

Trade Waste 90 Day Project

Activity 6: Benchmarking

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1 Purpose

To compare SA Water trade waste charges with other interstate water utilities, using available data. This Activity was included in the project scope to assist in determining if South Australia is cost competitive with other states in terms of trade waste charging. The scope of this activity is limited to trade waste charging only and does not include any non-transparent cross subsidies, concessions or confidential agreements which may apply in South Australia or interstate.

1.1 Glossary

The following glossary items are used in this document:

Term	Description
SA Water	South Australian Water Corporation
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
CWW	City West Water
KL	Kilolitre, 1kL = 1,000 litres
ML	Megalitre, 1ML=1,000,000 litres
SS	Suspended Solids
TDS	Total Dissolved Solids
TKN	Total Kjeldahl Nitrogen
TP	Total Phosphorus
VLBC	Volume and load based charges
WWTP	Wastewater Treatment Plant

1.2 References

The following table identifies the documents and/or articles that are referenced in this document:

Title	URL's	State
SA Water's Trade Waste Fees and Charges 2014-15 brochure	http://www.sawater.com.au/NR/rdonlyres/0B7BB80D-2DC7-47BA-8983-7178DAE0E135/0/TradeWasteFeesCharges20142015.pdf	SA
SA Water's Restricted Wastewater Acceptance Standards	http://www.sawater.com.au/NR/rdonlyres/8E8F6482-D4B4-4AD5-8D75-B2990F4F33D6/0/AcceptanceStandards.pdf	SA
SA Water's Restricted Wastewater Acceptance Framework	http://www.sawater.com.au/NR/rdonlyres/8E88C486-C2A5-48DF-A053-A80A4B883A3D/0/Restrictedwastewateracceptanceframework.pdf	SA
Water Corporation Trade Waste Charges Factsheet	http://www.watercorporation.com.au/~media/files/business/trade%20waste/industrial%20waste%20in%20your%20business/trade-waste-charges.pdf	WA
CWW Approved Acceptance Criteria	https://www.citywestwater.com.au/documents/approved_acceptance_criteria.pdf	VIC
CWW's Pricing Handbook 2014-15	http://www.citywestwater.com.au/documents/pricing_handbook.doc	VIC
Unitywater trade waste policy	http://www.unitywater.com.au/Sewerage/New-Trade-Waste-Policy-in-2012.aspx	QLD
Unitywater Trade Waste Fees and Charges 2014-15	http://www.unitywater.com.au/fees-and-charges	QLD

2 Methodology

For the purpose of this activity, the Food and Beverage Industry has been apportioned into various segments, with beverage, dairy, poultry and meat processing/smallgoods selected for this benchmarking exercise.

In order to calculate the annual average trade waste costs per customer type, known trade waste data from SA Water's VLBC trade waste customers residing in these categories has been used for the 2014 calendar year. SA Water's VLBC trade waste customers are closely monitored with the wastewater discharged sampled routinely to ensure the contaminant limits are not exceeded and the sites are compliant. The contaminant loadings are calculated using known concentrations and volumes obtained from the Trade Waste Encumbrance System (database which houses the trade waste customers billing data).

For each customer, we have extracted the quarterly trade waste volume and loadings from the Trade Waste Encumbrance System. The data has been collected over the 2014 calendar year (4 quarters). A formula based on contaminant loading and volume has been used to calculate the contaminant concentrations. This way we could appropriately relate the right charge rate where trade waste charges were applied by concentration levels.

The 2014-15 trade waste charges of 5 different Australian water authorities, including SA Water have been applied to the same trade waste volumes and contaminant loadings (SA Water customer's data). For an industry segment, the quarterly trade waste charges for each customer have been averaged. The "average" customer's yearly trade waste charges for each industry segment have been calculated by totalising the corresponding quarterly average charges.

The same criteria has been utilised for each water authority (as detailed under Section 3 "Benchmarking"), to allow a fair comparison of the trade waste costs for each trade waste customer type for each authority.

The trade waste audits and monitoring costs have not been included in this exercise.

3 Water Authorities Data

Several interstate water authorities have been approached and the information extracted to apply the corresponding trade waste charges and the associated non-compliances to South Australia's current Food and Beverage VLBC trade waste customers.

The following water authorities have been used for benchmarking activity.

- Water Corporation (WA)
- City West Water (Vic)
- Unitywater (Qld)
- TasWater (Tasmania)

SA Water has collected information from each water authority and used the same criteria in order to identify similarities and differences between the trade waste charging systems.

3.1 SA Water

3.1.1 Criteria used when selecting the trade waste customers eligible for quality / quantity charges

- Volume and load based charges apply on a user-pays basis to trade waste discharges that exceed one of the following annual discharge threshold levels:
 - Volume greater than or equal to 10 ML
 - BOD greater than or equal to 10 tonnes
 - SS greater than or equal to 10 tonnes
 - TDS greater than or equal to 20 tonnes

3.1.2 Parameters used for trade waste charging

- The parameters listed under SA Water's [Trade Waste Fees and Charges 2014-2015](#) fact sheet are used for charging. (Volume, BOD, SS, TDS, TKN, TP)
- TDS charges apply for the component of load above 650mg/L.
- Trade waste volume and load based charges apply to the maximum concentrations and volumes specified in each customer's authorisation. Any discharges over those limits are non-compliant and SA Water recovers the full long run marginal cost of accepting and disposing of the non-compliant portion from the customer. The non-compliant charges incurred by SA Water's customers have been included in SA Water's data. The trade waste cost reflective volume and load based charges are listed on SA Water's website under [Trade Waste Fees and Charges 2014-2015](#).

3.1.3 Contaminant concentrations limits

- Depending on the specific nature of discharge and sewerage system to which it will discharge, SA Water may vary one or more standards in the [Restricted Wastewater Acceptance Standards](#). These standards list the more commonly applied limits. The VLBC trade waste customers may acquire industry specific limits, depending on the specific nature of discharge and sewerage system to which it will discharge.
- In SA, the limits are set for contaminant concentrations and mass loadings. The daily mass loading limits are currently being trialled at several Food and Beverage VLBC sites. These mass loadings are largely dependent on the receiving WWTP's, and allow a degree of flexibility with compliance when volumes to sewer are variable. (i.e. - higher concentrations are permitted with lower volumes to sewer).

3.1.4 State specific charges

- SA Water charges an initial trade waste discharge application fee (currently \$572 for VLB sites), audit, sampling and monitoring charges. These charges are considered relatively minor when compared to load based charges and so have not been included for any of the states as part of this research.

3.1.5 Recycled water schemes

- Adelaide is Australia's leading capital city in water recycling, with the Bolivar WWTP receiving approximately 85% of VLB trade waste recycling 36% of the effluent. In any reuse scheme it is critical to ensure that processes can provide recycled water of adequate standard in terms of salinity and other contaminant loads. The trade waste charge for TDS is influenced by this.

3.2 Water Corporation (WA)

3.2.1 Criteria used when selecting the trade waste customers eligible for quality / quantity charges

- Trade waste customers discharging 5kL or more per day of trade waste will qualify for quality-quantity trade waste charges.

Comparison to SA Water: Applicable for all SA Water trade waste customers included in this activity

- The user-pays charging system (which aims to recover the full cost of treating and disposing of trade waste) is currently in place. All trade waste customer categories pay trade waste charges.

3.2.2 Parameters used for trade waste charging

- All parameters listed under WA Water Corporation's [Trade Waste Charges 2014-15](#) factsheet are used to calculate the trade waste charges.
- The same analysis suite is performed for all industry types, including all the parameters listed. Therefore, in WA, a trade waste customer will be charged for a total of 22 contaminant loadings.
- TDS charges apply from 1,000mg/L.

Comparison to SA Water: SA Water does not monitor the trade waste sites for all parameters; SA Water has used for this comparison the parameters charged in SA (volume, BOD, SS, TDS, TKN, TP) plus grease (where the loadings are known). As SA Water does not include all other parameters to calculate the trade waste charges, the charges in WA will be higher than the reported figures.

3.2.3 Contaminant concentrations limits

- In WA, limits are set for concentrations and mass loadings. The daily mass loadings limits are dependent on the receiving WWTP's, these limits don't affect the actual trade waste charges; they are mainly used to identify pre-treatment upgrades for compliance.
- The same contaminants limits apply over the entire industry; no specific limits are set for industry types. The quantity-quality charges are set on levels (low, medium and high) based on the concentrations limits set, the trade waste fees and the tiers based on concentration limits are listed under Water Corporation's [Trade Waste Charges 2014-15](#) factsheet.

3.2.4 State specific charges

- An annual permit charge (\$220.35) is levied to cover the costs of administrating the permit licencing system and it is applicable to all customers. This fee wasn't taken in consideration for this exercise.

Comparison to SA Water: SA Water does not charge an annual fee for a trade waste authorisation

3.2.5 Recycled water schemes

- Wastewater recycling schemes are in place with some injection back to aquifers.

Comparison to SA Water: Very similar to SA Water's pre-treatment systems and principles

3.3 City West Water (CWW) (Victoria)

3.3.1 Criteria used when selecting the trade waste customers eligible for quality / quantity charges

- When a trade waste customer meets one of the following criteria, CWW charges according to contaminant load and trade waste volume:
 - Maximum trade waste discharge volume is expected to exceed 4kL/day (10kL/day for commercial food businesses).
 - Trade waste volumes cannot be calculated from potable water meters (e.g. cheese manufacture that use large volumes of milk or acceptance of contaminated groundwater/stormwater).

Comparison to SA Water: Applicable for all SA Water trade waste customers included in this activity

3.3.2 Parameters used for trade waste charging

- The parameters listed under [City West Water's Pricing Handbook 2014-15](#) are used for charging (Volume, BOD, SS, TKN and TDS). No TP charges apply.

Comparison to SA Water: SA Water parameters used for charging are: Volume, BOD, SS, TDS, TKN, TP

- There are no non-compliance levies when the load limits are exceeded.

3.3.3 Contaminant concentrations limits

- CWW sets limits for contaminant concentrations and mass loadings. Relevant information can be found under [CWW Approved Acceptance Criteria](#).
- As no non-compliance charges are applied, the contaminants limits are irrelevant for this exercise.

3.3.4 State specific charges

- CWW recovers its administrative costs in resolving the non-compliance. If a customer's discharge breaches their trade waste agreement or consent, a trade waste compliance management process comes into effect. As this incurs additional administrative and analytical expense, a range of non-compliance charges apply. Two types of charges are levied in respect of this process, an hourly charge for labour and any laboratory analytical costs.

Non-compliance management charge	Charge (\$)
Executive (per hour, includes GST)	397.40
Specialist (per hour, includes GST)	153.25
Consultant/ Officer (per hour, includes GST)	103.35
Laboratory charge (includes GST)	At cost

3.3.5 Recycled water schemes

- CWW's recycled water schemes are either sewer mining operations (in residential/commercial catchments) where TDS concentrations are generally low, or, are located at treatment plants where reverse osmosis plants are in place.
- Melbourne Water also supplies recycled water to farmers (when there is demand) which is not treated with reverse osmosis. To ensure recycled water quality an environmental licence condition exists for TDS concentrations at the inlet to Melbourne Water's Western treatment plant. There is currently a charge in place for inorganic TDS loads for CWW's trade waste customers to assist in meeting compliance.

3.4 Unitywater (Queensland)

3.4.1 Criteria used when selecting the trade waste customers eligible for quality / quantity charges

- COD > 600 mg/L, SS > 300 mg/L TKN > 150 mg/L and TP > 50 mg/L
- A site qualifies for trade waste quality/quantity charges if discharges a large volume of wastewater or the discharge exceeds the target sewer admission limits or contains substances listed in the mandatory sewer admission limits (recorded under the [Unitywater's Trade Waste Management Plan](#))

(<http://www.unitywater.com.au/Sewerage/New-Trade-Waste-Policy-in-2012.aspx>)

Comparison to SA Water: Applicable for all SA Water trade waste customers included in this activity

3.4.2 Parameters used for trade waste charging

- The chargeable parameters (volume, SS, COD or BOD, TKN, TP, TDS, Grease, Sulphate) are listed under the [Unitywater Pricing 2014-2015 - Trade Waste Charges](#) factsheet.

(<http://www.unitywater.com.au/fees-and-charges>)

Comparison to SA Water: SA Water does not monitor the trade waste sites for all parameters; SA Water has used for this comparison the parameters charged in SA (volume, BOD, SS, TDS, TKN, TP) plus grease (where the loadings are known).

- No non-compliance levies are applied. Trade waste charges and fees will be levied in accordance with Unitywater's Schedule of Fees and Charges. The calculation of these fees

is based on the pricing principle of 'user pays' and aims to recover the full costs of treating and disposing of trade waste.

3.4.3 Contaminant concentrations limits

- The mandatory and target limits are listed under [Unitywater's Trade Waste Management Plan](#).
- As no non-compliance charges are applied, the contaminants limits are irrelevant for this exercise.

3.4.4 State specific charges

- Unitywater charges for additional inspection and wastewater testing as required to be performed as a result of non-compliance – extra fees.

3.4.5 Recycled water schemes

- Not currently in use. TDS is not a parameter of concern.

3.5 TasWater (Tasmania)

3.5.1 Criteria used when selecting the trade waste customers eligible for quality / quantity charges

- TasWater has categorised the trade waste customers into four categories (Category 1 and 2, Commercial and Category 3 and 4, Industrial). The industrial customers are currently unregulated and are charged volume and load based charges. Charges apply for mass load above domestic strength.

Comparison to SA Water: Applicable for all SA Water trade waste customers included in this activity

- The user-pays charging system is currently in place. (All trade waste customer categories pay trade waste charges).

3.5.2 Parameters used for trade waste charging

- The chargeable parameters are the volume of trade waste, BOD, SS, TP, TKN, Oxidised Sulphur (OS), Grease and Sodium.

Comparison to SA Water: SA Water does not monitor the trade waste sites for all parameters; SA Water has used for this comparison the parameters charged in SA (volume, BOD, SS, Sodium – calculated as 22% of the TDS value, based on the average history data of Bolivar WWTP's wastewater influent, TKN, TP) plus grease (where the loadings are known).

- TasWater uses a system which charges exceedance fees based on a scale system which is currently under review. Exceedance fees are applied for parameters based on a calculated risk factor which takes into account a number of parameters.

→ Note that when calculating TasWater's trade waste charges for our benchmarking exercise, we haven't included any non-compliance charges due to the inaccuracy in applying a formula with many unknowns; therefore the final trade waste charges presented in our document would be an under approximation of the actual charges.

3.5.3 Contaminant concentrations limits

- TasWater is currently subject to trade waste limits set in Schedule 3 of the Water and Sewerage Industry (General) Regulations 2009 http://www.austlii.edu.au/au/legis/tas/num_reg/wasir20092009n67522/sch3.html . About 6 typical limits can be amended if higher strength waste (BOD, TSS, etc.) can be treated at a specific treatment plant, but most limits are set by the Regulations. The concentration limits are stipulated by TasWater for each industrial trade waste customer, including mass loadings where there is risk of impacting WWTP operations.

3.5.4 State specific charges

- None

3.5.5 Recycled water schemes

- Wastewater recycling schemes are in place. Tasmania has some WWTP licenses which only approve irrigation as the means to discharge effluent. TDS limits are strictly focussed on these catchments. Sodium only is used as measure for trade waste charging.

3.6 Water Authority Data Summary

	SA Water	Water Corp (WA)	City West Water (VIC)	Unity Water (Qld)	TasWater (Tasmania)
SA Water's selected customers qualify for TW charges?	Yes	Yes	Yes	Yes	Yes
Acceptance Criteria for VLB charging	>10ML volume/year and/or >10tonnes BOD/year and/or >10 tonnes SS/year and/or >20 tonnes TDS/year	≥ 5 KL volume/day	≥ 4 KL volume/day	COD > 600 mg/L and/or SS > 300 mg/L and/or TKN >150 mg/L and/or TP >50 mg/L and/or large volume of wastewater	Mass load above domestic strength
Parameters used for charging	Volume, BOD, SS, TDS, TKN, TP	Volume, BOD, SS, TDS, TKN, TP + Grease + Acidity + Alkalinity + Sulphate + Metals (11)	Volume, BOD, SS, TDS, TKN	Volume, BOD, SS, TDS, TKN, TP + Grease + Sulphate	Volume, BOD, SS, Sodium, TKN, TP + Grease + Oxidised Sulphur
Non-compliance charges included in benchmarking model	Yes	Yes	No (only administrative costs apply in resolving the non-compliance)	No (only administrative costs apply in resolving the non-compliance)	No (non-compliance charges apply, but couldn't be calculated and applied for our exercise due to the inaccuracy of applying a formula with many unknowns)

4 Benchmarking Results

SA Water has extracted the actual discharge data by trade waste parameter for all Food and Beverage VLB customers. Data was collated for the calendar year 2014.

The data has been segmented into industry types, as agreed with Food SA, with the following segments selected for the benchmarking exercise: beverage, dairy, poultry and meat processing/smallgoods.

Trade waste charges for 2014-2015 have been applied for each of these segments.

To be noted:

- For SA Water trade waste customers subject to VLBC who are paying sewerage rates, a discount is applied against sewer rates when calculating VLB charges, in recognition that rates cover a portion of the costs associated with treatment. The discounts against sewer rates are not included in these calculations.
- The application, audit, permit renewal, sampling and monitoring fees have not been included in this exercise for all water authorities included in this exercise.
- The benchmarking activity is used only to compare the interstate contaminant based trade waste charges and does not include any comparisons of cross subsidies, concessions or other charges which may be applied interstate.
- The Beverage segment does not include breweries.
- CWW & Unitywater: the administrative fees associated with resolving a non-compliance issue have not been included in this exercise.
- TasWater: non-compliance charges could not be included.
- Sydney Water has not been taken in consideration for the benchmarking exercise due to the existence of too many variables within the charging system and the time pressures for this project. The trade waste charges vary, depending on the type of the receiving wastewater treatment plant (primary, secondary or tertiary). The trade waste unit charges for Sydney water have been previously profiled by SA Water and are significantly higher than SA Water.

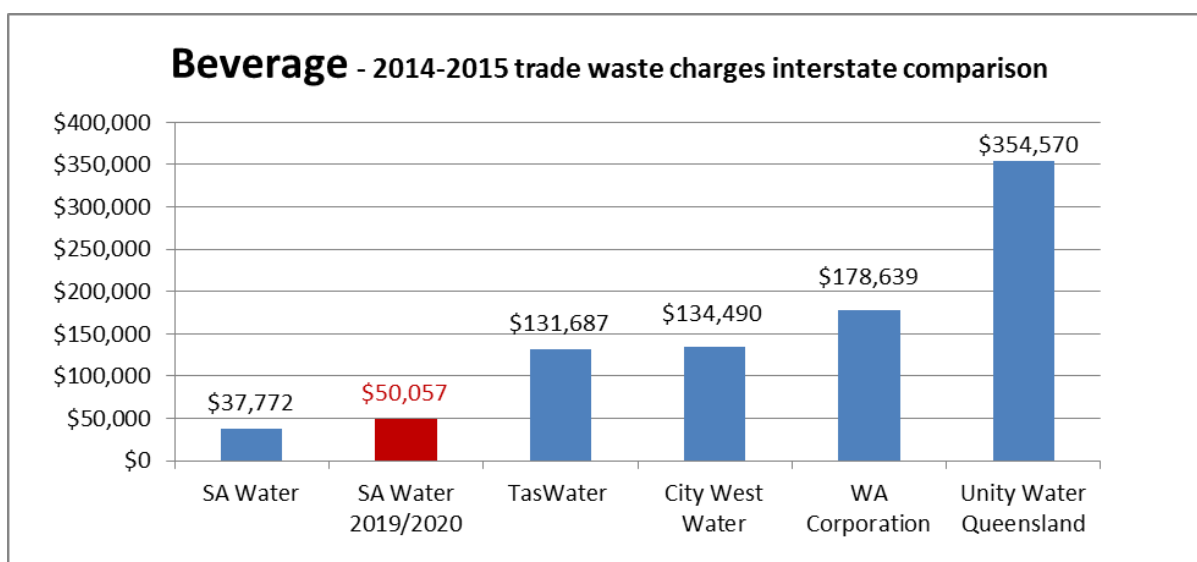
The final results are summarised in the tables below:

Industry Segments	SA Water	TasWater	City West Water	Water Corporation (WA)	UnityWater (Qld)
Annual average trade waste charges (\$) for the average trade waste customer representing an industry segment					
Beverage	\$37,772	\$131,687	\$134,490	\$178,639	\$354,570
Dairy	\$67,716	\$191,541	\$171,679	\$264,488	\$511,038
Poultry	\$186,723	\$800,740	\$700,408	\$972,683	\$2,038,840
Smallgoods	\$13,669	\$32,145	\$28,690	\$40,827	\$88,689

Industry Segments	SA Water	TasWater Increase %	City West Water Increase %	Water Corporation (WA) Increase %	UnityWater (Qld) Increase %
Annual trade waste charges increase (%) for the average trade waste customer representing an industry segment					
Beverage	Benchmark	249 %	256 %	373 %	839 %
Dairy	Benchmark	183 %	154 %	291 %	655 %
Poultry	Benchmark	329 %	275 %	421 %	992 %
Smallgoods	Benchmark	135 %	110 %	165 %	549 %

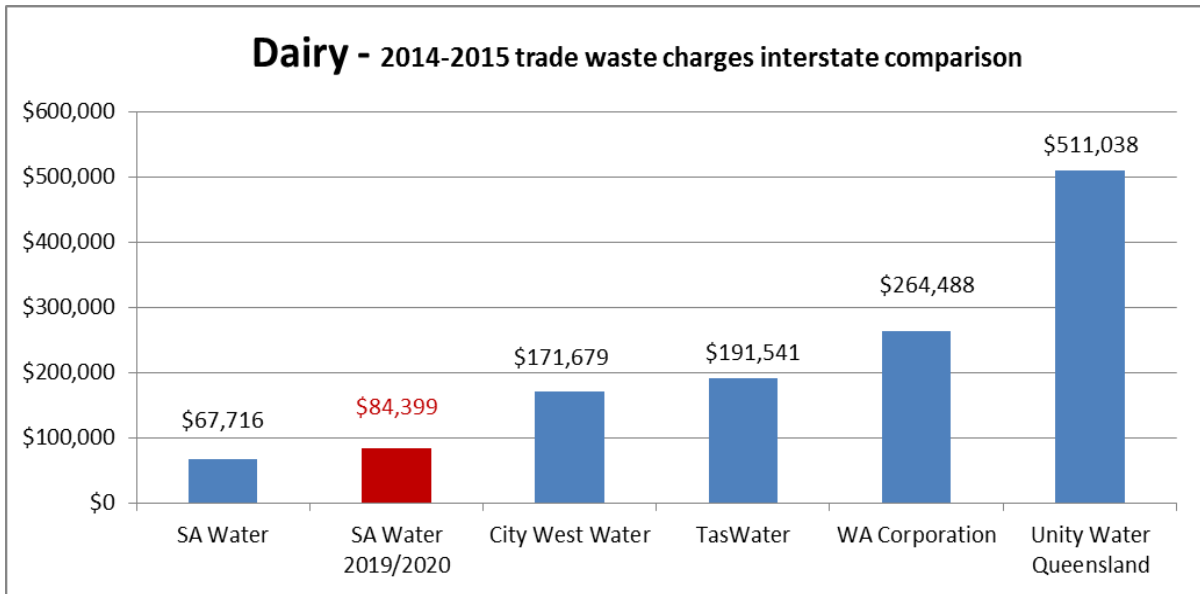
The Food and Beverage trade waste customers are shown to be paying less trade waste charges in SA, compared to other states. The trade waste charges for 2014-2015 have been applied for each of these segments. For SA only, we have also applied projected trade waste charges for 2019-2020. (Highlighted on the graphs below in red).

The Beverage industry segment (SA) would be charged annually around 4.7 times more if the same businesses were located in WA, 9.4 times more in Queensland (Gold Coast), 3.6 times more in Victoria and 3.5 times more if in Tasmania.



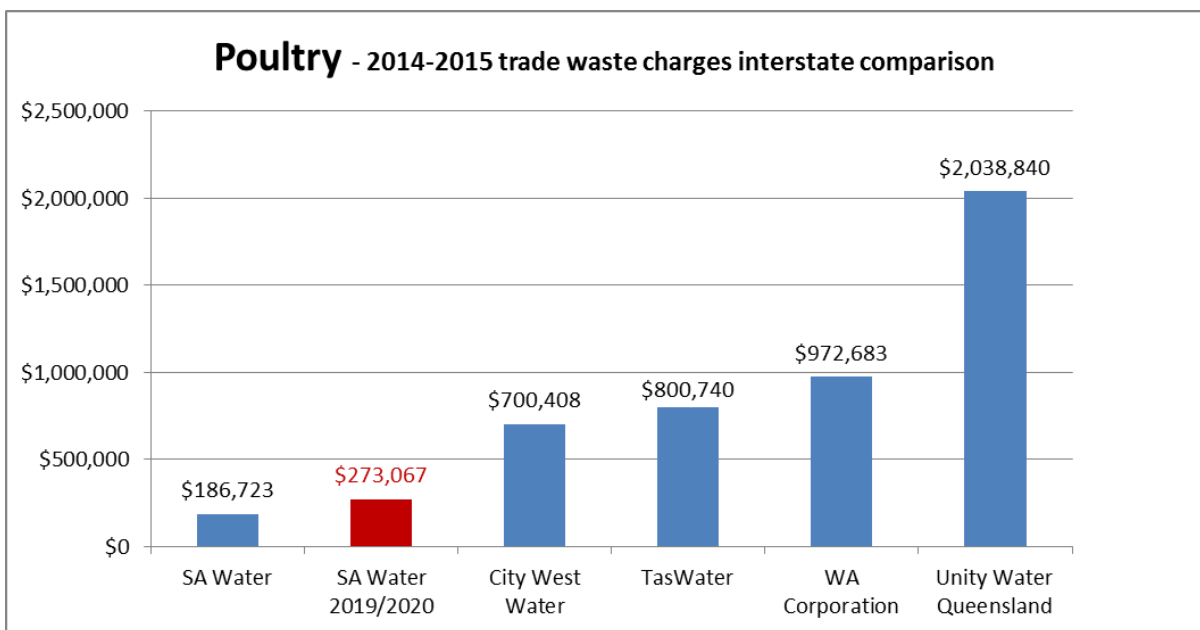
* Non-compliance charges included for SA Water only.

The Dairy industry segment (SA) would be charged annually around 3.9 times more if the same businesses were located in WA, 7.5 times more in Queensland (Gold Coast), 2.5 times more in Victoria and 2.8 times more if in Tasmania.



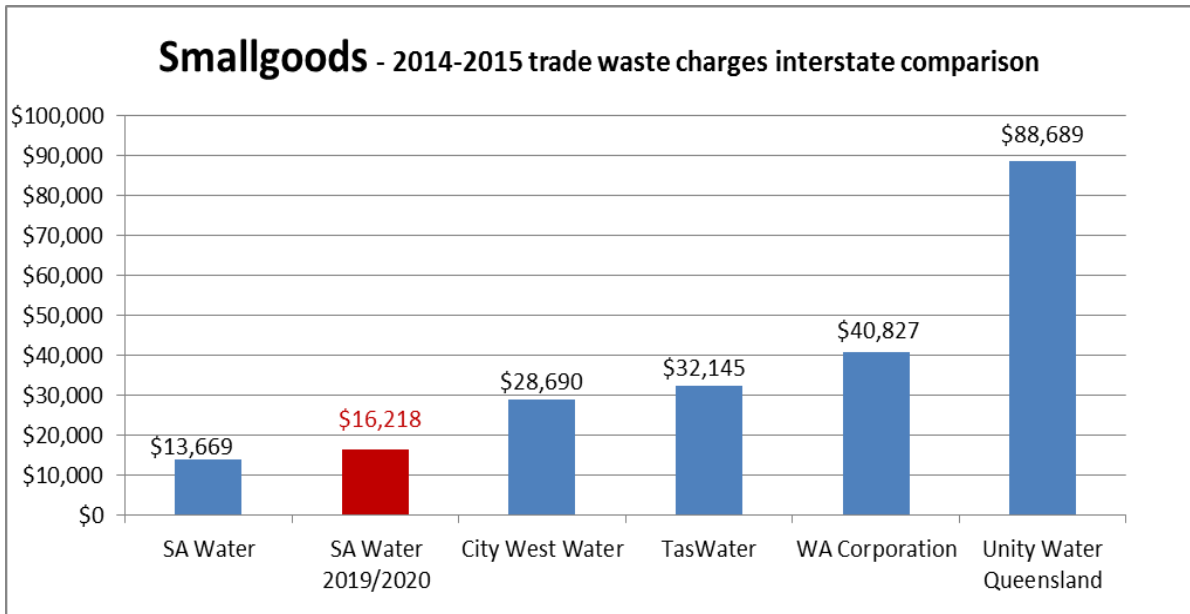
*** Non-compliance charges included for SA Water only.**

The Poultry industry segment (SA) would be charged annually around 5.2 times more if the same businesses were located in WA, 10.9 times more in Queensland (Gold Coast), 3.8 times more if in Victoria and 4.3 times more if in Tasmania.



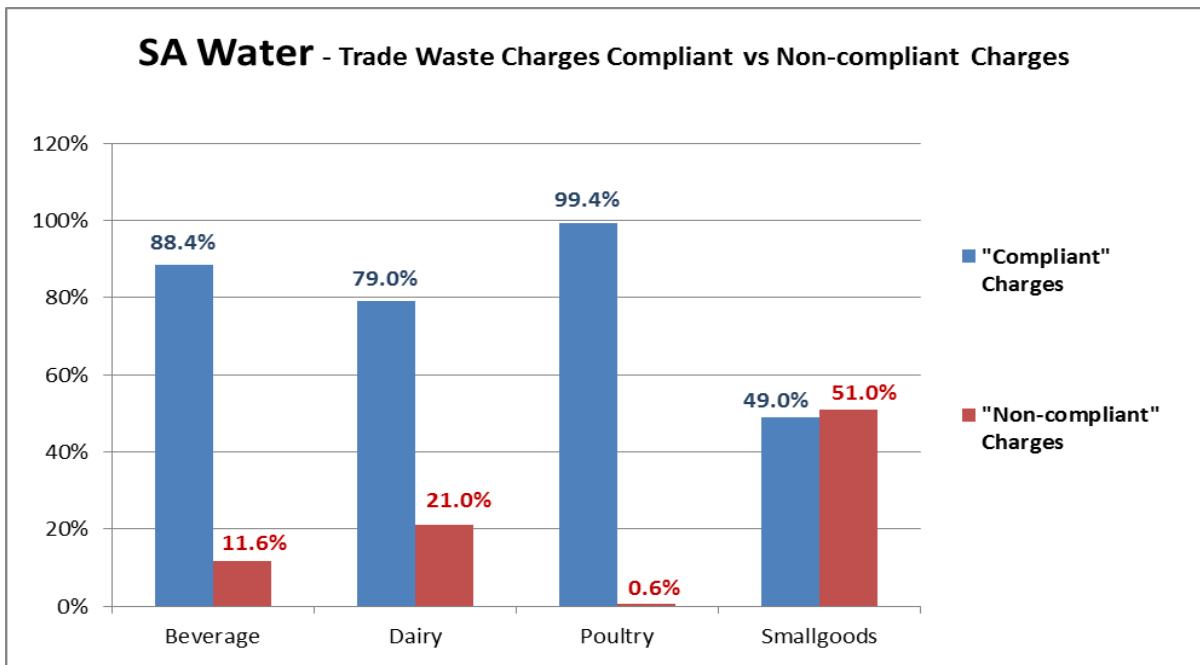
*** Non-compliance charges included for SA Water only.**

The Smallgoods industry segment (SA) would be charged annually around 2.7 times more if the same businesses were located in WA, 6.5 times more in Queensland (Gold Coast), 2.1times more if in Victoria and 2.4 times more if in Tasmania.



* Non-compliance charges included for SA Water only.

The non-compliant / compliant charges ratio for SA Water is presented in the graph below:



The table below highlights the trade waste loadings discharged annually by a representative industry customer, on average. The minimum and maximum loadings have been also calculated to represent the lowest and highest trade waste discharger for each industry type at SA Water.

Customer Segments		Volume (ML)	SS (tonnes)	BOD (tonnes)
Beverage	Min	5.2	0.8	13.9
	Max	223.7	13.9	240.1
	Average	57.2	4.4	80.7
Dairy	Min	4.6	8.4	36.7
	Max	104	37.3	197.3
	Average	62.9	18.8	97.4
Poultry	Min	67.1	11	52.7
	Max	847.5	112.6	380.4
	Average	391.1	60.3	224
Smallgoods	Min	4	1.2	3.7
	Max	18.7	8.6	39.9
	Average	10.5	4	15.2

The level of transparency with respect to future trade waste charges are compared in the table below, which indicates the duration in which charges are currently 'locked-in' for respective utilities:

	SA Water	CWW Vic	Water Corp WA	Unitywater Qld	TasWater
Trade Waste Charges set and locked for:	6 years	5 years	1 year	1 year	1 year

5 Conclusion

The benchmarking activity for the Food and Beverage industry has found that the nominated SA Water trade waste charges for the Food and Beverage Industry have been identified to be significantly lower than those trade waste charges at other profiled interstate water authorities in WA, TAS, VIC, and QLD, even when applying the 2020 SA Water charges.

This is primarily a consequence of the contaminant charges at SA Water being far lower than interstate utility charges.

In conjunction with trade waste charges being lower than interstate utilities, SA Water also sets those prices for longer periods of time in comparison to ALL the profiled interstate utilities.