framework for public entity regulators for sewage, such as TER, the Director of Public Health and the EPA. EMPCA is the primary environment protection and pollution control legislation in Tasmania, is focussed on preventing environmental harm from pollution and waste and defines whether an STP is Level 1 or 2.

There are no national guidelines for sewage treatment and disposal in the same way as there is for water treatment. Instead, there are the:

- *Tasmanian Emission Limit Guidelines for Sewage Treatment Plants*
- *Tasmanian Bio solids Reuse Guidelines*
- wastewater re-use guidelines.

The EPA:

- imposes quality limits on treated effluent from STPs under EMPCA, including for permits issued by councils under LUPAA, and is able to update the limits as necessary using environmental protections notices
- is focussed on ensuring treated effluent and solid waste from Level 2 STPs does not cause unacceptable environmental harm when discharged to the environment
- regulates odour and noise emissions from Level 2 STPs
- assesses a regulated entity's larger wastewater development proposals and investigates spill and odour issues arising from infrastructure failures.

There are 33 Level 1 EMPCA permits that cover smaller STPs regulated by councils. The scope of this audit does not extend to Level 1 STPs because:

- they service only a very small percentage of the Tasmanian population
- they are not regulated in the same way as Level 2 STPs
- reliable and consistent data is unavailable.

The regulated entity is responsible for ensuring its sewerage network and sewage treatment facilities provide Tasmanians with an efficient, effective and environmentally compliant wastewater disposal system.

As at 30 June 2017, 56 582 ML of sewage was collected and managed by TasWater's sewerage network and facilities of:

- 79 Level 2 STPs incorporating primary, secondary and tertiary treatments
- 34 Level 1 STPs
- 747 sewerage pump stations
- 179 677 sewerage connections
- 4 745 km of sewerage main

TasWater's sewer network is shown in Appendix 7.

We assessed the level of environmental compliance by the regional corporations and TasWater since 2009 by examining:

- STP compliance
- sewerage network performance.

Councils are not included in this assessment because data prior to 2009-10 is considered unreliable and many councils did not report sewerage network performance information to the regulator.

1.2.1 STP compliance

STPs are an important component of the sewage management process as their purpose is to receive and treat raw sewage to allow it to be safely recycled or discharged to the environment.

In Tasmania in 2015-16, 12 300 dry solid tonnes of treated sewage solids was recycled as bio solids for the fertilisation of soil, 10.4% of total effluent discharge was recycled for use as irrigation and 89.6% of total treated effluent was discharged to the environment into fresh, estuarine or marine waters.

Sewage treatment undertaken by STPs is divided into three categories:

- Primary – where raw sewage is screened to remove objects that should not be present, followed by grit removal and primary settling so solids can settle and grease can be skimmed from the surface
- Secondary – secondary or biological treatment, assists the removal of contaminants and bacteria by using micro-organisms to consume organic matter. Secondary level STPs also disinfect effluent prior to discharge
- Tertiary treatment – removes specific contaminants such as nitrogen and phosphate and removes greater levels of contaminants than can be achieved from secondary treatment. After tertiary treatment, treated effluent is discharged to the environment.

The majority of Tasmania's Level 2 STPs operate at the secondary sewage treatment level.

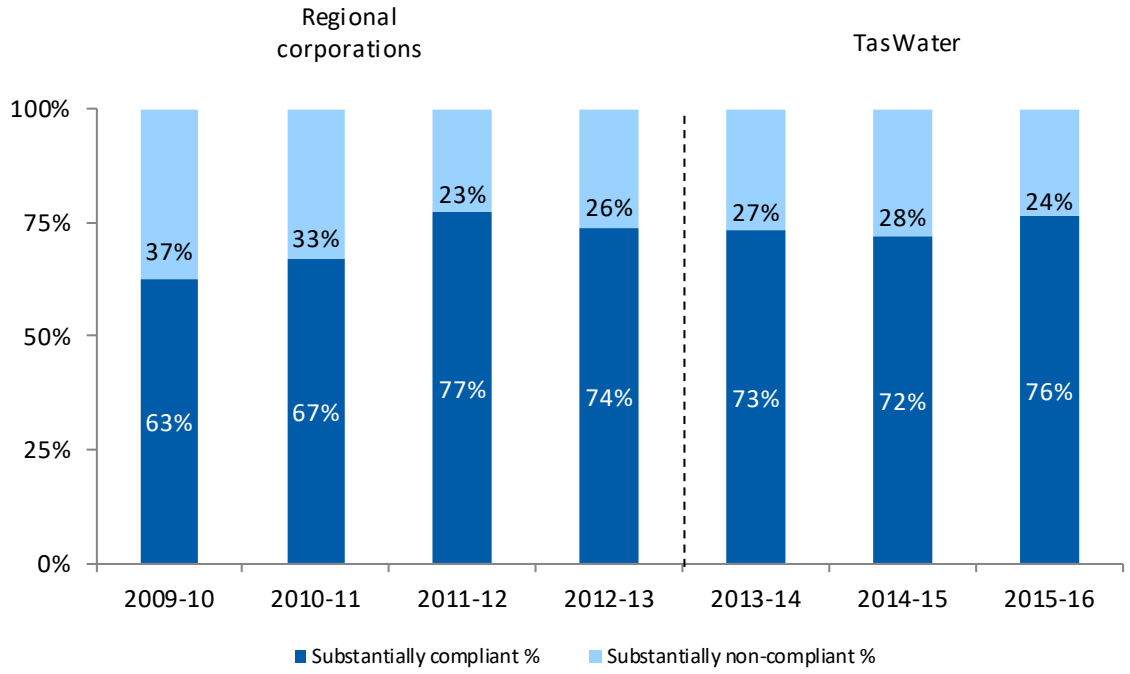
Key measures of overall environmental compliance of STPs are the levels of compliance to discharge limits stipulated by the EPA. Each Level 2 STP is required to operate under the specific conditions of the relevant permit. Using EPA and TER data, we reviewed the compliance of Level 2 STPs by examining:

- discharge to water limits (sewage discharge to fresh or marine waters)
- discharge to land limits
- treated volume compliant with EPA requirements.

Discharge to water limits

TER categorises STPs as being either substantially compliant (a 75% or higher compliance level with permit conditions) or substantially non-compliant (less than 75% compliance with permit conditions)[2]. Figure 10 shows the results for the period 2009-10 to 2015-16.

Figure 10: Percentage of compliant Level 2 STPs 2009-10 to 2015-16



Source: TER

Figure 10 shows that the percentage of substantially compliant STPs has:

- increased from 63% in 2009-10 to 77% in 2011–12 under the regional corporations
- remained relatively static since 2011–12 between 72% and 77% with no significant improvement achieved since the establishment of TasWater.

We note the 2015-16 SOIR stated there has been no tangible progress toward substantially improved compliance levels.

As at 2016-17, TasWater advised substantially compliant STPs have declined to 73% and substantially non-compliant STPs have increased to 27%.

2. We noted only 72 of the 79 Level 2 STPs were assessed for compliance in 2016. EPA advised seven plants were excluded, namely Brighton, Penna, Railton, Richmond, Scamander, St Marys and Stieglitz. All are pre-dominantly re-use discharge plants. Brighton, Penna, Railton, Richmond and Stieglitz are not included in the compliance calculation for discharge to water due to no discharge to water occurring. Penna, Richmond, Scamander and Stieglitz are recognised as full reuse plants and consequently do not have approved discharge to water locations. Insufficient data was available to assess St Marys STP discharge to water compliance.

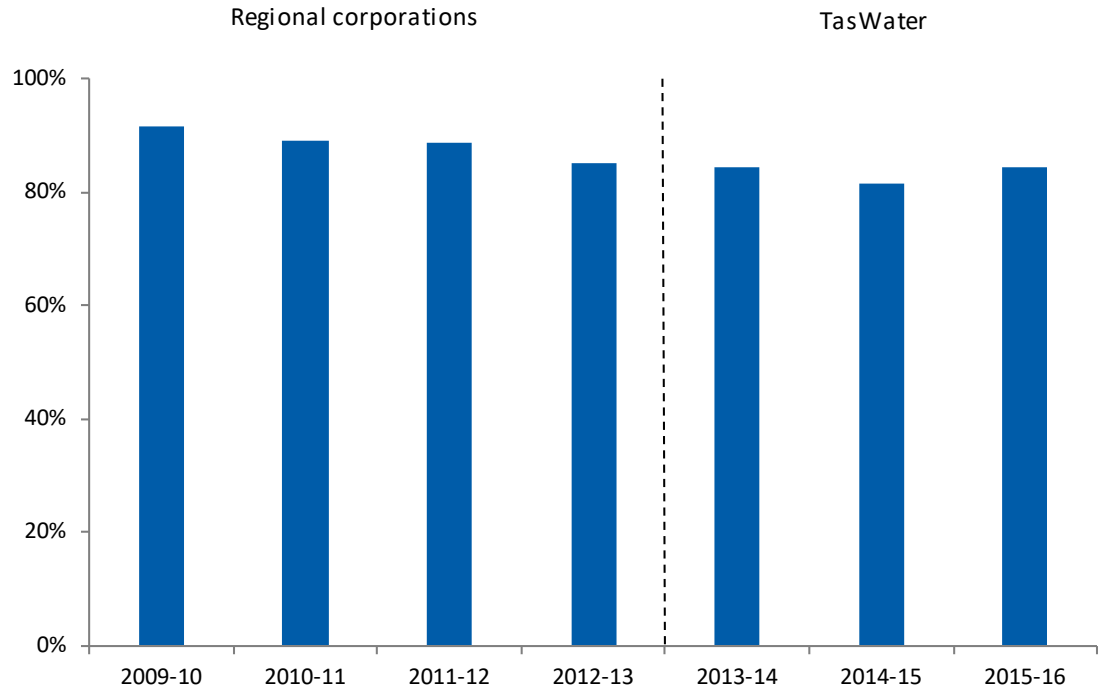
Discharge to land limits

Since the commencement of the reforms, there has been no improvement in discharge to land limits. We note that the 2015-16 SOIR states that, over the last five years, the flow-weighted compliance with relevant reuse limits continued to be within an acceptable range although compliance slightly decreased in 2015-16. The report went on to say that some systems are clearly compromised and struggling due to overloading and/or sludge accumulation.

Treated volume fully compliant with EPA requirements

Figure 11 shows the percentage of treated sewage volume that was compliant with regulatory limits for the period 2009-10 to 2015-16.

Figure 11: Percentage of treated sewage volume compliant with regulatory limits 2009-10 to 2015-16



Source: EPA

Figure 11 shows that the percentage of treated sewage volume decreased:

- from 91.4% in 2009-10 to 85.2% in 2012-13 under the regional corporations
- further to 81.4% in 2014-15 before improving to 84.2% by 2015-16.

TasWater advised they consider the high levels of compliance in 2009-10 by the regional corporations was due to more relaxed license limits. TasWater reported in their *Key Performance Indicator Trends* report for 2013-14 to 2016-17, it has improved compliance to 86% in 2016-17.

With respect to STP compliance overall, we note comments made by:

- TER in the 2015-16 SOIR where it stated that, despite significant investment since 2009-10 aimed at improving the performance of STPs and operational practices, compliance with regulatory discharge limits for sewage effluent had worsened by 8% over that period
- TasWater in relation to:
    - individual STPs – if compliance is measured by fully compliant plants, there has been only minor improvement. If measured by substantial compliance, there has been significant improvement and, if measured by overall volumetric compliance, there has been improvement
    - environmental protection notice conditions – there are over 2 500 conditions that apply to Tasmania's STPs and TasWater currently prioritises its efforts to those sites that account for most of the wastewater discharged (the Big 13) and those most likely to be contributing to environmental degradation and community risk (20 highest risk sites). This enables TasWater to generate better environmental outcomes for the community sooner and ensures that its resources are not diluted by spending time and money on those sites which are not having an appreciable impact

- odour – TasWater focusses efforts on the minimisation of odour emanating from STPs, particularly those close to residential areas. For example, in 2014-15, TasWater spent in excess of $1.0m to address odour issues emanating from the Rosny STP and commenced staged spending of over $10.0m in respect of odour issues emanating from the Ti Tree Bend STP, to be completed in 2018. TasWater advised that the number of complaints received regarding odour declined from 274 in 2013-14 to 114 in 2015-16 but increased to 137 in 2016-17.

1.2.2 Sewerage network performance

Effective sewerage network performance is important in preventing potential harm to the environment by minimising the impact of sewer main breaks, chokes and overflows/spills.

We assessed sewerage network performance of the regional corporations and TasWater for the period 2009-10 to 2015-16 with reference to:

- TER reports
- EPA data
- Bureau of Meteorology (BOM) national performance reporting 2015–16 (being the only year BOM has undertaken this analysis).

The EPA receives data from a regulated entity and, along with councils, is responsible for ensuring chokes, spills and overflows which could have an impact on the environment, are adequately remedied. EMPCA also provides for regulated entities to be prosecuted or issued with infringement notices for sewerage network failures.

We adopted the following indicators used by TER to assess the performance of the regional corporations and TasWater for the rate of:

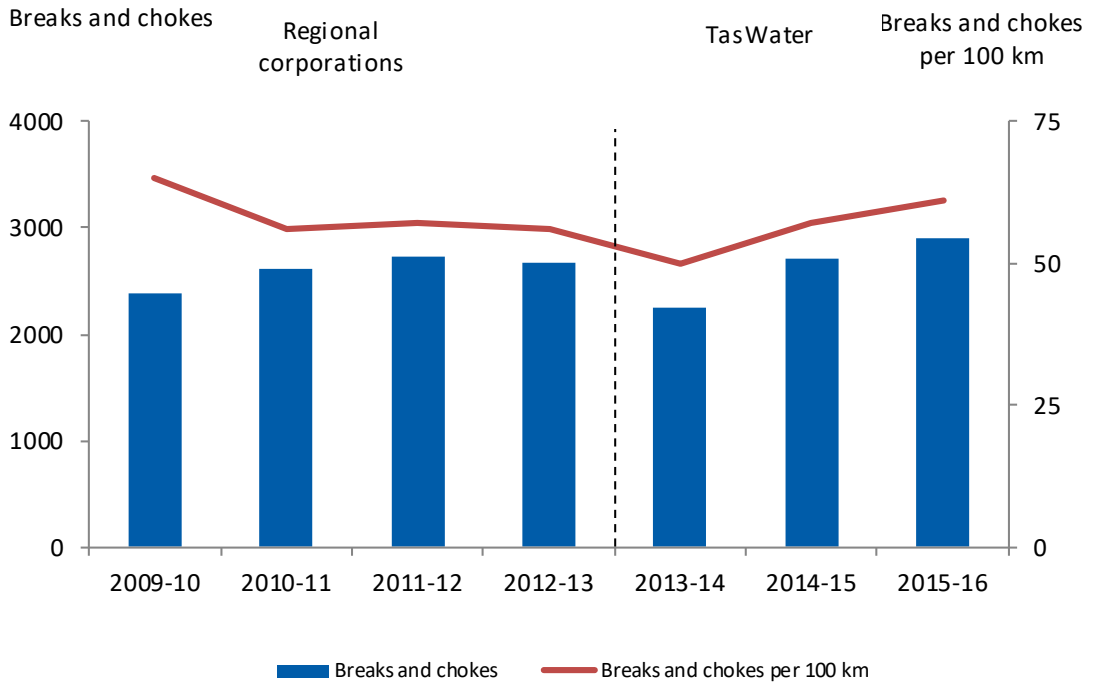
- sewer mains breaks and chokes
- sewer overflows.

Sewer mains breaks and chokes

Sewer mains breaks are usually caused by aging infrastructure or a pipe blockage and chokes are usually caused by tree roots or other objects finding their way into the pipes. Reliability of the sewerage network is measured by the frequency of service failure as indicated by the rate of sewer mains breaks and chokes.

Figure 12 details the number of sewer mains breaks and chokes and breaks and chokes per 100 km in Tasmania for the period 2009-10 to 2015-16.

Figure 12: Number of sewer mains breaks and chokes and number per 100 km 2009-10 to 2015–16



Source: TER

Figure 12 shows the number of breaks and chokes and the number of breaks and chokes per 100 km have remained fairly constant since 2009-10 except for a dip in 2013–14, but have since been steadily increasing. TasWater advised the dip in 2013-14 may have been as a result of breaks and chokes being reported as overflows due to the extreme wet weather occurring at that time (see Figure 13 below showing an unusually high number of overflows reported in the same period).

It should be noted that data for the regional corporations may be problematic due to the:

- low quality of performance data
- number of separate information systems being utilised for data capture
- concerns around the capture of accurate and timely data during inspections and rectification works.

Assessing TasWater's performance, we note an increase in breaks and chokes from 2 710 in 2014-15 to 2 895 in 2015-16. TasWater advised the number reduced to 2 156 in 2016-17.

In comparison to other jurisdictions, we note that in BOM's *National performance report 2015–16: urban water utilities*:

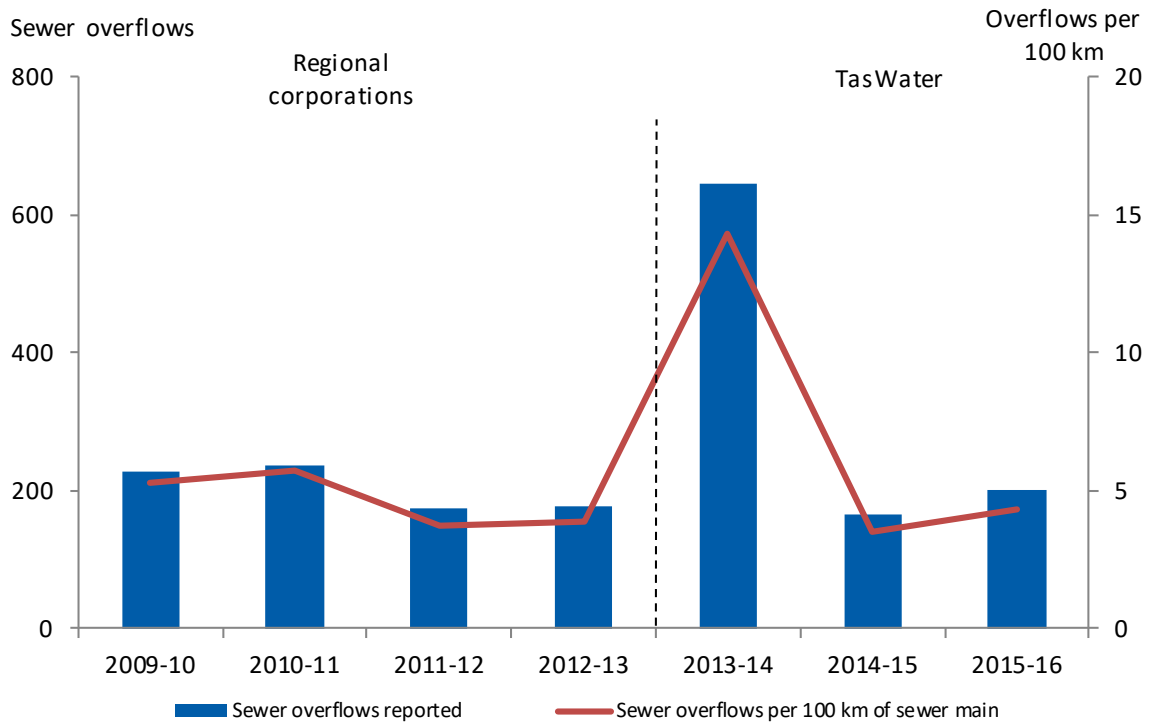
- the median number of breaks and chokes is not available
- the median rate of breaks and chokes per 100 km for regulated entities with 100 000 connections or more was 30.1 for 2014-15 and 25.2 for 2015-16. TasWater's rate was 57 and 61 respectively – significantly higher than the national median but well below the minimum service standard rate of 104 required by TER. TasWater advised the rate reduced to 45.5 in 2016-17.

Sewer overflows

Sewer spills or overflows are usually caused by equipment break downs, pipe blockages or occur after periods of heavy rain.

Figure 13 shows the number of sewer overflows and overflows per 100 km of sewer main for the period 2009-10 to 2015-16.

Figure 13: Number of sewer overflows and overflows per 100 km of sewer main 2009-10 to 2015–16



Source: TER

Figure 13 shows the number of overflows reported and overflows per 100 km of sewer main remained fairly constant, except for 2013–14, where the number jumped from the annual average of around 200 overflows to 645 overflows. TasWater advised that the large increase may have been as a result of data inconsistencies as it was the first year of the single entity and in the SOIR for that year, TasWater reported to TER that the previous entities were under-reporting.

In comparison to other jurisdictions, we note that in BOM's *National performance report 2015–16: urban water utilities* the median number of overflows:

- reported for entities with 100 000 connections or more was 30 for 2014-15 and 22.5 for 2015-16. TasWater's reported overflows of 164 and 201 respectively were significantly higher than the national median. We note that TasWater reported in their *Key Performance Indicator Trends* report for 2013-14 to 2016-17, it has reduced the number of reported overflows to 134 in 2016-17.
- per 100 km for entities with 100 000 connections or more was 0.49. TasWater's rate of 4.3 was significantly higher than the national median. TasWater advised this reduced to 2.8 in 2016-17.

TasWater collects a range of data in addition to the data provided to, and published by, TER and BOM in respect of sewerage network performance and considers some of its measures more indicative of performance. However, in its Sewage Spill Abatement Strategy, effective from August 2015, TasWater confirmed that:

- sewer mains breaks and chokes per 100 km and sewerage overflows per 100 km are often reported when detailing the performance of the sewer network and used those measures as a baseline for performance improvement
- its current sewerage network performance is well below that desired as it:
  - performs poorly against regulatory transitional service standards
  - predominantly lies in the worst quadrant when compared with key performance indicator results of peer water authorities and utilities
  - varies significantly seasonally and annually in response to rainfall and climate
  - is poor in comparison with peer Australian water authorities.

We note that, although not measured by TER, TasWater recognises that sewage spills into sensitive areas, such as beaches or oyster leases, can have significant public health, amenity and financial impact to communities and businesses and can have a direct impact on the shellfish industry. TasWater advised that investment decisions (such as the Shellfish Risk Mitigation Plan) take such impacts into account in prioritising funding to address infrastructure failings to reduce business and community impacts.

TasWater developed its *Sewage Spill Abatement Strategy* for reducing sewage spills associated with sewage collection assets over the next five years consistent with the aim of its Sewer Spills Management Policy. The strategy dovetails with TasWater's 2016-18 corporate plan which targets a reduction in the number of sewage spills as a strategic goal for the business.

In respect of sewerage network performance, we note that the 2015-16 SOIR stated that:

- it is evident that despite significant investment of effort and expenditure, environmental compliance was not at the level expected or required for contemporary sewerage networks
- performance outcomes will need to improve markedly to achieve the required regulatory standards.

We are satisfied that the measures used in our assessment of sewerage network performance are appropriate for the period reviewed. We note that in July 2017, BOM stated that it intended to remove a number of performance indicators currently used for jurisdictional comparison, including sewer overflows reported to the environmental regulator, on the basis that the regulatory requirement to report overflows varies between jurisdictions, thereby limiting the value of the indicator for national comparison.

1.2.3 EPA and TasWater

In November 2016, the EPA entered into a memorandum of understanding (MOU) with TasWater for a period of three years. The MOU sets out the management and regulatory approach to be used to achieve a 20% uplift over the next three years in environmental compliance and performance for Tasmania's wastewater management network. In the MOU, EPA and TasWater recognise:

- the creation of a single water authority with state-wide reach represented the best opportunity yet to address significant legacy issues that challenge the delivery of affordable, high quality public drinking water and wastewater services to Tasmania
- the magnitude of the water and sewerage task necessitates co-operation between TasWater, economic and technical regulators, industry and the community to ensure that TasWater would be supported in balancing its pricing, service standard and compliance obligations in a manner acceptable to the community
- wastewater legacy issues include ageing, undersized infrastructure and outdated system design and configuration, largely attributable to the cost of servicing Tasmania's relatively small, dispersed population
- investment in wastewater asset upgrades has generally not kept pace with community needs or contemporary environmental standards
- that three years on since the establishment of TasWater, the rate of progress towards securing acceptable environmental outcomes from the public wastewater management network is inadequate, does not meet community expectations and shows a downward trend in compliance for the last five years.

Since November 2016, a number of meetings have been held and proposals delivered to the EPA by TasWater. Until the EPA publishes 2016-17 information, we are not able to verify what progress has been made since the commencement of the MOU.

Section 1.2 Conclusions

- State-wide compliance with environmental standards for wastewater has not improved since 2009 as STPs have not complied with licence conditions and sewerage infrastructure has been under-performing compared to national averages.
- Significant long-term environmental benefits have not been achieved since 2009 and have not been achieved more quickly since 2013 as evidenced by:
    - ongoing non-compliance of STPs
    - no improvement in the percentage of compliant treated sewage volume, although this has reportedly improved since 2015-16
    - the high number of sewer mains breaks and chokes and breaks and chokes per 100 km
    - the high number of sewer overflows and overflows per 100 km.

Recommendation

2. TasWater improves its efforts in wastewater management compliance to meet community and regulatory expectations.

POINT OF INTEREST – ST HELENS

The St Helens catchment has significant inflow and infiltration problems, with surface water and ground water entering sewers through unauthorised connections, ageing infrastructure and overloading the STP.

TasWater has a state-wide program to address these issues through cooperation with local councils, businesses and private property owners. As a shellfish zone, St Helens has been prioritised for future work.

Source: TasWater

The new Jetty Road sewage pump station was built in May/June 2016 at a cost of $1.66m to replace both the old Jetty Road and St Helens Point Road sewage pump stations. The old Jetty Road station was decommissioned around June 2016 and sewage now flows to the new Jetty Road station. The St Helens Point Road station will remain in service until the gravity main between it and the new Jetty Road station is completed after Easter 2018. The St Helens Road station will then be decommissioned and sewage will flow into the new Jetty Road station.

In addition, work on the Esplanade station has begun with an upgrade to the rising mains on either end of the station and this work will continue during 2018 with an expansion of the wet well. These works will significantly reduce the risk of a sewage overflow into George's Bay.

In 2019, TasWater plans to complete a three-year ambient monitoring program to better understand flows and environmental risk in Georges Bay and this will inform future work to protect oyster lease areas and public amenity.

1.3 HAVE TOURISM OPERATORS, LOCAL BUSINESSES AND THE COMMUNITY BEEN PROVIDED WITH IMPROVED WATER AND SEWERAGE INFRASTRUCTURE SOONER?

In this sub-section we determine whether tourism operators, local businesses and the community were provided with improved water and sewerage infrastructure sooner by assessing whether there was quicker achievement of health and environmental standards since 2013. This sub-section should be read in conjunction with sub-sections 1.1 and 1.2.

A definition of 'sooner' has been defined in Section 1.

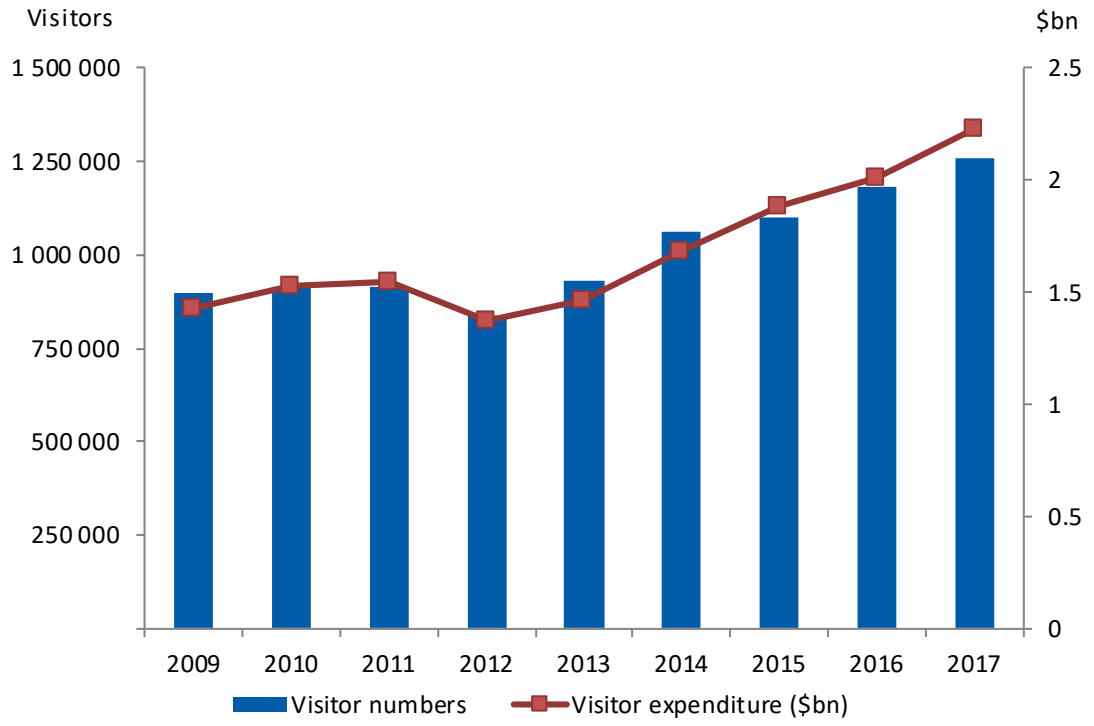
Tourism and local businesses were specifically identified as beneficiaries of the reforms by the government because:

- the tourism industry contributed 5.5% to Tasmania's Gross State Product (GSP) in 2008.
- local businesses contributed 9.5% to Tasmania's GSP in 2014-15 and they supported the Tasmanian economy by providing local employment opportunities and providing needed goods and services.

We have focussed on the tourism sector because we consider that an improvement in water and sewerage services in this sector would positively impact local businesses and the community.

Figure 14 shows the growth in Tasmanian tourism from 2009 to 2017 (calendar years) and its growing importance to the Tasmanian economy.

Figure 14: Visitor numbers and visitor expenditure since 2009



Source: Tourism Tasmania quarterly snapshots

Figure 14 shows that since 2009, the total number of visitors to the state increased by 40% and the total annual visitor spend increased from $1.43bn to $2.23bn. The Tasmanian Government aims to expand tourism to attract 1.5m visitors to the state by 2020.

The growth in tourism may imply the impact of any deficiencies in Tasmania's water and sewerage infrastructure has not negatively impacted the tourism industry. However, because much of our tourism appeal is built on our 'clean green' image, tourists having to boil water or being required to use bottled water while visiting Tasmania can diminish that image and potentially damage the state's reputation. In addition, sewage spills to beaches or other popular recreation areas or into areas that contaminant seafood could impact the tourist experience.

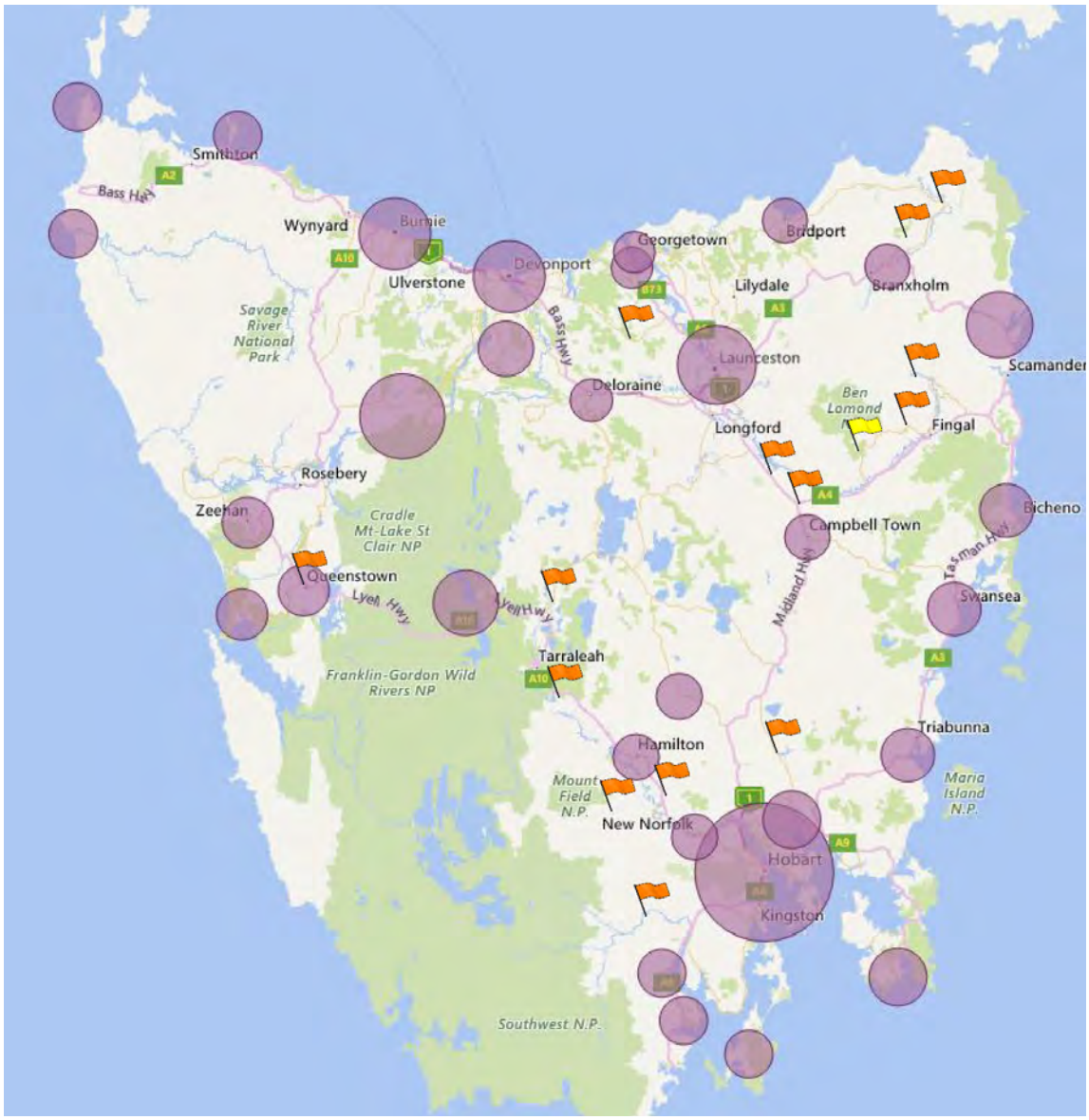
Water infrastructure

To determine whether water infrastructure improved in tourism areas, we reviewed water quality and water provision in tourism areas across the state.

Water quality

Where a location's water supply is not suitable for drinking, the water supply is subject to a public health warning advising people not to drink it or to boil it prior to drinking. We assessed whether public health warnings were present for 2016-17 in areas where high numbers of visitors were present and the results are shown in Figure 15.

Figure 15: Public health warnings in tourism areas as at 25 September 2017



Source: TasWater, DHHS and TAO

location of a permanent boil water alert location of a public health alert

The size of the purple circles are representative of tourist visitation numbers to regions in Tasmania.

Figure 15 shows that the majority of major visitor locations have clean, drinkable tap water and are not subject to any public health warning, e.g. Hobart and surrounds, Cradle Mountain, the East Coast and the North West Coast. However, we noted a number of public health warnings in the North East of the state and along the Lyell Highway between Queenstown and Hobart.

Since 2009:

- three locations had public health warnings lifted from their water supplies by the regional corporations – Poatina, Linda and Swansea
- fifteen locations had public health warnings lifted from their water supplies by TasWater. Several of these locations (including Scamander, Mole Creek, Lilydale, Lady Barron, Franklin, Derby, Branxholm, Avoca) attract notable visitor numbers or are on routes to important visitor destinations.

In August 2016, TasWater announced its 24 Glasses Project, where it made a commitment to accelerate its program of addressing water quality issues in the remaining 24 towns that still had either permanent boil water alerts or public health alerts. Since the commencement of that project, 12 of the 24 towns included in the project have had alerts lifted and TasWater expects to complete the project by August 2018.

Water provision

We requested information from TasWater in respect of water mains breaks, water interruptions, bursts, leaks and average time to attend to issues affecting water provision to customers in tourism areas. TasWater advised that specific data was not available at this time but its new asset management system Maximo would capture this data in the future.

As at 2016-17, in its *Key Performance Indicator Trends* report for 2013-14 to 2016-17, TasWater reported water mains breaks per 100 km of water main have been steadily increasing.

Sewerage infrastructure

We requested information from TasWater in respect of sewer mains breaks and chokes, sewer overflows, sewerage service interruptions and average time to attend to issues affecting sewerage service provision to customers in tourism areas. TasWater advised that specific data was not available but that in the future, its new asset management system Maximo would allow data extraction to this level. TasWater also advised that it does not take tourism factors into consideration in planning its improvements, however, we note:

- swimming at Tasmania's beaches has not been negatively impacted, in part as a result of the appropriate management of wastewater
- locally grown oysters and other shellfish are specifically protected under TasWater's Spill Abatement Strategy, ensuring they are safe to eat. Tasmania's seafood is a culinary attraction to tourists
- specific projects have been implemented to alleviate odour from a number of STPs in highly populated/visited areas.

In addition, key projects as detailed below commenced in respect of Hobart and Launceston being two key tourism areas shown in Figure 15.

TasWater has commenced strategic planning of the Hobart Sewerage Improvement Project. The greater Hobart area is made up of multiple council regions with 14 sewerage systems servicing over 40% of TasWater's customer base. The capacity, condition, performance and long-term operation of the sewerage systems is of significant interest and importance to local businesses and the community. The purpose of the project is to:

- rationalise STPs discharging into the Derwent Estuary
- upgrade existing infrastructure to improve performance and capacity.

The project will be delivered at a cost of $400m to $500m over 20 years and capital works are not expected to commence for at least 10 years. Aspects of this project may be brought forward if there are external triggers such as tightening of the EPA discharge requirements.

TasWater also commenced planning the Launceston Sewerage Improvement Project. Launceston is built on the banks of the Tamar River and tourist operators offer river cruises to view wetlands, the Cataract Gorge and the Batman Bridge. The city is unique among cities in Australia in that it has a combined sewerage and stormwater system. The combined system protects Launceston from flooding during high rainfall by pumping storm water directly into the Tamar River but also means that effluent enters the North Esk, South Esk and Tamar rivers. The purpose of the project is to:

- improve operation of the system
- improve overflows into rivers
- identify development options to protect public health and the environment while supporting industries and local businesses.

The project will be delivered at a cost of $270m over five years with approvals expected to take around five years and capital works commencing in 2021-22.

We note that in its 2015-17 corporate plan, TasWater stated that as a provider of essential services, the quality of its products and services contributes to the wellbeing of the community and the environment. However, with all provisions of essential services customer affordability is a constraining factor in solution implementation.

Section 1.3 Conclusions

- Tourism operators, local businesses and the community have benefited from quicker achievement of health standards since 2013 in water supply treatment processes, fluoridation and public health warnings but not in microbiological sampling compliance, microbiological compliance and the proportion of the population receiving compliant water.
- Tourism operators, local businesses and the community have not benefited from quicker achievement of environmental standards since 2013 as evidenced by ongoing STP non-compliance.

POINT OF INTEREST – GRETNA

TasWater supplies water to around 50 connections in Gretna, which is subject to a permanent boil water alert. News articles published in January 2015 and August 2016 record residents complaining that poor water quality had affected their livelihoods and reduced the viability of the local hotel. Gretna residents lobbied the government about their concerns following alerts advising them not to bathe in the untreated water.

Source: https://walkingthederwent.com/tag/triffitts-neck/

In August 2016, TasWater advertised its Regional Towns Water Supply Strategy, which listed 24 locations where it intended to accelerate water infrastructure improvement, including Gretna. The neighboring locations also benefitted from this project with 80% of Bushy Park and Glenora property owners agreeing with TasWater to be subject to the fees and charges of a reticulated water supply. A new water treatment plant is being constructed at Bushy Park for this purpose and will pipe water from the Fenton Main to Gretna, Bushy Park and Glenora providing drinkable water by the end of 2017.

In August 2017, the Fenton water supply was awarded the prize for the state's best drinking water and a chance to represent Australia in the international water tasting competition held in the historic spa town of Berkeley Springs in West Virginia, USA. Judges consider appearance, odour, flavor, mouthfeel and aftertaste to identify the best municipal water and bottled waters from more than 100 competitors across the world. Australian competitors have previously collected two awards and last year, Tasmania won the national championship with water from the Barrington water treatment plant. This year, the water that will soon supply Gretna from the plant at Lake Fenton, will take a turn.

2. HAVE THE REFORMS IMPROVED STRATEGIC ASSET MANAGEMENT?

In this section, we determine whether improved strategic asset management has been achieved by assessing whether:

- the 2008 intended outcomes have been achieved:
  - adequate asset management plans
  - a condition assessment for assets
  - an improved infrastructure standard
  - renewal over the coming decades has been planned for and achieved
- the 2012 intended outcome of state-wide infrastructure planning has been achieved.

2.1 HAS IMPROVED STRATEGIC ASSET MANAGEMENT PLANNING BEEN ACHIEVED?

Strategic asset management brings together economics, engineering, information technology, sustainability and human elements to form an holistic approach to the delivery of assets. This approach recognises the combination of these elements into a greater whole as well as their inter-relationships and interdependencies. It focuses on the long-term direction for overall management of infrastructure assets, while considering immediate operational matters.

In this sub-section we assess whether:

- adequate asset management plans have been in place since 2009
- state-wide infrastructure planning has occurred since 2013.

Prior to 2009, assets for water and sewerage were primarily managed by 28 councils (Tasman did not have any water or sewerage infrastructure while Flinders did not have sewerage infrastructure) and three bulk water authorities, each responsible for creating and implementing their own asset management plans. There was no state-wide co-ordination of effort in respect of managing the state's water and sewerage infrastructure.

In 2006, the Local Government Association of Tasmania (LGAT) commissioned a report examining the financial sustainability of local government. The report was released in March 2007 and included the following findings related to asset management by councils:

- only a small proportion of councils had asset management policies or plans to establish asset management practices
- too little consideration was given to the extent to which future generations were expected to pick up the costs of renewing council infrastructure
- there were no reporting requirements in councils' annual reports covering the reporting of a council's current infrastructure backlog or its respective annual renewals gap
- each council should work towards adoption of a total asset management system for the whole-of-life planning, funding, acquisition, registration, accounting, operation, maintenance, disposal and renewal or enhancement of each component in its infrastructure
- improving asset management and unifying infrastructure accounting is critical to addressing infrastructure problems and each council should work towards establishing a comprehensive 10-year asset management plan integrated within their long-term 10-year financial plan.

In addition, TER's SOIR for 2007-08 found that 70% of councils did not have strategic asset management plans and stated that councils' asset management was poor and did not properly inform:

- strategic or long-term asset management
- annual asset management planning for maintenance, disposal, renewal or enhancement
- assessment of asset condition
- operational and capital expenditure.

The 2008 Industry Act required mandatory asset management planning in the sector. This requirement was formalised as a condition of any operating licence issued by TER. As a result, from 2009, all regulated entities were required to develop asset management plans.

Asset management plans are one element of effective strategic asset management planning. More broadly, strategic asset management planning includes the following elements:

- asset management policy
- asset management objectives
- asset management strategy
- asset management plans – acquisition, operations, maintenance and disposal plans.

To assess strategic asset management planning of regional corporations and TasWater, we determined whether the above elements were present for the period 2009-10 to 2016-17 and the results are shown in Table 5.

Table 5: Strategic asset management planning 2009-10 to 2016-17

Entity	Asset management policy	Asset management objectives	Asset management strategy	Asset management plans
Southern Water	✗	✗	**P**	✓
Ben Lomond Water	✗	✓	**P**	✓
Cradle Mountain Water	✓	✓	**P**	✓
TasWater	✓	✓	✓	✓

✓ Exists; ✗ Does not exist; **P** Partially exists

Table 5 shows that the four strategic asset management elements planning were:

- not fully addressed by regional corporations
- fully addressed by TasWater.

To further our assessment, we examined the asset management plans (being the only element available for both regional corporations and TasWater) for the period 2009-10 to 2016-17.

Southern Water

As at 30 June 2013, Southern Water held 51.7% (based on the dollar value of asset valuation at replacement cost) of the state's water and sewerage infrastructure.

Southern Water created its Asset Management Plan 2011-42 with the primary intention to take stock of the data and knowledge it possessed regarding the infrastructure and systems it managed.

The plan detailed the strategies and tactical plans Southern Water intended to use to achieve its stakeholder and regulatory goals while achieving minimum life cycle costs for its infrastructure.

The most significant investment driver of the plan was compliance with water and sewerage standards. The capital priorities and projections used in the plan reflected the principal investment drivers required to bring water and sewerage services into regulatory alignment with acceptable benchmarked performance amongst other Australian water and sewerage authorities.

Infrastructure growth was determined as a lesser investment driver with Southern Water focussed more on significant renewal investment in water and sewerage assets.

Southern Water did not claim that the plan was developed in accordance with the *International Infrastructure Management Manual 2006* (the Manual), the applicable standard at that time.

Ben Lomond Water

As at 30 June 2013, Ben Lomond Water held 25.9% (based on the dollar value of the asset valuation at replacement cost) of the state's water and sewerage infrastructure.

Ben Lomond Water published its asset management plan in July 2011 for the period 2011-40 in accordance with the Manual.

The plan stated that Ben Lomond Water would:

- manage its infrastructure assets to meet the required level of service in the most cost effective manner for present and future consumers
- meet minimum legislative and organisational requirements for sustainable service delivery and long term financial planning and reporting
- demonstrate responsive management of assets (and levels of service provided from assets) and compliance with regulatory requirements
- ensure that water and wastewater systems were managed in a financially sustainable manner
- address water systems on boil water alerts and non-compliant wastewater systems.

Capital expenditure was initially primarily driven by completion of projects to achieve compliance with TER's requirements with any asset improvement or renewal planned to occur later.

Cradle Mountain Water

As at 30 June 2013, Cradle Mountain Water held 22.4% (based on the dollar value of the asset valuation at replacement cost) of the state's water and sewerage infrastructure.

Cradle Mountain Water engaged a consultant to produce its asset management plan in 2011 in accordance with the Manual.

The plan was developed to cover an initial 10 year period and was implemented for the purpose of:

- providing a systematic approach to optimising the performance of its assets to meet agreed service standards at an affordable price
- assessing asset performance and demand
- improving the reliability of asset performance
- improving forecasts for both capital and operational budgets based on asset performance and reliability needs
- identifying and quantifying business risks and trends
- formulating and evaluating capital and operational options for meeting service levels
- continuous improvement in delivering lowest life cycle cost service solutions.

Capital expenditure was primarily to ensure best value from capital improvement programs and available budgets (operations and maintenance) to achieve compliance with TER's requirements.

TasWater

In January 2014, the International Organisation for Standardisation (ISO) 55001 – *Asset management -- Management systems -- Requirements* – became the accepted standard, guiding businesses to think strategically about outcomes and the overall asset management system. This approach was adopted by TasWater for its first strategic asset management plan in 2015.

TasWater's plan covered its fixed infrastructure assets used for the sourcing, treatment and delivery of drinking water to the customer and the collection, transportation, treatment and return of wastewater to the environment.

The purpose of the plan was to:

- understand competing priorities, stakeholders and challenges
- document asset management practices and integrate asset management systems
- assemble the infrastructure assets register
- understand the need to assess asset performance and condition

- develop and use modelling tools to better understand renewal programs
- identify a renewal backlog and achieve higher levels of asset renewals.

In its plan, TasWater stated that:

- it was still in a period of transition and consolidation while it develops a state-wide operating model
- its strategic asset management plan was not a simple consolidation of the plans of the previous regional corporations rather, TasWater was building a new state-wide asset management system
- its inaugural strategic asset management plan was strategic in nature and a more detailed asset management plan was to be developed in coming years
- a key challenge of the new asset management system was the retention and consolidation of existing asset data, which was incomplete and collated across multiple databases including Global Information System (GIS)* and Supervisory Control and Data Acquisition (SCADA)**
- it had commenced the implementation of a new asset management information system, Maximo. This system was expected to consolidate the disparate asset data inherited from regional corporations.

We assessed the quality of the asset management plans of the regional corporations and TasWater against ISO 55001 to gauge whether strategic asset management planning had improved since 2008. Although ISO 55001 was not the applicable standard at the time of the regional corporations, we consider the key elements of this standard to be sufficiently similar to the key elements of the Manual (used by two of the regional corporations) to allow comparison.

The results of this assessment are shown in Table 6.

* GIS - a system designed to capture, store, manipulate, analyse, manage and present spatial and geographic data

** SCADA - a computer system that monitors and controls a process. In the case of water and sewerage, SCADA will monitor water treatment plants, sewerage pumping stations and sewerage treatment plants and other assets.

Table 6: Strategic asset management plans

ISO 55001	Cradle Mountain Water	Ben Lomond Water	Southern Water	TasWater
ISO 55001 stated in the plan	✓	✓	✗	✓
Context of the organisation				
The plan is aligned with the context of the organisation	✓	✓	✓	✓
Stakeholders needs and expectations are considered	P	✓	✗	✓
Scope of the asset management system is defined	✗	✗	✗	✓
Asset management system is in place	✗	✗	✗	✓
Leadership				
Commitment to the asset management system	P	✗	P	✓
Asset management policy	✓	✗	✗	✓
Responsibilities and roles defined	✓	✓	✗	✓
Planning				
Asset management plan addresses risks and opportunities	P	P	✓	✓
Planning to achieve asset management objectives	P	P	P	✓
Support				
Resources determined	P	P	✗	P
Asset management plan ensures competency of staff	✗	✗	✗	P
Staff aware of asset management policy and plan	✗	✗	✗	✓
Communications plan is in place	✗	✗	✗	✓
Information requirements determined	P	✓	✓	✓
Total assessed as adequate	**27%**	**33%**	**20%**	**87%**
Total assessed as partial	**40%**	**20%**	**13%**	**13%**
Total assessed as inadequate	**33%**	**47%**	**67%**	**0%**

✓Component present; ✗ Component not present; **P** Component partially present

The regional corporations' primary focus in respect of asset management was regulatory compliance with the exception of Cradle Mountain Water, which adopted a more progressive approach through the use of a professional services company specialising in global water markets to formulate its asset management plan. TasWater adopted a sophisticated approach and Table 6 shows that significant improvement in the quality of strategic asset management planning has been achieved with TasWater's strategic asset management plan assessed as being 87% compliant with ISO 55001.

TasWater also commenced development of a long-term strategic plan for the period 2018-37 which will inform asset management over that timeframe.

Section 2.1 Conclusions

- Improved strategic asset management planning has been achieved since 2009.
- The implementation of state-wide infrastructure planning has commenced since 2013 as evidenced by:
  - the development of a state-wide operating model planned for in the 2015 asset management plan
  - the development of a long-term strategic plan covering the period 2018-2037
  - a commitment to building a new state-wide asset management system as stated in the 2015 asset management plan
  - a solid theoretical framework underpinned by asset management strategies and associated management plans.

2.2 HAS OLD AND FAILING WATER AND SEWERAGE INFRASTRUCTURE BEEN IDENTIFIED AND RENEWED?

In this sub-section we determine whether old and failing water and sewerage infrastructure has been identified and reviewed by assessing whether the following have been achieved since 2009:

- condition assessments have been undertaken for assets
- renewal over the coming decades has been planned for and achieved
- an improved infrastructure standard has been achieved.

2.2.1 Identification of old and failing water and sewerage infrastructure

Identification of old and failing infrastructure can occur in a number of ways at the strategic and operational levels including through:

- asset condition assessments
- maintenance logs and service reports
- regulatory assessment.

For the purpose of this audit, we determined whether old and failing infrastructure assets have been identified by reviewing asset condition assessments.

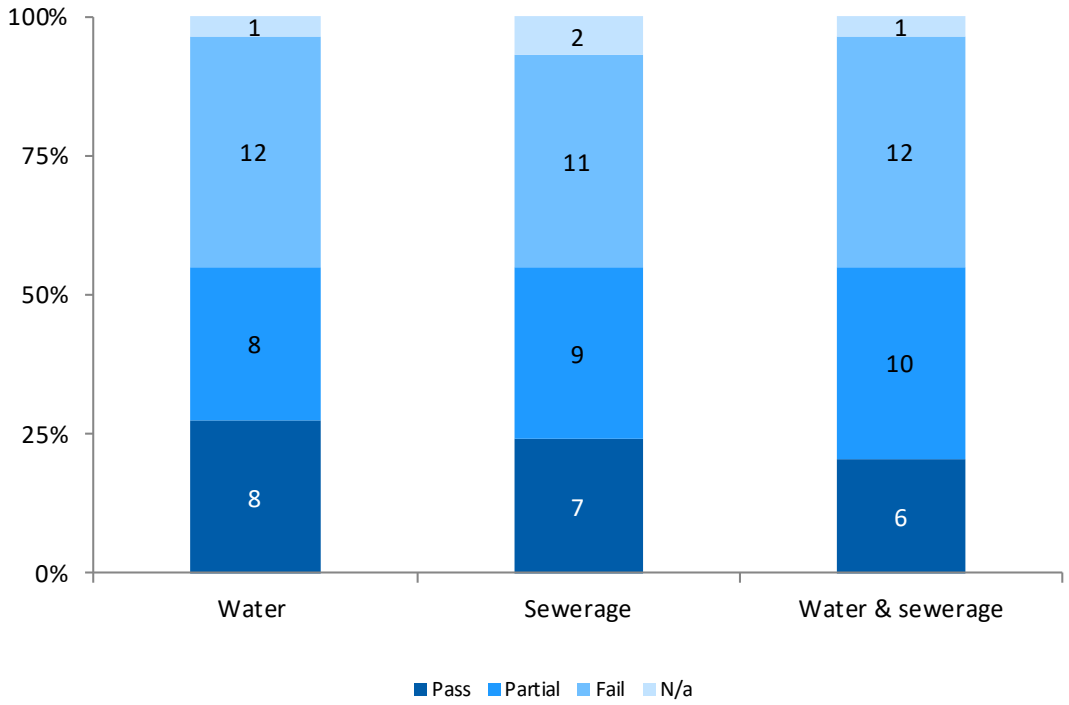
An asset condition assessment is the process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for preventative or remedial action. It is a crucial component of effective asset management and in determining an asset's remaining useful life and capability to meet performance requirements as well as capital works replacement programs and forward planning.

An important element of our determination was identifying the condition of water and sewerage assets managed by councils. Asset condition assessments undertaken by the Government Prices Oversight Commission (GPOC) in 2006-07 of the councils and bulk water authorities' assets formed the baseline of recording the condition of the assets transferred to the regional corporations and later, to TasWater.

Councils

To understand the degree to which councils had assessed the condition of their water and sewerage assets, we examined the 2006-07 GPOC report – *Local Government Water and Wastewater Businesses – Cost Recovery Compliance Review*, released in February 2008. Figure 16 shows the details of this examination.

Figure 16: Asset condition assessments – completion by councils



Source: GPOC. Pass – assessment undertaken; Partial – assessment partially undertaken (e.g. only certain asset classes completed or commenced); Fail – no assessment undertaken; N/a – council did not provide infrastructure.

Figure 16 shows that:

- eight (29%) councils had conducted full condition assessments of water assets and a further eight (29%) had partially conducted condition assessments
- seven (26%) councils had conducted full condition assessments of sewerage assets and a further nine (33%) had partially conducted condition assessments
- six (22%) councils had conducted full condition assessments of both water and sewerage assets and a further ten (37%) had partially conducted condition assessments.

Full details of the asset condition assessments for all councils are contained in Appendix 8 and shows that overall knowledge of the condition of the state's water and sewerage infrastructure assets was inadequate and insufficient to properly inform effective asset management at a state-wide level.

Regional corporations

Each of the regional corporations used customised asset management systems suited to the needs of their specific region. To understand the degree to which the regional corporations had assessed the condition of water and sewerage assets, we examined the:

- asset management plans for all three entities
- TER's SOIRs for the period 2009–10 to 2012–13.

Southern Water

As part of the strategic asset management process for the Southern region in 2011, Southern Water undertook an assessment of assets by asset class and identified current situation, risk, challenges, opportunities and initiatives for each class.

In its asset management plan, Southern Water stated that the asset management journey began with insufficient data, knowledge of particular asset classes, receiving environments, asset condition, configuration or performance. Southern Water further stated that acquiring that knowledge would take time.

Detailed asset condition information appears in the asset condition report and outlines Southern Water's maintenance plan. Major components were to:

- incorporate all legacy maintenance programs into its asset management system (Navision)
- develop consistent maintenance programs across the region that were formerly under councils' control
- develop reports to recognise high risk assets.

Southern Water adopted responsive maintenance reporting of service interruptions to capture asset condition at the time of interruption, where possible, and this information was then input into Navision. Renewals were prioritised and delivered by a combination of their own workforce and specialist contractors.

Ben Lomond Water

As part of the strategic asset management process for the Northern region in 2011, Ben Lomond Water developed a condition rating system using the following numerical scale:

1 Excellent Condition - only planned maintenance required

2 Very Good - minor maintenance required plus planned maintenance

3 Good - significant maintenance required

4 Poor - significant renewal/upgrade required

5 Very Poor – unserviceable.

Condition assessments were completed on a prioritised basis with above ground assets assessed in the short-term (two to three years) and underground assets in the medium to long-term (five to 10 years) with the following results reported as at July 2011:

- initial condition assessments completed for 25% of above ground assets including wastewater treatment plants, dams, reservoirs (unroofed) and sewer pump stations
- condition assessments of the underground assets, being 70% of the asset base, would take considerable time
- commitment to developing a priority ranking for condition assessments based on asset criticality with critical assets defined as those assets lacking system redundancy and where failure would have significant consequences including:
    - the ability of the system to provide services to customers
    - potential impact of asset failure on the environment
    - potential impact of asset failure to public health and wellbeing
    - regulatory non-compliance.

Cradle Mountain Water

As part of the strategic asset management process for the North-Western region in 2011, Cradle Mountain Water undertook work to assess the condition and service requirements of water and sewerage assets with the following results:

- maintenance data was collected for 50% of the total water assets and of this, less than 30% was complete
- maintenance data was collected for 27.5% of the total sewerage assets and of this, less than 30% was complete
- failure analysis of water and sewerage systems was conducted using a rating scale of one to five which informed their 30 year renewal plan based on the life of the assets included in the asset register. The 30 year renewal profiles were prepared for all asset classes and were to be updated as asset conditions become known to drive capital expenditure on renewals.

In summary, although the regional corporations achieved some improvement in the knowledge of the condition of the state's water and sewerage infrastructure assets, overall knowledge remained inadequate and insufficient to properly inform effective asset management.

TasWater

In the first years of TasWater (2013 to 2015), the existing asset condition assessments of the regional corporations were relied upon to guide the direction of work with individual programs of work for each region updated annually.

In June 2015, in its *Strategic Asset Management Plan*, TasWater stated that during that time, it had little opportunity to pursue asset condition assessments on an asset class scale as compliance-related projects had the highest priority and consumed the majority of available resources with asset engineers focussed on establishing state-wide asset management systems and filling knowledge gaps. TasWater's corporate plan for 2015-18 also stated that a significant number of challenges existed, such as ageing or non-compliant infrastructure and an array of geographic complexities.

In September 2015, an independent audit was undertaken to rate TasWater's asset condition data. The audit concluded that TasWater's condition data was at varying levels of completeness, depending on asset class, ranging from 10% - 100%. The report also noted that some assets do not require condition data to be collected and data for some assets can be used to infer asset condition across similar cohorts.

Since the audit, TasWater commenced an asset condition assessment program stating the age and condition of assets varies but the majority are well into their operational lives with some nearing the end of their serviceable lives. TasWater further stated that a general deficit of renewal and refurbishment in the past had diminished longer term performance and reliability of some assets and there were still many assets that had not had their condition formally assessed.

The September 2015 audit also rated the completeness of TasWater's asset criticality data and assessed it as less than 30%. In 2016, TasWater developed the Asset Criticality Framework to assist accurate identification and criticality ranking of all assets. The intention of the framework was to provide a consistent understanding and approach for establishing the importance of assets across asset levels and classes that are critical to achievement the of business objectives and which support:

- funding allocation decisions (prioritisation)
- planning for maintenance, operation, renewals and emergency response
- management of risk.

TasWater defines critical assets as those assets which have a high consequence of failure including those that are most important for delivering the required service and business objectives. Criticality scores for water and sewerage infrastructure assets are derived from the following eight key impact areas identified in TasWater's Risk Management Framework:

- financial
- workplace health and safety and staff wellbeing
- public health
- customer service delivery/supply interruption
- compliance and legal
- reputation
- management effort.

A criticality ranking is calculated using the methodology documented in the Framework.

In respect of water assets:

- due to the nature of mains (ie below ground and under pressure), an opportunistic approach has been taken with inspection during maintenance or repair. A small number of critical water mains have had proactive inspections undertaken.

In respect of sewerage assets:

- mains – approximately 9% (around 400 km) have been Closed Circuit Television (CCTV) examined and their condition noted and a further program based on assessed risk is currently underway
- sewage pumping stations - 100% of criticality ratings have been assigned, 15% of condition data has been collected and 100% of performance history data (ie blockages, electrical faults) has been collected
- STPs – 100% of criticality ratings have been assigned and 60% have been visited for detailed maintenance and asset condition assessment.

TasWater advised that an external review of asset condition data across all asset classes is planned for 2017-18.

In summary, TasWater has created the foundation for additional work through the establishment of the Asset Criticality Framework to further improve the knowledge of the condition of the state's water and sewerage infrastructure assets.

2.2.2 Planning for renewal and replacement of old and failing water and sewerage infrastructure

Evidence of planning for the renewal and replacement of old and failing infrastructure would generally be found in strategic, corporate and asset management plans.

We reviewed the corporate and asset management plans for the regional corporations and determined that:

- Southern Water planned a significant renewal investment in water and sewerage assets
- Ben Lomond Water planned asset improvement or renewal to occur later
- Cradle Mountain Water planned a renewal program.

We also reviewed TasWater's 2018-37 Long-Term Strategic Plan, corporate plans, Strategic Asset Management Plan 2015 and Asset Maintenance Strategy 2017 and noted that TasWater's intentions were to:

- maintain long-term asset reliability and function
- deliver required operational performance
- ensure expenditure is prudent and efficient
- develop and use a modelling tool to better understand the status of renewal programs
- identify a renewal backlog and a starting asset renewal ratio of 60% for strategies and funding. Achieving an 85% ratio over the 20 year period is expected to require an average annual renewal budget of $73m per annum.

TasWater further stated that a significant proportion of the infrastructure assets it inherited are aging and require significant investment if contemporary public health and environmental compliance standards are to be met and that it is still in a period of transition and consolidation as it develops a state-wide operating model. In its 2015-17 corporate plan TasWater noted that its capital works program was likely to be geared toward addressing compliance objectives with its capital works spend being predominantly allocated to compliance until 2019.

Further evidence of planning for the renewal and replacement of old and failing infrastructure would be found in the entities' budgets and forecasts. We reviewed the budgets of the regional corporations and TasWater for the period 2009-10 to 2015-16 and determined that for renewals or replacements:

- Southern Water budgeted:
  - $2.3m in 2009-10 and $5.5m each year for 2010-11, 2011-12 and 2012-13 for water infrastructure ($18.8m)
  - $1.7m for 2009-10 and $4.5m each year for 2010-11, 2011-12 and 2012-13 for sewerage infrastructure ($15.2m)
- Ben Lomond Water budgeted $3.6m in 2012-13 for combined water and sewerage infrastructure
- Cradle Mountain Water budgeted
  - $1.0m in 2012-13 for water infrastructure
  - $2.7m in 2012-13 for sewerage infrastructure.

As 2012-13 was the only year where reliable budget information was available for both water and sewerage infrastructure for all regional corporations, we compared total budgeted expenditure for renewals or replacements against actual expenditure and the results are shown in Table 7.

Table 7: Regional corporations – capital expenditure – renewals or replacements 2012-13

2012-13		
Budget	Actual	Variance
$17.3m	$29.9m	$12.6m (73%)

Source: TAO, TER

We also compared TasWater's budgeted expenditure for renewals or replacements against actual expenditure for the period 2013-14 to 2015-16 and the results are shown in Table 8.

Table 8: TasWater – capital expenditure – renewals or replacements 2013-14 to 2015-16

2013-14		2014-15		2015-16	
Budget	Actual	Budget	Actual	Budget	Actual
$19.2m	$33.8m	$20.1m	$33.3m	42.6m	$40.0m

Source: TAO, TasWater, TER

Note: For 2016-17 TasWater budgeted renewals or replacements capital expenditure at $32.2m with actuals of $27.5m achieved. Actual expenditure in Tables 7 and 8 is derived from TER's SOIR. The SOIR report for 2016-17 is due for publication in early 2018.

Tables 7 and 8 generally show a pattern of under-budgeting for renewal or replacement water and sewerage infrastructure over ownership structures and years with variances between 6% and 176%. As this capital expenditure category relates to work costed to poor performing (failing) or critical assets aimed at improving service standards, the result for actual expenditure reflects the general state of TasWater's infrastructure.

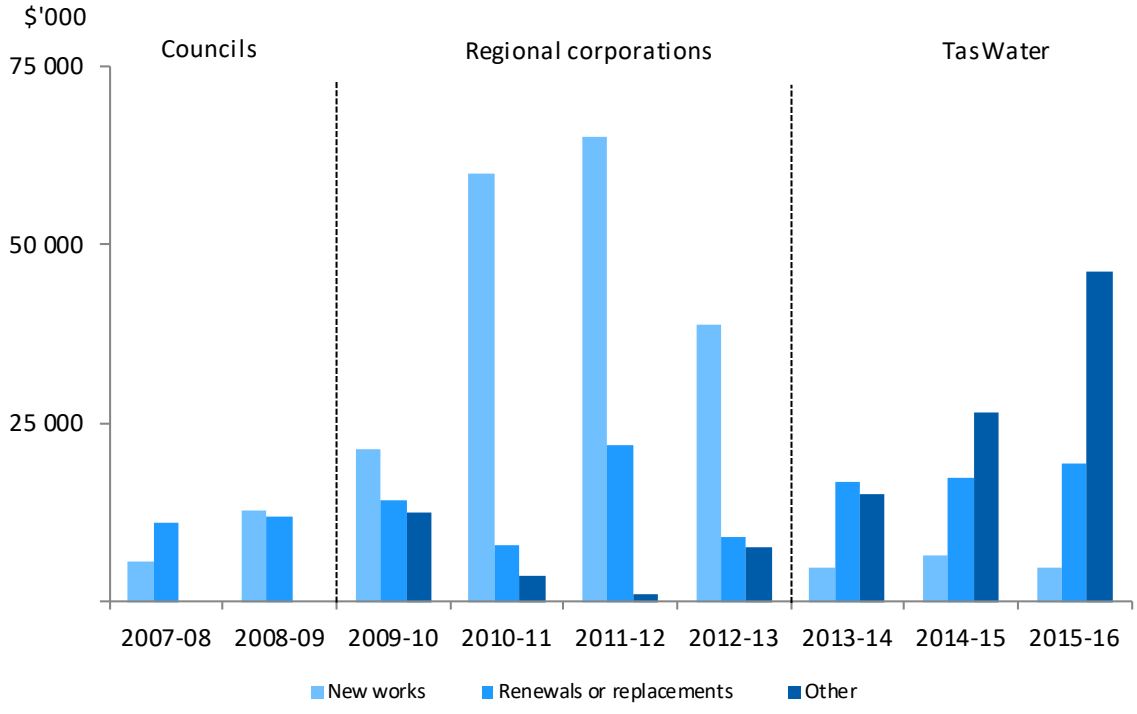
2.2.3 Renewal of old and failing water and sewerage infrastructure

Although historically there has been insufficient asset condition identification to properly inform asset management and capital investment, as shown in Sub-Section 2.2.2, expenditure on water and sewerage infrastructure continued to occur and new works, replacements or renewals and other works are ongoing.

Water infrastructure

Figure 17 shows investment in water infrastructure for the period 2007-08 to 2015-16 and provides a breakdown of capital expenditure on new works, renewals or replacements and 'other' works. 'Other' works includes compliance improvements for items such as new systems (for monitoring and control, asset management or performance recording to improve data collection and services to customers). Note that compliance is the cost driver for categorisation purposes when directed at achieving a regulatory standard by TasWater and a compliance project may also include significant growth or renewal components.

Figure 17: Water infrastructure – capital expenditure by category 2007-08 to 2015-16



Source: TER. Note: council data does not contain amounts for the category of 'other'.

Figure 17 shows that:

- the councils invested:
  - primarily in renewals or replacements, spending 55% of their total capital expenditure on this category
  - in new works as their second priority, spending 45% of their total capital expenditure on this category
  - an average of $11.4m per annum on renewals or replacements
- the regional corporations invested:
  - primarily in new works, spending 71% of their total capital expenditure on this category and reaching a record high in 2010-11 of 84% due to $47m (including Commonwealth Government grants) spent on the installation and rollout of water meters
  - in renewals or replacements as their second priority, spending 20% of their total capital expenditure on this category
  - the least proportion in other works, spending 9% of their total capital expenditure on this category
  - an average of $13.2m per annum on renewals or replacements
- TasWater invested:
  - primarily in other works, spending 56% of its total capital expenditure on this category and reaching record highs since its establishment
  - in renewals or replacements as their second priority, spending 34% of its total capital expenditure on this category
  - the least proportion in new works, spending 10% of its total capital expenditure on this category
  - an average of $17.8m per annum on renewals or replacements.

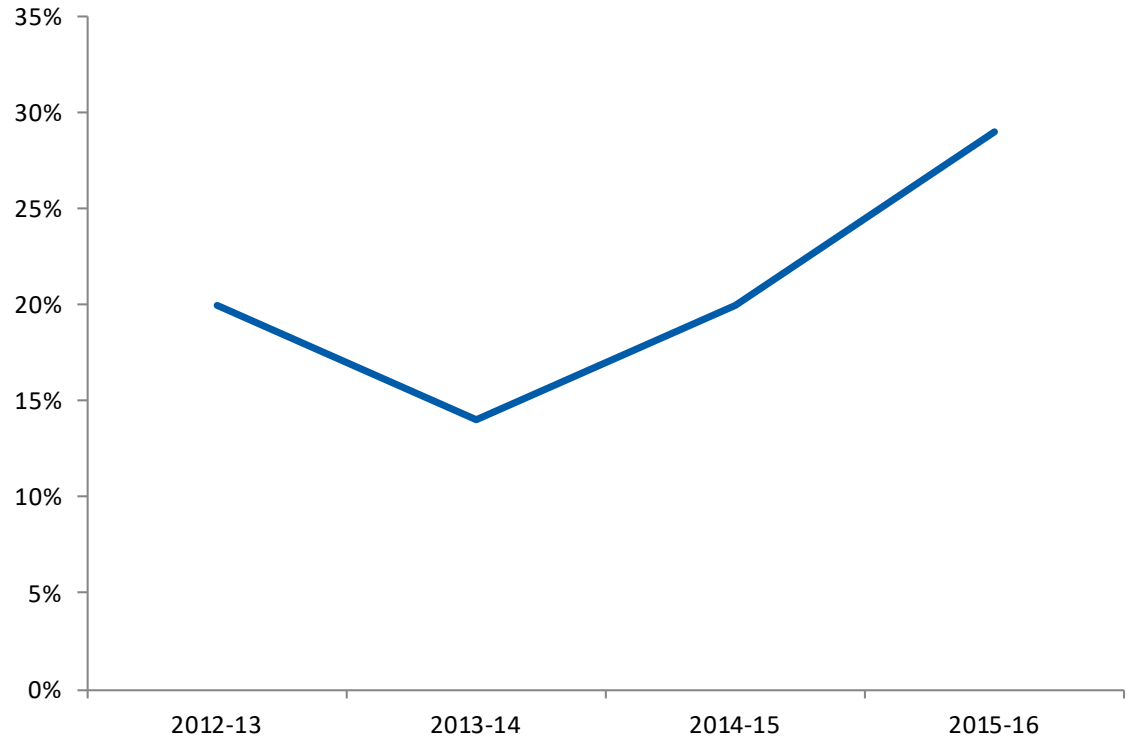
Whilst the percentage of total capital expenditure invested in water infrastructure varied over the past nine years under the different ownership structures, the average annual level of expenditure on renewals or replacements steadily increased. However, the expenditure was:

- not properly planned or budgeted for
- inadequate given what was known about the condition of the infrastructure
- below the capacity to undertake capital expenditure (as detailed in Section 3).

One indicator of water infrastructure condition is the quantum of water losses across the water network – the level of loss may be indicative of the standard of the water infrastructure – the greater the level of water loss, the higher the level of leakage as a result of poor quality infrastructure.

Examination of the SOIR reports indicated that the water loss across the water network has been increasing since 2013-14 as shown in Figure 18.

Figure 18: Estimated water loss in the TasWater network



Source: TER.

The BOM estimated that in the five years to 2017, average water losses for Australian water utility providers was 10% of total input. As demonstrated in Figure 18, TasWater's losses are substantially higher at around 30%.

TasWater advised that results have improved for 2016-17 with reductions across all water loss measures:

- infrastructure leakage index
- real losses per connection
- real losses per water main
- unaccounted for water.

Whilst 2016-17 results have potentially improved, TasWater remains one of the worst performers in water loss in Australia. However, TasWater advised that:

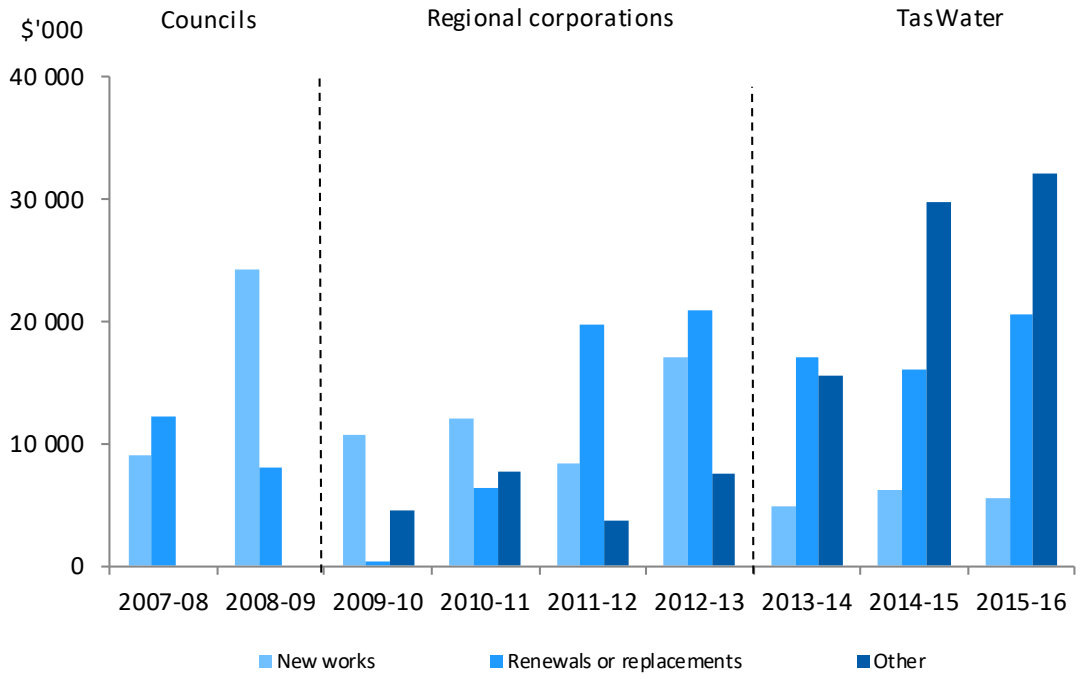
- results could be due to poor quality data because bulk water meters are not located in inappropriate locations
- there are unmetered connections and losses from fire hydrants that contribute to overall water loss
- the Tasmanian water network is not only affected by the age and condition of the underground pipes but also the topography - the undulating nature of Tasmania's landscape required pipes to be pressurised to pump water to customers and this can make pipes more susceptible to leakage
- as part of its regional towns program, TasWater is addressing unaccounted for water on a town-by-town basis but claims this is not a simple, quick or inexpensive issue to address.

Notwithstanding the above, TasWater confirmed that a large proportion of the losses were due to leakage.

Sewerage infrastructure

Figure 19 shows investment in sewerage infrastructure for the period 2007-08 to 2015-16 and provides a breakdown of capital expenditure on new works, renewals or replacements and 'other' works. 'Other' works has the same meaning as for water infrastructure.

Figure 19: Sewerage infrastructure – capital expenditure by category 2007-08 to 2015-16



Source: TER. Note: council data does not contain amounts for the category of 'other'.

Figure 19 shows that:

- the councils invested:
  - primarily in new works, spending 62% of their total capital expenditure on this category
  - in renewals or replacements as their second priority, spending 38% of their total capital expenditure on this category
  - an average of $10.1m per annum on renewals or replacements
- the regional corporations invested:
  - primarily in renewals or replacements, spending 43% of their total capital expenditure on this category
  - in new works as their secondary priority, spending 38% of their total capital expenditure on this category
  - the least proportion in other works, spending 19% of their total capital expenditure on this category
  - an average of $12.7m per annum on renewals or replacements
- TasWater invested:
  - primarily in other works, spending 53% of its total capital expenditure on this category
  - in renewals or replacements as its second priority, spending 36% of its total capital expenditure on this category
  - the least proportion in new works, spending 11% of its total capital expenditure on this category
  - an average of $17.9m per annum on renewals or replacements.

TasWater's capital expenditure on sewerage infrastructure has been:

- at an historic low for new infrastructure
- increasing for renewals or replacement infrastructure
- at an historic high for other works.

Whilst the percentage of total capital expenditure invested in sewerage infrastructure has varied over the past nine years under the different ownership structures, the average annual level of expenditure on renewals or replacements has been steadily increasing. However, the expenditure was:

- not planned or budgeted for
- inadequate given what was known about the condition of the infrastructure
- below the capacity to undertake capital expenditure (as detailed in Section 3).

2.2.4 Infrastructure standard since 2009

The 2015-16 SOIR noted that additional capital expenditure targeted at replacing old or poor infrastructure in order to bring the water and sewerage network up to expected standards was required.

As noted in Sub-Section 2.2.1, there has been an improvement in the theoretical framework and consequent progress in identifying old and failing water and sewerage infrastructure and increasing investment in the renewal, replacement and compliance of infrastructure.

We consider an improved infrastructure standard has been achieved for some asset classes (more so for water than sewerage) given the level of expenditure to date. However, the level of improvement requires acceleration. This is supported by the findings in the 2015-16 SOIR.

Section 2.2 Conclusions

- The identification of old and failing water and sewerage infrastructure has occurred since 2009 as evidenced by the progress of asset condition assessments and the establishment of the Asset Criticality Framework to further improve knowledge of the condition of the state's infrastructure.
- The renewal of old and failing water and sewerage infrastructure has only occurred for some assets since 2009 due to:
    - budgeted capital expenditure for renewals or replacements being consistently less than actual expenditure
    - actual capital expenditure for renewals or replacements has not proceeded commensurate with the age and condition of the infrastructure and borrowing capacity available.
- Renewal over the coming decades has been planned for since 2009 but has not proceeded commensurate with the age and condition of the state's infrastructure.
- An improved infrastructure standard has occurred for some assets since 2009.

Recommendations

3. TasWater completes its work assessing the condition of infrastructure assets in the short term.
4. TasWater undertakes greater investment and prioritisation of capital expenditure to address old and failing infrastructure.

2.3 HAS WATER AND SEWERAGE INFRASTRUCTURE BEEN EXPANDED OR EXTENDED?

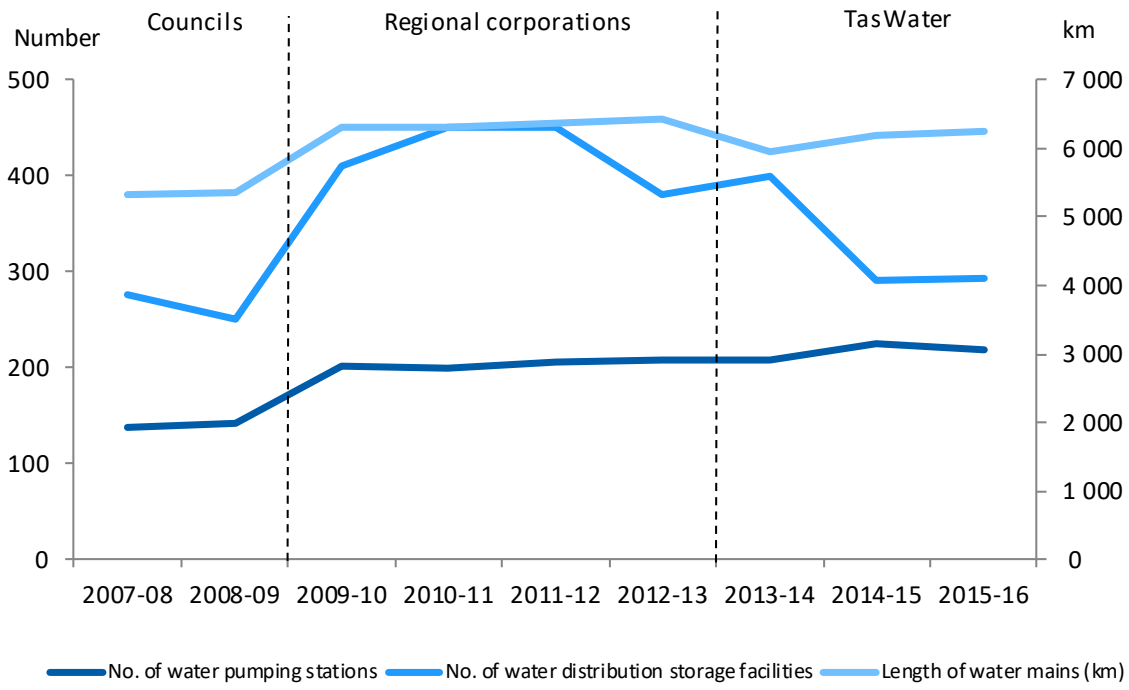
In this sub-section we determine whether water and sewerage infrastructure has been expanded or extended (as defined by TasWater) since 2009 and augmentation has been planned for over the coming decades.

Expansion is defined as augmentation of infrastructure to accommodate properties that cannot be catered for by the current water or sewerage system's capacity. Extension is defined as lengthening the infrastructure to enable connection of unserviced land to the current water or sewerage system. In this section we have determined that expansion and extension constitute 'new' infrastructure.

2.3.1 Water assets

Figure 20 tracks the number and coverage of water assets (non-dam) for the period 2007-08 to 2015-16

Figure 20: Water assets (non-dam) 2007-08 to 2015-16



Source: TER.

Figure 20 shows that between 2007-08 and 2015-16 the:

- number of pumping stations has increased from 138 to 219 – an increase of 59% – 47% achieved by the regional corporations and 12% by TasWater. TasWater advised this has not changed in 2016-17
- number of distribution storage facilities has increased from 275 to 411 under the regional corporations and consolidated to 294 in 2015-16 by TasWater. TasWater advised the data to 2012-13 is likely incorrect due to double counting at some facilities and the number is 297 in 2016-17
- length of water mains increased from 5 316 km to 6 245 km – an increase of 17.5% – 11.4% achieved by the regional corporations with large expansions over a number of years and 6.1% achieved by TasWater. TasWater advised an increase to 6 266 km in 2016-17.

It is important to note that the 2013-14 SOIR stated that the total length of water mains went from 6 442 km to 5 943 km upon the formation of TasWater – a reduction of 499 km in the recorded length of the water mains. The reduction was recognised after consideration of the findings of an independent audit undertaken in July 2014 which found that previous reporting was not in line with National Performance Reporting definitions in that outfalls and disused pipes were no longer included in the reported figure. Comparisons with previous years should therefore not be made in gauging network growth or reduction.

In addition to the information in Figure 20, we determined that the number of water connections has grown from 193 477 in 2007-08 to 204 949 in 2016-17, an increase of 6%.

As detailed in Sub-Section 2.2, investment in new water infrastructure has occurred, but at a slower rate than expenditure on compliance related activities.

The councils invested:

- in new works as their second priority, spending 45% of their total capital expenditure on this category
- an average of $9.2m per annum on new assets.

The regional corporations invested:

- primarily in new works, spending 71% of their total capital expenditure on this category and reaching record highs in 2010-11 and 2011-12 of 84% and 74% respectively
- an average of $46.2m per annum on new assets (taking into account the budgeted one-off expense of the installation and rollout of water meters across the relevant years, the average annual spend on new assets was $36.9m).

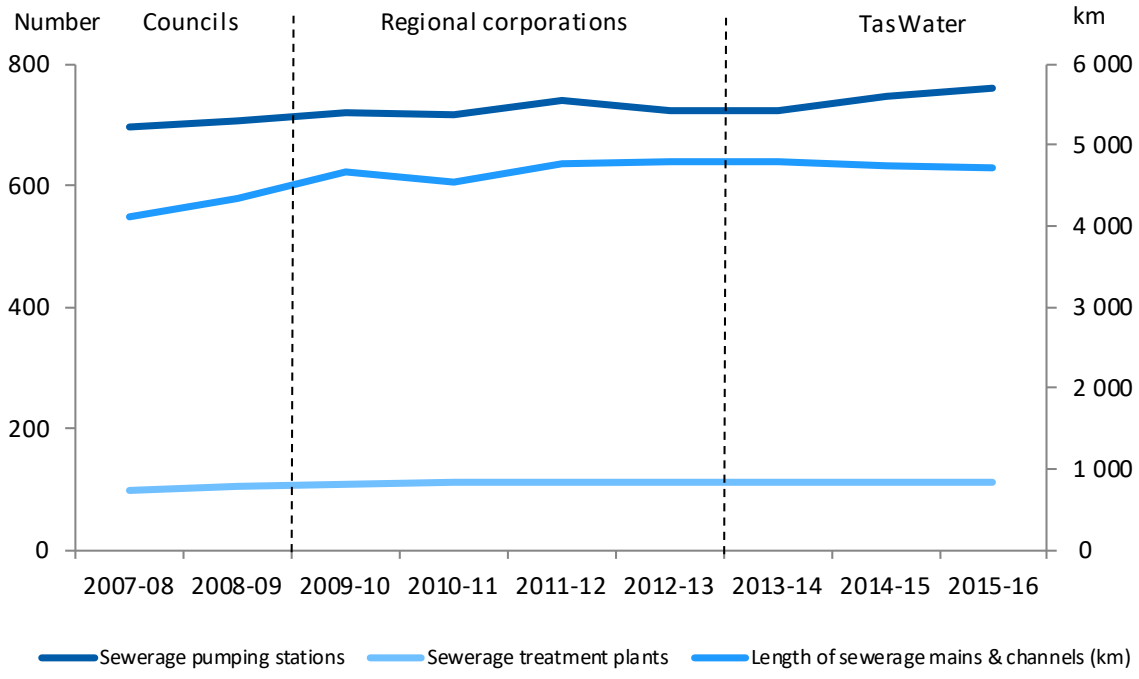
TasWater invested:

- the least proportion in new works, spending 10% of its total capital expenditure on this category
- an average of $5.3m per annum on new assets.

2.3.2 Sewerage assets

Figure 21 tracks the number and coverage of sewerage assets for the period 2007-08 to 2015-16.

Figure 21: Sewerage assets 2007-08 to 2015-16



Source: TER.

Figure 21 shows that between 2007-08 and 2015-16 the:

- number of sewerage pumping stations increased by 9% from 695 to 760 – 3% achieved by the regional corporations and 6% achieved by TasWater. Following rationalisation, TasWater advise the number has reduced to 747 in 2016-17
- number of sewerage treatment plants increased by 14% from 98 to 112 – 100% achieved by the regional corporations and remaining at that level under TasWater. In 2016-17, following rationalisation, TasWater advise the number has reduced to 79
- length of sewerage mains and channels increased by 15% from 4 118km to 4 723km - 11% achieved by the regional corporations and 4% achieved by TasWater. In 2016-17, TasWater advised the length has marginally increased to 4 745.

In addition to the information in Figure 21, we determined that the number of sewerage connections has grown from 178 461 in 2007-08 to 179 677 in 2016 17 – an increase of 0.7%.

As detailed in Sub-Section 2.2, investment in new sewerage infrastructure has occurred, but at a much slower rate than expenditure on compliance related activities.

The councils invested:

- primarily in new works, spending 62% of their total capital expenditure on this category
- an average of $16.6m per annum on new assets.

The regional corporations invested:

- in new works as their secondary priority, spending 38% of their total capital expenditure on this category
- an average of $14.4m per annum on new assets.

TasWater invested:

- the least proportion in new works, spending 11% of its total capital expenditure on this category
- an average of $5.6m per annum on new assets.

A period of over eight years has now elapsed since the regional corporations were first created. We would expect to see a documented strategy to rationalise or decommission old and inefficient assets, particularly since TasWater has a high level of infrastructure per capita compared to other Australian water and sewerage providers.

TasWater's long-term strategic plan briefly addresses planning around rationalisation projects, while the strategic asset management plan is more succinct in its assertion that there are 'potential long term savings from rationalising and optimising some of our systems, networks and service standards'. The 2015-17 corporate plan states that TasWater has initiated planning to investigate rationalising wastewater infrastructure in the Derwent and Tamar.

Although TasWater has begun identifying rationalisation opportunities for water and sewerage facilities, no overarching rationalisation strategy is in place.

TasWater advised it:

- has deliberately developed a 10-year financial plan and 20-year long term strategic plan
- is not able to determine specific rationalisations because work is undertaken progressively and rationalisation occurs where prudent
- is assessing the extent to which rationalisation can occur as it goes through its upgrade and in accordance with regulatory expectations.

Whilst the percentage of total capital expenditure invested in new water and sewerage infrastructure has varied over the last nine years under the different ownership structures, the average annual level of expenditure has been steadily decreasing and has been at an historic low under TasWater.

Section 2.3 Conclusions

- Water and sewerage infrastructure has been expanded and extended since the commencement of the reforms.
- A structured approach to asset rationalisation is not in place as evidenced by the absence of a rationalisation strategy.

Recommendation

5. TasWater finalises its rationalisation strategy to support rationalisation projects.

POINT OF INTEREST – BLUE DERBY TRAILS

Derby is one of several small towns in north-eastern Tasmania that has had a 'Do Not Consume' warning on its water supply and has been subject to a permanent boil water alert for the past 10 years. During this time, the population has been around 200 people and there were few opportunities for local employment.

Derby was settled in 1874 and prospered on tin mining until 1929 when a dam built to blast water onto the ore burst with catastrophic results. The disaster occurred after heavy rains that also flooded Launceston and cut the roads to Hobart. The downpour damaged several tin mines in the area and when the dam burst at the Briseis tin mine, it released a 30 metre wall of water that tore through Derby. The mine reopened 5 years later but profits declined and it closed again in 1948. Contaminants in the water supplies to several settlements in the area, such as Pioneer and Winnaleah, have included heavy metals– a legacy of the days of tin mining.

In 2013, the Dorset and Break O'Day Councils secured support for a project that has markedly increased prosperity in the region - the Blue Derby Trails - more than 80 km of world class mountain bike trails at Derby and in the Blue Tier Forest Reserve.

Within months of completion in June 2015, the Blue Derby Trails were featured in international mountain bike magazines and visitor numbers began to increase and business in Derby began to improve.

In July 2016, international media announced that the Blue Derby Trails would host part of the Enduro World Series in 2017. Locals recognised an exciting opportunity to showcase the town and Tasmania to the world. In response to increasing demand, several residents established accommodation businesses in the area and prepared to meet the higher demand in cafés and local hotels.

Locals endeavouring to provide quality services to the visitors struggled with the effects of discoloured water on their laundries and the additional work required to boil all the water their customers needed.

Wash bay for bikes - https://www.ambmag.com.au/news/riding-atlas-in-derby-430906

As the date for the event drew closer, residents and their representatives raised concerns about the impact of the boil water alerts on the state's brand and the image of Tasmania as a clean and green destination.

In response, TasWater installed 5 temporary water tanks and large supplies of bottled water to Derby to support the event. These water supplies were positioned around the town to service the requirements of the riders.

Feedback from participants and visitors included:

- Derby was really great - having the whole town supporting cyclists really enhances our visits
- it was great having the wash bay for bikes at the trail head, with a shower and toilet block next door and helped us get ready to fly out of Launceston
- the water tanks were great to service all the people in town for the event but wonder how they will manage the crowds when taps replace the tanks
- we are super impressed with Derby although remembering to bring drinking water every time is a bit of an issue.

Derby now has about 30 000 visitors a year and commercial successes include at least 30 premises offering accommodation services in the area. The Treasurer stated he was delighted at the stimulus achieved through the development of the Blue Derby mountain biking trails in the North Eastern region – many small businesses have been established or expanded to provide accommodation, food and transport to the interstate and international visitors who have come to experience the Enduro World Series trails for themselves.

TasWater completed extensions to the Ringarooma Valley Water Supply which enabled DHHS to lift the boil water alert in Derby on 7 August 2017.

Steps on water near Derby – photo credit Jmacqueen Media

3. HAVE THE REFORMS DELIVERED THE EXPECTED FINANCIAL BENEFITS?

In this section, we determine whether the reforms have delivered the expected financial benefits by assessing whether:

- the 2008 intended outcomes have been achieved:
  - one billion dollars of new water and sewerage infrastructure over the next 10 years
  - improved financial return
  - improved capacity to service debt
  - tourism operators, local businesses and the community received cost effective and sustainable services
  - increased revenue flows into the sector to support self-sustaining investment and the appropriate use of debt funding
  - customers pay for the services they receive
- the 2012 intended outcomes have been achieved:
  - further integration of administrative systems creating cost savings and reduced reporting
  - a stronger and more stable cash flow
  - better capacity to manage debt
  - more flexibility to deal with a significant capital expenditure program
  - deliver estimated savings of $5m per annum after a period of time.

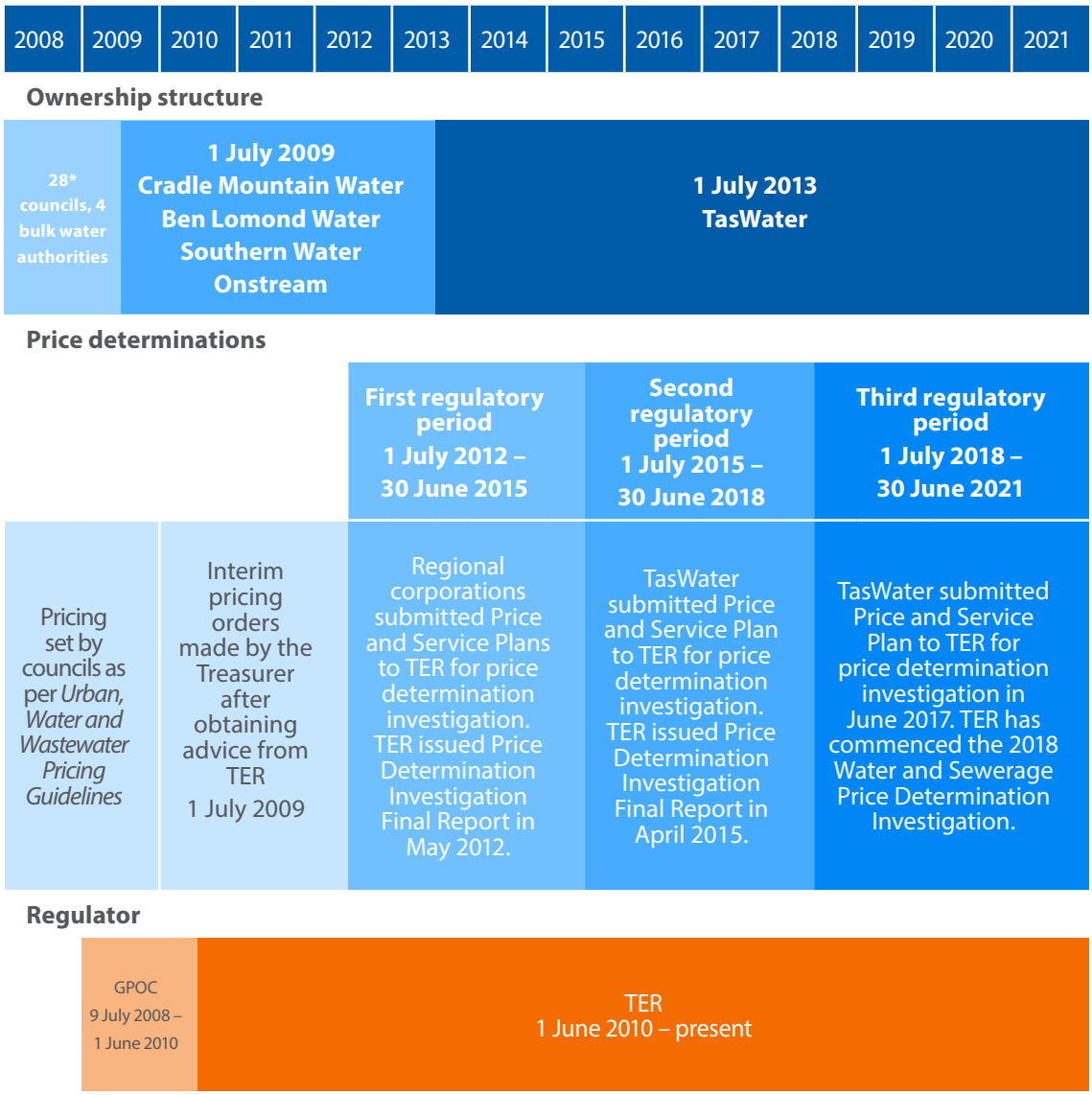
3.1 HAVE PRICING STRUCTURES BALANCED REVENUE MAXIMISATION AGAINST EQUITY WITHIN THE REGULATORY ENVIRONMENT?

In this sub-section we assess whether the pricing structures implemented by the entities have balanced revenue maximisation against equity in the regulatory environment since 2009. We define equity in this context as being 'fairness' of pricing across the customer base.

In undertaking this assessment, it is necessary to consider the different pricing structures and regulatory environments that have existed under council, regional corporations and TasWater ownership of water and sewerage assets.

Figure 22 shows the water and sewerage entity structures, pricing policies and plans and regulatory environment for the period 2008 to 2021.

Figure 22: Structural, pricing and regulatory environment 2008-21



*Tasman Council's services were limited to a reticulated sewerage service in Nubeena. These assets were transferred to Southern Water in 2008–09.

3.1.1 Water pricing

Councils

Prior to 2009, there was little consistency across the state for the pricing of water services. Prices were set by councils using the *Urban Water and Wastewater Pricing Guidelines* (Pricing Guidelines) issued in January 2003. The Pricing Guidelines set upper and lower price limits that councils could charge based on the weighted average cost of capital (WACC). This approach was considered sound and was used by other regulated utility utilities in Australia, particularly in the gas and electricity industries.

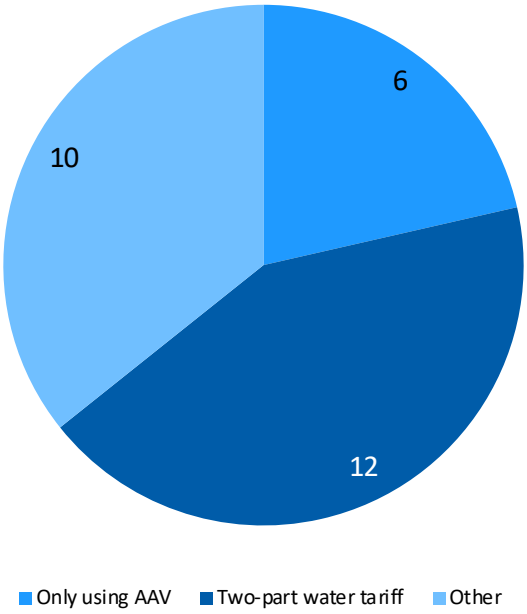
The nature of the pricing information was such that councils could, and did, apply their own interpretation of the Pricing Guidelines which led to inconsistent pricing structures across Tasmania.

The residential water tariff structure used by councils was one of the following methods:

- Annually Assessed Value (AAV) – water pricing based on the AAV of the property with a minimum charge also applied in most cases
- Two-part water tariff – a fixed tariff for all customers or tariff based on connection pipe size, plus a variable component calculated using a metered volumetric charge with no free water allowance
- Excess usage – a fixed charge together with a metered variable excess charge (range of 250 to 400 kL per annum).

Figure 23 shows the distribution of the water pricing structures used by councils.

Figure 23: Council distribution of residential water tariff structures as at 2008-09

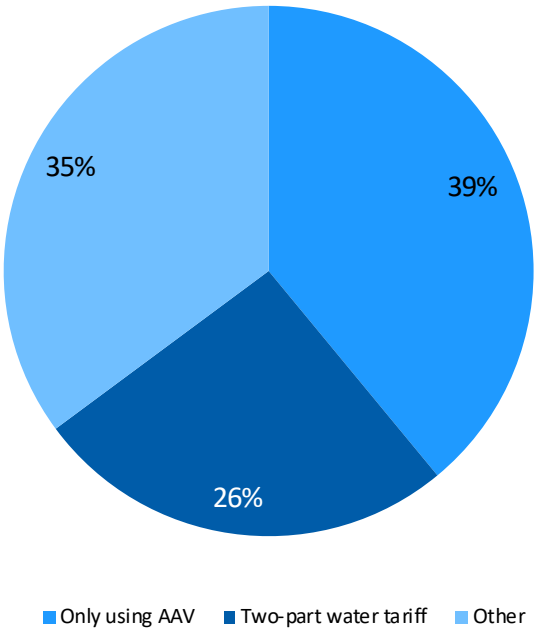


Source: GPOC. Note: Tasman Council did not provide water services prior to 2009

Figure 23 shows that the majority of councils applied either the two-part water tariff or excess usage charge water pricing method.

Figure 24 below shows the population distribution of the water pricing structures used by councils.

Figure 24: Council population distribution of residential water tariff structures as at 2008-09



Source: GPOC and TAO

Figure 24 shows the AAV and excess usage charge pricing methods applied to the majority of the population and only 26% of the population was subject to a two-part water tariff.

In December 2006, the Taskforce noted that urban councils with bulk water supply arrangements with a bulk water authority, but no volumetric based pricing structure for customers (those with AAV based pricing) faced a serious disconnect between the costs of water supply (volume-based) and revenues generated from water (not volume-based). In some cases, the cost of water services was in excess of the revenue councils received from their customers. This pricing approach gave rise to inefficient price signals with councils:

- attempting to manage the cost of infrastructure maintenance
- potentially creating unmet demand because there were no water use restrictions based on price.

In late 2007, the Treasurer issued terms of reference to GPOC to conduct an inquiry to determine whether councils were charging a price that fell between the upper and lower revenue limits specified in the Pricing Guidelines. The upper limit was defined by GPOC as the maximum allowable revenue that avoids monopoly rents. In this context, monopoly rents could also be referred to as the receipt of excess profits due to an artificial restriction of service. The lower limit represented the 'minimum business viability' requirement where all costs were met, including a provision for asset refurbishment or replacement, but without allowing a return on capital other than interest costs incurred and dividends paid. Both the upper and lower revenue limits were based on the WACC.

In February 2008, GPOC reported in respect of the review and noted that:

- water pricing structures should be designed to meet the general objectives of efficiency, equity and simplicity. Two-part pricing (two-part tariff), comprising a fixed charge (to cover the cost of maintaining dams, pipes, reservoirs and other essential infrastructure) and a volumetric or variable charge (to cover the costs of delivering water to a property and the cost of water treatment and pumping) was the generally acceptable method for setting charges for water usage to meet these general objectives
- nineteen of the 28 councils set water pricing in strict compliance with the Pricing Guidelines (Tasman Council was not included as it did not provide a water service)
- it was not clear whether three of the 28 councils had water meters in place in order to properly calculate water charges
- the average Tasmanian household used around 350 kL to 400 kL of water per year so it was unlikely that many households were ever subjected to an excess charge
- four councils were recovering above the upper revenue limit – all of these councils required an adjustment to council rates of more than 5% to become compliant with the upper limit
- five councils were recovering below the lower revenue limit – one of these councils required an adjustment to council rates of more than 5% to become compliant with the lower limit.

Regional corporations

The 2008 Industry Act established pricing principles for the provision of regulated services. In particular, efficient pricing was to be provided through two-part pricing for water services based on the recovery of fixed costs and variable costs by way of separate charges through voluntary metering, mandatory metering or such other manner as determined by the regulator.

The transition to the new regulatory arrangements was supported by the issuing of an Interim Price Order (IPO) on 1 July 2009. The IPO, which was reviewed by the Treasurer annually, initially capped price increases at 10% per annum over the interim period.

On 17 February 2010, the Treasurer amended the IPO to reduce the price increase cap of 10% per annum to 5% per annum.

On 1 July 2011, the IPO was revised to:

- increase the caps on annual price increases from 5% to either 10% per annum or $50, whichever was the greater
- increase the caps on annual revenue increases from 5% to 10%
- include an additional requirement for the regional corporations to undertake tariff reform in 2012 that would commence the transition to a tariff structure consistent with the pricing principles under the 2008 Industry Act.

The original intent of the interim arrangements was to unwind pricing inequities by transitioning the water and sewerage industry towards full cost recovery and consistent pricing arrangements to apply from 1 July 2012 under the first full price determination. In this respect, the 2008 Industry Act was amended on 22 July 2011 to establish a statutory revenue limit, which:

- applied from 1 July 2012
- reflected the maximum revenue permitted under the Act
- was based on the combined result of the WACC for existing assets and new assets to reflect past and contemporary economic factors, such as different interest rates prevailing at the time assets were acquired.

From 1 July 2012, water prices have been independently set by TER which must determine prices in accordance with the pricing principles contained in the 2008 Industry Act together with any additional pricing principles in the Regulations. The 2008 Industry Act specifies a transition period for the application of the pricing principles beginning 1 July 2012 and ending 1 July 2020.

TER assesses a regulated entity's Price and Service Plan (PSP) by conducting a price determination investigation - a process by which TER reviews a regulated entity's proposed costs to provide water and sewerage services to Tasmanian customers together with proposed prices and services to be delivered over the regulatory period. For the period 1 July 2012 to 30 June 2015, TER compared the revenue each regulated entity expected to receive in each year of the first regulatory period and compared this against the following revenue limits:

- upper revenue limit (full cost recovery)
- statutory limit (maximum revenue permitted under the 2008 Industry Act)
- lower revenue limit (sustainability threshold), which includes debt servicing costs, operating and maintenance expenditure and an asset renewal annuity.

As part of its investigation, TER provides a draft report summarising its proposed decisions, the reasons for those decisions, any changes required to the water and sewerage provider's proposed PSP and a draft price determination setting out prices for the regulated water and sewerage services for the regulatory period. A final report and final price determination are then issued after public consultation.

The first price determination applied for the period 1 July 2012 to 30 June 2015 and continued the transition towards 'target' prices for each of the regulated water and sewerage services provided. This determination stated that target pricing had the following priorities:

- at a minimum, generate revenue to ensure the viability of each regulated entity throughout the first regulatory period
- commence the transition of revenues to levels to achieve financial sustainability
- retain the statutory revenue limit
- achieve two-part pricing for water (with one fixed charge and a separate variable charge based on metered water usage) for all customers from 1 July 2012, including the removal of free water allowances
- commence the transition of customers to a rational price structure consistent with legislated pricing principles
- to not increase existing cross-subsidies between customers and, if possible, reduce cross-subsidies
- manage the impact of price changes on customers.

TasWater

Since the establishment of TasWater, the many different pricing structures and revenue cross-subsidisation of services by councils and the regional corporations have been unwound to create uniform, state-wide, same-service, same-pricing. TasWater has continued to transition customers from the prices previously charges by councils and the regional corporations under PSP 1 (2012-2015) and PSP 2 (2015-2018).

The first price determination commenced under the regional corporations, but not all customers had reached target tariffs for water by 30 June 2015. TasWater estimated that 63% of water customers at that time were above target and 37% were below target.

The second price determination applies for the period 1 July 2015 to 30 June 2018 and its focus is on prices, with its primary objective being to achieve a level playing field for all customers based on pricing equity whilst avoiding price shock. In assessing TasWater's revenue forecast, TER observed that revenue exceeded the lower revenue limit by a significant margin and would approach the statutory revenue limit during the period. TER formed the view that TasWater would have the financial capacity to speed up the price transition without causing price shocks for customers up to target tariffs during the second regulatory period.

Under the second price determination, TER approved the following pricing arrangements:

- customers whose current fixed water charges were above the nominated target tariffs had their prices reduced to the target tariffs from 1 July 2015
- customers whose current fixed water charges were equivalent to the applicable water target tariff did not have any increases to those charges
- most residential customers whose current fixed water charges were below the target tariffs faced price increases capped at the greater of either 10% or $100 per annum until they reach the target tariff. For larger customers, the $100 cap increased in proportion to the size of their water connection
- customers not on the respective target tariff for water usage moved to the target tariff over the period in three equal, annual steps
- the target water usage charge increased by 2.5% per annum to reflect inflation.

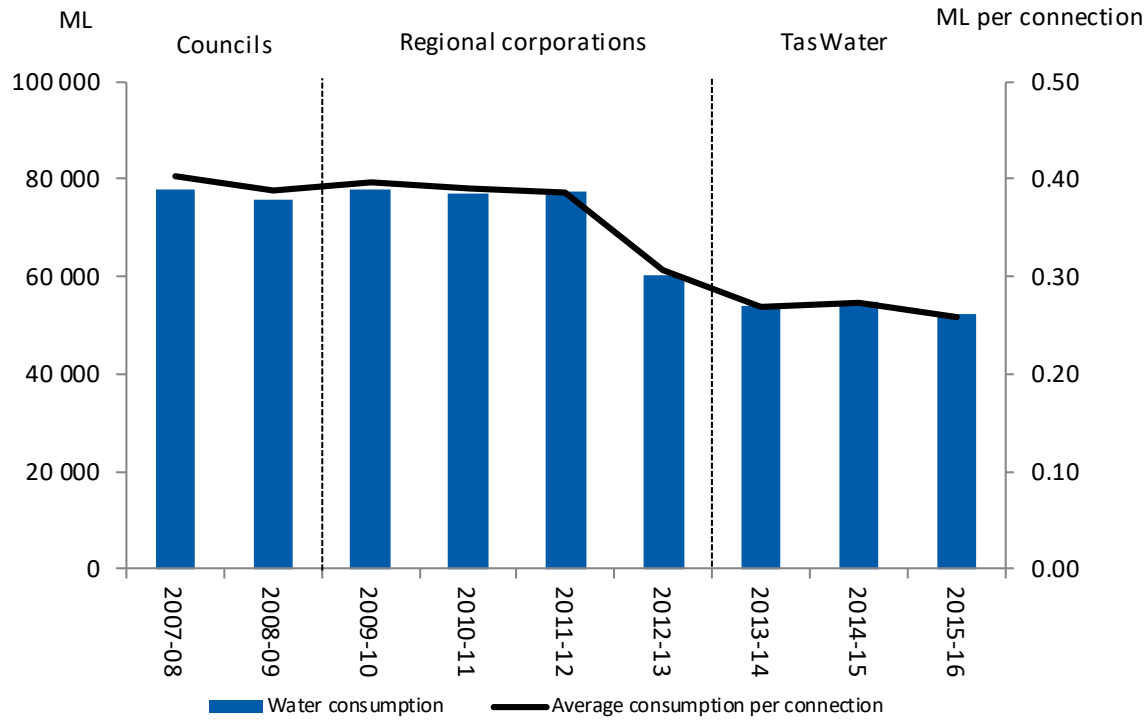
TasWater is required to transition all customers to the target tariff by 1 July 2020.

Impact of water pricing structures on water consumption

As noted above, in December 2006 the Taskforce identified that AAV pricing structures could potentially create unmet demand because there were no water use restrictions based on price, and hence no incentive for some consumers to monitor or manage their water consumption.

To assess whether water pricing structures have led to a change in the consumption of water we examined water consumption in Tasmania for the period 2007-08 to 2015-16 as shown in Figure 25.

Figure 25: Tasmanian water consumption 2007-08 to 2015-16



Source: TAO and TER

Figure 25 shows:

- a significant drop in consumption in 2012-13 due to:
  - new water meter rollout from February 2012. Most old water meters were replaced and many new meters were installed to water connections that had never previously been metered
  - the introduction of two-part water pricing bills from 1 July 2012
- average water consumption was consistent from 2007-08 to 2011-12 and reduced by 28% since 2012-13 as water pricing became more aligned to water usage.

As at 2016-17, TasWater advised total water consumption increased to 56 155 ML and consumption per connection increased to 0.27 ML.

Customer behaviour has changed as evidenced by a reduction in water consumption following the roll out of water meters and the commencement of volumetric pricing. Figure 25 shows that since the establishment of TasWater, a new pattern of reduced water usage has emerged.

3.1.2 Sewerage pricing

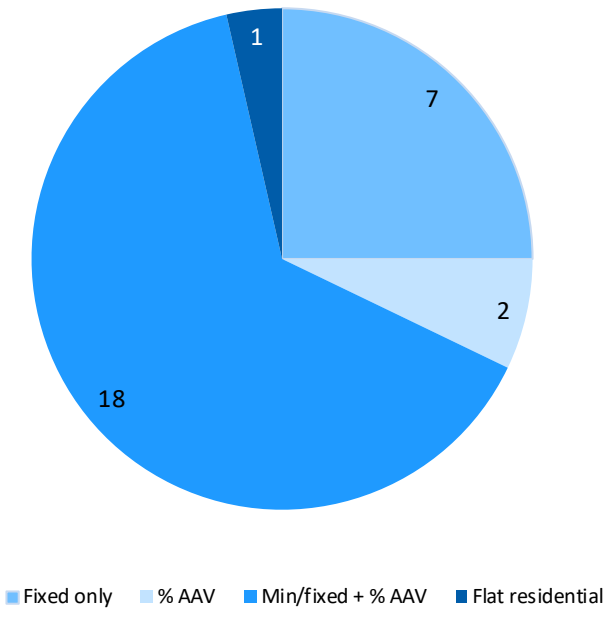
Councils

As with water pricing, prior to 2009, there was little consistency across the State for the pricing of sewerage services. Prices were set by councils using the Pricing Guidelines issued in January 2003 and, as with water, each council determined its own pricing policy for sewerage services. The residential sewerage tariff structure used by councils was one of the following methods:

- Percentage of AAV – sewerage services pricing for a property based on its AAV
- Fixed only – fixed sewerage service charge
- Minimum/fixed + % AAV – based on a minimum or fixed charge plus a component calculated as a percentage of AAV
- Flat residential fee – only used by Launceston City Council.

Figure 26 shows the distribution of councils using the above methods to calculate residential sewerage services charges.

Figure 26: Council distribution of residential sewerage tariff structures 2008-09

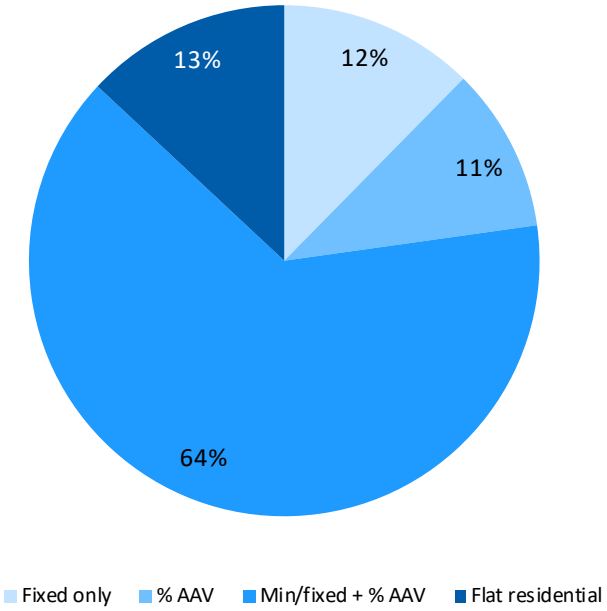


Source: GPOC

Figure 26 shows that most councils were using a sewerage services pricing structure of minimum/fixed + % AAV.

Figure 27 shows the population distribution using the three residential sewerage tariff structures.

Figure 27: Council population distribution of residential sewerage tariff structures 2008-09



Source: GPOC

Figure 27 shows that the majority of the population was charged using the minimum/fixed fee + % AAV method.

As with water pricing, pricing for sewerage services was subject to upper and lower limits. In the 2008 inquiry into councils' compliance with the Pricing Guidelines, GPOC found that:

- twenty two of 27 councils were in strict compliance with the Pricing Guidelines (Tasman and Flinders Island councils were excluded as they did not provide sewerage services)
- two councils obtained a return above the upper limit
- three councils obtained a return below the lower limit.

Regional corporations

The various pricing structures used by councils for sewerage services were, like water, retained by the regional corporations until TER's first pricing determination in July 2012. Price increases for sewerage were controlled in the same way as for water and were subject to the same price and revenue caps that were imposed on water.

From 1 July 2012 sewerage tariffs were applied in accordance with TER's price determination, with all linkages to property values removed. Sewerage service charges were calculated on a single fixed charge based on the number of equivalent tenements (a measure of demand a property will place on infrastructure) assessed for each property. A discount was applied to customers on a limited service e.g. a septic tank effluent disposal scheme. Tariffs were increased proportionally depending on their equivalent tenements assessment and/or where the connection size was larger than the standard connection.

TasWater

The many different pricing structures and revenue cross-subsidisation of services implemented by councils and the regional corporations have been unwound to create uniform, state-wide, same-service, same-pricing for sewerage.

The first price determination commenced under the regional corporations, but not all customers had reached target tariffs for sewerage services by the end of 30 June 2015. TasWater estimated that 18% of sewerage services customers at that time were above target and 82% below target.

The second price determination applies for the period 1 July 2015 to 30 June 2018 with one of its primary pricing objectives being to achieve a level playing field for all customers based on pricing equity whilst avoiding price shock.

Section 3.1 Conclusions

- Pricing structures since 1 July 2009 have balanced revenue maximisation against equity in the regulatory environment as evidenced by:
  - the introduction of two-part pricing is financially appropriate and equitable for all customers
  - the proportion of fixed and variable price weighting is reasonable given the geographical location and number of infrastructure assets needed to service the population
  - a regulated pricing methodology providing an appropriate level of revenue flows as detailed in Section 3.2
  - the migration of customers to tariff rates over time to prevent 'bill shock'.

3.2 HAVE REVENUE FLOWS INCREASED TO ACHIEVE SELF-SUSTAINING INVESTMENTS AND HAS AN APPROPRIATE LEVEL OF DEBT FUNDING BEEN UTILISED?

In this sub-section we assess whether:

- revenue flows into the sector have increased to support self-sustaining investment since 2009
- there has been an appropriate use of debt funding since 2009
- there has been an improved capacity to service debt since 2009
- there has been a better capacity to manage debt since 2013.

We have defined 'appropriate' as being an accepted industry benchmark.

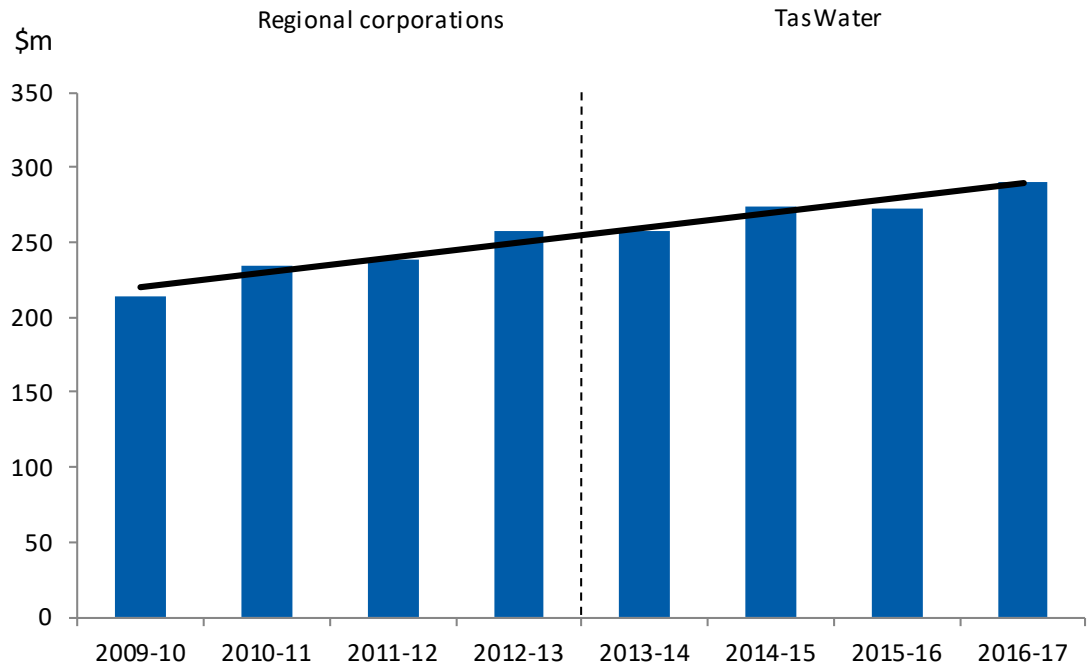
This sub-section should be read in conjunction with Sub-Section 3.3.

3.2.1 Revenue flows to support self-sustaining investment

In this sub-section we determine whether revenue flows into the sector have increased since 2009 to support self-sustaining investment.

Figure 28 shows revenue flows for the regional corporations and TasWater for the period 2009-10 to 2016-17.

Figure 28: Revenue flow 2009-10 to 2016-17



Source: TAO

Figure 28 shows revenue flows consistently increased over the period:

- 20.4% increase by regional corporations
- 13% increase by TasWater.

Price determinations made by TER significantly influence revenue generation. As part of the price determinations in 2012 and 2015, TER compared the revenue each regulated entity expects to receive between 1 July 2012 and 30 June 2018 against the upper, statutory and lower limits.

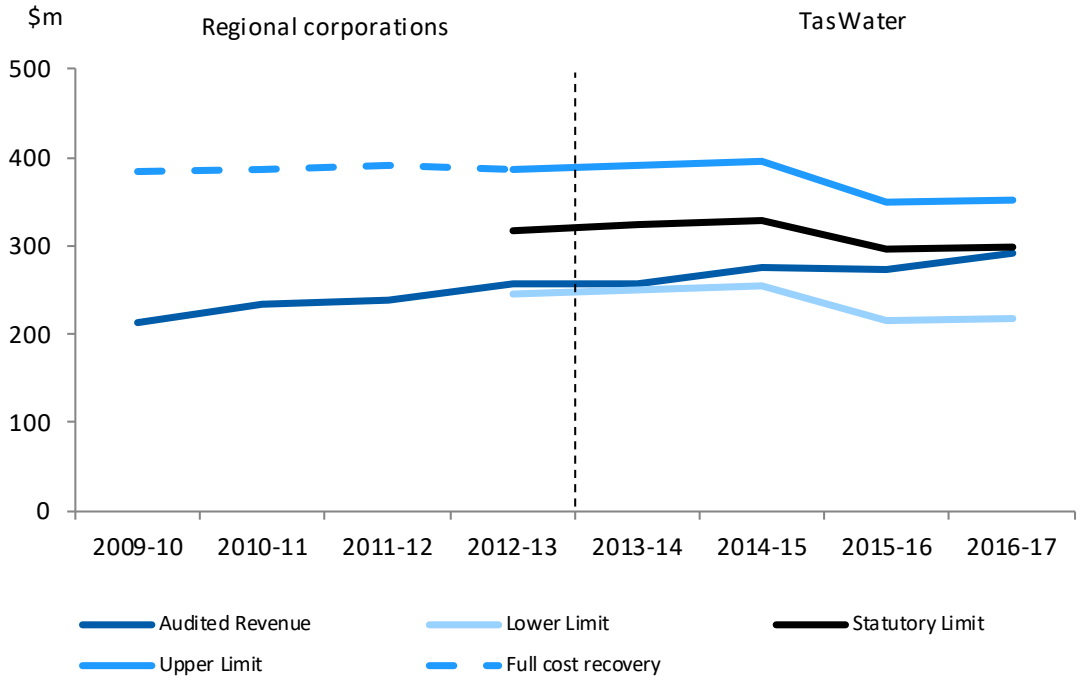
TER previously directed the regional corporations and TasWater, via the PSP Guidelines, to include the capital expenditure required to achieve regulatory compliance in the asset renewal annuity.

Figure 29 on the following page compares the revenue of the regional corporations and TasWater from 2009-10 to 2016-17 with the revenue limits. While the calculation of the upper revenue limit has been consistent over this period, the:

- statutory revenue limit did not exist before 1 July 2012
- calculation of the lower revenue limit included an asset replacement annuity, which was not part of any IPO revenue determination.

Therefore the statutory and lower revenue limits cannot be calculated for the period 2009–10 to 2011–12.

Figure 29: Entity revenue compared to revenue limits 2009-10 to 2016-17



Source: TAO

Figure 29 shows that:

- regional corporations' revenue was between the lower and statutory revenue limits in 2012–13 and well below the upper revenue limit between 2009–10 and 2012–13
- TasWater's revenue remained between the lower and statutory revenue limits between 2013–14 and 2016–17, but the gap between the statutory and upper revenue limits and actual revenue is decreasing.

Since actual revenue exceeded the lower revenue limit, we conclude that the regional corporations and TasWater had:

- generated sufficient revenue to support self-sustaining investment
- not generated sufficient revenue to reach full cost recovery
- closed the gap between actual revenue and the statutory and upper revenue limits.

In the final report for PSP, TER noted that TasWater should be moving towards recovering revenue at the upper revenue limit as a longer-term objective.

3.2.2 Capacity to use, service and manage debt

In this sub-section we determine whether there has been an appropriate use of debt funding, improved capacity to service debt and a better capacity to manage debt.

Use of debt funding

The use of debt funding can be an advantageous way to finance capital investment as it almost always costs substantially less than equity financing. The appropriate use of debt financing also provides the potential for an enhanced return on assets.

In determining whether there has been an appropriate use of debt funding, we examined the following common measures of leverage:

- Debt Ratio = Total debt / Total Assets

  The debt ratio compares an entity's total debt to its total assets and shows the amount of leverage being used by the entity. The lower the percentage, the less leverage the entity is using and the stronger its equity position. The higher the ratio, the more risk the entity is considered to have taken on.

- Debt to Equity Ratio = Total Debt / Owner's Equity

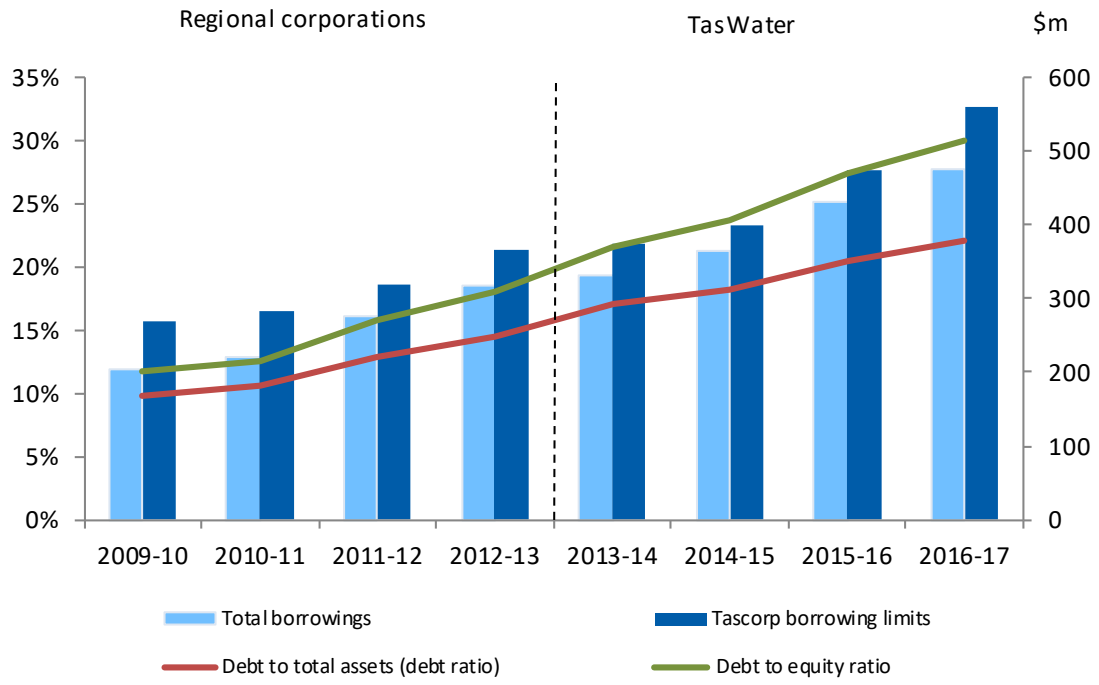
An entity's debt to equity (gearing) ratio compares owner's equity (or capital) to funds borrowed. Gearing is a measurement of the entity's financial leverage, which demonstrates the degree to which an entity's activities are funded by owners versus financiers.

We also compared total borrowings of the entities against the borrowing limits imposed by the Tasmanian Public Finance Corporation (Tascorp).

Tascorp was established by the *Tasmanian Public Finance Corporation Act 1985* and is a statutory body corporate for the purpose of developing and implementing borrowing and investment programmes for the benefit of Tasmanian state authorities. The 2012 Act precludes the regulated entity from borrowing from any person other than Tascorp unless approved by the Minister.

Figure 30 shows the total borrowings and borrowing limits, debt ratio and debt to equity ratio for the regional corporations and TasWater for the period 2009-10 to 2016-17.

Figure 30: Borrowings and debt ratios 2009-10 to 2016-17



Source: TAO

Note: Onstream is not included in the amalgamated amounts for regional corporations.

Figure 30 shows that:

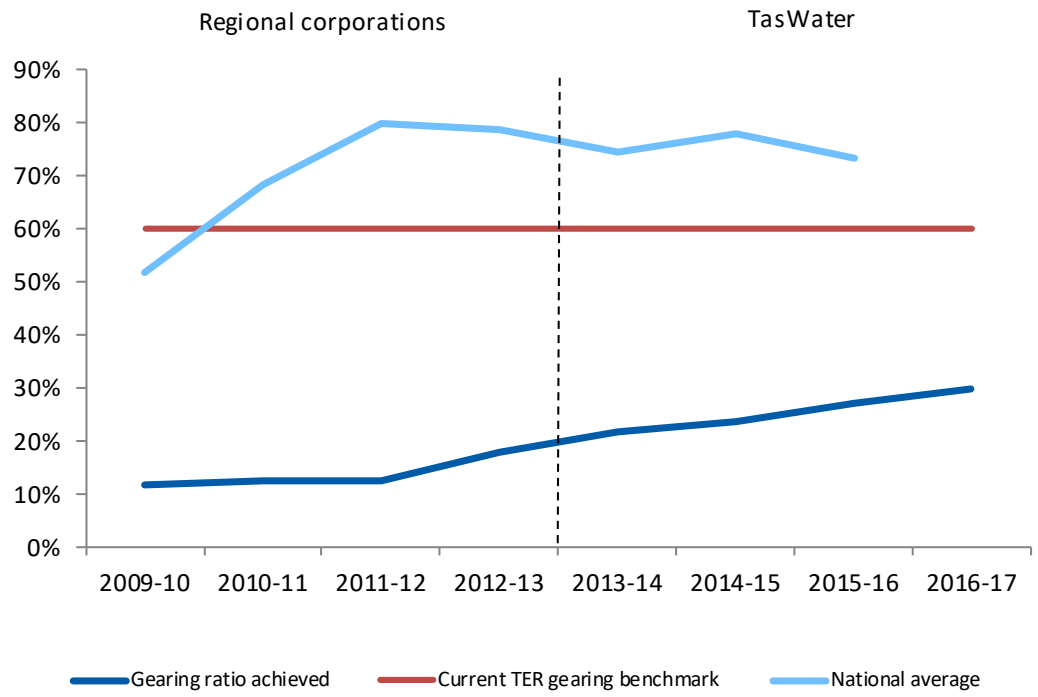
- total borrowings steadily increased from $203.6m in 2009-10 to $474.9m in 2016-17 – an increase of 133% - 56% achieved by the regional corporations and 77% by TasWater
- Tascorp steadily raised the borrowing limits of the regional corporations and TasWater from $270m in 2009-10 to $500m by December 2016 with the limit further increased to $560m in June 2017. Since 2009-10, Tascorp limits for the regulated entities increased by $290m or 107%. The increases enabled TasWater to complete its proposed capital expenditure program
- debt ratio steadily increased from 9.9% in 2009-10 to 22.1% in 2016-17 – an increase of 12.2%
- debt to equity ratio steadily increased from 11.8% in 2009-10 to 30% in 2016-17 – an increase of 18.2%.

Both the regional corporations and TasWater had low debt and debt to equity ratios demonstrating significant capacity to increase borrowings to fund infrastructure investment.

We also compared the gearing ratios of the Tasmanian water and sewerage entities with water and sewerage entities with more than 100 000 connections in other Australian jurisdictions.

Figure 31 shows the gearing ratios for the regional corporations and TasWater for the period 2009-10 to 2016-17 compared to the national average and the TER benchmark of 60%. The TER benchmark is based on the benchmark used by other economic regulators, such as the Australian Economic Regulator, and has been set at 60% since 2004, and is based on how an efficient water and sewerage entity should be structured.

Figure 31: Gearing ratios 2009-10 to 2016-17



Source: TAO and TER price determinations 1 and 2; National average is based on latest data (to 2015-16) and excludes Tasmania.

Figure 31 shows that:

- the regional corporations' and TasWater's gearing ratio steadily increased but remained well below the benchmark limit of 60% for the entire period since the commencement of the reforms
- the Australian average gearing ratio for the period 2013-2016 (since the inception of TasWater), was 75% with Tasmania's gearing ratio over the same period being one of the lowest in Australia at an average rate of 24%. In 2016-17, TasWater's ratio increased to 30% resulting in a four year average of 26%.

Figure 31 illustrates the regional corporations and TasWater had capacity to increase borrowings to drive more vigorous investment in infrastructure especially in a low interest rate environment. While TasWater's gearing appetite is conservative at present, the 2016-18 corporate plan target in respect to the gearing ratio is gradually moving upwards.

Servicing debt

An organisation's capacity to service debt is evidenced by:

- its ability to meet interest repayments (interest cover)
- its ability to meet principal repayments
- sufficient cash flow from operating activities to:
  - meet commitments to make payments to owners
  - meet loan obligations
  - maintain assets in a productive state
  - grow assets to meet business and customer needs.

Interest rate cover

Interest rate cover is used to determine how easily an entity can pay interest on outstanding debt and has been calculated as earnings before interest and tax (EBIT) divided by interest expense. TasWater's interest rate cover from 2013-14 to 2016-17 is provided in Table 9.

Table 9: Interest rate cover 2013–14 to 2016–17

Entity	2013–14	2014–15	2015–16	2016–17
TasWater (actual)	2.94	3.48	2.71	2.84

Source: TAO and TasWater

TasWater's interest rate cover threshold as stated in its Long-Term Strategic Plan is 2.0. Using this interest rate cover benchmark, TasWater's borrowings could increase by an additional $200m before it breachs the benchmark.

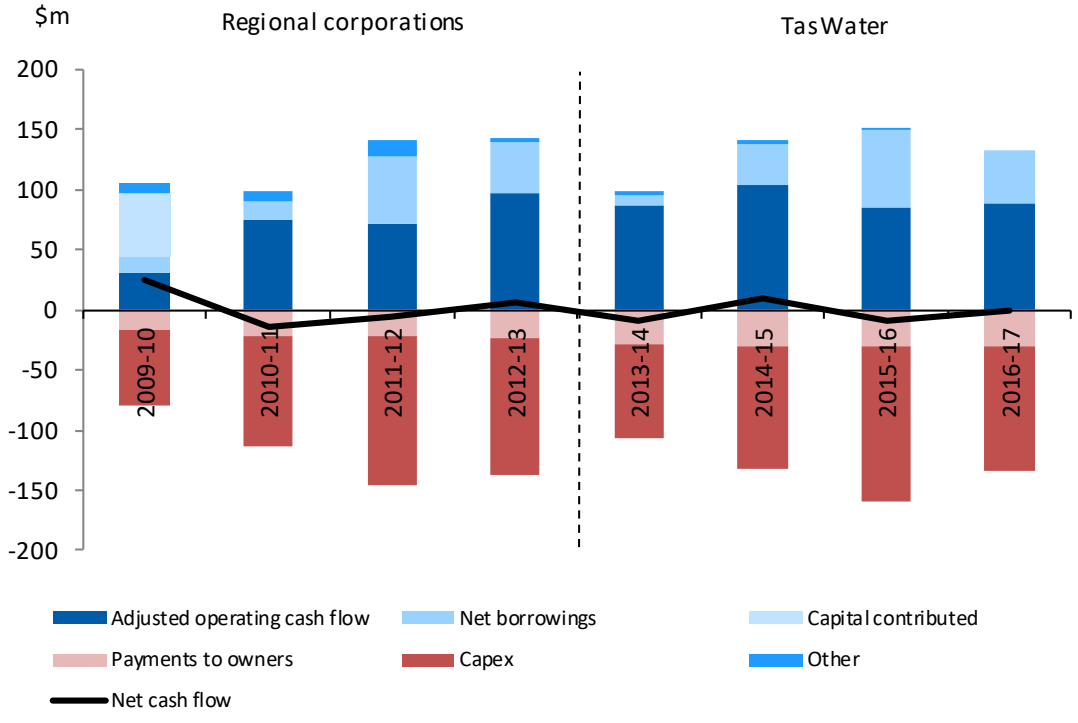
Cash flows to service debt repayment obligations

In normal circumstances, an entity would use cash generated from operating activities to repay debt obligations. However, in the case of the regional corporations and TasWater, this was not the case as the debt position continued to increase each year to meet planned capital expenditure.

Figure 32 shows that net cash flows from operating activities (adjusted to exclude guarantee fees and income tax equivalents paid to owners) have been used to make payments to owners (which include guarantee fees and income tax equivalents and dividends) and to fund capital expenditure. To the extent that remaining net cash flows from operating activities are insufficient to fund capital expenditure, additional borrowings have been drawn down.

TasWater's cash management objective has been to hold as little cash as possible, with excess cash or cash needs being met from an overnight borrowing facility. TasWater endeavours to hold no more than $2.5m in its operating account at any given time as shown in Figure 32.

Figure 32: Summary of cash flows 2009-10 to 2016-17



Source: TAO and TasWater

As illustrated in Figure 32 and the fact Tascorp continued to increase the borrowing limit for TasWater (as shown in Figure 30), it is evident TasWater can generate sufficient cash flows to service debt obligations. Further, the regulated nature of the industry and influence of the regulator on prices also provides certainty over the ability to meet debt repayment commitments.

Managing debt

An organisation's capacity to manage debt is evidenced by its:

- ability to draw down the debt, repay the debt when required and negotiate new facilities for further debt when needed
- profitability
- cash flows.

These three elements have previously been discussed in this sub-section. TasWater's Treasury Management Policy (TMP) provides the policy framework within which all investment, borrowing, foreign exchange and related activities are to be conducted and underpins financial decision-making in the context of its annual budget and 10-year financial plan.

The policy stipulates TasWater maintains a rolling 10-year financial plan and commitment to operating in a financially sustainable manner by:

- identifying, measuring and reporting interest rate, liquidity, counterparty credit and foreign exchange risks
- proactively managing these risks to protect and enhance earnings and cash flows to deliver the target set out in the 10-year financial plan
- ensuring funds are available to meet approved outlays.

Table 10 identifies whether the regional corporations and TasWater incorporated a number of elements we considered necessary to ensure effective debt management into their treasury management policies.

Table 10: Identification of selected treasury management elements

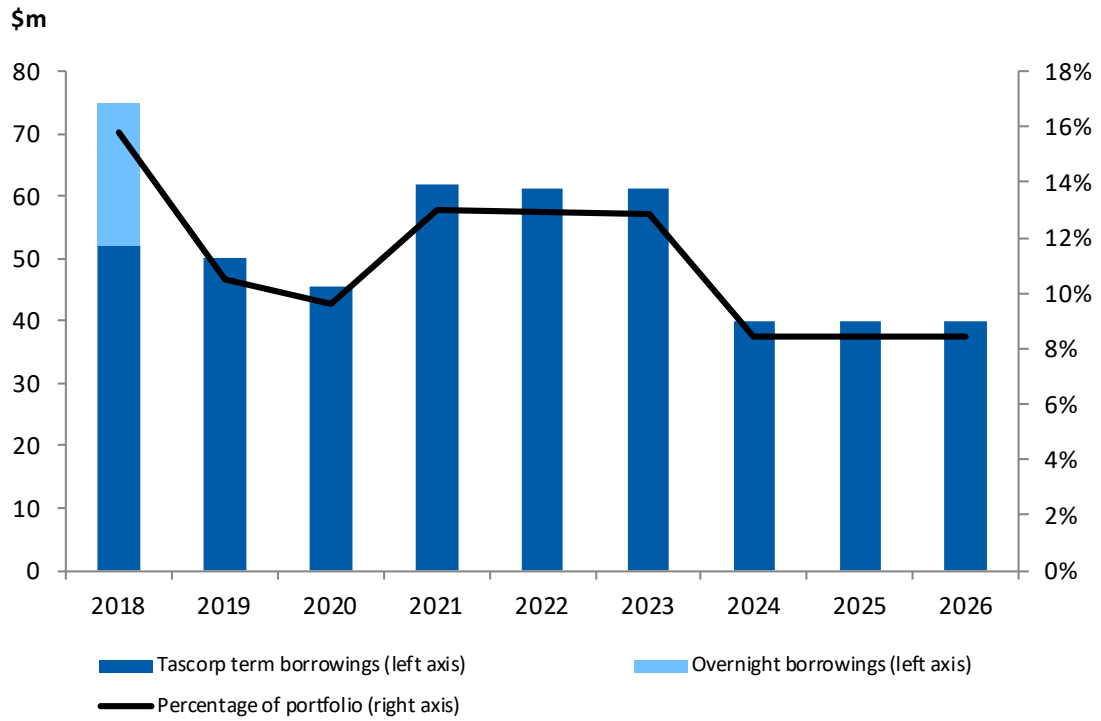
	Regional Corporations	TasWater
Treasury Management Policy (TMP)	✓	✓
Review process for the TMP	✓	✓
Advice sought in respect of the TMP	✓	✓
Combination of fixed and floating interest rates	✓	✓
Staggered borrowing maturity dates	✓	✓
Identified, measured and reported risks: • Interest rate • Liquidity • Counter party credit • Foreign exchange	✓	✓

Source: TAO

Table 10 shows the regional corporations and TasWater developed effective treasury management policies. We noted the regional corporations' policies were similar, suggesting collaboration.

One of the elements contained in TasWater's TMP is the staggering of borrowing maturity dates over time. We examined TasWater's borrowing maturity schedule for the next nine years to 2026, with the results shown in Figure 33.

Figure 33: TasWater borrowing maturity as at 30 June 2017



Source: TAO

Figure 33 shows that the percentage of fixed-term debt maturing each year is about 11% and the high amount of debt for 2018 is due to the inclusion of short-term (overnight) borrowings of $23m.

Section 3.2 Conclusions

- Revenue flows have increased to support self-sustaining investment since 2009.
- Payment of dividends, guarantee fees and tax equivalents have been made to councils as required by the 2008 and 2012 Acts.
- There has been an improved capacity to service debt and meet debt repayment requirements since 2009 as evidenced by:
  - a strong interest cover ratio exceeding the target set in corporate plans and the long-term 10-year financial plan
  - low debt to total assets and debt to equity ratios demonstrating capacity to increase borrowings and fund infrastructure investment
- An appropriate level of debt funding has not been utilised since 2009 as more capital expenditure could have been funded by debt to improve compliance with environmental standards for wasterwater as outlined in Section 1.2
- There has been a better capacity to manage debt since 2013.

Recommendation

6. TasWater investigates the acceleration of infrastructure investment by utilising additional debt funding.

3.3 HAS MORE FLEXIBILITY TO DEAL WITH A CAPITAL EXPENDITURE PROGRAM BEEN ACHIEVED?

In this sub-section we assess whether:

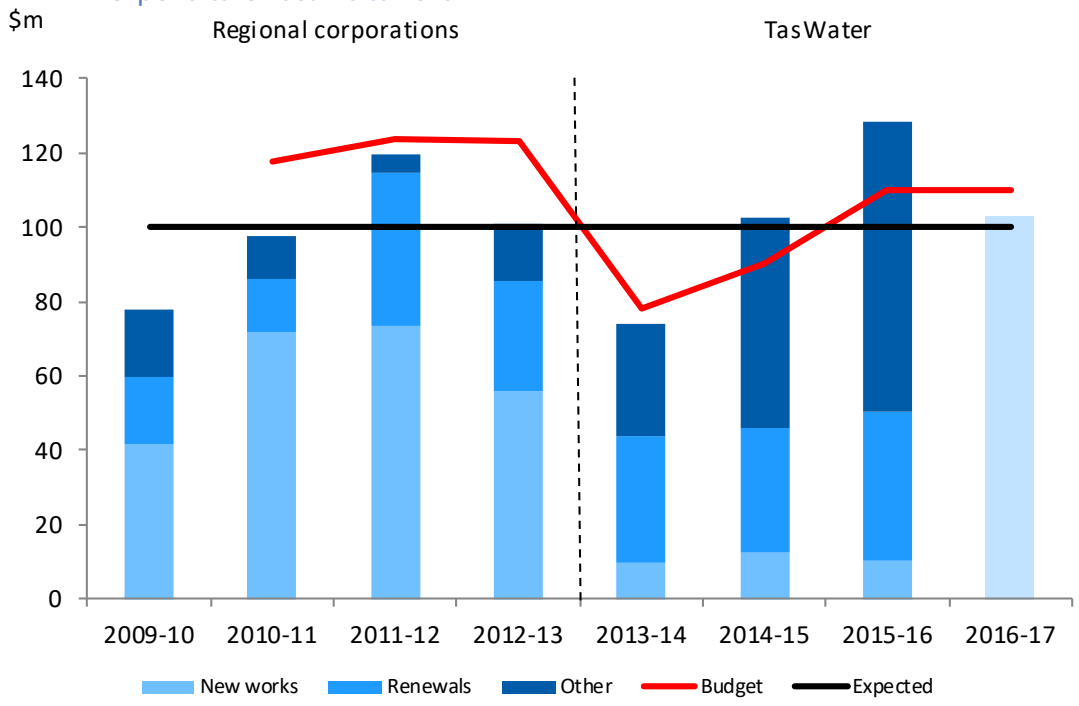
- $1bn of spending over 10 years on new water and sewerage infrastructure has occurred since 2009
- there has been a stronger and more stable cash flow since 2013
- there has been more flexibility to deal with a significant capital expenditure program since 2013.

3.3.1 Expected infrastructure investment 2009-10 to 2018-19

An investment of $1bn over 10 years on new infrastructure equates to an average annual investment of $100m to commence from the creation of the regional corporations in 2009-10. We have interpreted 'new' as including investment in the water and sewerage capital expenditure categories of new and renewals or replacements.

Figure 34 shows the level of capital expenditure (budget and actual) by the regional corporations and TasWater over the period 2009-10 to 2016-17 compared to the average annual expenditure of $100m expected by the government since 2009-10.

Figure 34: Capital expenditure (budget and actual) compared to expected average annual expenditure 2009-10 to 2016-17



Source: TAO.

Note: Budget information for 2009-10 for the regional corporations has been excluded because budget data for Cradle Mountain Water was unavailable. The actual capital expenditure for 2016-17 was not able to be categorised.

Figure 34 shows:

- total capital expenditure on new and renewal or replacement water and sewerage infrastructure for the period 2009-10 to 2015-16 totalled $486.1m against the expected expenditure of $700m over the period (seven years of the 10 year period)
- actual capital expenditure is $213.9m or 30.6% behind expected expenditure with the regional corporations contributing $53.8m or 7.7% and TasWater contributing $160.1m or 22.9% of the shortfall
- the regional corporations' actual capital expenditure was less than budget for at least three out of four years (budget data not available for 2009-10)
- TasWater's actual capital expenditure has been close to or above budget for all its years of operation with the majority of the budget spent on 'other' capital works (as discussed in Section 2).

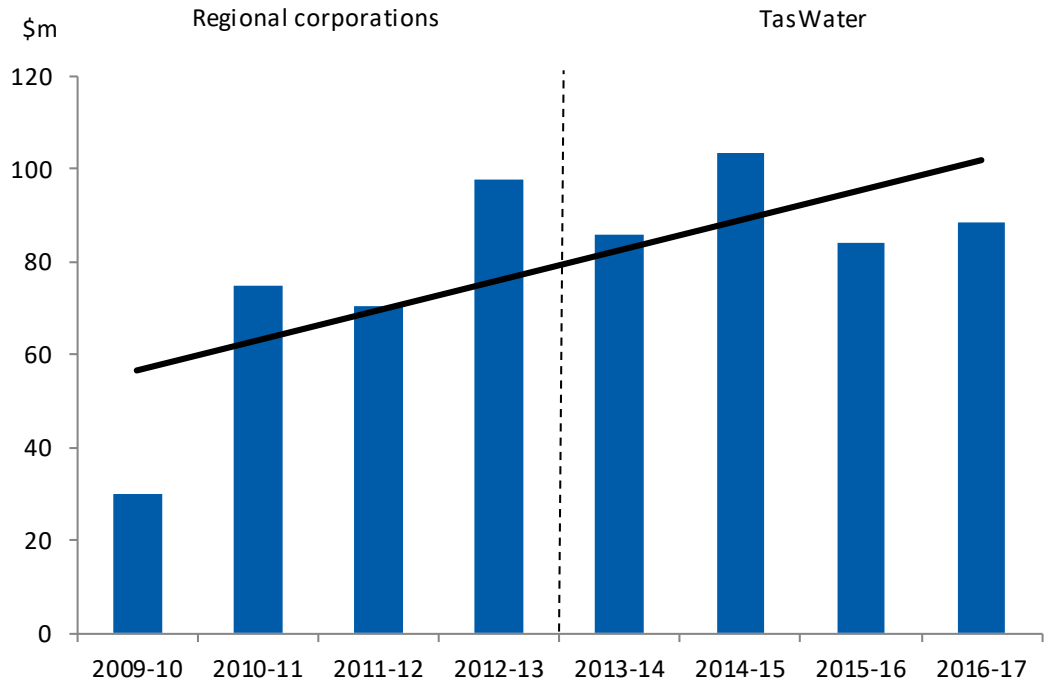
Based on its knowledge of the state of the infrastructure assets, TasWater considers the initial estimate of $1 billion was significantly understated and completed an assessment in 2017 that identified $3.8 billion was required to rectify failing assets. Therefore, to address the condition of the infrastructure requires significantly greater capital expenditure.

3.3.2 Cash flows

We determined whether the cash flows of the regional corporations and TasWater have been stronger since 2013.

Figure 35 shows adjusted operating cash flows for the regional corporations and TasWater for the period 2009-10 to 2016-17.

Figure 35: Adjusted operating cash flows 2009-10 to 2016-17



Source: TAO.

Figure 35 shows adjusted operating cash flows:

- steadily increased for regional corporations since commencement of the reforms from $30m in 2009-10 to $97.6m in 2012-13, an increase of 225%
- averaged $68m for regional corporations and $90.6m for TasWater
- TasWater maintains an average annual adjusted operating cash flow of $23m, or 34%, higher than the regional corporations.

3.3.3 Financial flexibility

We assessed whether there has been more flexibility by the regional corporations and TasWater to deal with a significant capital expenditure program since 2013.

The accounting term financial flexibility is used to describe an entity's ability to:

- meet its operational requirements (including debt-servicing costs)
- react to unexpected changes in economic or business conditions
- achieve its budgeted capital expenditure program
- take advantage of investment opportunities
- meet expectations of or commitments to owners of the business.

Table 11 shows an assessment of the regional corporations and TasWater against each of these financial flexibility elements based on our analysis shown throughout Section 3.

Table 11: Assessment of financial flexibility 2012-13 to 2016-17

	Regional Corporations		TasWater	
	Ability to achieve	Actually achieved	Ability to achieve	Actually achieved
Meet operational requirements	✓	✓	✓	✓
React to unexpected changes in economic or business conditions	✓	✓	✓	✓
Achieve its budgeted capital expenditure program	✓	✗	✓	✓
Take advantage of business opportunities	✓	P	✓	P
Meet expectations of, or commitments to, owners of the business	P	P	✓	✓

✓— Outcome realised; ✗— Outcome not realised; **P** — Outcome partially realised

TasWater demonstrated flexibility to increase borrowings by approximately more than double the level of borrowings of the regional corporations and has further access to additional borrowing limits and capacity within prescribed regulatory revenue limits and limits imposed by Tascorp. Further limits have also been made available but not utilised indicating the capacity to be more flexible in its future rollout of infrastructure projects.

Section 3.3 Conclusions

- Actual expenditure since 2009 is in line with the government's expected expenditure of one billion dollars over 10 years. However, this includes capital expenditure on non infrastructure related capital items.
- More flexibility to deal with a capital expenditure program has been achieved since 2013 as evidenced by a stronger and more stable cash flow.

3.4 DO CUSTOMERS PAY AN APPROPRIATE AMOUNT FOR THE SERVICES THEY RECEIVE?

In this sub-section, we examine whether:

- customers paid an appropriate amount for water and sewerage services received since 2009
- tourism operators, local businesses and the community received services that are cost effective since 2009.

Tasmania possesses around 12% of Australia's fresh water but a land area of only 1% of Australia's landmass. Despite the natural abundance of fresh drinkable water, there are significant costs involved in providing high-quality safe drinking water to Tasmania's population due to its dispersed population and challenging geography.

Prior to being consumed, drinking water must be stored, treated and reticulated to end users and sewage must be collected, treated and disposed of. Water and sewerage infrastructure requires substantial financial resources to establish, maintain and replace. Because of Tasmania's dispersed population and past infrastructure ownership structures for water and sewerage assets, TasWater has significantly more assets per customer than other water and sewerage entities in Australia. While Tasmania has only 2-3% of the Australian population, it has 38% of the drinking water systems, 37% of the sewerage systems and 18% of the dams. This means 2-3% of the population has to fund the maintenance, upgrade and compliance of a disproportionate level of infrastructure.

The price of water and sewerage services should be at least matched against the cost of delivery.

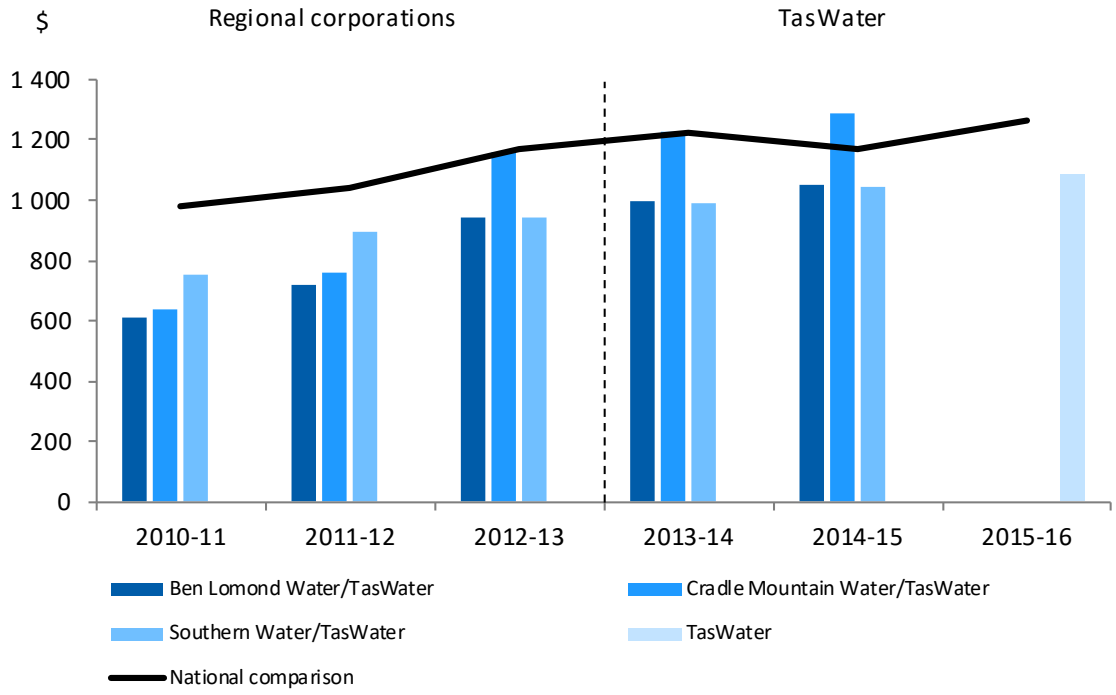
Prior to 2009, not all pricing mechanisms used by councils were reflective of the true costs of providing water and sewerage services. As noted in Sub-Section 3.1, some councils used fixed water charges based on property values rather than water usage as a mechanism to set a price on water.

Sub-Section 3.1 examined the various pricing arrangements that existed prior to the current second price determination. Integrated pricing for water and sewerage was not achieved until 2016 and the process will not be fully completed until 2020. Prior to 2016, each region in Tasmania still retained separate target tariffs for the fixed water and sewerage components of the pricing structure and these were only standardised in 2015-16 as part of the second price determination.

In 2015-16, TasWater pricing data was presented on a one-column, one-entity basis and not on a three region basis. The previous regional corporations' pricing structures were no longer applicable as TasWater's pricing now reflected uniform or same-service pricing on a state-wide basis. We compared TasWater with other like-sized entities (100 000 plus customers) prior to 2016 using the regional pricing structure.

Figure 36 shows the comparison of the regional corporations and TasWater against water and sewerage entities in other jurisdictions.

Figure 36: Water and sewerage pricing compared to other jurisdictions 2010-11 to 2015-16



Source: TER

Note: Pricing figures 2010-11 and 2011-12 were supplied by TER and are estimates, based on research undertaken by TER.

Figure 36, shows pricing in Tasmania was largely below the average water and sewerage pricing in other Australian jurisdictions (100 000 plus customers category). While this has not been the case for some customers, in future, a single target pricing model will result in all customers paying the same price for the same service. This brings fairness in pricing to all Tasmanians regardless of where they live.

We noted customers with a deficiency in their local water reticulation infrastructure, receive a 10% discount on their fixed water tariff to reflect the reduction in service. In addition, customers subject to a permanent boil water alert or a 'do not consume' notice receive a 20% discount on their variable water component to reflect the provision of reduced quality water. These adjustments are made to ensure prices paid by customers reflect service delivery.

Section 3.4 Conclusion

- Customers had not paid an appropriate amount for water and sewerage services since 2009 but have paid an appropriate amount since 2013.
- Tourism operators, local businesses and the community received services that are cost effective since 2009. Refer also to Sub-Section 1.3.

3.5 HAVE COST SAVINGS AND REDUCED REPORTING AND ADMINISTRATIVE EFFORT BEEN ACHIEVED?

In this sub-section we assess whether cost savings and reduced reporting and administrative effort have been achieved by assessing whether:

- there has been improved financial return since 2009
- further integration of administrative systems creating cost savings and reduced reporting since 2013
- estimated savings of $5m per annum have been delivered after a period of time since 2013.

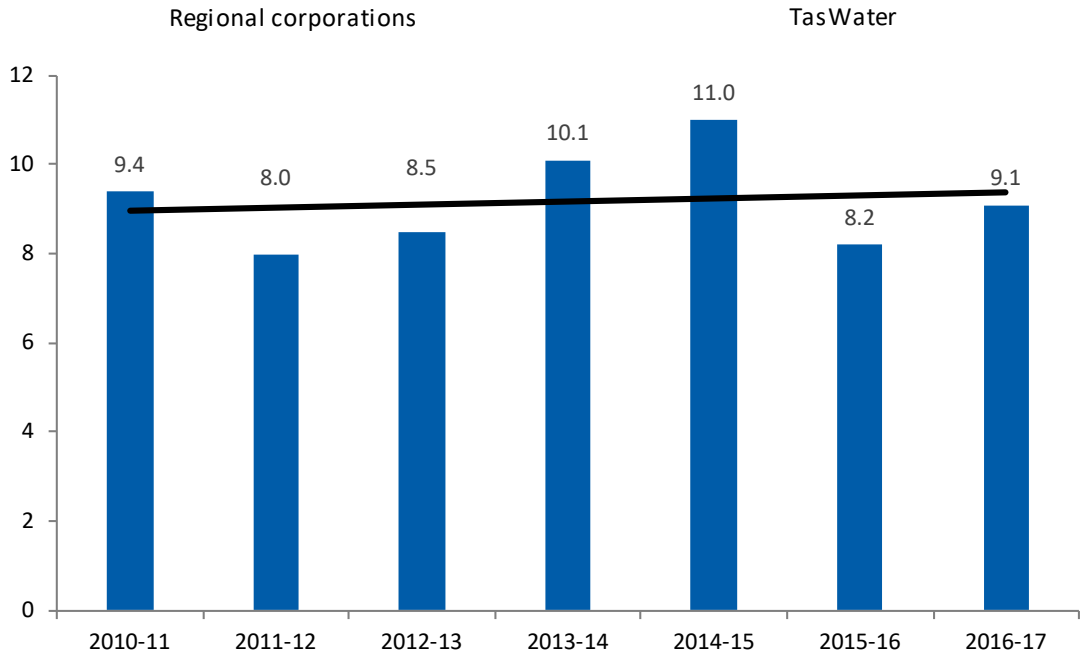
3.5.1 Financial return

In 2008, in the second reading speech for the *Water and Sewerage Corporations Bill 2008*, the Minister noted the financial returns from the water and sewerage sector averaged around 2% to 3%. We were not able to determine the basis for this calculation.

Instead, we used the profit ratio (net profit after tax divided by total income) as a measure of financial return, which is reported in TER's 2015-16 SOIR and is used by BOM in its national performance reporting. We see the profit ratio as an appropriate measure to compare the financial return for the regional corporations and TasWater.

Figure 37 shows the profit ratio for the regional corporations and TasWater for the period 2010-11 to 2016-17.

Figure 37: Profit ratio for regional corporations and TasWater 2010-11 to 2016-17



Source: TER and TAO (2016-17)

Figure 37 shows the profit ratio for:

- the regional corporations dropped from 9.4% in 2009-10 to 8.5% in 2012-13 and averaged 8.6%
- TasWater dropped from 10.1% in 2013-14 to 9.1% in 2016-17 and averaged 9.6%.

As shown above, the underlying average financial return improved under TasWater by 1%.

3.5.2 Cost savings

In November 2011, the:

- regional corporations engaged a consultant who estimated cost savings of $5m per annum could be achieved by merging the regional corporations and shared services into a single entity
- common Chair of the Boards of the regional corporations advised a House of Assembly Select Committee that a merger would achieve savings of 3% to 5% per annum in discretionary costs that, in 2011-12 dollars, would equate to $3m to $5m. The common Chair defined discretionary costs as total costs less depreciation, interest and raw material costs.

To gain approval for the merger from the owner councils, the estimated $5m in savings was intended to be returned to owner councils from 2013–14.

In 2012, the government introduced enabling legislation into Parliament for water and sewerage industry reform. In the second reading speech for the *Water and Sewerage Reform Bill 2012*, the government stated that additional savings would be delivered as a result of the reform through further integration of reporting and administrative effort.

In 2015, TasWater engaged the same consultant referred to previously to assess whether savings identified during the 2011 review had been achieved. The consultant's report stated they had assessed the cost savings analysis prepared by management and reported results against each of the broad cost savings categories identified in the 2011 report. The report did not:

- provide any assurance on the reliability of the forecasts or the underlying assumptions as they may be affected by unforeseen events and depend on the effectiveness of management's actions in implementing the forecasts
- take one-off merger implementation costs of $5m into account, including:
    - redundancy payments to former employees
    - organisational design and transition planning
    - recruitment services
    - outplacement services
    - other non-redundancy related restructure costs.

A comparison of estimated and actual savings is provided in Table 12 following.

Table 12: Comparison of cost savings estimated in 2011 and maintainable savings identified in 2015

Category	Estimated annual savings (2011)($m)	Maintainable annual savings (2015)($m)	Impact on cost driver
Personnel	3.419	4.287	Reduction in management positions
Regulation/ audit	1.115	1.432	Consolidation of licence fees and memberships and improved remission controls
Procurement/ depreciation	0.849	0.473	Increase in size of business reduces procurement/ depreciation costs
Board	0.250	0.117	Reduction in board positions
Fleet	0.150	0	Vehicles in current fleet have not reached disposal age
Less contingency costs	*-0.783*	Not applicable	
Total	**5.000**	**6.309**	

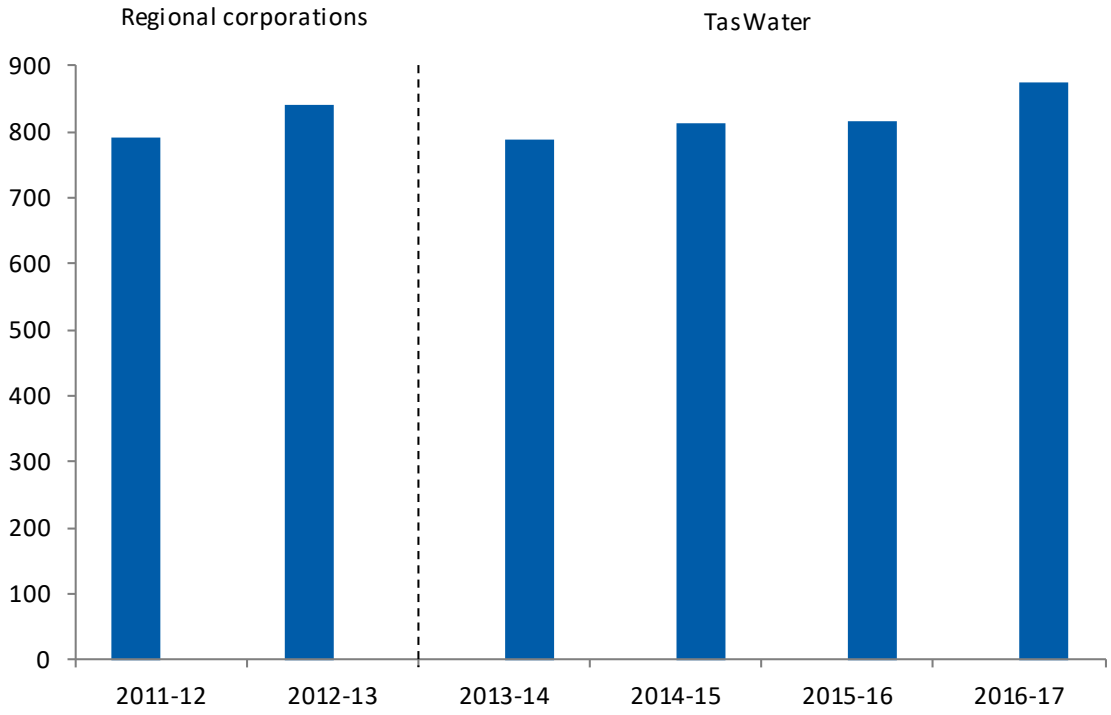
Source: TasWater

The maintainable cost savings identified by the consultant in 2015 exceeded the estimated savings projected by the government. Information provided by TasWater also supported the consultant's findings, with TasWater's estimation of savings in 2014-15 totalling $6m.

In the absence of any information produced by TasWater on savings achieved in 2015-16 and 2016-17, we examined the extent to which reductions in personnel costs have been sustained in subsequent financial years.

Figure 38 shows in 2016–17, the total number of employees employed by TasWater exceeded the total number of employees employed by the regional corporations in 2012–13.

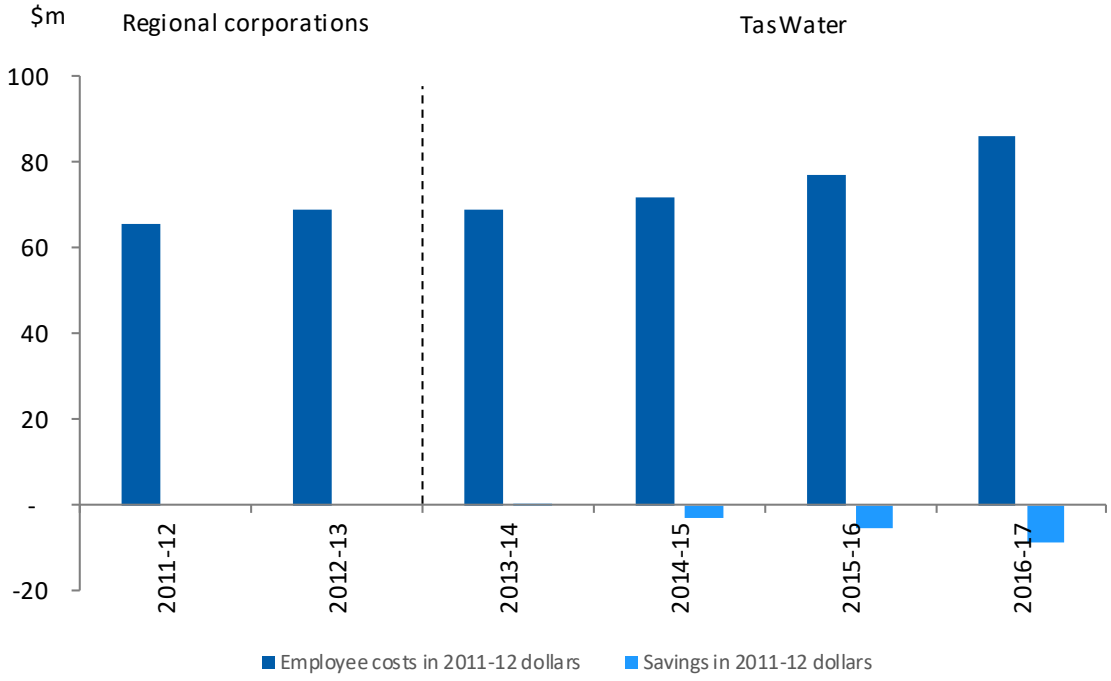
Figure 38: Total number of employees 2011–12 to 2016–17



Source: TasWater, Ben Lomond Water, Cradle Mountain Water, Southern Water and Onstream

In 2015-16, employee-related costs incurred by TasWater exceeded those incurred by the regional corporations in 2012–13 as shown below in Figure 39. Specifically, employee-related costs in 2016-17 were $17.1m greater in 2011–12 dollars, than in 2012-13.

Figure 39: Employee-related costs 2011–12 to 2016–17 (in 2011–12 dollars)



Source: TasWater, Ben Lomond Water, Cradle Mountain Water, Southern Water and Onstream adjusted to reflect 2011–12 dollars.

In addition, Table 13 highlights total expenses consistently increased over the period 2013–14 to 2016–17 since the establishment of TasWater.

Table 13: Analysis of financial performance 2013–14 to 2016–17

($m)	2013–14	2014–15	2015–16	2016–17	Trend
Total revenue	273.6	300.3	309.3	315.5	5% ▲
Total expenses	234.1	252.9	273.1	274.6	6% ▲
Modified EBIT	46.0	43.8	29.8	43.5	3% ▲

Source: TAO and TasWater

Note: Modified EBIT = underlying profit + interest expense + superannuation interest expense.

We therefore conclude:

- savings greater than $5m were achieved in 2014-15
- maintainable savings greater than $5m have not been achieved for 2015-16 and 2016-17 due to increases in employee numbers and remuneration costs in those years.

TasWater advised the level of maintainable savings had been adversely impacted by increases in expenses relating to higher levels of asset compliance expenditure.

Section 3.5 Conclusions

- Financial return has improved since 2009.
- Savings of $5m per annum after a period of time as a result of the merger have not been fully achieved since 2013 due to higher levels of asset compliance expenditure.
- Further integration of administrative systems creating cost savings and reduced reporting has partially occurred since 2013.

POINT OF INTEREST – KINGBOROUGH SEWERAGE UPGRADE PROJECT

This project is for the purpose of consolidating and optimising the Kingborough area sewerage system to make it ready for the area's expected growth and to improve environmental outcomes for the Derwent Estuary. The project will centralise sewage from four local catchments, treat all of it to an improved modern standard and reduce operating costs through consolidation.

The project includes three key components:

1. Upgrading the Blackmans Bay STP
   Over the next two years, the existing 30-year-old plant will continue to operate with its capacity being more than doubled. The quality of treated effluent will be significantly improved with the introduction of modern treatment technology ensuring discharge of effluent into the Derwent Estuary complies with environmental regulations. The work will also provide improved odour management.
2. Closing three existing, overloaded STPs at Electrona, Margate and Howden.
   These three plants each present a range of issues, including discharge of effluent into the waters of North West Bay and odour issues for nearby areas. Each plant will be decommissioned with flows diverted to the upgraded plant for improved treatment. Electrona and Margate will each be converted to a new pumping station. This work will also provide improved odour management for the local community.
3. Constructing a new pipeline to transport sewage from Electrona, Margate and Howden to the new plant.

Source: TasWater

The project is based on a long-term sewerage strategy for Kingborough which began with a recommendation from Kingborough Council in 2009. TasWater has been engaging with the Kingborough community since 2013 (while it was still Southern Water).

With Kingborough being one of Tasmania's fastest-growing regions, this strategy and project will ensure these new assets deliver reliable service for future generations. The project will be delivered at a cost of $51m by late 2018.

4. HAVE THE REFORMS PROVIDED IMPROVED CUSTOMER SERVICE?

In this section, we determine whether the reforms provided improved customer service by assessing whether:

- the 2008 intended outcomes achieved:
  - minimum customer service standards established and achieved
  - customer service standards drive business decision-making
  - a more robust regulatory framework comparable to other Australian states
  - customers have a voice through a transparent regulatory process
  - there is communication between technical and economic regulator
- the 2012 intended outcomes achieved:
  - consistent service delivery and customer relations
  - better services for customers.

4.1 HAVE MINIMUM CUSTOMER SERVICE STANDARDS BEEN ESTABLISHED AND ACHIEVED?

In 2007, a position paper prepared for the Taskforce stated that a formal process was not in place to provide customers and service providers with a process to resolve complaints and disputes. Further, if customers were unable to reach a satisfactory and reasonable resolution with a service provider, they were not provided with a formal process to seek views and advice from an independent party to consider and investigate their complaint.

Prior to the reforms, management of customer service and responses to customer complaints varied across the state with each council and bulk-water authority responsible for customer service within their area.

The 2008 Industry Act required TER to issue a Code for regulated services. In November 2008, TER issued an IPO, supplemented in April 2009 by a Statement of Intent, which required the regional corporations to contribute to the development of standards for customer service. TER issued the first Code listing minimum standards for customer service in July 2010.

In 2012, TER published a Price Determination report which required regulated entities to comply with the Code from 1 July 2012. However, the 2012 report also listed transitional targets for the minimum service standards. The transitional targets recognised that improvements over time were needed to achieve the desired standards and time was needed to develop performance measurement processes.

In April 2015, TER issued another Price Determination report in which it listed minimum service standards to commence from 1 July 2015.

The Code specifies standards and conditions of service and supply with which the regulated entity must comply in providing water supply services intended for drinking water, reticulated drinking water that is non-potable* water, and sewerage services. The regulated entity is required to:

- meet the customer-related standards, procedures, practices and conditions for water and sewerage services as set out in the Code
- develop, issue and comply with a customer charter which meets the procedural and substantive requirements of the Code and sets out the regulated entity's approved transitional service standards. Customer charters are the primary means by which customers are informed of their rights and obligations.

* potable water is defined as water fit or safe for drinking.

Schedule 1 of the Code details 22 individual elements that form the minimum service standards (22 standards) the regulated entity is required to meet. The 22 standards are based on standards adopted for similar businesses elsewhere in Australia operating in a mature and efficient environment. The regulated entity is required to:

- meet the 22 standards over time
- demonstrate in its PSP how it intends to transition to achieving the 22 standards over time – this is examined and approved by TER as part of the price determination process
- meet the 22 standards prior to the end of the second Price Determination being 30 June 2018.

To determine the extent to which the regional corporations and TasWater had progressed in achieving the 22 standards, we examined:

- performance data reported in TER's SOIRs
- entity annual reports.

This sub-section does not apply to councils as the Code was issued in 2010, by which time the regional corporations were in place.

The 22 standards are grouped into the categories of water supply, sewerage services and customer service. From these categories, we extracted 11 standards we considered were the most critical to service delivery and undertook an analysis of the performance of the regional corporations and TasWater for the period 2011-12 to 2015-16.

Table 14 shows a summary of our analysis. A more comprehensive analysis is contained in Appendix 9. For our analysis, we have used an approach endorsed by TER, which was to gauge whether standards had been met using an amalgamation of the individual targets listed for each of the regional corporations and then averaged. Our results represent a close approximation of data presented in other reports so we are satisfied this approach allows proper analysis of the results.

Table 14: Summary of minimum customer service standards 2011-12 to 2015-16

	2011-12	2012-13	2013-14	2014-15	2015-16
	Regional Corporations		TasWater		
Water supply					
Unplanned interruptions per 100 km[1]	✗	✗	✗	✗	✗
Average time to attend priority one bursts and leaks	NRR	✓	✗	✓	✗
Unplanned interruptions restored within five hours	NRR	NRR	✓	✓	✓
Planned interruptions restored within five hours	NRR	NR	✗	✓	✓
Sewerage services					
Sewer breaks and chokes (per 100km)	✗	✗	✗	✓	✓
Average time to attend sewer spills, breaks and chokes	NRR	NRR	✗	✓	✗
Average sewer service interruption	✓	✓	✓	✗	✗
Sewage spills contained within five hours	NRR	✗	✓	✗	✓
Sewerage services					
Total water and sewerage complaints per 1 000 properties[2]	✗	✓	✓	✗	✗
Water and sewerage complaints to the Ombudsman per 1 000 properties	✓	✗	✓	✓	✓
Percentage of calls answered within 30 seconds	✗	✗	✓	✓	✓

✓— achieved; ✗— not achieved; Source: TER.

NR – Not reported; **NRR** – Not required to be reported – no transitional target set by TER.

Notes:

1. No entity has met this standard since the inception of the Code.
2. Category includes complaints to the Ombudsman.

The regional corporations did not commence reporting against the 22 standards until 2011-12.

Table 14 shows that:

The regional corporations:

- improved performance against the standard for total water and sewerage complaints
- consistently met the standard for average sewer service interruption
- met the standard for average time to attend priority one bursts and leaks (in the year it was first reported)
- reduced performance against the standard for water and sewerage complaints to the Ombudsman
- failed to meet the standard for sewage spills contained within five hours (in the year it was first reported)
- consistently failed to meet the standards for:
  - unplanned interruptions per 100 km
  - sewer breaks and chokes per 100 km
  - percentage of calls answered within 30 seconds.

TasWater (as verified by reports to TER for the period 2013-14 to 2015-16):

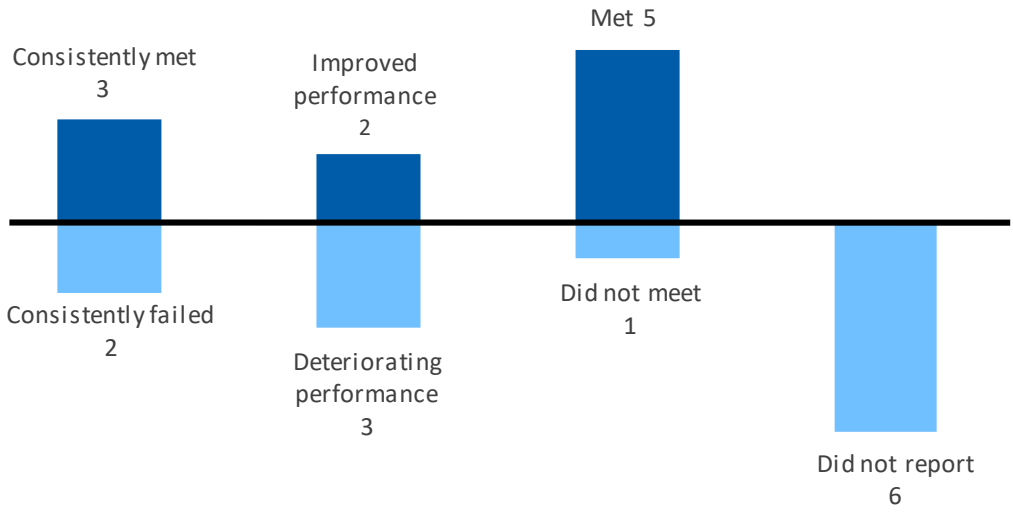
- improved performance against the standard for:
  - sewer breaks and chokes per 100 km
  - planned interruptions restored within five hours
- consistently met the standards for:
  - unplanned interruptions restored within five hours
  - water and sewerage complaints to the Ombudsman
  - percentage of calls answered within 30 seconds
- provided variable performance for sewage spills contained within five hours
- reduced performance against the standards for:
  - average time to attend to priority one bursts and leaks
  - average time to attend sewer spills, breaks and chokes
  - average sewer service interruption
  - total water and sewerage complaints
- consistently failed to meet standards for:
  - unplanned water interruptions per 100 km

For 2016-17, TasWater advised it had achieved:

- improved performance against the standards for:
  - average time taken to attend bursts and leaks
  - planned water supply interruptions restored within five hours
  - sewer breaks and chokes per 100 km
  - average time to attend sewer spills, breaks and chokes (but still non-compliant with the Code)
  - average sewerage service interruptions
  - average time to attend sewer spills, breaks and chokes
  - total water and sewerage complaints per 1 000 properties (but still non-compliant with the Code)
  - water and sewerage complaints to the Ombudsman per 1 000 properties
  - percentage of calls answered within 30 seconds.
- reduced performance against the standards for:
  - unplanned water supply interruptions per 100 km of water main
  - unplanned water supply interruptions restored within five hours (but still in compliance with the Code)
  - sewerage spills contained within five hours (but still in compliance with the Code).

Taking the analysis further, following are Figures 41 and 42, which show changes in the performance of the regional corporations and TasWater against all 22 standards over the period they were reported.

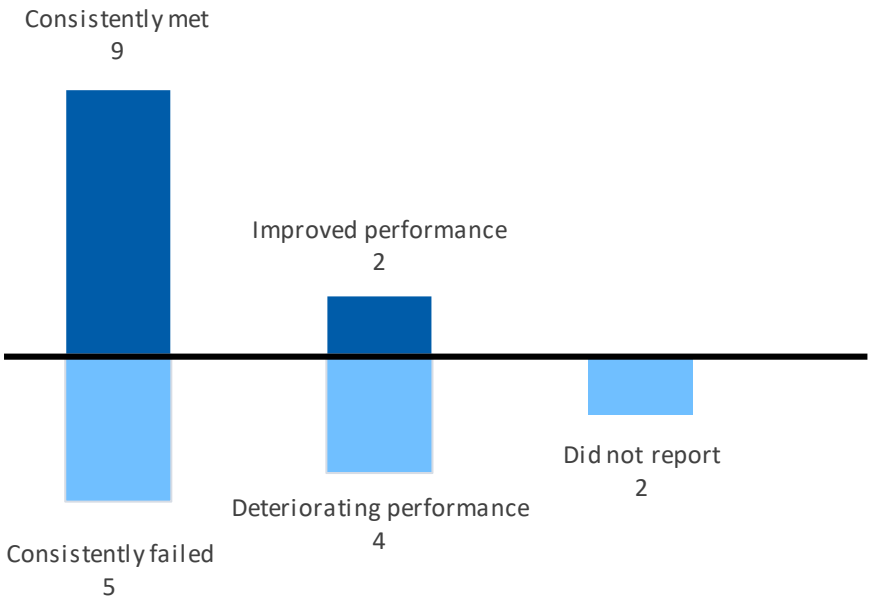
Figure 40: Regional corporations' performance against the 22 standards 2011-12 to 2012-13



Source: TER

Note: Consistently – results apply to two or more consecutive years including the most recent year. Variable – results vary from year to year but met the standard.

Figure 41: TasWater's performance against the 22 standards 2013-14 to 2015-16



Source: TER

Note: Consistently - results apply to two or more consecutive years including the most recent year.

Ignoring the standards not reported, Figures 41 and 42 show the regional corporations achieved 63% of the standards over time and TasWater achieved 55%.

Taking into account TasWater's reported results for 2016-17 detailed above would translate to a percentage of 65%, a 10% increase on the previous year.

Section 4.1 Conclusions

- Minimum customer service standards have been established since 2009.
- Not all minimum customer service standards have been achieved since 2009 despite concessions on transitional targets and performance.

Recommendation

7. TasWater works more diligently to achieve the minimum customer service standards as required by the *Tasmanian Water and Sewerage Industry Customer Service Code* (Code).

4.2 HAVE SERVICE DELIVERY AND CUSTOMER RELATIONS IMPROVED ACROSS THE STATE?

In this sub-section our assessment determines whether:

- customer service standards have driven business decision-making since 2009
- there has been consistent service delivery and customer relations since 2013
- there have been better services for customers since 2013.

To form our conclusion, we examined:

- performance data reported in TER's SOIRs
- customer charters, strategic, corporate and annual plans and annual reports for the regional corporations and TasWater
- customer service and complaints data for TasWater.

4.2.1 Business decision-making

To determine whether the customer service standards detailed in the Code have driven business decision-making since 2009, we reviewed the strategic, corporate and annual plans for the regional corporations and TasWater to identify alignment between the entities' plans and the Code.

Regional corporations

Southern Water

Southern Water listed the following objectives and targets against the standards in relation to customer service or customer values in its corporate plans:

Corporate plan 2011-14 (six objectives)	Target 2011-12	Target 2012-13	Target 2013-14
Customer satisfaction (average per customer)	Establish baseline	Baseline +10%	Baseline +15%
Number of permanent boil water notices	3	0	0
% of households metered	100%	100%	100%
Water quality compliance per drinking water system	100%	100%	100%
Average duration of unplanned water supply interruptions	Trend ▼	Trend ▼	Trend ▼
Number of sewer blockages and sewage spills restored in five hrs	90%	91%	92%
Complaints (water/ sewerage) per 1 000 properties	<18	<16	<14

Corporate plan 2012-15 (four objectives)	Forecast 2011-12	Target 2012-13	Target 2013-14	Target 2014-15
Customer satisfaction (telephone enquiries)	70%	70%	74%	76%
Corporate image (level of respect)	54%	54%	59%	60%
Complaints (water/sewerage) per 1 000 properties	<18	<18	<18	<18
Comply with statutory timeframes for assessment of all development applications	100%	100%	100%	100%

Southern Water's annual plan 2011-12 included:

- the customer service excellence program which was launched to improve customer service
- reporting against customer service centre operations
- initiatives to increase information to and from customers including consultation programs, information leaflets, fact sheets, a pricing awareness communication program and a water sense program.

Ben Lomond Water

Ben Lomond Water listed the following objectives and targets against the standards in relation to customer service or customer values in its corporate plan:

Corporate plan 2010-11 to 2012-13 (nine customer values)	Target 2011-12	Target 2012-13	Target 2013-14
Customer satisfaction (average per customer)	Measure	Increase	Increase
Average duration of unplanned water supply interruptions	Measure	Decrease	Decrease
Number of sewer service (blockages and spills) restored within five hrs	Measure	Decrease	Decrease
Complaints/1000 properties	Measure	Decrease	Decrease
Permanent boil water alerts	16	NTS	NTS
Temporary boil water alerts	9	6	NTS
Water quality compliance for drinking water systems	Increase	Increase	Increase
STPs complying with license conditions	100%	100%	100%
Comply with compliance implementation plan	Yes	Yes	Yes

NTS - No target set

Ben Lomond Water's annual report 2011-12 included non-financial performance criteria with target service standards . The report did not focus on customer service or customer satisfaction to the same extent as reports of the other regional corporations.

Cradle Mountain Water

Cradle Mountain Water listed the following objectives and targets against the standards in relation to customer service or customer values in its corporate plan:

Corporate plan 2010-13 (6 mentions)	Year 0 2009-10	Year 1 2010-11	Year 2 2011-12	Year 3 2012-13
Customer satisfaction	N/a	Create baseline	Increasing trend	Increasing trend
Deliver customer and stakeholder expectations	NTS	NTS	NTS	NTS
Develop strong customer relationships	NTS	NTS	NTS	NTS
Write and publish customer charter	NTS	September 2010	NTS	NTS
Undertake a customer service and engagement survey	NTS	October 2010	NTS	NTS
Revise and update the customer service and engagement strategy	NTS	June 2011	NTS	NTS

N/a – not applicable; NTS – no target set

Cradle Mountain Water's annual report 2011-12 included milestones met by the customer service team, objectives for the next year including implementing a customer service strategy, improving billing data and developing a system to deliver self service to customers online.

TasWater

TasWater's Corporate Plan 2013-15 lists targets for all the standards and reported against all but two of the standards since its establishment. The executive summary of the plan states TasWater planned to continue the previous customer service programs from each of the regional corporations and two of the nine strategic objectives state:

- to provide water and sewerage services that meet community needs, regulatory requirements and agreed customer service standards
- understand customer needs and achieve a reputation for delivering excellent customer service.

TasWater's Corporate Plan for 2016-18 identifies the following values and initiatives:

- deliver consistent and timely service by:
  - centralising call centres and creating a customer service centre of excellence
  - developing tools and self-service options that enhance customer experience
  - meeting regulatory targets for service interruptions and response times by:
    - delivering the state-wide network operation centre
    - improving alarm and monitoring systems reliability and capability
  - delivering PSP2 water and sewer mains capital programs
- increase public awareness of community benefits of TasWater's operations and capital program by implementing the community and information education strategy.

The plan also states the objective to improve business systems and processes by improving customer relationship and service management systems and lists performance targets for the standards in an appendix to the report.

TasWater's annual report 2013-14 included reporting against a number of value drivers including:

- customers and community value
- people and culture
- quality of product and services.

In addition to reporting performance against the standards, TasWater reported a number of field services delivered including:

- sewer blocks cleared
- stop taps repaired
- water leaks repaired
- service locations
- inspections
- water main breaks.

Further, TasWater reported a new customer charter had been delivered and an internet portal established, making customer contact easier.

TasWater's annual report 2015-16 stated:

- a 24/7 Network Operations Centre (NOC) to improve customer responsiveness and operational efficiency opened in October 2015
- the majority of key customer and community metrics were met or achieved better than target, with the only exception being the number of registered complaints
- the majority of complaints related to water quality aesthetics and reflected the number of water treatment systems that require renewal or upgrade to meet modern standards
- performance against the regulator's standards for customer service were met or better for four of the five standards reported with the only exception being the number of registered complaints
- a community engagement framework had been developed to guide the delivery of community engagement plans
- the Your Say online engagement portal was being well used.

TasWater's annual report 2016-17 stated:

- response to customer calls was the quickest of all comparable water authorities in Australia, with 90% of calls answered within 30 seconds
- an average of 440 calls from customers was received each day (equating to one call every three minutes, 24 hours a day, seven days a week, 365 days a year), and resolves 96% of calls in the first call
- the expanded NOC and Customer Service Centre has relocated to a newly refurbished single-site in Devonport in November 2016
- additional monitoring was implemented via the NOC on 21 previously unmonitored sewage pump stations across the state
- tablets for use in the field has been implemented resulting in less paperwork and increased efficiency
- entered into an MOU with the EPA in November 2016 to allow TasWater to make the biggest improvements in the performance of sewerage treatment plants in the fastest way.

In summary, we found sufficient evidence that customer service standards have driven business decision-making for the regional corporations and TasWater.

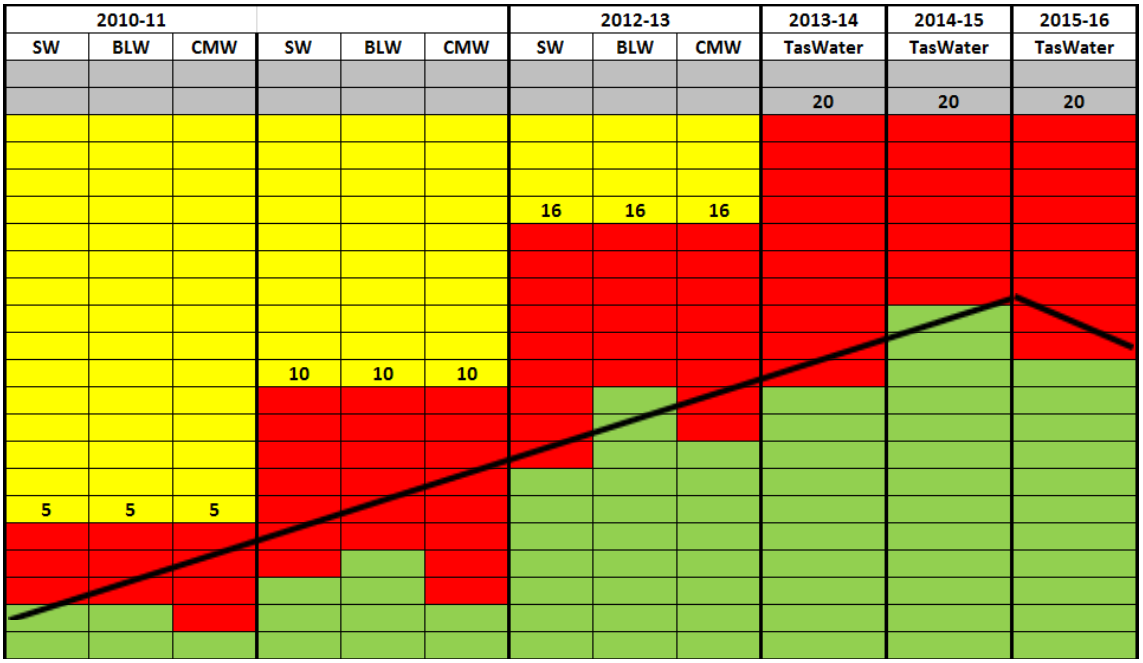
4.2.2 Service delivery

We defined 'service delivery' as the services required to be delivered by the regulated entity, as regulated by the Code and required to be delivered to a standard and/or within prescribed targets. We have defined 'consistent' as being of a similar standard from one year to the next.

In Sub-Section 4.1 we assessed the regulated entities' performance against the Code. In this sub-section we assessed the performance of the regional corporations and TasWater against the 22 standards focussing on the progression of improvement over the period 2010-11 to 2015-16.

Figure 42 shows the results of this assessment.

Figure 42: Progression of performance against customer service standards 2010-11 to 2015-16



Source: TAO and TER

Key: BLW = Ben Lomond Water; CMW = Cradle Mountain Water; SW = Southern Water.

Grey cells represent standards which are not measurable*; green cells represent standards achieved; yellow cells represent standards against which performance was not required to be reported; red cells represent standards not achieved. Black line shows trend over time. Numbers represent the total number of standards required to be reported.

* None of the regulated entities reported performance against two standards - number of customers receiving more than five unplanned water interruptions a year and number of customers receiving more than three sewerage service interruptions per year. Each TER SOIR over the period examined stated the indicators for these standards are not measurable.

Figure 42 shows:

- the progression of the number of standards achieved year on year
- in respect of performance reporting:
  - in accordance with TER requirements, the number of standards required to be reported increased year on year from five in 2010-11 to 20 in 2015-16
  - TasWater achieved full reporting against the measurable standards from 2013-14, well before the due date of 30 June 2018
- service delivery as measured by performance against the standards improved since the commencement of the reforms from 30% in 2010-11 and 2011-12 to 52% in 2012-13. Following the establishment of TasWater, results declined to 50% in 2013-14, improved to 65% in 2014-15 and declined to 55% in 2015-16.

For 2016-17 TasWater advised it established a suite of internal and external policies to ensure service delivery is consistent across the state. These policies determine how TasWater responds to all points of customer service delivery across the state. Many of these policies did not exist or were inconsistent between the previous corporations. Key policies that primarily relate to service delivery include:

- Connection Policy
- Service Charges Policy
- Trade Waste Charges Policy
- Drinking Water Quality Policy
- Service Introduction Policy
- Service Extension and Expansion Policy
- Developer Charges Policy
- Small Towns Water Supply Guideline
- Sewer Spills Management Policy
- Water Restrictions Policy
- Dam Safety Management Policy.

TasWater expects service delivery to improve as the policies are implemented.

TasWater advised all projects provided to its asset division for investigation are prioritised against tactical objectives which have line of sight to strategic themes. This ensures TasWater can determine how a project aligns with customer feedback and facilitates customer focussed service provision.

4.2.3 Customer relations

To assess the quality of the regional corporations' and TasWater's customer relations, we used the following measures:

- customer charter
- customer satisfaction
- comparison to other relevant entities
- average resolution time
- complaint escalation rate
- implementation of other customer centric activities.

Customer Charter

The main objective of a customer charter is to provide a framework for defining service delivery standards, the rights of customers and how complaints from customers will be handled. The customer charter details:

- the overview statement of an entity's business and describes its activities
- customer service goals
- customer's rights as they pertain to an entity
- what an entity will do to ensure it will meet customer service goals and observe customer's rights.

The customer charter sets the scene for the manner in which an entity will relate to, and serve, its customers and the relationship the entity endeavours to have with its customers.

From commencement in July 2010, the Code required regulated entities to issue a customer charter to inform customers about the regulated services performed, the respective rights and responsibilities of the regulated entity and customers and to complete the charter by 1 October 2010.

We compared the customer charters of the regional corporations and TasWater and found:

- regional corporations:
  - complied with the legislative requirement to develop a customer charter
  - customer relations was limited to dealing with complaints and service interruptions and was a narrow view of what an entity could do to ensure positive and constructive customer relations.
- TasWater:
  - complied with legislative requirement to develop a customer charter
  - developed a charter that included all the elements required by the Code
  - included significantly more information than regional corporations
  - included targets and performance measures in accordance with those required by the Code:
    - TasWater will meet the 22 standards
    - listed targets for levels of service the same or better than required by the 22 standards but specified those targets for only 9 of the 22 standards. The details of our examination are contained in Appendix 9.

TasWater annually reported performance against all the standards to TER and used a subset of that information to inform a broader audience through its customer charter (subset of nine) and annual reports (subset of six).

Customer satisfaction

An effective way to measure customer service is to track changes in customer satisfaction over time and undertaking regular customer satisfaction surveys can assist an entity to gauge the level of satisfaction of its customers with respect to its services.

The regional corporations listed strategies to enhance customer satisfaction in their corporate plans but did not publicly report performance against the targets in their annual reports.

TasWater's annual reports contained no information about customer satisfaction. However, the 2014-15 annual report listed progress against initiatives identified in TasWater's *Corporate Plan 2016-18*, including the introduction of customer surveys which was described as 'in progress'.

Comments in the plan show the survey initiative was moved from 2014-15 to 2015-16 but that monthly 'pulse' data would be collected in 2014-15. TasWater conducts pulse surveys by telephone calls to random customers within 72hrs of service to establish:

- whether customers were satisfied
- how easy it was to do business with TasWater (customer effort score)
- whether the issue was resolved in the first contact (first point resolution).

TasWater advised its service experience team conducts between 80 and 100 pulse surveys each month in a conversational style to collect feedback from the customer.

TasWater set a target for the customer effort score of 2.5 (on a scale of 1 to 5 – where 1 means easy and 5 means difficult) in 2014-15 and 2015-16 for customers to rate their experience. Results provided by TasWater showed that customers found:

- it was slightly easier to do business with TasWater in 2015-16 (score of 1.34) than in 2014-15 (score of 1.35)
- slightly harder to do business with TasWater in 2016-17 (score of 1.41).

All results to date have been below the target limit of 2.5 and TasWater reduced its target limit to 2 for 2016-17.

Responses to the surveys are used by TasWater to gauge customer satisfaction, for performance management and for the professional development of the customer relations team. TasWater does not publicly report a measure for customer satisfaction and results of the pulse surveys are only reported internally.

TasWater advised it had improved customer satisfaction from 90% in 2015-16 to 93% in 2016-17.

Comparison to other relevant entities

We compared the performance of the regional corporations and TasWater against other Australian entities providing the same service.

The *National Performance Report 2015-16: Urban Water Utilities* found the median number of complaints increased from 4 in 2014-15 to 5 in 2015-16 (per 1 000 properties). The minimum standard set by TER was nine. TasWater reported 14 complaints (per 1 000 properties) in 2015-16. TasWater advised the result for 2016-17 was 12.2, a reduction of 13% from the previous year.

The *National Performance Report 2015-16: Urban Water Utilities* listed TasWater's performance as the quickest response to customer calls of all comparable water authorities in Australia, with 90% of calls to its contact centre answered within 30 seconds . TasWater advised the result for 2016-17 was 89%, a reduction of 1% from the previous year.

Average resolution time

The regional corporations did not collect or report data relating to the resolution of customer issues and TasWater was unable to extract the number of active issues (such as service requests and complaints) open at any one time, the number of service requests or complaints resolved each month and does not report this information.

We were therefore unable to assess whether the number of active issues or issues resolved changed over time.

TasWater does report against a number of customer service standards related to issues resolution in its annual report. Table 15 lists changes in results over the period 2014-15 to 2016-17.

Table 15: Customer service standards performance measures reported in annual reports

Customer service standards	2014-15	2015-16	2016-17
Water			
Unplanned water supply interruptions restored within five hours	97%	84% ▼	No data[3]
Average minutes to attend water bursts and leaks	37.2	34.8 ▲	30 ▲
Sewerage			
Average minutes to attend sewer spills or breaks	50.4	55.1 ▼	56 ▼
Complaints			
Total complaints per 1 000 properties	11.3	14.3[4] ▼	12.2 ▲
% calls answered within 30 seconds	89	88.7 ▼	89 ▲

Source: TAO and TasWater annual reports. ▲ = improvement, ▼ = deterioration. Data in annual report differs from 2015-16 SOIR (84% vs 93%) but neither meets minimum standard.

3. TasWater have experienced data reliability issues relating to the January 2017 implementation of Maximo challenges were experienced mainly due to connectivity of mobility devices used by the regional workforce along with the workforce adapting to Maximo. These challenges have caused some downstream issues with data reliability for some indicators. These issues have largely been overcome and TasWater expect improved data quality for these indicators in 2017-18.

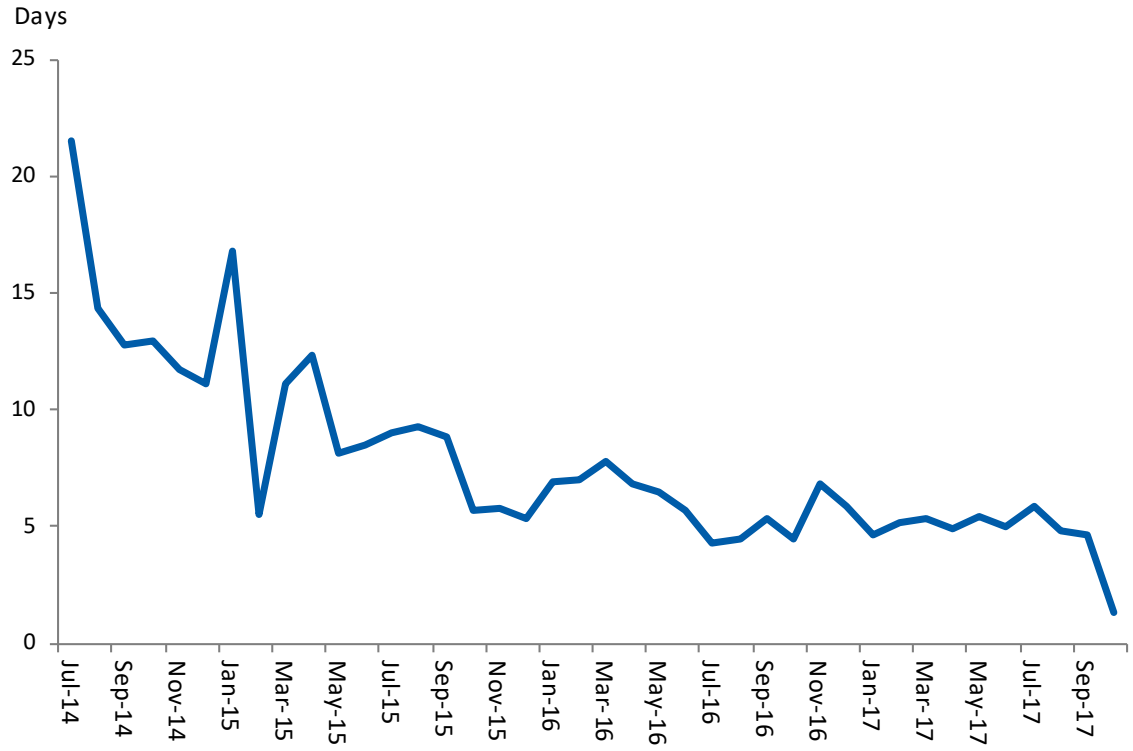
4. TasWater confirmed this figure was incorrectly reported as 13.8 in its 2015-16 annual report.

Table 15 shows that TasWater:

- improved service standards in:
  - average minutes to attend water bursts and leaks
  - total complaints per 1 000 properties
- not changed the level of service in % of calls answered within 30 seconds
- reduced service standards in:
  - unplanned water supply interruptions restored within five hours (data for 2014-15 to 2015-16 only)
  - average minutes to attend sewer spills or breaks.

TasWater also collected data to determine its service provision in resolving customer issues. The average number of days from customer contact to resolution is shown in Figure 43 for the period July 2014 to September 2017.

Figure 43: Average number of days from customer contact to resolution July 2014 to September 2017



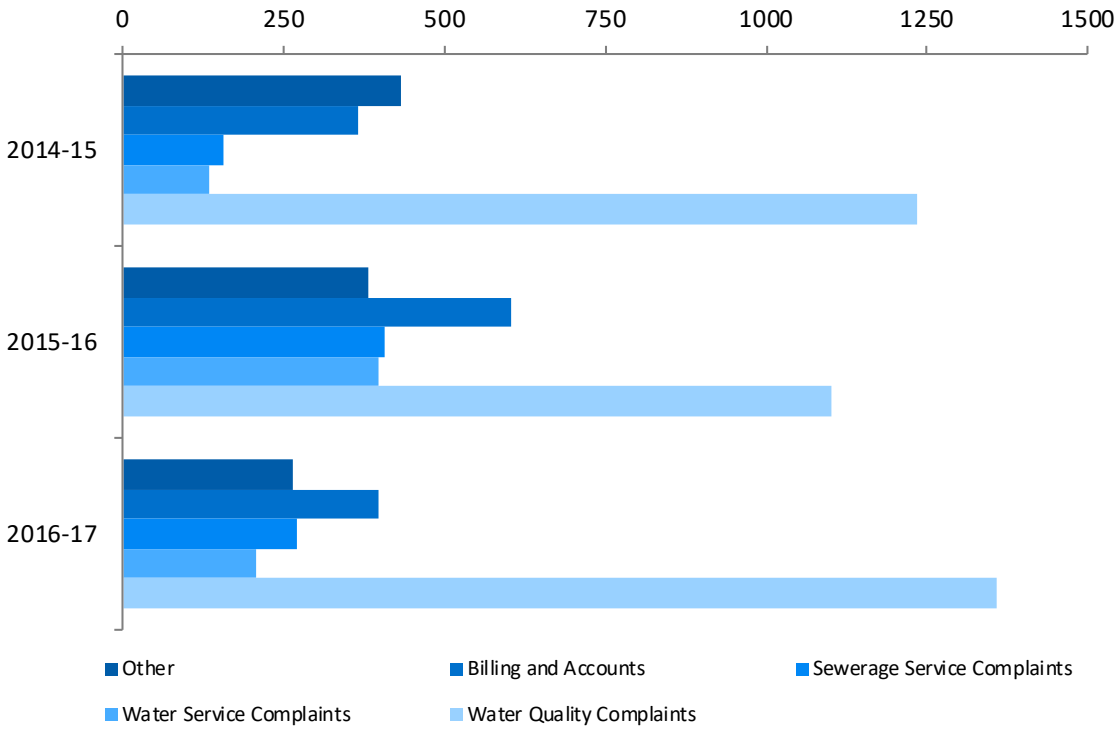
Source: TasWater

Figure 43 shows a decrease over time in the average number of days taken by TasWater to resolve customer issues and complaints. We note TasWater restructured its customer relations teams in late 2014 and implemented a centralised customer service centre. TasWater advised that these changes channelled all customer contacts to one location and resulted in the number of reported customer contacts significantly increasing. The improvement in time to resolve issues shown in Figure 43 is notable given that it occurred during a period of increased customer contacts.

TasWater reported an increase in the proportion of issues that were resolved within the initial contact with a customer (first point resolutions), from 51.7% in 2014-15 to 81% in 2016-17.

Figure 44 on the following page shows the number of customer complaints received by TasWater for the period 2014-15 to 2016-17. We found the total reported in the 2014-15 SOIR (2 324) differed from the total reported in the 2014-15 TasWater Annual Report (2 098), by 226. For the purpose of our illustration in Figure 44, we added the difference (226) to the total for 'Other'.

Figure 44: Number of customer complaints received by TasWater by type since centralising the customer service centre



Source: TAO and TasWater. TasWater began collecting this data in 2014-15.

Figure 44 shows the total number of complaints increased by 24% from 2 324 in 2014-15 to 2 892 in 2015-16 and in 2016-17 decreased by 14% to 2 500 with improvements in all areas except water quality. The number of complaints about water quality dropped by 11% from 1 233 in 2014-15 to 1 101 in 2015-16 before increasing by 23% to 1 357 in 2016-17.

TasWater advised the increased contact from customers resulted in a number of improvements in services. For example, in 2015, there was an increase in complaints about the taste and odour of water in the water catchment for the Greater Hobart area. The water supply was identified as being impacted by Methyl-Isoborneol (MIB) which is a naturally occurring, non-toxic organic compound commonly formed by algae. While MIB impacts the taste and odour of water it does not have a health impact and affected water supplies continued to meet the AWDG. MIB has the impact of creating taste and odour often described as 'earthy and/or musty', which can be removed via the dosing of carbon during the water treatment process.

As a result of this customer contact, TasWater advised it established several carbon dosing facilities, including three trailer mounted units for deployment as required and also developed a testing program to identify MIB trends. TasWater reports that, because weather patterns change and seasonal variations impact water supplies, the greatest source of timely information remains contact from customers.

Other service improvements reported by TasWater include responsiveness to customer complaints and the proportion of responses provided within 10 business days (or longer, by agreement, dependent upon complexity). TasWater's performance has been better than the target of 80% set by the Code since it was first reported in the 2014-15 SOIR (86%) and improved to 89% in 2015-16.

For 2016-17, TasWater advised its had achieved 93%

Complaint escalation rate

Changes in the proportion of complaints which are escalated to the Ombudsman is another measure of customer relations.

In the final year of the regional corporations, the 2012-13 SOIR recorded 0.8% of complaints had been escalated to the Ombudsman - in excess of the minimum standard set by TER of 0.5%.

Since the establishment of TasWater, the proportion of complaints escalated to the Ombudsman has remained below the target.

Other customer centric activities

TasWater advised it had implemented a number of other customer centric activities including:

- restructured its customer service team
- developed a customer relations team with liaison officers and a resolutions team within their complaints function
- centralised its telephone services and relocated the call centre to North West Tasmania
- rescheduled work in response to a cluster of complaints (e.g. to locate the section of pipe causing problems and prioritising its replacement following concerns raised about the colour of water in Lilydale)
- promoted the 1-300 telephone number in advertisements and on all correspondence to encourage customer contact and increase engagement and community education
- prioritised community consultation and arranged and delivered community education programs (e.g. provided information about fluoride and chlorine treatments to support consultation with Judbury residents)
- undertaken community communications including timely and informative correspondence (e.g. newsletters to aquaculture businesses entitled *Protecting Tasmania's shellfish industry Update September 2016* which TasWater delivered across the state including Pittwater and Georges Bay)
- introduced website options for customers to submit information including an online engagement hub (e.g. the 'Have your say' hub encourages customers to submit comments on various projects as well as the PSPs).
- introduced customer engagement activities available in the information about PSPs including focus groups, consultation papers, meetings, forums, discussions and telephone surveys
- provided options for customers to lodge concerns via their website (e.g. a Water Quality Incident Report to capture information from customers about the taste, odour or colour of water or any irritants. The form uses check boxes to request information from customers to assist TasWater to investigate, identify and rectify any causes of contamination)
- provided options for customers to complete application forms with instructions to submit enquiries, complaints and feedback
- implemented various customer centric policies (e.g. the Complaints, Enquiries and Dispute Management policy says customers can raise a complaint to senior management level or access information about contacting the Ombudsman if required).

TasWater advised for 2016-17, they had established a suite of internal and external policies to ensure service delivery is consistent across the state. These policies determine how TasWater responds to all points of customer service delivery across the state. Many of these policies did not exist or were inconsistent between the previous corporations. Key policies that primarily relate to service delivery include:

- Customer Charter
- Customer Contract
- Complaints, Enquiries and Disputes Management Policy
- Financial Hardship
- Adjustment of Bills Policy
- Customer Engagement Policy
- Right to Information Policy.

4.2.4 Better services for customers since 2013

As detailed in Sub-Section 4.1, TasWater has met only 50% to 65% of the minimum customer service standards over the period 2013-14 to 2015-16.

However, one example where better service has been provided by TasWater is the removal of headworks charges. Headworks charges are one component of developer charges which are upfront charges imposed on developers as a condition of connection to the water or sewerage network. In 2014, TasWater reviewed its headworks model to determine an appropriate model for Tasmania. The review resulted in headworks charges being aligned with strategic land use plans to incentivise development in planned growth areas and consequently, planned growth areas no longer have headworks charges applied. TasWater advised that the new system would provide a price signal to incentivise development that makes best use of existing infrastructure and encourages development in the long-term interests of the state.

Section 4.2 Conclusions

- Service delivery has improved across the state since 2009 but has not been consistent since 2013 as evidenced by:
  - improvement of reporting and achievement against the minimum customer service standards in accordance with TER requirements, although achievement has declined since 2014-15
  - full reporting against the measureable standards has been achieved before the due date required by TER.
- Customer relations have improved across the state since 2009 and have been consistent since 2013 as evidenced by:
  - customer charters in compliance with legislative requirements
  - implementation of state-wide initiatives for the purpose of improving customer relations
  - collection of customer satisfaction information
  - implementation of processes for handling customer complaints including targets.
- Customer service standards have driven business decision-making since 2009.

Recommendations

8. TasWater continues to develop measures to better monitor levels of customer satisfaction.
9. TasWater consistently and publicly reports service levels and customer satisfaction.

POINT OF INTEREST – JUDBURY

Judbury lies about 11 kilometres upstream of Huonville in Tasmania's south. It was first serviced with water in 1937 by a system which draws raw water from Dora Creek and distributes it to 75 customers living in Judbury.

The Judbury water supply has been on a permanent boil water alert since 2009 due to high levels of *E. coli*, probably from native animals. Seasonal changes in the turbidity (cloudiness) of the water also affect the water quality and pesticide runoff from nearby forestry activity also poses a risk.

Dora Creek Falls. Photo courtesy of Denis Jeffrey

When TasWater commenced investigations to determine a sustainable solution for the Judbury water supply, they advised residents that the business case to replace the old water supply would require at least 80% of them to sign up to pay TasWater's fixed and variable charges.

Some of the residents said they would rather not drink treated water and their concerns centred on the health effects of treatments in their drinking water. TasWater invited speakers to meet the community to explain the treatments raw water needs to meet DHHS requirements.

Media attention focused on members of the community who voiced an interest in keeping the historic water supply system. TasWater worked with the local council to explain to residents that, even if 80% of them completed applications to remove their properties from TasWater services, TasWater would still have to remove the historic Dora Creek water system as it no longer meets water quality standards.

TasWater has included Judbury in its 24 Glasses Project.

4.3 HAS A MORE ROBUST REGULATORY FRAMEWORK BEEN ACHIEVED?

In this sub-section we assess whether:

- a more robust regulatory framework comparable to other Australian states has been achieved since 2009
- customers have had a voice through a transparent regulatory framework since 2009
- communication between technical and economic regulators has occurred since 2009.

As illustrated in Figure 1 and detailed in Section 1, the water and sewerage industry is now subject to a number of regulators.

To assist in making our determinations we:

- identified the regulatory frameworks in place in other Australian states
- examined the information promulgated by the regulators
- compared the means of communication between the regulators.

Regulatory framework

The economic regulatory framework in Tasmania is focussed on ensuring competitive market outcomes from the water and sewerage sector in relation to both price and service as well as ensuring the financial sustainability of the regulated entities and providing sufficient funding to meet other regulatory obligations.

The framework is administered by TER under the provisions of the 2008 Industry Act and regulations under that Act. Under these arrangements, regulated entities are required to be licensed with the licences binding the entities to comply with regulatory obligations.

In relation to service, the framework requires regulated entities to comply with a number of service standard obligations set out in the Code issued by TER. In addition, regulated entities are required to adopt appropriate management practices in relation to asset management, emergency management and regulatory compliance. The performance of the industry is also reviewed and reported on through annual SOIRs prepared by TER. The framework also provides for the regulation of prices for water and sewerage services.

Table 16 shows a comparison of the regulation of Tasmania's water and sewerage industry to that of other Australian jurisdictions.

Table 16: Comparison of water and sewerage industry regulatory frameworks – Australian jurisdictions

	TAS	SA	ACT	Qld	WA	VIC
Is there an economic regulator?	✓	✓	✓	✓	✓	✓
Is there a technical regulator?	✓	✓	✓	✗	✗	✗
Is there legislation?	✓	✓	✓	✓	✓	✓
Are there other supplementary regulatory activities undertaken by other government organisations	✓	✓	✓	✓	✓	✓
Does the regulator/s prescribe minimum customer service standards for both water and sewerage?	✓	✓	✓	✓	✗	✓
Does the regulator/s conduct reviews, undertake monitoring and provide industry reports?	✓	✓	✓	✓	✓	✓
Does the regulator/s prescribe upper and lower price limits, pricing plans and borrowing limits?	✓	✓	✓	✗	✓	✓
Does the regulator/s provide avenues for customers to have a voice?	✓	✓	✓	✓	✓	✓
Does the regulator/s prescribe customer relations requirements (eg customer charter)?	✓	✓	✓	✗	✗	✓
Is the regulatory framework transparent?	✓	✓	✓	✓	✓	✓

Source: TAO, Key: ✓ = satisfied; ✗ = unsure or not satisfied

Note: NSW did not respond to requests for information

Based on the results in Table 16, we are satisfied that a more robust regulatory framework comparable to other Australian states has been achieved since 2009.

CUSTOMER VOICE

To determine whether customers have a voice through a transparent regulatory process, we examined what avenues were made available to customers by the regulators to voice their opinions and concerns. Table 17 shows the results of this examination.

Table 17: Avenues of customer contact – water and sewerage industry regulators

Regulator	EPA	TER	Dept. of Public Health	Ombudsman
Website invites public submissions	✓	✓	✓	✓
Avenues provided for personal customer contact	✓	✓	✓	✓
Attend or communicate with councils, schools	✓	✓	✓	**N/a**
Community education	✓	✓	✓	✓
Community forums, groups	✓	✓	✓	✓

Source: TAO, Key: ✓ – yes, N/a – Not applicable.

In addition, TER requires the regulated entity to produce a detailed PSP for each regulatory period (currently three years) where it must justify:

- outcomes across drinking water, environment, dam safety compliance, customer service standards
- capital expenditure for projects and programs intended to be delivered during the period, why they are important (eg. compliance, growth, renewal, customer service) and how much it will cost
- operating expenditure for the efficient costs of running the entity and providing water and sewerage services
- total revenue required to deliver the services as well as depreciation on assets and return on capital investment
- pricing structure
- how customer consultation and demand forecasts support proposed investment and pricing.

TER considers the proposal and determines independently and transparently what expenditure and revenue will be allowed as well as the level of pricing.

We are satisfied that adequate avenues of communication within a transparent regulatory framework have existed between customers and the water and sewerage industry regulators since 2009.

Communication between technical and economic regulators

Since the commencement of the reforms, and outside the price determination investigation process, the economic regulator has liaised with the technical regulators on issues as they have arisen.

In December 2016, the Tasmanian Water and Sewerage Regulators Forum was formed with the objective of:

> providing a forum for Tasmanian water and sewerage industry regulators and TasWater to meet regularly to discuss strategic or priority issues associated with water and sewerage regulation in the context of the preparation for, and conduct of, price determination investigations and on an ongoing basis.

The operation of the forum together with the independence of the environmental, health, dam safety and economic regulators has facilitated regular and uninhibited communication between them.

We are satisfied appropriate levels of communication occur between the regulators.

Section 4.3 Conclusions

- The regulatory framework in Tasmania since 2009 has:
  - been strengthened by the implementation of the 2008 Industry Act
  - been as robust as the frameworks in other Australian states
  - provided customers with a voice through a transparent regulatory framework
  - facilitated communication between technical and economic regulators.

LIST OF ACRONYMS AND ABBREVIATIONS

2008 Act	*Water and Sewerage Corporations Act 2008*
2012 Act	*Water and Sewerage Corporation Act 2012*
22 standards	minimum service standards
AAV	Assessed Annual Value of the property
ADWG	*Australian Drinking Water Guidelines 2011*
audit	performance audit
BOM	Bureau of Meteorology
COAG	Council of Australian Governments
Code	Tasmanian Water and Sewerage Industry Customer Service Code
DHHS	Department of Health and Human Services
Director of Public Health	Director of Public Health and Environmental Health Services
EBIT	earnings before interest and tax
EMPCA	*Environmental Management and Pollution Control Act 1994*
EPA	Environment Protection Authority
Fixed charges	Fixed charges of water used or sewage services are designed to recover the cost of providing the service to a property (such as the cost of maintaining dams, pipes, reservoirs and other essential infrastructure).
GIS	Global Information System
GPOC	Government Prices Oversight Commission
GSP	Gross State Product
Guidelines	*Tasmanian Drinking Water Quality Guidelines 2015*
KPIs	Key Performance Indicators
Industry Act 2008	*Water and Sewerage Industry Act 2008*
IPO	Interim Price Order
ISO	International Organisation for Standardisation
LGAT	Local Government Association of Tasmania
Lower revenue limit	The lower revenue limit reflects the minimum amount of revenue a regulated entity needs to recover its costs of operations to achieve financial sustainability. A water and sewerage business should recover revenue at least equal to the lower revenue limit but no greater than the upper revenue limit as revenue above the upper revenue limit represents monopoly profits.

LUPAA	*Land Use Planning Approvals Act 1993*
Manual	*International Infrastructure Management Manual 2006*
Ml	Mega litre which equals one million litres
MIB	Methyl-Isoborneol
MOU	memorandum of understanding
NATA	National Association of Testing Authorities
NWI	National Water Initiatives
NOC	Network Operations Centre
Onstream	Tasmanian Water and Sewerage Corporation (Common Services) Pty Ltd trading as Onstream
Price Determination	A price determination investigation is a process in which TER reviews a regulated entity's proposed costs to provide water and sewerage services to Tasmanian customers together with its proposals for prices. Prices are determined on three revenue limits – upper, lower and statutory. A Price and Service Plan applies to a regulatory period which is usually three years. The plan includes the services it intends to deliver.
Pricing Guidelines	*Urban Water and Wastewater Pricing Guidelines*, January 2003
PSP	Price and Service Plan. TER assesses a regulated entity's PSP by conducting a price determination investigation. Transition period 1 July 2012 – 1 July 2020
PSP1	PSP period 1 July 2012 - 30 June 2015
PSP2	PSP period 1 July 2015 – 30 June 2018
Regional corporations	On 1 July 2009 three regional corporations – Ben Lomond Water (Northern Region), Cradle Mountain Water (North-Western Region) and Southern Water (Southern Region) – were established to provide water and sewerage services in Tasmania and were in place until July 2013.
Revenue limits	In determining the revenue allowances for each of the regulated entities, TER has established three annual revenue limits – upper, lower and statutory.
SAMP	Strategic Asset Management Plan
SCADA	Supervisory Control and Data Acquisition
Sewage	The waste matter that passes through sewerage.
Sewerage	The pipes and fittings conveying sewage.
SOIR	State of the Industry Report

Statutory revenue limit	The statutory revenue limit is the amount of revenue required to achieve the level of cost recovery stipulated in the 2008 Industry Act. It is calculated by applying the two separate weighted average costs of capital (WACCs) set out in section 68(1A) of the 2008 Industry Act i.e. one WACC for existing assets and another WACC for new assets.
STP	Sewage treatment plant
Tariffs	Prices charged for services made up of fixed charges, variable charges and miscellaneous fees and charges
TAO	Tasmanian Audit Office
Target tariff	Target tariffs represent transition tariff paths that apply in particular areas or regions. As part of the tariff reform arrangements, customers are moved to these target tariffs consistent with proposed constraints on price movements. All customers will be on target tariffs by 2017-18
TER	Tasmanian Economic Regulator
Taskforce	Ministerial Water and Sewerage Taskforce
TMP	Treasury Management Policy
Upper revenue limit	The upper revenue limit reflects full cost recovery (including a commercial rate of return on capital investments). More broadly full cost recovery includes, recovering the cost of capital, depreciation, plus operating and maintenance costs.
Variable Charges	A variable charge (also referred to as a usage charge) is the price charged for each unit of water delivered to, or sewage removed from, a property, and is designed to recover the variable costs of delivering water to, or removing sewage from, a property. For example, the variable costs for water include the cost of water treatment and pumping. The variable water usage charge is determined by a water meter measuring the volume of water delivered to a property, whilst the fixed charge is based on the overall cost of providing the service to a property.
WACC	Weighted average cost of capital The WACC is the weighted average of the cost of debt and cost of equity. In line with accepted regulatory practice, a benchmarked debt to equity ratio is used to determine the WACC.
WTP	Water treatment plant

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APPENDICES

APPENDIX 1: AUDIT CRITERIA

In determining the audit criteria, we drew on a several sources to gain an understanding of the government's intended outcomes from reforming the state's water and sewerage industry.

We used the Second Reading Speech for the 2008 Industry Act, to derive specific intended outcomes expected by the government to result from the 2008 reforms. Those reforms saw the formation of the regional corporations from July 2009. The expected benefits were further clarified in the government's submission to the Productivity Commission's inquiry into the Australian urban water sector in November 2010, which we also used to frame our criteria.

Further reform in 2012 saw the amalgamation of the regional corporations into a single entity, TasWater from July 2013. We drew on the intended outcomes contained in the Second Reading Speech for the *Water and Sewerage Corporation Bill 2012* to further add to the list of intended benefits already noted.

The audit addressed the objectives through the following criteria and sub-criteria:

Criteria		Sub-criteria	
1	Have the reforms delivered improved public health and environmental benefits?	1.1	Has compliance with applicable water quality standards improved?
		1.2	Has compliance with applicable environmental standards for wastewater improved?
		1.3	Have tourism operators, local businesses and the community been provided with improved water and sewerage infrastructure sooner?
2	Have the reforms improved strategic asset management?	2.1	Has improved strategic asset management planning been achieved?
		2.2	Has old and failing water and sewerage infrastructure been identified and renewed
		2.3	Has water and sewerage infrastructure been expanded or extended?

Criteria		Sub-criteria	
3	Have the reforms delivered the expected financial benefits?	3.1	Have pricing structures balanced revenue maximisation against equity within the regulatory environment?
		3.2	Have revenue flows increased to achieve self-sustaining investment and has an appropriate level of debt funding been utilised?
		3.3	Has more flexibility to deal with the capital expenditure program been achieved?
		3.4	Do customers pay an appropriate amount for the services they receive?
		3.5	Have cost savings and reduced reporting and administrative effort been achieved?
4	Have the reforms provided improved customer service?	4.1	Have minimum customer service standards been established and achieved?
		4.2	Has service delivery and customer relations improved across the state?
		4.3	Has a more robust regulatory framework been achieved?

Collectively, we used the list of benefits to assist us in forming conclusions on the extent to which the intended outcomes arising from reforms have been achieved

APPENDIX 2: SUBMISSIONS AND COMMENTS RECEIVED

Submissions and comments that we receive are not subject to the audit nor the evidentiary standards required in reaching an audit conclusion. Responsibility for the accuracy, fairness and balance of these comments rests solely with those who provided the response. However, views expressed by the Treasurer, TasWater and other interested stakeholders were considered in reaching adit conclusions.

Section 30(3) of the Act requires that this report include any submissions or comments made under Section 30(2) or a fair summary of them. Submissions received are included in full below.

TREASURER COMMENTS RECEIVED

I refer to your letter of 1 November 2017 in which you provided a summary of the findings and the recommendations in the report titled, *Report of the Auditor-General No.2 of 2017-18 - Water and sewerage in Tasmania: assessing the outcomes of industry reform*.

On behalf of the Hodgman Liberal Government, I acknowledge the important work you have undertaken in examining whether the reforms to the water and sewerage industry in 2008 and 2012 have realised their intended outcomes and objectives, including improving the financial position of the regulated entities, improving infrastructure investment, asset management, water quality and wastewater environmental compliance.

I am pleased that your report highlights the importance of good health and environmental outcomes for Tasmania's tourism industry and local businesses as well as the broader community. It is important for Tasmania's brand and for the overall economic development of the State that Tasmania's water and sewerage industry performs effectively and efficiently.

I note the comments in the summary of findings that only some of the intended objectives of the original reforms have been realised and note that Table 1 confirms that almost 50 per cent of the intended outcomes of the reforms have not been completed or are only partially complete. As the summary of your report makes clear, in some very important areas, the intended outcomes have not been achieved, particularly in the areas of environmental compliance for wastewater and infrastructure renewal and augmentation.

The performance of TasWater is of great concern to the Government. The Tasmanian Economic Regulator reported in the *Tasmanian Water and Sewerage State of the Industry Report 2015-16* that only one of TasWater's 79 sewage treatment plants was fully compliant. The report also stated that only 24 of the 79 sewage treatment plants met the benchmark of 90 per cent compliance. The Government is also concerned that TasWater's sewer spills in 2015-16 were up to eight times the national average and that there has been no progress in reducing the rate of sewer overflows, which remains significantly above the number reported by comparable interstate providers.

It is clear that Tasmania's water and sewerage industry currently faces a set of very significant challenges, despite significant reforms of the industry over the last decade. Many of these problems have remained, and in some areas have become worse.

Your conclusion states that the regulated entities have not taken advantage of their improved capacity to service debt to accelerate infrastructure investment. If TasWater and the regional corporations had more appropriately utilised debt funding to invest in infrastructure investment, much greater progress would have been achieved, especially in meeting community expectations for water and for achieving wastewater environmental compliance.

Instead, TasWater and its predecessor regional corporations have chosen to make generous returns to the owner councils. Since 2009, and despite the delays in removing boil water alerts and the substantial level of non-compliance with its environmental obligations, TasWater, and its predecessors, have paid councils around $207 million in total returns. Another $190 million of returns is planned over the remainder of TasWater's 10 year plan, which would result in almost $400 million in payouts.

One major element of the reforms was the introduction of universal water metering to enable consumption-based pricing of water. An important benefit of universal metering is that it enables the regulated entities to obtain better information on water losses across their systems and reduce the water leakage rate. This was the largest single benefit of metering in the cost-benefit analysis of universal metering in Tasmania undertaken by Marchment Hill Consulting in 2011.

However, this outcome has not been realised as water losses remain very high in Tasmania. The Tasmanian Economic Regulator reported in the 2015-16 State of the Industry Report that water losses were significantly higher in 2015-16. Only two litres out of every three litres of treated water were accounted for in 2015-16, such that 25 295 mega litres of water were treated by TasWater but this water was either lost or not charged to customers. This rate of loss is very high by national standards. According to the Bureau of Meteorology's *National Performance Report 2015-16*, the rate of loss for TasWater was more than three times the rate of any comparable mainland service provider.

The summary of findings states that TasWater has only partly realized the outcome of better services for customers. I note, however, that there is no reference in the summary to the recent increases in customer complaints. The Regulator's 2015-16 State of the Industry Report states that complaints to TasWater increased by 24 per cent from the previous year and the largest group of complaints (38 per cent) were in relation to water quality. The Regulator reported that the rate of complaints, at 14 per 1000 properties, was above the service standard.

There appears to be an inconsistency between the rankings in Table 1 and the summary of findings about the ability of the regulated entities to support self-sustaining investment and better manage debt. Table 1 states that the reforms have achieved their intended outcomes against these measures. This appears to be contrary to the comments and findings in the summary, which states that an appropriate level of debt funding has not been utilised since 2009.

While TasWater and its predecessor corporations have enjoyed the benefits of regulatory and structural reforms to improve their balance sheets, they have failed to use their financial position to act and improve their ageing and non-compliant infrastructure, to the detriment of the Tasmanian community. This failure to act is one of the reasons why the Hodgman Liberal Government is undertaking further reform of the Tasmanian water and sewerage industry. Under State Government ownership, TasWater would increase its gearing to accelerate infrastructure development and ensure that Tasmanians have access to a contemporary and compliant water and sewerage network.

I also note that whilst Table 1 confirms that almost 50 per cent of the intended outcomes of the reforms have not been completed or are only partially complete, Table 1 appears to be inconsistent with much of the commentary in the summary and gives a misleading impression of the overall extent to which the intended outcomes have been achieved. In some areas there may have been very limited progress, potentially well below community expectations, yet the report classes these as 'partly realised'. As an example, the intended outcome 'wastewater treatment plants comply with licence conditions' was assessed as 'partly realised'. The summary findings state that compliance with environmental standards for wastewater has not improved since 2009. Therefore, on a scale from zero to 10, TasWater's performance on a number of these measures may be ranked closer to zero than 10, based on the comments elsewhere in the summary.

Also utilising a broad measure such as 'partly realised' without qualification fails to acknowledge that some intended outcomes, such as quicker achievement of sewerage environmental standards, are much more important than some others in the table.

The table also does not distinguish intended outcomes that are important in their own right (such as improved environmental outcomes) from other intended outcomes that are

important primarily as pre-conditions or enablers for other outcomes, such as those relating to debt, which are important for achieving the required level of investment.

In addition, the table does not make sufficiently clear that some outcomes are not due to the efforts of TasWater and the regional corporations but instead to the broader regulatory environment or other factors. I note this is acknowledged for some intended outcomes, but this is only by way of footnotes and this may be overlooked in any quick review of the summary. If the table did not provide any score against TasWater or the regional corporations against these measures, this would have been a more accurate representation.

There were additional intended outcomes, acknowledged in the table that cannot be considered achievements of TasWater or the regional corporations. For example, 'increased revenue flows into the sector to support self-sustaining investment and the appropriate use of debt funding' has been assessed as 'outcome realised'. The increased revenue is largely due to the price increases approved by the Regulator and not the regional corporations or TasWater noting that the Regulator sets only the maximum revenues that could be charged to customers and it has been open to TasWater to manage this in conjunction with its owners.

It should also be noted that the current owners have not sought to take into account the impact of significant price increases on customers and have allowed the corporation to recover the maximum revenue allowable rather than lowering the return that they receive through returns. During the period 2010-11 to 2015-16 the average residential water and sewerage bill has increased by around 51 per cent while inflation growth over the period was 7.4 per cent. Significant price increases without consideration of price impacts on customers whilst delivering limited or no improvement in environmental outcomes is very concerning and accentuate the lack of progress with implementing the reforms.

The summary of findings states that in the area of water quality, the reforms have realised their intended outcomes and that water quality has approved. I accept that there has been some improvement in water quality since 2009. However, this improvement has been too slow and there is still much work to be done to ensure that all Tasmanians enjoy clean water that meets health and environmental standards, as do almost all other Australians who receive reticulated water.

I also note that your summary of findings fails to acknowledge that in terms of water quality no significant action was taken to advance or accelerate investment in improving water supply for a number (25 at the time) of regional small towns and settlements until August 2016, some eight years after the reforms began, nor that this action at the time was a unilateral decision by the board and was not supported initially by the owners.

Whilst not a component of your audit this highlights in my mind the dysfunction of the current governance model of 29 separate local government owners.

Finally, I note that the summary of findings makes a number of recommendations to TasWater which, if implemented, would help ensure that the outcomes of successive rounds of reforms are met. The Government fully supports the recommendations and strongly believes that the only way these can be achieved is by placing TasWater under Government ownership.

In particular, the findings and recommendations relating to the importance of an asset rationalisation strategy and long term planning are fully supported by the Government. For this to occur, the industry requires a long term infrastructure investment plan, which is a key feature of the legislation currently before the Parliament.

However whilst Table 1 indicates that "strategic asset management planning and state-wide infrastructure planning" has been achieved, no comment appears in your findings that this has occurred only recently nor that for nearly a decade since the reforms began there was an absence of a long term infrastructure plan which no doubt has contributed to the failure of the organisation to invest at appropriate levels.

The Government's plan includes ensuring that TasWater's 10 year $1.5 billion infrastructure investment program, which commenced in 2016-17, will be completed within five years of the Government taking ownership. The plan enables TasWater to have the funding, capacity and capability to action the recommendations in the report, including accelerating infrastructure investment, improving wastewater compliance, improving asset rationalisation and renewals and improving customer service standards.

Again, I thank you and the Tasmanian Audit Office for your work in undertaking this important performance audit.

Hon Peter Gutwein MP

Treasurer

TASWATER COMMENTS RECEIVED

The comments that follow represent TasWater's formal submission in response to the Tasmanian Audit Office's (TAO) report "Water and sewerage in Tasmania – assessing the outcomes of industry reform" (TAO Report).

While we agree with the majority of the findings and recommendations contained in the TAO report, there are a few areas where we either disagree with the conclusions or believe further context is required.

We note the challenges the TAO has faced in attempting to convert the initial expectations of the two reform stages into clear and measurable objectives, the constraints that this then places on the report and that in some cases the original intentions can only reflect what was known at that point in time.

Finally we recognise the significant effort made by TAO staff to gain a fuller understanding of our history and the intricacies of the water and sewerage operations.

Use of 2016/17 data

We acknowledge the TAO's partial inclusion of 2016-17 data in their report. However, had 2016-17 data been consistently used throughout the report, we believe it would have more fully demonstrated the progress that has been made in the four years since the commencement of TasWater in 2013-14, as demonstrated in our 2016-17 Annual Report. This is particularly relevant as many of our foundational initiatives take time for benefits to be fully realised and in a number of cases this would have been clearly evidenced through the inclusion of the 2016-17 data.

Comments on Findings and Recommendations

1.1 Has compliance with applicable water quality standards improved?

TAO Finding:

- Compliance with applicable water quality standards has improved since 2009 as evidenced by:
  - improvement in microbiological sampling compliance, although this has declined since 2013-14
  - improvement in microbiological compliance, although this has decline since 2013-14
- Significant long-term health benefits have not been achieved more quickly since 2013 in microbiological sampling compliance and microbiological compliance.

TAO Recommendation:

TasWater investigates and remedies the decline in microbiological sampling compliance and microbiological compliance

TasWater Response:

The decline in microbiological sampling compliance that occurred between 2013-14 and 2015-16 was isolated. Only four of the systems that we managed over this period were considered to have insufficient sampling to determine microbiological compliance in any given year, three of which were in towns under BWA or DNC alerts. This has since been rectified.

TasWater does not support the methodology developed by the TAO to assess improvement in microbiological compliance. The population receiving compliant water and the number of potable systems that are compliant with ADWG microbiological guidelines are considered better metrics as acknowledged by the Department of Health and Human Services.

Improvement in microbiological compliance is demonstrated as follows:

- Population receiving bacteriologically non-compliant reticulated water has reduced from 4.0% in 2008-09 to 0.6% in 2016-17.

- The percentage of potable systems compliant with ADWG microbiological guidelines has increased from 94.0% in 2013-14 to 100% in 2016-17.

The improvement in the quality of drinking water provided to customers as conveyed by the above measures confirms that significant long-term health benefits have been achieved since 2013.

1.2 Has compliance with applicable environmental standards for wastewater improved?

TAO Finding:

- State-wide compliance with environmental standards for wastewater has not improved since 2009 as sewerage treatment plants (STPs) have not complied with licence conditions and sewerage infrastructure has been under-performing compared to national averages.
- Significant long-term environmental benefits have not been achieved since 2009 and have not been achieved more quickly since 2013…..

TAO Recommendation:

TasWater improves its efforts in wastewater management compliance to meet community and regulatory expectations.

TasWater Response:

The findings are focussed on a number of metrics that are the industry no longer considers appropriate measures of performance. As an example the Bureau of Meteorology (BOM) has stated that the metrics regarding total spills/100km is not nationally valid as it is deemed unreliable. TasWater is currently working with the Environmental Protection Authority (EPA) to finalise a spills notification procedure and is quite rightly focussed on the impact of sewerage spills on specific environments (eg: sensitive receiving waters and those near shell fish leases) so that upgrades can be prioritised.

But in any event the finding fails to give due acknowledgement that significant long-term environmental benefits were achieved as demonstrated by:

- Percentage of treated volume compliant with EPA requirements (EPA measure) increasing from 81.4% in 2014-15 to 86.0% in 2016-17
- Total number of sewer overflows reduced from 645 in 2013-14 to 134 in 2016-17
- Sewer odour complaints (EPH) decreased from 274 in 2013-14 to 137 in 2016-17
- Dry weather sewage spills per reduced from 155 in 2013-14 to 66 in 2016-17
- Recycled water compliance increased from 69% in 2014-15 to 79% in 2016-17
- Percentage of bio-solids beneficially re-used increased from 56.0% in 2013-14 to 99.8% in 2016-17.

We are working to further improve our performance as evidenced through the prioritisation of environmental outcomes in our LTSP which is informed by consultation with our customers, the community and regulators. As further evidence of this our Memorandum of Understanding with the EPA is aimed at focusing on strategies that will deliver outcomes that matter for the environment and for our customers.

1.3 Have tourism operators, local businesses and the community been provided with improved water and sewerage infrastructure sooner?

TAO Finding:

- Tourism operators, local businesses and the community have benefited from quicker achievement of health standards since 2013 in water supply treatment processes, fluoridation and public health warnings but not in microbiological sampling compliance, microbiological compliance and the proportion of the population receiving compliant water.

- Tourism operators, local businesses and the community have not benefited from quicker achievement of environmental standards since 2013 as evidenced by ongoing STP non-compliance.

TasWater Response:

Please refer to the comments above in Section 1.1 which outlines our position on microbiological sampling compliance and also demonstrates significant improvement in microbiological compliance, including the proportion of the population receiving compliant water.

STP compliance is not the only measure of environmental performance and we have demonstrated significant improvement in a number of other areas such as dry weather spills, odour complaints, recycled water compliance and the percentage of bio-solids beneficially re-used (refer to comments in Section 1.2).

2.2 Has old and failing water and sewerage infrastructure been identified and renewed?

TAO Finding:

- The renewal of old and failing water and sewerage infrastructure has only occurred for some assets since 2009 due to:
    - budgeted capital expenditure for renewals or replacements was consistently less than actual expenditure
    - actual capital expenditure for renewals or replacements has not proceeded commensurate with the age and condition of the infrastructure and borrowing capacity available.
- Renewal over the coming decades has been planned for since 2009 but has not proceeded commensurate with the age and condition of the state's infrastructure.

TAO Recommendation:

TasWater undertakes greater investment and prioritisation of capital expenditure to address old and failing assets.

TasWater Response:

We acknowledge that actual capital renewal spend in the first two years of TasWater exceeded the initial budget, however, it was materially in line with budget in 2015-16 and 2016-17. As we have gained a better understanding of our assets, our capital budgeting process has improved.

When assessing the rate at which old and failing water and sewerage infrastructure has been renewed and upgraded it is important to consider all capital expenditure. A capital project may be primarily driven by a need to address compliance issues however this does not mean that the associated capital expenditure isn't also renewing or replacing existing infrastructure. In fact quite often compliance issues have been the result of failing infrastructure.

The finding that not all old and failing infrastructure has been renewed is correct, however, this was never expected to occur within 8 years of the initial reform. We note that the 2008 intended outcomes were aiming for renewal over the coming decades.

2.3 Has water and sewerage infrastructure been augmented or expanded?

TAO Finding:

A structured approach to asset rationalisation is not in place as evidenced by the absence of a rationalisation strategy.

TAO Recommendation:

TasWater finalises its rationalisation strategy to support rationalisation projects.

TasWater Response:

Whilst we are still in the process of formalising an overarching state-wide rationalisation strategy, we have developed a number of localised rationalisation strategies and plans. These include Hobart Sewer Improvement Program, Launceston Sewer Improvement Program, Northern Midlands Sewer Improvement Program, Pardoe and Kingborough. The assets considered within these rationalisation strategies service over 80% of our sewerage customers.

3.2 Have revenue flows increased to achieve self-sustaining investments and has an appropriate level of debt funding been utilised?

TAO Finding:

- An appropriate level of debt funding has not been utilised since 2009 as more capital expenditure could have been funded by debt to improve compliance with environmental standards for wastewater as outline in section 1.2
- There has been an improved capacity to service debt and meet debt repayment requirements since 2009 as evidenced by:
    - a strong interest rate cover ratio exceeding the target set in corporate plans and the long-term 10 year financial plan

TAO Recommendation:

TasWater investigate the acceleration of infrastructure investment by utilising additional debt funding

TasWater Response:

We acknowledge that a relatively low level of debt was inherited in the initial reform. Total borrowings have since been increased by $271M and total gearing has gone from 11.8% in 2009-10 to 30% in 2016-17.

The finding fails to acknowledge that TasWater is only able to increase debt up to our borrowing limit set annually by Tascorp. We were within 5% of this limit for 2016-17 (prior to late limit increase in June 2017). Furthermore capital works need to be properly planned to ensure that they are prudent and efficient and also require all appropriate council and regulatory approvals – this takes time.

In August 2016 we publically announced that we intended to accelerate our capital program. This is demonstrated in our Corporate Plan which projects capex of $135.3M in FY2017-18 and $149.6M in FY2018-19. The accelerated capital expenditure program has been developed within the limits determined by acceptable annual price increases and financial sustainability metrics. These metrics include our target level of interest rate cover of 2.0 times. Our long term modelling forecasts that we will be close to this level by 2025-26.

3.3 Has more flexibility to deal with a capital expenditure program been achieved?

TAO Finding:

Actual expenditure since 2009 is in line with the government's expected expenditure of one billion dollars over 10 year. However, this incudes capital expenditure on non infrastructure related capital items.

TasWater Response:

In the second reading speech of the Water and Sewerage Industry Bill 2008, Mr Aird stated,

> 'Investment approaching one billion over the next decade is required just to bring the sector as a whole up to the appropriate standard.'

Total capital expenditure of $820M has been expended in the first 8 years since the initial reform, with a further $285M forecast in the next 2 years. This results in total capital expenditure of $1.1B over a 10 year period.

We do not agree with the exclusions of non infrastructure capital expenditure when assessing performance against this intended reform outcome. Non infrastructure expenditure has the capacity to directly impact the delivery of water and sewerage services

and also contributes to improved outcomes for our customers. This can be demonstrated through the installation of smarter technologies such as SCADA and the implementation of asset management software which enable us to better monitor our assets and as a result defer or reduce the need for capital and/or operating expenditure in some instances.

If the non infrastructure capital expenditure category is excluded, the capital expenditure to 2016-17 was $708M, with a further $249M forecast for 2017-18 and 2018-19. This results in total water and sewerage infrastructure investment of $956M over the 10 year period. Based on this, we still clearly meet the test of *'Investment approaching one billion over the next decade'*.

3.5 Have cost savings and reduced reporting and administrative effort been achieved?

TAO Finding:

Savings of $5m per annum after a period of time as a result of the merger have been partially achieved since 2013.

TasWater Response:

TasWater achieved $6.3M of sustainable savings as at 30 June 2015. This has been independently reviewed and verified by a major chartered accountancy firm. In addition, further savings of $0.9M were achieved in 2015-16 and $3.8M in 2016-17 (a total of $11.0M in sustainable savings). As such the $5M target has not only been achieved in full but has been exceeded.

We note that the savings have been partially offset by increased costs incurred in meeting the improved compliance levels.

4.1 Have minimum customer service standards been established and achieved?

TAO Recommendations:

TasWater works more diligently to achieve the minimum customer service standards as required by the Tasmanian Water and Sewerage Industry Customer Service Code (Code).

TasWater Response:

We are working diligently towards the achievement of customer service standards through the improvement and standardisation of processes and procedures and the optimisation of systems.

We have established a water quality taskforce to address water quality complaints and are responding more consistently to the issues raised by our customers. Ongoing and proactive water quality sampling has enabled early detection of taste and odour indicators, in many cases enabling measures to be implemented before customers are impacted. Improvements in data capturing is enabling operational improvements.

The implementation asset management software facilitates greater responsiveness to customer initiated service requests and is improving the scheduling of preventative maintenance and identification of asset renewal requirements.

4.2 Have service delivery and customer relations improved across the state?

TAO Recommendations:

TasWater consistently and publicly reports service levels and customer satisfaction.

TasWater Response:

The service standards are developed in accordance with the customer service code. Our performance against these standards is consistently and regularly reported in the State of the Industry Report. We also voluntarily provide further information on customer performance in our annual report.

Michael Brewster

Chief Executive Officer

TasWater

AUDITOR-GENERAL RESPONSE TO TASWATER COMMENTS

With respect to the response from TasWater and the comment relating to the use of 2016-18 data, I have made it clear in my report that the data and information for 2016-17 has been included as appropriate and in some cases, we have included data beyond 30 June 2017. In my view the report is an accurate representation across all elements reviewed and properly reflects the efforts made by TasWater across all the years of operation.

In respect to all other areas in our report, I am satisfied that the comments made by TasWater correlate with our findings and our report includes commentary on the items raised.

DEPARTMENT OF HEALTH AND HUMAN SERVICES COMMENTS RECEIVED

Thank you for your correspondence of 1 November 2017 about the performance audit on water and sewerage industry reform.

Public Health Services (PHS) officers have been providing advice about this performance audit to officers of the Tasmanian Audit Office (TAO) since August 2017.

I am concerned that the way some findings are presented in the summary, and some of the measures used by the TAO to assess historical water quality, could give a mistaken impression of performance against public health outcomes. The Director of Public Health has expressed concern that I share, that is the importance of not undermining the community's trust in the safety of the state-wide public drinking water supply.

From a public health perspective, the critical measure is the proportion of the population serviced by TasWater that reliably receives compliant drinking water.

In 2008/09, 96 per cent of the serviced population received microbiologically compliant drinking water. By 2015/16 this was 99.2 per cent and by 2016/17 this had increased to 99.4 per cent. This demonstrates a clear improvement in performance, with relatively little room to further improve this measure. While this measure is noted in the summary, it is in non-quantitative terms, and only after citing apparently less favourable findings that are less indicative of the overall 'public health' performance.

This important aspect of TasWater's recent performance could be much more clearly communicated by stating early in the summary that 'In 20l5/16, 99.2 per cent of the serviced population received microbiologically compliant drinking water.' I encourage the TAO to consider giving this fact prominence in summary.

It is not clear how much more quickly such improvements in population-level measures could reasonably have been achieved, bearing in mind the improvements in recent years, and TasWater's plans to address the remaining non-compliant small to very small supplies by August 2018 through their Regional Towns Water Supply Strategy.

Other findings made by the TAO under Criterion 1 Section 1.1, about microbiological sampling compliance and microbiological compliance, use as a denominator the total number of individual public water supplies. In doing so, the performance of a water supply servicing 20 people is given the same weight as a supply servicing 20 000 people. These measures of operational performance do not well represent overall 'public health' performance.

Assessment of microbiological sampling compliance (in particular how missing data are handled) has changed over the audit period. Further, apparently unfavourable changes in microbiological compliance can result from events such as TasWater taking over a poorly performing non-compliant small private water supply. These supplies are then subject to a boil water alert to protect public health until water treatment renders the water potable. Such circumstances make the story behind these apparently simple measures complex – and difficult to summarise succinctly.

Thank you for the opportunity to comment on the summary of findings.

Michael Pervan

Secretary

Department of Health and Human Services

ENVIRONMENT PROTECTION AUTHORITY COMMENTS RECEIVED

Thank you for your letter of 1 November 2017 inviting comment on the summary of findings relating to the above performance audit. EPA officers have reviewed the summary and I offer the following comments for your consideration.

I am advised that the summary as it relates to wastewater management and compliance is reasonable and consistent with the EPA's rationale for entering into the current Memorandum of Understanding (MoU) with TasWater. The MoU acknowledges that the rate of progress towards securing environmental outcomes from the public wastewater management network is inadequate and does not meet community expectations. Through the MoU, the EPA and TasWater have agreed to address these deficiencies by adopting a specific wastewater management and regulation strategy designed to achieve accelerated environmental compliance and performance improvements by the end of 2019.

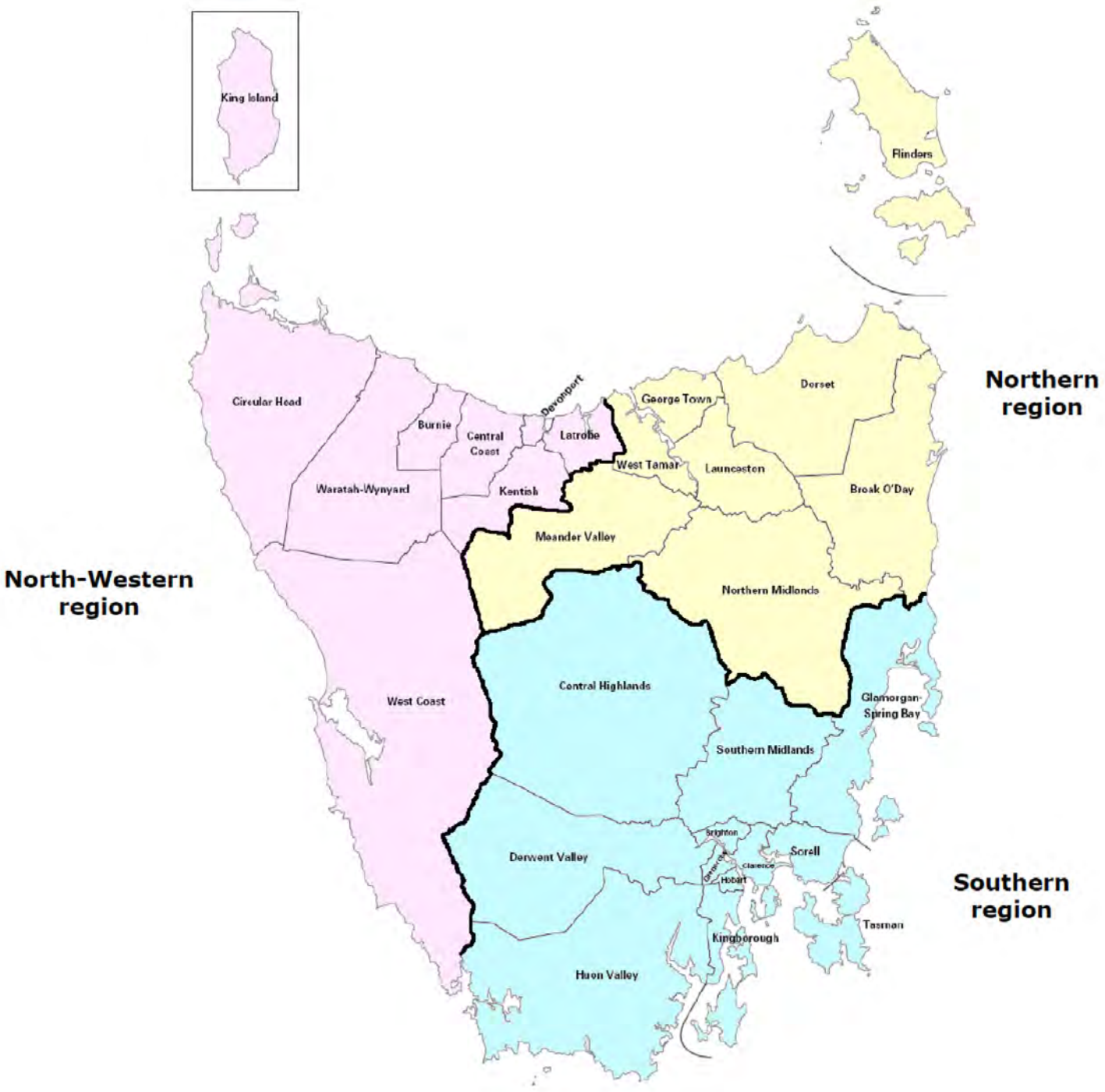
Thank you for the opportunity to comment.

Wes Ford

Director

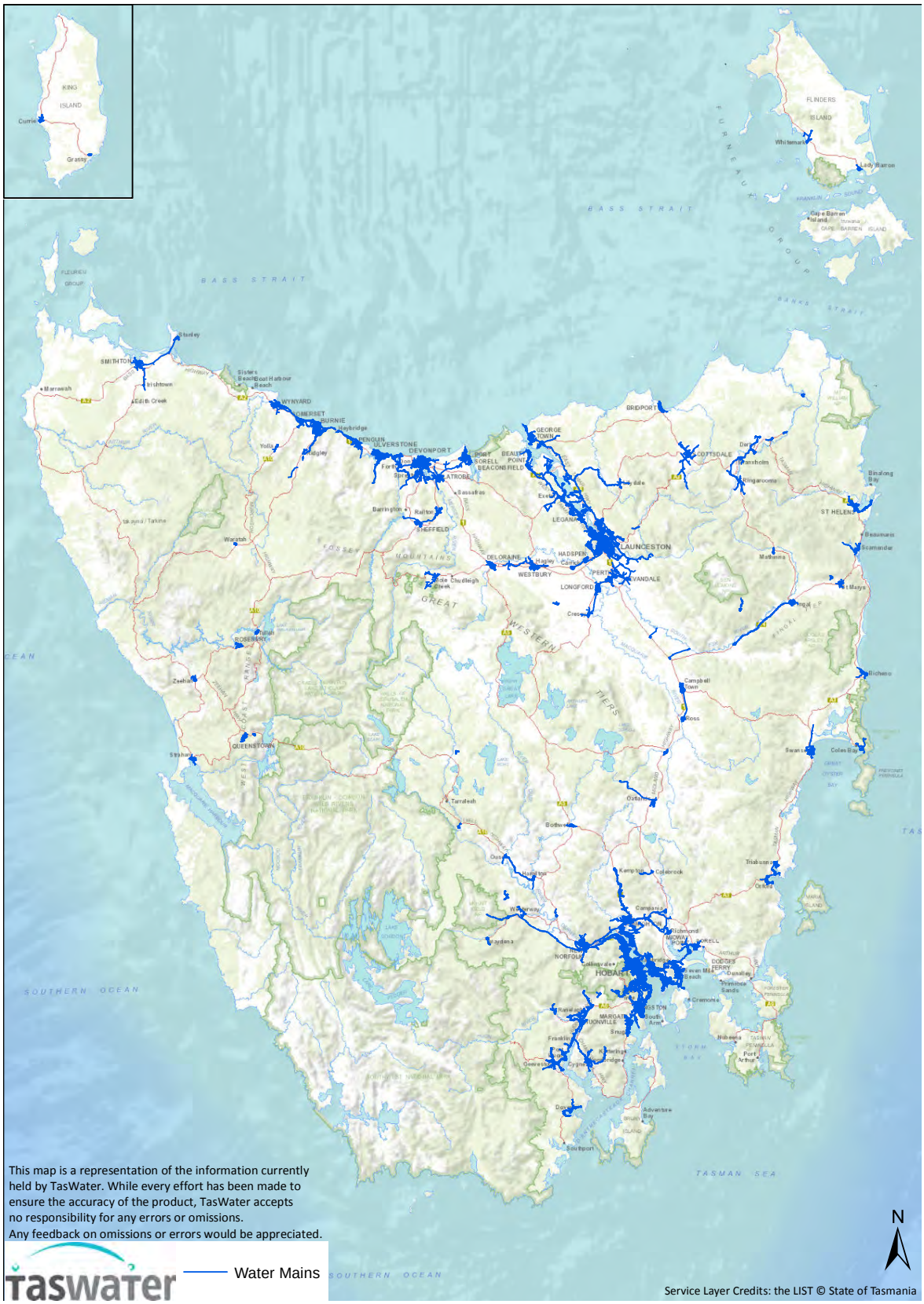
Environment Protection Authority

APPENDIX 3: AREA COVERED BY THE REGIONAL CORPORATIONS



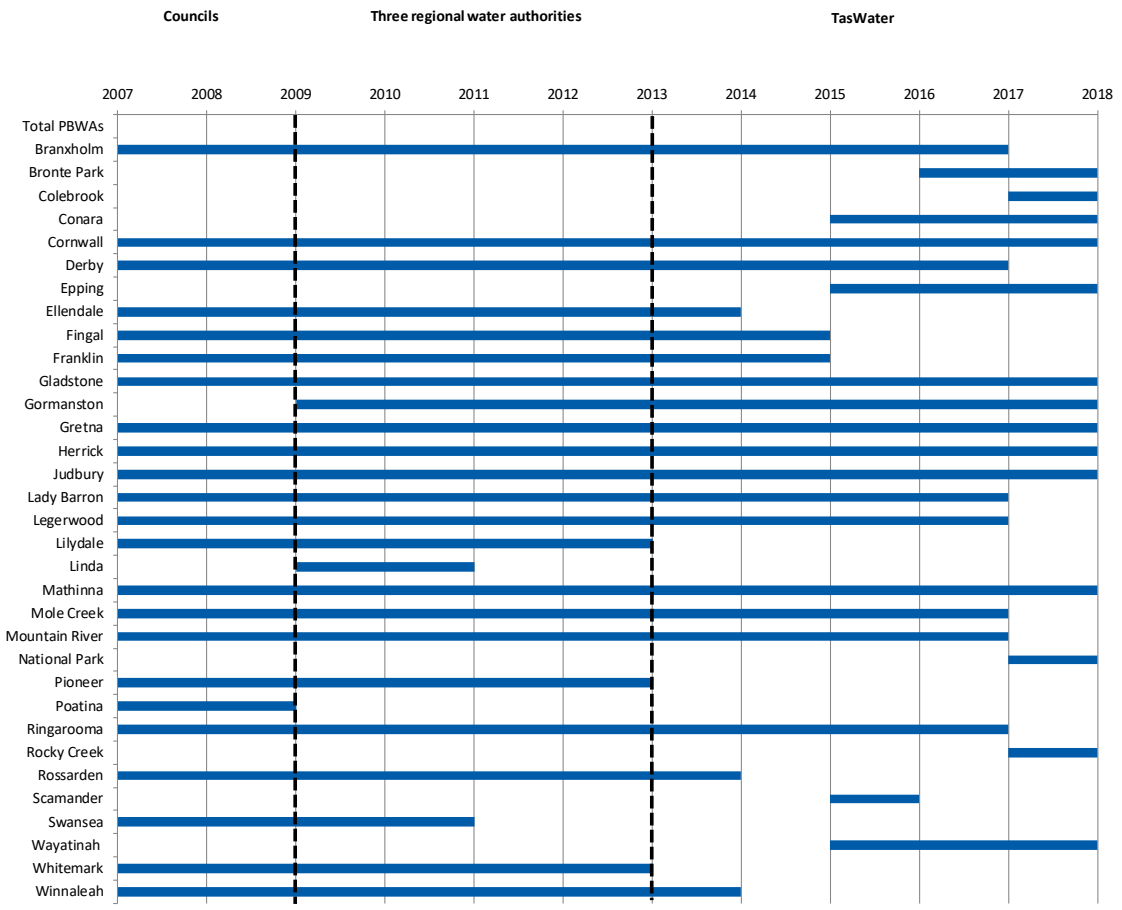
Source: TER

APPENDIX 4: TASWATER'S WATER NETWORK 2017



Source: TasWater

APPENDIX 5: PERMANENT BOIL WATER ALERTS SINCE 2007



Source: TAO

Appendix 5 shows the number of Tasmanian towns with permanent boil water alerts since 2007 and when those 33 towns came on or off alerts. We sourced the data for our illustration from DHHS and the Annual Drinking Water Quality reports.

The illustration uses the beginning of the financial year (e.g. 2007 for 2007-08) to mark the year from which an alert was applied to a town. Duration is shown as the number of financial years (all or part) in which an alert was applied to a town (e.g. 2009 to 2011 = 2 for Linda).

The illustration shows a total of 33 towns. The total number of alerts increased from 23 to 24 in 2009 which is when responsibility for water infrastructure was transferred from councils to the regional corporations.

The total number of alerts remained above 20 until responsibility for water infrastructure was transferred to TasWater in 2013. Infrastructure projects enabled alerts to be lifted from three towns in 2013 and another three towns in 2014, but another four towns were added in 2015. The number of alerts remained at 18 in 2016 as one was added and another was lifted. In 2017 seven towns had alerts lifted, but another three had temporary boil water alerts rolled over to permanent boil alerts leaving a total of 14 towns with alerts in September 2017.

In August 2016, TasWater advised that 99% of Tasmanians received drinkable water from their taps and identified 24 towns that represented the remainder. The report accompanied a commitment to accelerate programs to address water quality issues in these towns, some of which were subject to Do Not Consume notices as well as alerts. TasWater delivered upgrades that enabled alerts to be lifted from 12 of the 24 towns by September 2017 and plans have been developed to upgrade the remaining towns by August 2018. Issues delaying the remainder include the need for additional community consultations and securing commitment from 80% of potential customers to support the business cases needed to develop additional infrastructure.

APPENDIX 6: DRINKING WATER QUALITY MANAGEMENT PLANS

Requirement to have a Drinking Water Quality Management Plan.

Test 1: Assess whether TasWater's current plan that complied with the latest ADWG's 12 elements.

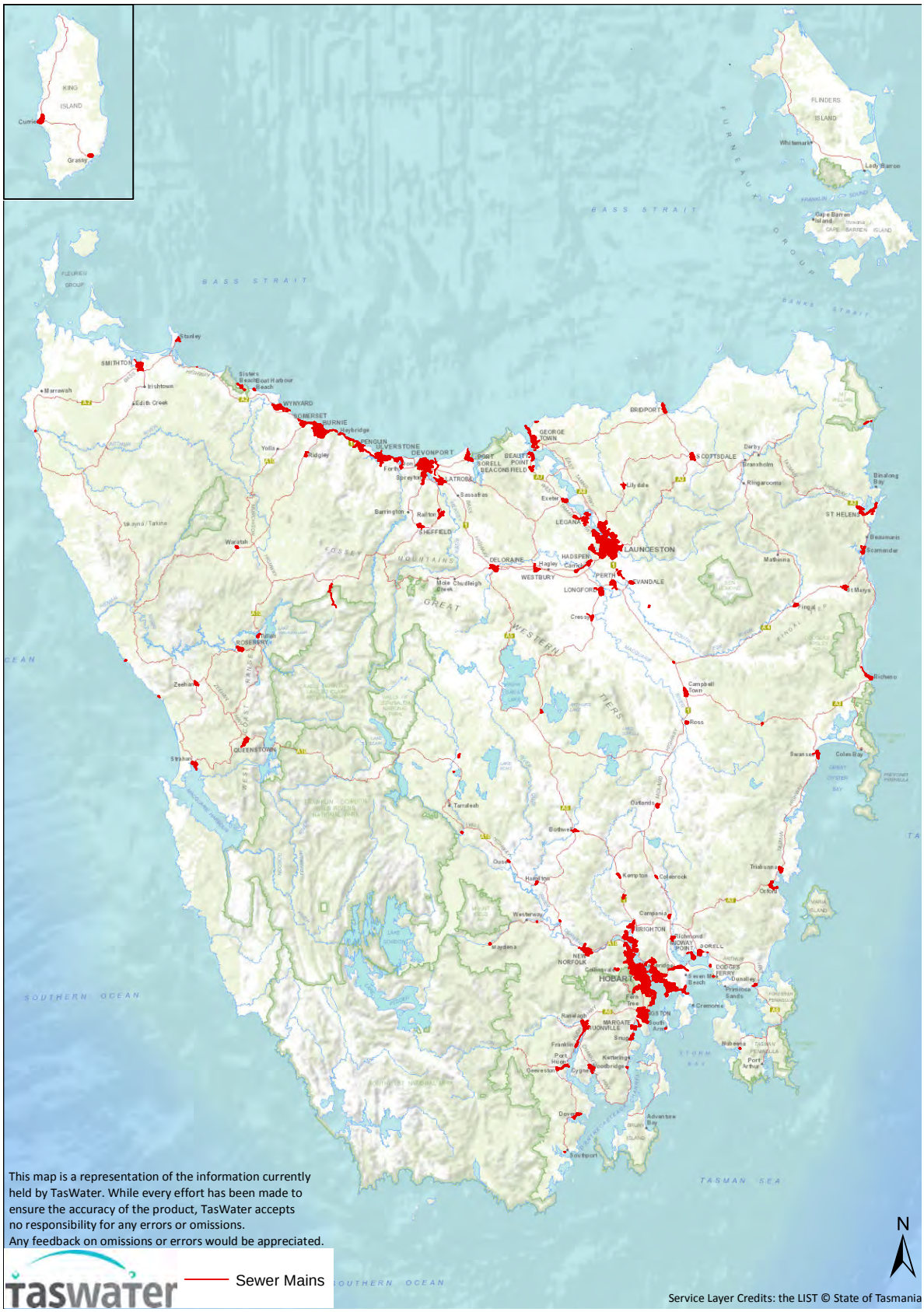
Element	Element present
Commitment to drinking water quality management	✓
Assessment of the drinking water supply system	✓
Preventive measures for drinking water quality management	✓
Operational procedures and process control	✓
Verification of drinking water quality	✓
Management of incidents and emergencies	✓
Employee awareness and training	✓
Community involvement and awareness	✓
Research and development	✓
Documentation and reporting	✓
Evaluation and audit	✓
Review and continual improvement	✓

Test 2: Historical test to see whether TasWater, the councils, regional corporations had Drinking Water Quality Management Plans in place.

Year	Entity	Management plan in place
2016	TasWater	✓
2015	TasWater	✓
2014	TasWater	✓
2013	Regional corporations	✓
2012	Regional corporations	✓
2011	Regional corporations	✓
2010	Regional corporations	✓
2009	Councils	**P***

* Kingborough Council did not prepare a Drinking Water Quality Management Plan for Bruny Island.

APPENDIX 7: TASWATER'S SEWER NETWORK 2017



Source: TasWater

APPENDIX 8: ASSET CONDITION ASSESSMENT – COUNCILS

Council	Condition assessment (Water)	Condition assessment (Sewerage)
North		
Break O'Day	✗	✗
Dorset	✗	✗
Flinders	✗	N/a
George Town	✓	✓
Launceston	✓	P
Northern Midlands	P	P
West Tamar	✗	✗
North-West		
Burnie	P	P
Central Coast	P	✓
Circular Head	✗	✗
Devonport	✓	✓
Kentish	P	P
King Island	✗	✗
Latrobe	✗	✗
Meander Valley	✗	✗
Waratah-Wynyard	✗	✗
West Coast	✗	✗
South		
Brighton	✓	✓
Central Highlands	P	P
Clarence	✗	✗
Derwent Valley	✓	✓

Council	Condition assessment (Water)	Condition assessment (Sewage)
Glamorgan/Spring Bay	**P**	**P**
Glenorchy	✓	**P**
Hobart	✓	✓
Huon Valley	✗	✗
Kingborough	**P**	**P**
Sorell	✗	✗
Southern Midlands	✓	✓
Tasman	**N/a**	**N/a**

Source: TAO, Key: ✓ = Condition assessment completed, asset register in use ; ✗ = No assessment undertaken; **P** = Some condition assessment has been done. This may mean that above ground assets only have been assessed or assets are assessed only when they fail **N/a** Tasman Council does not provide water and sewerage services.

APPENDIX 9: ASSESSMENT OF WATER AND SEWERAGE ENTITIES' COMPLIANCE WITH THE CODE

Customer service code service standards, targets and performance	2011-12			2012-13			2013-14			2014-15			2015-16		
	Benchmark	Result	Pass/ Fail	Benchmark	Result	Pass/ Fail	Benchmark	Result	Pass/Fail	Benchmark	Result	Pass/ Fail	Benchmark	Result	Pass/ Fail
Indictor															
Water:															
Unplanned water supply interruptions (per 100km of water main)	18.5	33.5	✗	32	47	✗	32	75	✗	71	97	✗	71	93	✗
Average time taken to attend bursts and leaks:															
- priority 1 (minutes/% of time standard achieved)				46	37	✓	30	31	✗	60/90%	36	✓	60/90%	35/87%	✗
- priority 2 (minutes/% of time standard achieved)				114	88	✓	120	95	✓	180/90%	70	✓	180/90%	69/98%	✓
- priority 3 (minutes/% of time standard achieved)				2400	1264	✓	1440	1930	✗	4320/90%	673	✓	4320/90%	1861/91%	✓
Average frequency of unplanned water supply interruptions (number per 1 000 properties)	0.24	0.03	✓	0.25	1.11	✗	0.1	0.1	✗	0.1	0.17	✗	0.10	0.17	✗
Average frequency of planned water supply interruptions (number per 1 000 properties)	0.19	0.001	✓	0.25	0.30	✗	0.1	0.05	✓	0.1	0.03	✓	0.10	0.01	✓
Average unplanned customer minutes off water supply (minutes)				25	19	✓	20	18	✓	25	24	✓	25.00	34	✗
Average planned customer minutes off water supply (minutes)				30	7	✓	15	11	✓	20	9	✓	20	2	✓
Average duration of water supply interruptions:															
- unplanned (minutes/% of time standard achieved)	180	97	✓	180	175	✓	100	131	✗	180/80%	143	✓	180/80%	199/90%	✗
- planned (minutes/% of time standard achieved)	267	166	✓	267	205	✓	180	244	✗	180/80%	292	✗	180/80%	130/94%	✓
Unplanned water supply interruptions restored within five hours (per cent)							98	98	✓	85	97	✓	85	94	✓
Planned water supply interruptions restored within five hours (per cent)							95	81	✗	80	95	✓	80	97	✓
Number of customers receiving more than five unplanned water interruptions a year (number/% of time standard achieved)^							0	NR		0/90%	NR		0/90%	NR	
Unaccounted for water (per cent)							10	14	✗	14	22	✗	14	33	✗

Customer service code service standards, targets and performance	2011-12			2012-13			2013-14			2014-15			2015-16		
	Benchmark	Result	Pass/ Fail	Benchmark	Result	Pass/ Fail	Benchmark	Result	Pass/Fail	Benchmark	Result	Pass/ Fail	Benchmark	Result	Pass/ Fail
Indictor															
Sewerage:															
Sewer breaks and chokes (per 100km of sewer main)	28	53	✗	28	52	✗	28	109	✗	104	57	✓	104	61	✓
Average time to attend sewer spills , breaks and chokes (minutes/% of time standard achieved)							41	61	✗	60/90%	51	✓	60/90%	55/74%	✗
Average sewerage service interruption (minutes/% of time standard achieved)	210	201	✗	220	150	✓	150	118	✓	180/80%	274	✗	180/80%	277/78%	✗
Sewerage spills contained within five hours (per cent)				99	94	✗	99	99	✓	99	98	✗	99	100	✓
Customers receiving more than three sewerage service interruptions per year^							0	NR		0	NR		0	NR	
Customers:															
Total water and sewerage complaints (per 1 000 properties)	9	15.8	✗	7	5	✓	9	6.5	✓	9	11.59	✗	9.00	14.28	✗
Water and sewerage complaints to Ombudsman (per 1 000 properties)	0.5	0.5	✓	0.5	0.8	✗	0.5	0.31	✓	0.5	0.32	✓	0.50	0.38	✓
Percentage of calls answered by an operator within 30 seconds	68	58	✓	90	82	✓	90	92	✓	85	89	✓	85	88	✓

✓— Benchmark met; ✗— Benchmark not met; ^ — Indicator not measurable; **NR** — Not reported; *indicator measured on a state-wide basis

Source: TER

Note: 2011-12 to 2012-13 use averages of results for regions reported in SOIRs, 2013-14 to 2015-16 use TasWater results reported in SOIRs

APPENDIX 10: CUSTOMER SERVICE STANDARDS – TASWATER CUSTOMER CHARTER 2015

Customer service code - TER	TasWater Customer Charter - 2015	TER SOIR 2015-16
Water:		
Average time taken to attend bursts or leaks (minutes/90% of instances):		
- priority 1	60/90% ×	60/90% ×
- priority 2	180/90%	180 /90%
- priority 3	4 320/90%	4 320/90%
Unplanned water interruptions restored within five hours %	100	85
Planned water supply interruptions restored within five hours %	100	80
Customers receiving more than five unplanned water interruptions a year (number/90% of instances)	0/90%	0/90% (NR*)
Sewerage:		
Average minutes to attend sewer spills , breaks, etc. (90% of instances)	60/90% ×	60/90% ×
% Sewerage spills fixed in five hours	100	99
Customers receiving more than three sewerage interruptions per year	3/90% of instances	0 (NR)

Source: TAO

Figures marked in red with a × indicate standards that were not achieved in 2015-16 according to TER's SOIR Performance for 2015-16 was not reported against two of the standards, which are marked (NR).

AUDIT MANDATE AND STANDARDS APPLIED

Mandate

Section 17(1) of the *Audit Act 2008* states that:

> 'An accountable authority other than the Auditor-General, as soon as possible and within 45 days after the end of each financial year, is to prepare and forward to the Auditor-General a copy of the financial statements for that financial year which are complete in all material respects.'

Under the provisions of section 18, the Auditor-General:

'(1) is to audit the financial statements and any other information submitted by a State entity or an audited subsidiary of a State entity under section 17(1).'

Under the provisions of section 19, the Auditor-General:

'(1) is to prepare and sign an opinion on an audit carried out under section 18(1) in accordance with requirements determined by the Australian Auditing and Assurance Standards

(2) is to provide the opinion prepared and signed under subsection (1), and any formal communication of audit findings that is required to be prepared in accordance with the Australian Auditing and Assurance Standards, to the State entity's appropriate Minister and provide a copy to the relevant accountable authority.'

Standards Applied

Section 31 specifies that:

> 'The Auditor-General is to perform the audits required by this or any other Act in such a manner as the Auditor-General thinks fit having regard to –

(a) the character and effectiveness of the internal control and internal audit of the relevant State entity or audited subsidiary of a State entity; and

(b) the Australian Auditing and Assurance Standards.'

The auditing standards referred to are Australian Auditing Standards as issued by the Australian Auditing and Assurance Standards Board.

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