

Tasmanian Economic Regulator  
**Review of Tasmanian Water and  
Sewerage Corporation's Operating  
and Capital Expenditure**  
Final Report

Final | 20 April 2018

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number

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**ARUP**

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# 1 Introduction

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## 1.1 Overview

The Tasmanian Economic Regulator (Regulator) manages the economic regulatory framework that governs TasWater's operations. The framework is designed to replicate competitive tensions in a monopoly market, ensuring the best outcomes for consumers. Specifically, the Regulator has stated that the framework for the Tasmanian water and sewerage sector is focussed on ensuring that:

- the sector delivers competitive market outcomes in relation to both price and service;
- regulated entities are financially sustainable; and
- regulated entities have sufficient revenue to meet their regulatory obligations.

The third Price and Service Plan (PSP3 or 'the plan') will act as a key instrument in the implementation of the regulatory framework, and will cover the period from 1 July 2018 to 30 June 2021. The plan will set the expected levels of capex and opex for TasWater in carrying out its water and sewerage obligations in line with compliance requirements, and will also inform the Regulator's price determination for water and sewerage services.

## 1.2 Background

Arup was engaged by the Regulator to undertake an independent review of TasWater's proposed operating expenditure and capital expenditure for PSP3. The approach Arup adopted in undertaking this expenditure review was in accordance with the Regulator's approach to regulation, namely in assessing the prudence and efficiency of TasWater's proposed expenditure.

Arup's Draft Report was published with the Regulator's Draft Report and Draft Price Determination on 30 November 2017 for public consultation.

TasWater provided its response to the Regulator's Draft Report which raised issues to the Regulator's findings for:

- Weighted average cost of capital (WACC)
- Regulatory depreciation
- Operating expenditure
- Capital expenditure
- Other matters

This report aims to address the matters within Arup's scope of works, and highlight issues relating to operating expenditure and capital expenditure.

### **1.3 Quoted numbers**

The values presented in this report are quoted as regulated expenditure amounts. This is a different approach to Arup's Draft Report which presented both the regulated and unregulated expenditures summed to a total amount.

The updated approach by Arup aligns with the amounts quoted in TasWater's response and will provide greater transparency when making comparisons between these documents.

### **1.4 Disclaimer**

This draft report (the "Report") was prepared by Arup Pty Ltd ("Arup") for the Tasmanian Economic Regulator ("the Client").

The Report has been developed using data and information from a variety of sources, including from TasWater, consultation with stakeholders, and from related public industry literature. Arup has not established the reliability or accuracy of those sources nor verified the information so provided. Within this context Arup has made a number of assumptions regarding this information to develop the Report which have been used to frame its comments on the prudence and efficiency of TasWater's proposed opex and capex. Every effort has been made by Arup to use the most reasonable assumptions in its analysis and in developing recommendations for the Client. Results should be seen in the context of the terms of engagement, and any changes to the underlying assumptions used will have material impacts on this analysis.

Accordingly, no representation or warranty of any kind (whether express or implied) is given by Arup to any third-party as to the internal consistency or accuracy of the Report, its recommendations, nor any output derived from it.

## 2 Capital Expenditure

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### 2.1 Facilities, fleet and plant

#### Arup Draft Report

Information supplied by TasWater indicated that the current fleet consisted of approximately 760 vehicles, which includes both larger trucks, work utility's (4WD and 2WD) and passenger vehicles. The fleet reduction recommended by Arup was based on a benchmarking study of other utility organisations, which indicated that the average proportion of vehicles to staff was around one to three<sup>1</sup>.

Arup concluded that achieving the industry benchmark in the short-term would be difficult considering TasWater's current position of 760 vehicles, and instead proposed a fleet reduction of 40% over the upcoming regulatory period to 456 vehicles representing an end point for the PSP3 period of one vehicle for every two staff based on approximately 912 FTEs.

#### TasWater response

TasWater noted that the data provided to Arup was incorrect as the number of vehicles had included other fleet assets (trailers, backhoes, forklifts etc.). As a result, TasWater provided an updated breakdown of the number of assets in its fleet, which as at December 2017 included a total of 751 fleet assets of which 458 are vehicles, separate from other plant.

Using the updated number of vehicles in TasWater's fleet, the proportion of vehicles to staff is approximately one to two. Consequently, TasWater did not consider it necessary to reduce the number of vehicles further as their actual fleet is currently in line with Arup's Draft Report.

#### 2.1.1 Recommendation

While Arup concluded in its Draft Report that achieving the industry benchmark of one vehicle to three staff would be difficult in the short-term, the PSP3 target of one vehicle for every two staff was based on a total of 760 vehicles. It was expected that beyond PSP3, TasWater would continue to reduce the total number of vehicles towards an efficient level and in line with the industry benchmark.

The updated vehicle number provided by TasWater shows that the actual number of vehicles is 458 which already represents Arup's draft recommendation of vehicle reduction in PSP3. Considering that TasWater is actually already at the PSP3 target set by Arup in the Draft Report, a new target should be set to continue moving TasWater towards an efficient number of vehicles.

Based on benchmarking of other utility organisations the average proportion of vehicles to staff is around one to three, resulting in TasWater's benchmarked

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<sup>1</sup> Noting that this benchmark was not static, and utility organisations were seeking to find ways to further reduce the number of vehicles used, within the constraints of their physical environment, operating / contracting arrangements and safety considerations.

number of vehicles equalling 304 vehicles based on 912 FTEs. Considering that marginal savings generally become more difficult to achieve as an organisation approaches an efficient frontier, Arup believes that an achievable target for TasWater in PSP3 is the midpoint between the current number of vehicles (updated by TasWater to 458) and the benchmarked number of vehicles at 304, representing a total of 381 vehicles and an overall 17% reduction in the number of vehicles.

This amendment to the recommended reduction in fleet would have the following impact on expenditure:

1. Assume business as usual reflects TasWater’s proposed PSP3 Facilities, fleet and plant capex = \$13.54m.
2. TasWater has identified 60% of program cost goes to fleet = \$8.12m.
3. Recommended reduction of PSP3 fleet capex by 17% = \$1.38m reduction.

It would be expected that beyond PSP3, TasWater continues to reduce the total number of vehicles towards the efficient level and in line with the industry benchmark. It is important to note that any reductions of TasWater’s fleet should not impact the health and safety of TasWater staff particularly those located in field based operational roles. Therefore, TasWater will need to consider re-allocation of vehicle support from those operational areas which will not be impacted by health and safety considerations towards those operational areas where there is a stronger need for the vehicle support, both on operational and health and safety grounds. TasWater’s policy of ensuring its fleet is moving towards vehicles with ANCAAP 5 star ratings is sound.

Table 1 Summary of regulated facilities, fleet and plant capex for PSP3 (\$’000 nominal)

<b>Facility, Fleet and Plant Renewals</b>	<b>FY19 (F)</b>	<b>FY20 (F)</b>	<b>FY21 (F)</b>	<b>Total</b>
TasWater (Draft)	4,686	4,369	4,480	13,535
Arup (Draft)	2,999	2,796	2,867	8,662
TasWater (Response)	4,686	4,369	4,480	13,535
Arup (Recommended)	4,686	3,679	3,790	12,155

## 3 Operating Expenditure

### 3.1 Salaries

#### Arup Draft Report

TasWater forecast significant efficiencies in productivity of around \$2.1m in FY18 and \$2.2m in FY19, the majority of which appear to be the release of short-term roles following completion of deployment and integration of the Maximo asset management system and completion of contractor safety training. These improvements will see salary costs remain relatively constant through FY19-21 in real terms.

Arup suggested that further efficiency could be achieved if TasWater adopts a 2% forecast escalation for total salary costs, reflecting the current EBA.

#### TasWater response

TasWater noted that it is currently in the process of negotiating a new Senior Enterprise Agreement (EA), and a proposed Senior EA that included 2.3% annual salary increase was recently not supported in a staff ballot. The General EA which covers the majority of staff expires in mid-2018.

TasWater highlighted that a recent Deloitte Access Economics report concluded that:

*We expect the five-year average for wage growth in the Tasmanian utilities sector to reach around 3.3% by 2018-19.*

Additionally, the Australian Government's Mid-Year Economic and Fiscal Outlook (MYEFO) forecasts that wage growth will accelerate to 3.5% by FY2020/21.

#### 3.1.1 Recommendation

Considering the updated information provided by TasWater, Arup accepts that the outlook for the average wage growth is marginally higher than recommended in its Draft Report. Therefore, Arup accepts the 2.25% escalation for salaries opex as proposed by TasWater for PSP3.

Table 2 Summary of regulated salaries opex for PSP3 (\$'000 nominal)

Salaries	FY19 (F)	FY20 (F)	FY21 (F)	Total
TasWater (Draft)	82,552	84,273	86,279	253,104
Arup (Draft)	82,574	84,137	85,959	252,670
TasWater (Response)	82,592	84,355	86,406	253,353
Arup (Recommended)	82,592	84,355	86,406	253,353

## 3.2 Materials and services

### 3.2.1 Overview

#### Arup Draft Report

TasWater identified significant productivity improvements in materials and services to be realised over FY17 and FY18. During PSP3, base expenditure was forecast to grow relatively slowly, however there was a step increase in the escalation from FY18 to FY19.

Arup suggested that a lower escalation rate in PSP3 could be used to define the opex in FY19 to FY21 unless a clear reason for the step change in escalation could be provided.

#### TasWater response

TasWater accepted the proposed escalation rate of 3% per annum, however noted that its model allocated 95.87% of total opex to regulated opex, while Arup's model rounded up the allocation to 96%.

### 3.2.2 Recommendation

Arup accepts that the percentage allocation of total opex to regulated opex used by TasWater will be more precise and therefore accepts the minor changes to the materials and services opex proposed in Arup's Draft Report.

Table 3 Summary of regulated materials & services opex for PSP3 (\$'000 nominal)

Materials and Services	FY19 (F)	FY20 (F)	FY21 (F)	Total
TasWater (Draft)	28,865	30,258	32,108	91,231
Arup (Draft)	28,133	29,098	30,093	87,324
TasWater (Response)	28,079	29,046	30,046	87,171
Arup (Recommended)	28,079	29,046	30,046	87,171

## 3.3 Chemicals

#### Arup Draft Report

Arup noted that the 10-year historical average of chemical prices in Australia adopted by TasWater included a significant outlier in 2009 which skewed the long-term average. The data indicated that from late-2015 the annual cost of chemicals had been trending downwards and while there was a kick-up in mid-2016, the continuation back to an average increase of 5.02% per annum was not demonstrated.

Arup concluded that unless the significant escalation of price rises proposed by TasWater could be verified by chemical suppliers, the recommended cost

escalation could not be proven to be efficient. In lieu of this, a 1.5% escalation assumption in line with a 5-year average would be more efficient.

### **TasWater response**

TasWater agreed that a five-year historical average is a reasonable basis for escalating the chemical opex in PSP3, however that the actual five-year historical average for chemical prices is 1.97% per annum based on the Australian Bureau of Statistics (ABS) data series A3343855L.

### **3.3.1 Recommendation**

Arup analysed the ABS data series A3343855L and was not able to reconcile the five-year historical average of 1.97% per annum proposed by TasWater. Through email correspondence, Arup was presented with TasWater's analysis which calculated the arithmetic mean of 1.51% and a geometric mean of 1.97% and were informed that TasWater believed a geometric mean was the appropriate method for determining escalation as it takes into account the effect of compounding.

Arup's concern with TasWater's approach is that in a mathematical sense the geometric mean cannot exceed that arithmetic mean, and identified in TasWater's analysis that a combination of approaches had been used to calculate the proposed five-year historical average of 1.97% per annum. Calculating the true geometric mean over the same period results in an escalation of 0.69% per annum.

TasWater responded that its approach was used to account for the variability in the data. Arup agrees that the historical growth of chemical prices has been volatile and this makes any statistical analysis difficult and subject to challenge. Arup notes that, as in any data set which could be assumed to be a 'random walk', the chosen start and end data points (or times) has a large impact on the percentage growth rates calculated over a given period. This is not an unusual outcome experienced by economic regulators seeking to examine cost indices.

Arup's analysis has explored a range of different methods<sup>2</sup> and considers that an annual escalation of chemical prices between 1.39% and 1.97% based on historical data is a reasonable recommendation for PSP3. Therefore Arup's recommended escalation of 1.5% per annum likely reflects an efficient level of chemical cost growth based on the available information and the analysis undertaken.

Ultimately, given the volatility in historical prices, the small historical sample size, and uncertainty over the future trajectory of chemical prices, it would be prudent for TasWater to explore mid-term to long-term price contracts with chemical suppliers to establish an efficient forward price assumption. Such an approach based on specified volumes, quality and delivery point(s) from a competitive tendering process might best reflect an economically efficient price path that meets the requirements imposed by regulation with regulatory oversight. Thoughts on contractual arrangements for adjustments to prices for volumes

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<sup>2</sup> Including arithmetic mean, geometric mean, trend line analysis (with R squared), mean squared error bands, standard deviation and confidence intervals, and application of a smoothed index analysis sometimes used in regulatory decision making.

which do not meet those specified will need to be thought through in developing the tender process.

Table 4 Summary of regulated chemicals opex for PSP3 (\$'000 nominal)

<b>Chemicals</b>	<b>FY19 (F)</b>	<b>FY20 (F)</b>	<b>FY21 (F)</b>	<b>Total</b>
TasWater (Draft)	9,726	10,274	10,853	30,853
Arup (Draft)	9,389	9,580	9,774	28,743
TasWater (Response)	9,444	9,686	9,934	29,064
Arup (Recommended)	9,389	9,580	9,774	28,743

### 3.4 Motor vehicles

#### Arup Draft Report

Arup recommended adjustments made to Facility, Fleet and Plant Renewal opex consequential to the reduction in the fleet size. The recommendation of opex reduction in proportion to the reduction in fleet numbers.

#### TasWater response

TasWater noted that the data provided to Arup was incorrect as the number of vehicles had included other fleet assets (trailers, backhoes, forklifts etc.). As a result, TasWater provided an updated breakdown of the number of assets in its fleet, which as at December 2017 included a total of 751 fleet assets of which 458 are vehicles.

Using the updated number of vehicles in TasWater's fleet, the proportion of vehicles to staff is approximately one to two. Consequently, TasWater did not consider it necessary to reduce the number of vehicles further as their actual fleet is currently in line with Arup's Draft Report. Therefore, TasWater proposed that there should be no reduction to motor vehicle opex, from that it originally proposed.

#### 3.4.1 Recommendation

As a consequence of Arup's final recommendation on vehicle reductions (separate from plant, see 2.1.1 above), and using a 17% reduction in the assumed variable component of motor vehicle opex, Arup recommends an equivalent reduction in total motor vehicle opex by 7% of the original opex proposed by TasWater. While approximate, this adjustment is the reasonable outcome from the information provided to Arup by TasWater.

Table 5 Summary of regulated motor vehicles opex for PSP3 (\$'000 nominal)

Motor vehicles	FY19 (F)	FY20 (F)	FY21 (F)	Total
TasWater (Draft)	3,959	3,989	4,019	11,967
Arup (Draft)	3,389	3,414	3,440	10,243
TasWater (Response)	3,959	3,989	4,019	11,967
Arup (Recommended)	3,959	3,569	3,606	11,134

### 3.5 Ongoing productivity savings

The Regulator has undertaken a review of productivity savings imposed on water and sewerage utilities by other jurisdictional regulators and found that it would be reasonable to apply a 1.50% annual productivity on TasWater’s opex for PSP3.

Arup believes that the proposed productivity target of 1.50% per annum<sup>3</sup> is achievable across the organisation and that the approach is in line with other jurisdictions<sup>4</sup>. While many of these efficiencies are difficult to directly identify, there is a level of efficiency that will be realised across the organisation as TasWater continues to implement its productivity program. Additionally, there is an expectation that TasWater will pursue savings beyond what has already been identified for PSP3.

Arup would like to reinforce its comments made in its Draft Report related to the strong potential for improvements in productivity within TasWater. Arup’s Draft Report stated:

*“While additional savings on salary costs should be possible, of primary concern for the PSP3 period will be a need and expectation from its customers and stakeholders for a significant lift in measured staff productivity. This should be achievable as the benefits of the integrated asset management systems, and a capex project focus of integrating treatment plants and updating technology provide the opportunity for staff to be re-deployed to undertake other roles to speed the capex and maintenance programs, leading to much improved compliance to technical standards and regulatory requirements.”<sup>5</sup>*

TasWater itself has stated that it is keenly aware that it has a significantly larger number of water and sewerage treatment plants and other water assets, than its mainland peers, and that this has been driven by its legacy ownership structures, which saw different design, procurement and implementation approaches used. In addition, the legacy focus on smaller service areas limited access to economies of scale and scope to the detriment of planning and delivery efficiency, and hence arguably a large negative impact on productivity. Anecdotally this in turn applied

<sup>3</sup> It should be noted that Arup has not undertaken its own productivity study or benchmarking analysis of TasWater and is relying on the Regulator’s findings.

<sup>4</sup> This approach is based on regulatory precedent and industry standard as outlined in KPMG’s 2017 review of Seqwater’s expenditure.

<sup>5</sup> Arup, *Review of the Tasmanian Water and Sewerage Corporation’s Operating and Capital Expenditure, Draft Report*, 30 October 2017, page 69.

upwards pressure on historical prices which in many circumstances could only be relieved through non-compliance to water quality and service standards.

Rationalisation and standardisation of the prior diverse approaches to network design and implementation, and take-up of a regional planning view to solving water quality and sewerage treatment issues (including the move towards larger plant sizes where economically efficient), are reasons why there is an expectation that there should be productivity improvements commencing in PSP3, and becoming stronger in future PSP periods.

Opportunities to replace two or more treatment plants with a single larger plant, more interconnected pipe and pumping networks, and a more holistic planning and operational focus with the opportunity to operate interconnected equipment, should over time reduce unit replacement costs, and lead to reduced unit operating costs. These productivity expectations from stakeholders including the Regulator should rightly be reflected in the forward opex forecasts approved at each PSP review.

In its Draft Report, Arup made the further observation that:

*“The importance of both strategic planning and regional planning cannot be underestimated, with these approaches providing the essential long term and regional view of capital expenditure requirements to ensure that optimal solutions are implemented and that upgraded or renewed assets are not left stranded or made redundant after the fact.*

*Without such regional strategies in place, it is very difficult to objectively assess whether regional optimisation of assets, consolidation, or decommissioning of assets has been appropriately considered to avoid inefficient outcomes like redundant or stranded assets.”<sup>6</sup>*

Following full implementation of the Long-Term Strategic Plan (LTSP) a focus on development of up-to-date Regional Plans will provide the link between the overall strategy, the capex review process<sup>7</sup>, and the project and program implementation will give the Regulator comfort that productivity improvements are being pursued by TasWater. In the absence of these more detailed and up-to-date plans the Regulator has difficulty in assessing the potential for future productivity improvements and hence potential for cost reductions, particularly how these may flow to downwards pressure on opex.

Productivity improvements need to be pursued for the benefit of TasWater’s customers through both improved water quality and service responsiveness and delivery, which is delivered in a manner which has the outcome of putting downwards pressure on service prices.

In addition to improvements in the planning processes it employs, TasWater has indicated it has invested in its Productivity Improvement Program through staff support tools such as Maximo to improve data capture and use, again leading to

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<sup>6</sup> Arup, *Draft Report*, page 11.

<sup>7</sup> Which should be based on lowest life-time costs using an options analysis on an NPV basis, over as many viable regional and local design options as possible, to assess both capex and opex impacts on costs.

staff efficiency and productivity improvements. There are many other improvements proposed for implementation over time, some of which have been factored into TasWater's forward cost estimates as cost savings.

## 3.6 Development of a Labour Force Plan

### Arup Draft Report

In its Draft Report, Arup recommended the development and delivery of a Labour Force Plan. The proposed scope included the plan be updated on a 3 yearly cycle with a 5-year horizon, spelling out the management plan for the number and skill sets of FTE's within TasWater, and would itemise the role and utilisation of insourced and outsourced FTE resources, and plans for skill development and productivity improvements.

### TasWater response

While TasWater was of the opinion that the Regulator should not dictate the inputs of how to run their business, they were not opposed to the development of a Labour Force Plan in principle.

TasWater proposed the following scope for the Labour Force Plan:

- Be commensurate with the level of data available to TasWater to develop the plan (i.e., it will necessarily require assumptions and contain greater uncertainty in its initial version, and evolve over time to have more detail and accuracy);
- Include a five-year outlook and be reviewed and updated on a rolling three-yearly cycle;
- Include an estimate of the number and skill sets of full time equivalents (FTEs) within TasWater;
- Include sections on skill development and productivity improvement; and
- Provide justification for TasWater's salaries expenditure from PSP4 onwards.

TasWater agreed that it is appropriate to continuously review labour sourcing decisions to ensure customers receive value for money, however insourcing and outsourcing decisions should not form part of the proposed labour force plan given the sensitive nature of the topic.

### 3.6.1 Recommendation

It should be noted that the development of the Labour Force Plan should not dictate TasWater's operations, and instead provide the necessary transparency to the Regulator during regulatory reviews. In the absence of these more detailed and up-to-date plans the Regulator has difficulty in assessing the potential for future productivity improvements and hence potential for cost reductions, particularly how these may flow to downwards pressure on opex.

Arup largely agrees with the scope proposed by TasWater for the Labour Force Plan, however believes that in order for the Regulator to be able to properly assess the efficiency of TasWater's workforce during future regulatory reviews, at minimum consideration of the insourced and outsourced FTE mix at a business unit level should be provided.

The Labour Force Plan will contain sensitive information and therefore should be treated as a confidential document to be used only by TasWater for workforce planning and to assist the Regulator in understanding TasWater's workforce in future regulatory reviews.