Queensland's Urban Potable Water and Sewerage Benchmarking Report 2013/14

This is the fourth annual Urban Potable Water and Sewerage Benchmarking Report to be produced by ***qldwater*** for Queensland. It contains a suite of indicators and benchmarking data for 57 of the QLD urban water/sewerage utilities that reported data via SWIM in 2013/14. The data is presented in figures which provide comparative information to enable each Service Provider to benchmark its performance against that of similar sized Service Providers.

The report is divided into two areas (i.e. Sewerage Services and Potable Water Supply) and looks at aspects of capacity and viability, customer service, condition of assets, management and performance.

qldwater strongly supports the use of performance reporting and benchmarking to assist Service Providers in the continuous improvement of the services they provide to their community. Performance reporting and benchmarking provides valuable comparative data. This data enables each Service Provider to critically examine its performance by investigating trends in its indicators and by benchmarking these against those of similar Service Providers, and particularly against one or two high-performing Service Providers and implementing the best-practices identified.

External factors potentially influencing performance

There are a wide range of 'external' factors which can influence a Service Provider's performance. These factors include things such as:

- climate (e.g. rainfall patterns, evaporation, temperature)
- geography (e.g. geology (i.e. soil reactivity (shrink-swell)), typology (i.e. mountains, flood plain))
- size (e.g. population, number of connections, km^2)
- location (e.g. SEQ vs. Western Qld, dense urban vs. rural urban)
- services provided (e.g. water treatment vs. treated water imported from other supplier)
- water supply (e.g. river vs. dam vs. bore water may require different treatment, distance to supply)
- asset age (e.g. old assets may require more maintenance/repairs and be less efficient)
- regulatory requirements (e.g. sewerage treatment levels)

It is important to take into account these factors when comparing performance with other Service Providers.

One way for Service Providers to limit the effects of these external factors is to examine trends in their own performance indicators over time. It must be remembered though, that there may be changes in the external factors over time as well (e.g. wet vs. dry years).

Service Provider size as a factor in assessing Statewide 'benchmark' performance

It is important to note up front that the figures for smaller Service Providers may be skewed towards higher values for indicators that standardise data by 'per property', 'per connection' or 'per 100 km of mains'. This

is due to these smaller Service Providers having very low populations and relatively short main lengths which means that even small figures can be magnified when compared with larger organisations. This means that these indicators can result in small organisations comparing poorly with larger ones and in such cases benchmarking is only useful against Service Providers of a similar size.

Sewerage Services

Capacity and viability

The total reported capital expenditure on sewerage infrastructure in Queensland was $521,117,482 for 2013/14. The Statewide median average capital expenditure was $253 per property. In addition, the total reported operating costs to collect and treat sewerage from across the State was $578,969,766 at a median average cost of $405 per property for the State. The median value of the typical residential bill for sewerage services was $573.

Capital expenditure

Capital expenditure will vary markedly from year-to-year, particularly for Service Providers with a small number of sewerage assets, but still provides a snapshot of investment across the industry.

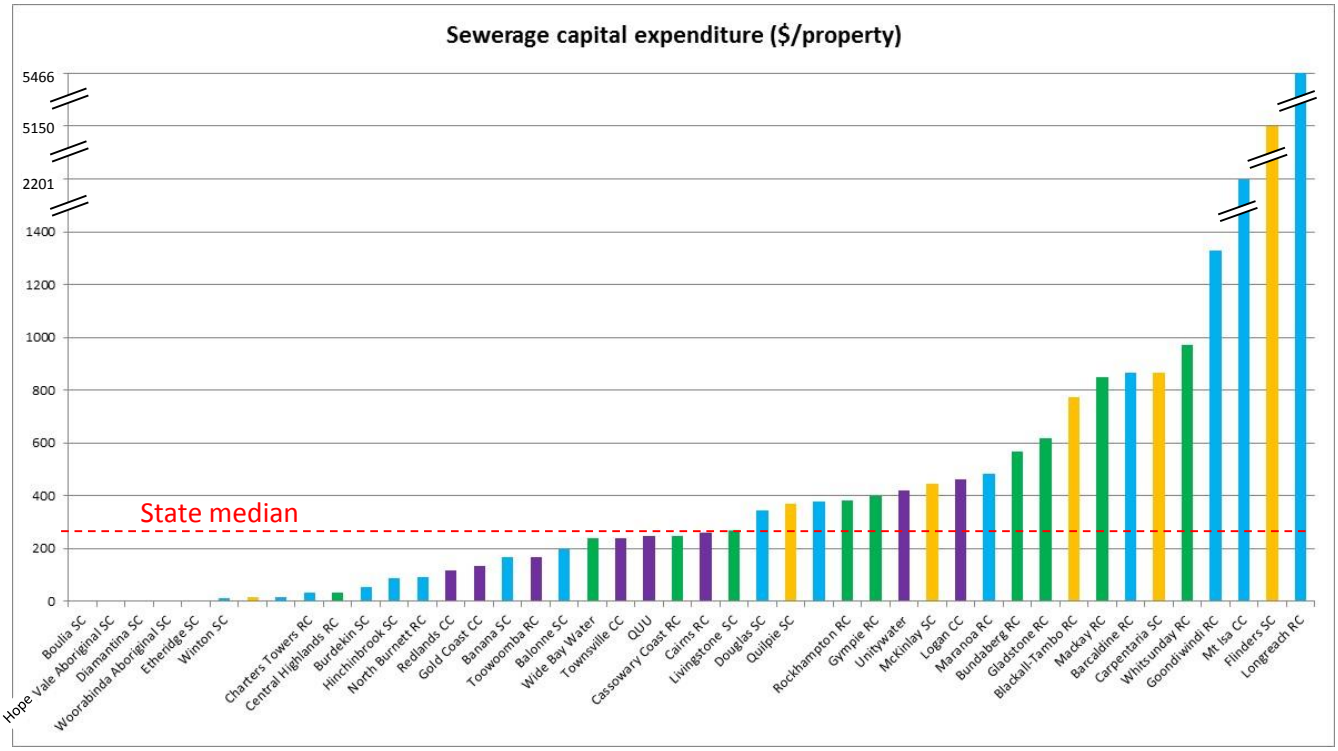

Figure 1. Sewerage capital expenditure ($/property)[1].

Note: This figure shows ranked values of sewerage capital expenditure ($/property) for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (**orange**), medium SP with between 1,000 and 9,999 connections (**blue**), large SP with between 10,000 and 50,000 connections (**green**), and extra-large SP with more than 50,000 connections (**purple**). The 2013/14 Statewide median value for sewerage capital expenditure is $253 per property. Each bar represents one SP.

[1] Note: figures for smaller SPs may be skewed towards higher values due to their very low populations.

Operating costs

The 'operating cost (sewerage) per property' is a good indication of the performance of a Service Provider. The components of operating cost (operation, maintenance and administration) are:

- Charges for bulk treatment/transfer of sewerage
- Salaries and wages
- Overheads on salaries and wages
- Materials/chemicals/energy
- Contracts
- Accommodation
- All other operating costs that would normally be reported
- Items expensed from work in progress (capitalised expense items) and pensioner remission expenses
- Competitive neutrality adjustments, they may include but not be limited to, land tax, debits tax, stamp duties and council rates

The type of treatment as well as the level of treatment (related to the discharge requirements) of sewage will affect the operation costs. With higher levels of sewerage treatment come associated increases in other costs, particularly energy.

Topography will also affect operation costs through the amount of pumping needed to move the sewage to the treatment plant. With higher levels of sewage pumping come an associated increase in asset maintenance and energy costs.

Service Providers with a number of separate sewage systems, larger areas of low density service (i.e. low numbers of properties serviced per km of main) and those with higher numbers of, and smaller, sewerage treatment plants will generally need more employees to effectively manage their systems and thus have higher operational costs.

The maintenance costs of sewerage infrastructure are related to several factors, such as the age and condition of the assets, the soil reactivity (shrink-swell rating) and the density of connected properties.

Typical residential bill

The 'typical residential bill – sewerage' is the dollar amount of the typical residential sewerage bill for the financial year, including special levies. If the bill is cost-reflective and a Service Providers' operations are run effectively and efficiently, the typical residential bill should be minimised and indicating the Service Provider is providing value for money to the community. The aim for a Service Provider should be to provide agreed levels of service at the lowest, but importantly, sustainable, residential bill. The trend for smaller water service provider's bills to reflect lower costs than large providers is opposite to the trend of decreasing cost with size demonstrated for large utilities nationally.

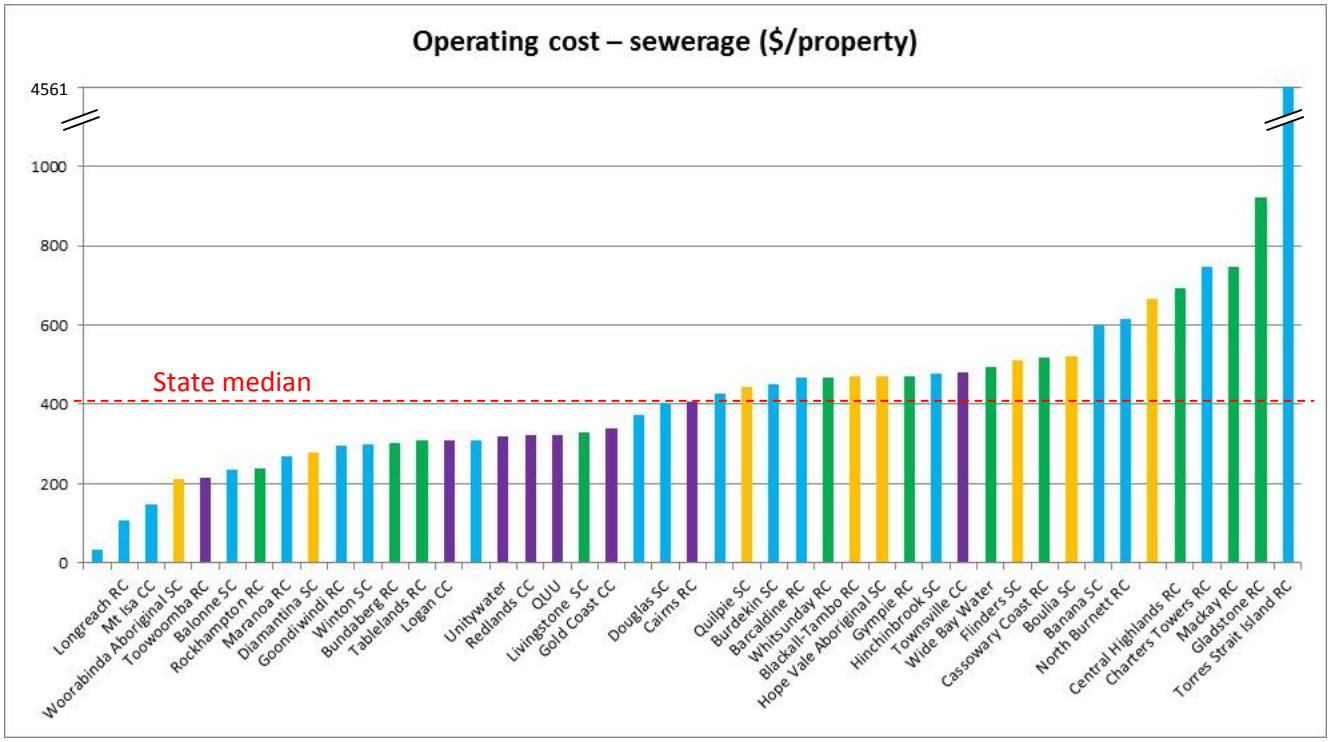

Figure 2. Operating costs – sewerage ($/property)[2].

Note: This figure shows ranked values of operating costs – sewerage ($/property) for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (**orange**), medium SP with between 1,000 and 9,999 connections (**blue**), large SP with between 10,000 and 50,000 connections (**green**), and extra-large SP with more than 50,000 connections (**purple**). The 2013/14 Statewide median value for operating costs – sewerage is $405 per property. Each bar represents one SP.

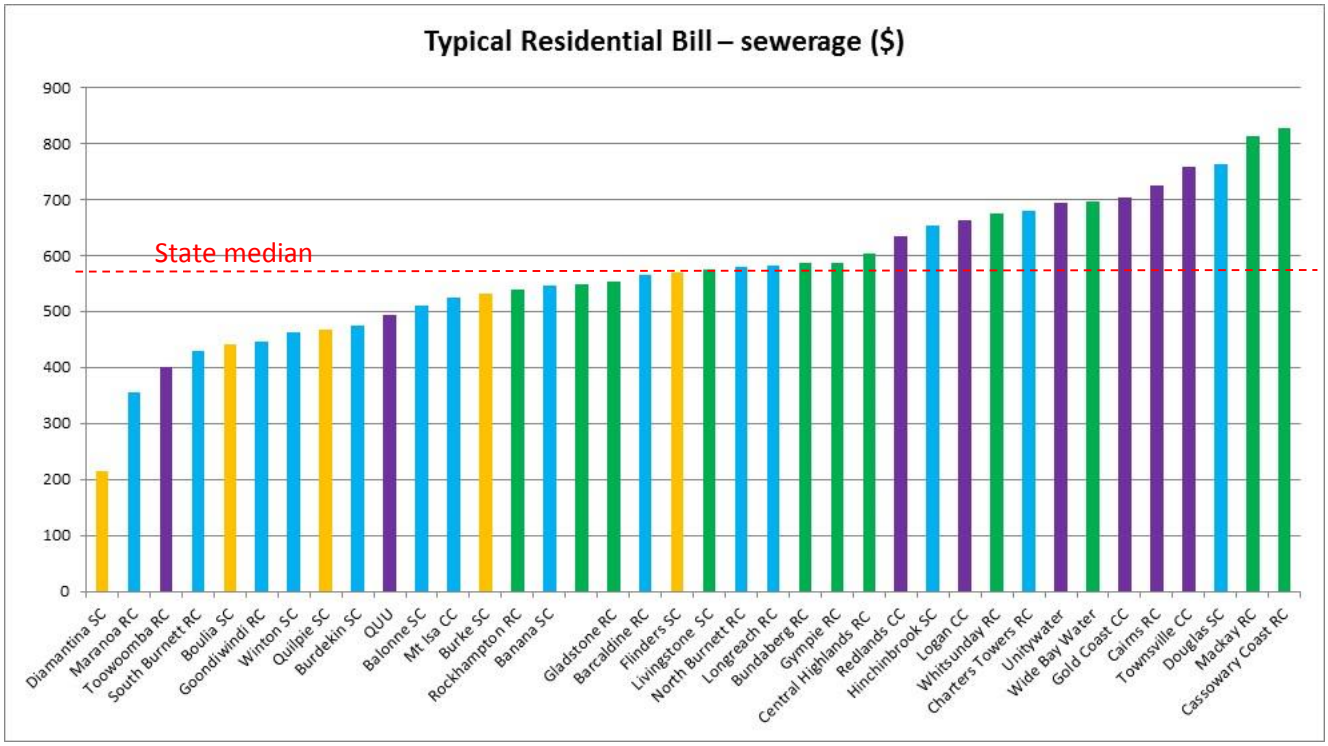

Figure 3. Typical residential bill – sewerage ($).

Note: This figure shows ranked values of the typical residential bill – sewerage ($) for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (**orange**),

[2] Note: figures for smaller SPs may be skewed towards higher values due to their very low populations.

medium SP with between 1,000 and 9,999 connections (**blue**), large SP with between 10,000 and 50,000 connections (**green**), and extra-large SP with more than 50,000 connections (**purple**). The 2013/14 Statewide median value for the typical residential bill – sewerage is $573. Each bar represents one SP.

Economic real rate of return

The financial performance of most Service Providers is intricately meshed with that of the owner councils. This makes determining the financial performance of the sewerage operations, as an individual business unit, hard to assess for many service providers.

In addition, an important distinction must be made between the category of (usually large) councils that are financially sustainable and can provide dividends to their stakeholders, and the smaller and often remote councils. In the latter, small populations (and thus rate bases) can mean that capital investment in sewerage infrastructure is difficult or impossible and relies on funding assistance and subsidies from other council income. In some cases even operating costs can be difficult to recover.

One comparator of financial performance is the Economic Real Rate of Return (ERRR). The ERRR (sewerage) is the revenue from sewerage business operations less operating expenses for the sewerage business divided by written down replacement cost of operational assets. An appropriate value for ERRR is difficult to determine for Service Providers but should be at least positive with a margin to allow for return on capital (NWC and WSAA, 2010). OTTER (2011) suggested that an ERRR of around 7% was required for full cost recovery in the Tasmanian urban water industry while the Productivity Commission questioned whether the NWC and NSW Office of Water definition of full cost recovery as an ERRR "greater than or equal to zero" was sufficient (see PC, 2011, p. 386).

Conclusive comparisons are difficult because of the range and diversity of service providers listed and the small number of data. The Statewide median value for ERRR (sewerage) was 3.8%.

Customer service

Sewerage service complaints

During 2013/14 a total of 4,364 sewerage service related complaints were reported across the State. The Statewide median number of complaints per 1,000 connections was 2.

Response time to sewerage incidents

The Statewide median for the average response time for sewerage incidence was 40 minutes.

Condition of assets

Sewerage main breaks and chokes

The Statewide median for the number of sewer main breaks and chokes reported per 100 km of sewer mains during 2013/14 was 15. This indicator can provide a rough surrogate for the condition and age of sewerage infrastructure.

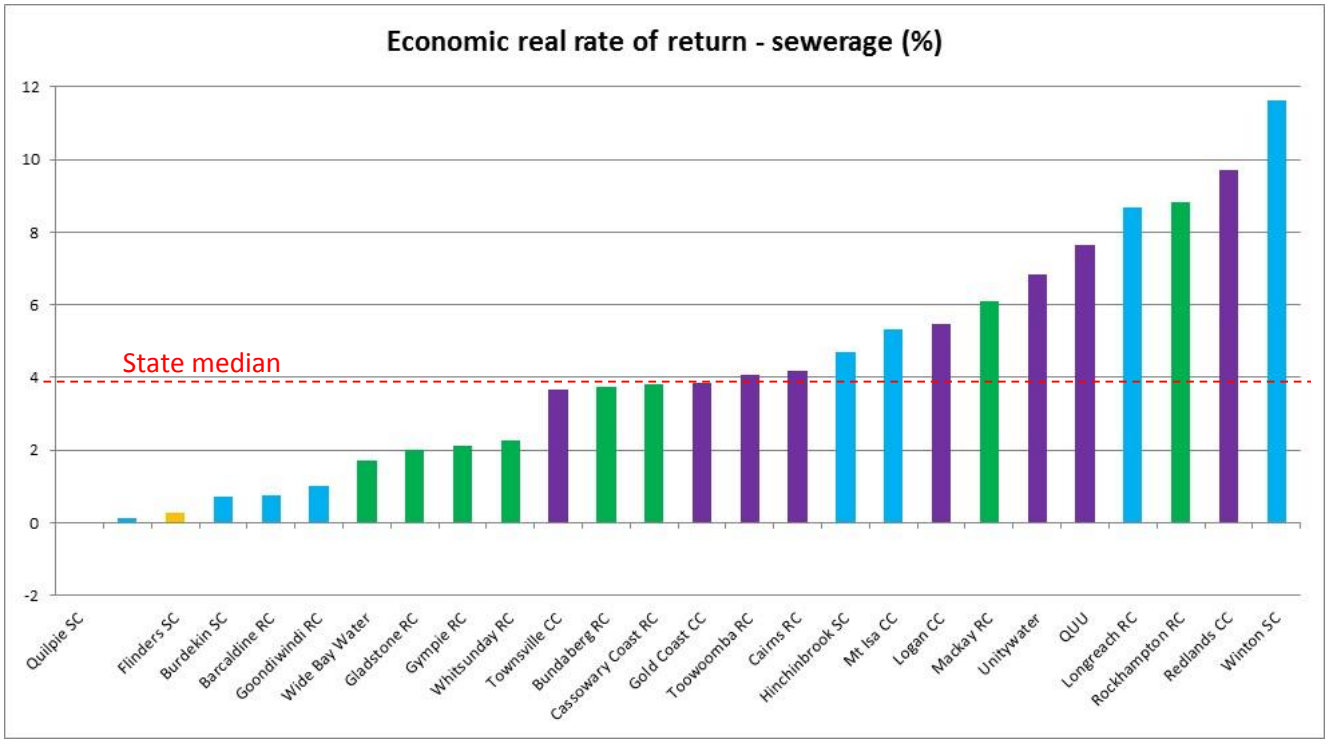

Figure 4. Economic real rate of return (ERRR) – sewerage (%).

Note: This figure shows ranked values of the ERRR – sewerage (%) for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (orange), medium SP with between 1,000 and 9,999 connections (blue), large SP with between 10,000 and 50,000 connections (green), and extra-large SP with more than 50,000 connections (purple). The 2013/14 Statewide median value for the ERRR – sewerage is 3.8%. Each bar represents one SP.

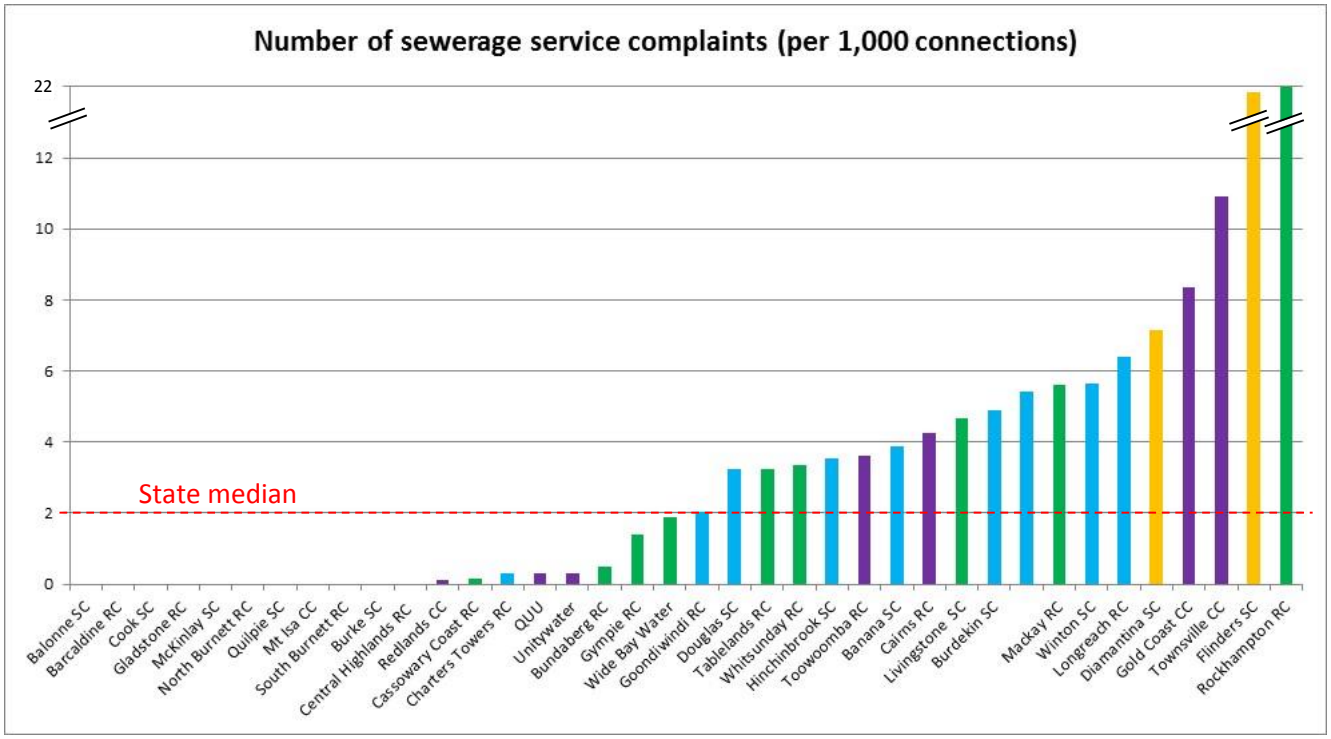

Figure 5. Number of sewerage service complaints (per 1,000 connections)[3].

Note: This figure shows ranked values for the number of sewerage service complaints per 1,000 connections for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than

[3] Note: figures for smaller SPs may be skewed towards higher values due to their very low populations.

1,000 connections (**orange**), medium SP with between 1,000 and 9,999 connections (**blue**), large SP with between 10,000 and 50,000 connections (**green**), and extra-large SP with more than 50,000 connections (**purple**). The 2013/14 Statewide median value for the number of sewerage service complaints per 1,000 connections is 2. Each bar represents one SP.

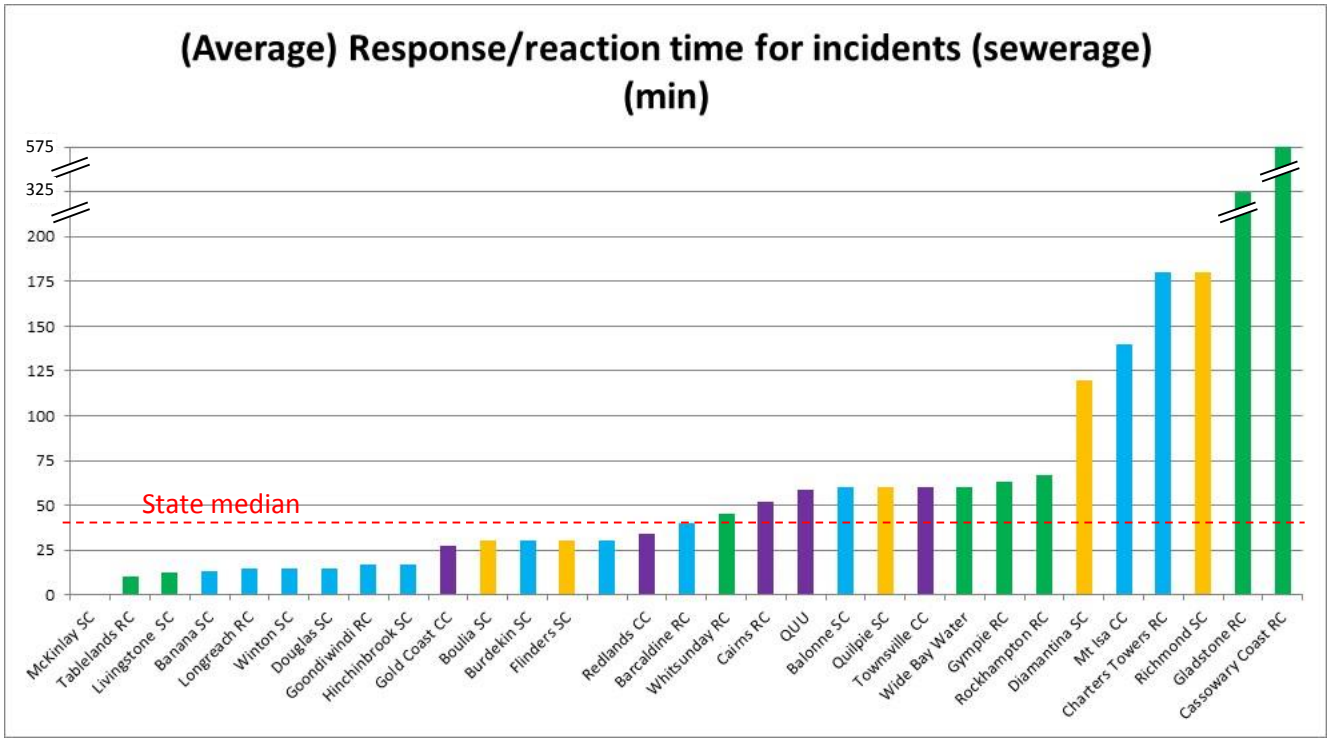

Figure 6. (Average) Response/reaction time for incidents (sewerage) (min).

Note: This figure shows ranked values for the (average) response/reaction time for incidents (sewerage) (min) for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (**orange**), medium SP with between 1,000 and 9,999 connections (**blue**), large SP with between 10,000 and 50,000 connections (**green**), and extra-large SP with more than 50,000 connections (**purple**). The 2013/14 Statewide median value for the (average) response/reaction time for incidents (sewerage) is 40 minutes. Each bar represents one SP.

Performance

Sewage overflows

During 2013/14 Service Providers reported that a total of 74 sewage overflow events were reported to the environmental regulator (EHP) with a Statewide median of 0.19 events per 100 km of mains. Overflows at pumping stations may occur in wet weather when sewage flows are increased from illegal connections to the sewer and because of stormwater infiltration. Overflows can also be caused by mechanical or power failures or blockages. Pumping stations are designed with a capacity to overflow at such times to prevent back-up of sewage and potential overflows to private premises.

Compliance of treated sewage

The 2013/14 Statewide median for the amount of sewage treated that was compliant with current licence limits was 99%.

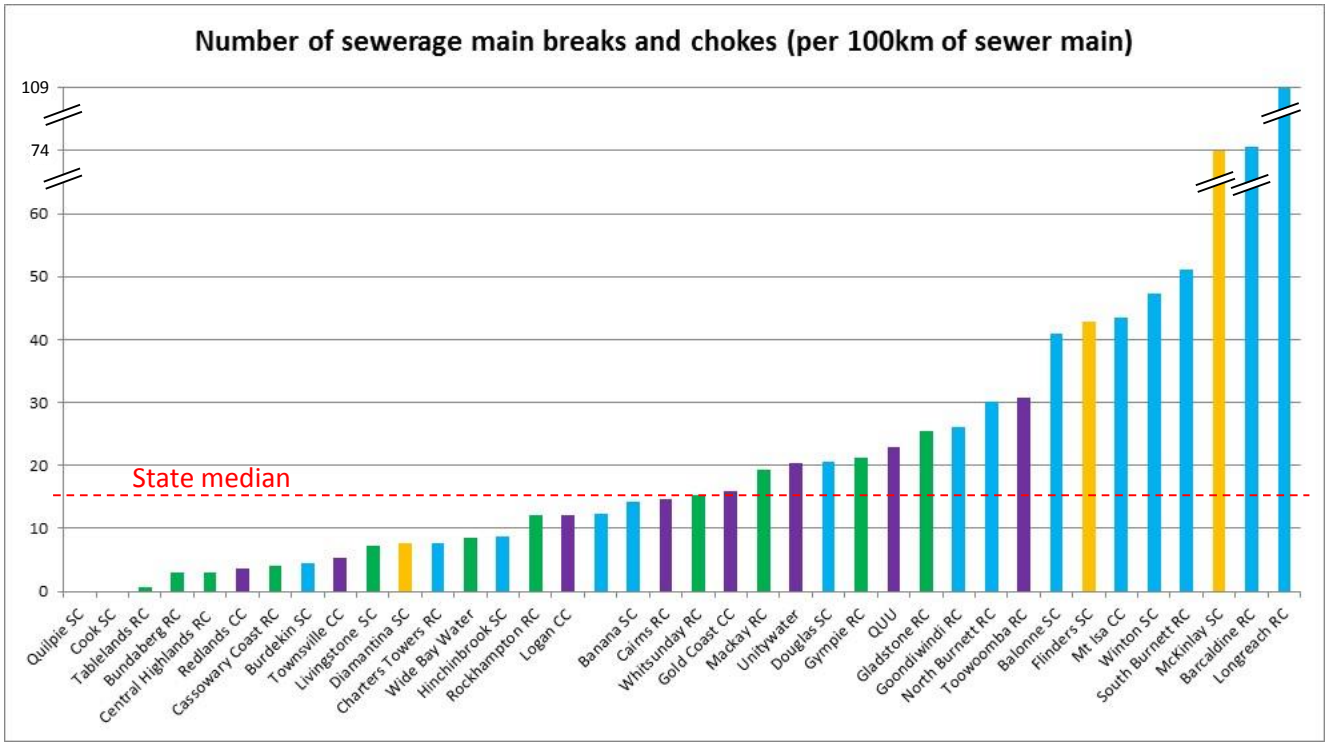

Figure 7. Number of sewerage main breaks and chokes per 100 km of sewer main[4].

Note: This figure shows ranked values for the number of sewerage main breaks and chokes per 100 km of sewer mains for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (**orange**), medium SP with between 1,000 and 9,999 connections (**blue**), large SP with between 10,000 and 50,000 connections (**green**), and extra-large SP with more than 50,000 connections (**purple**). The 2013/14 Statewide median value for the number of sewerage main breaks and chokes is 15 per 100 km of sewer main. Each bar represents one SP.

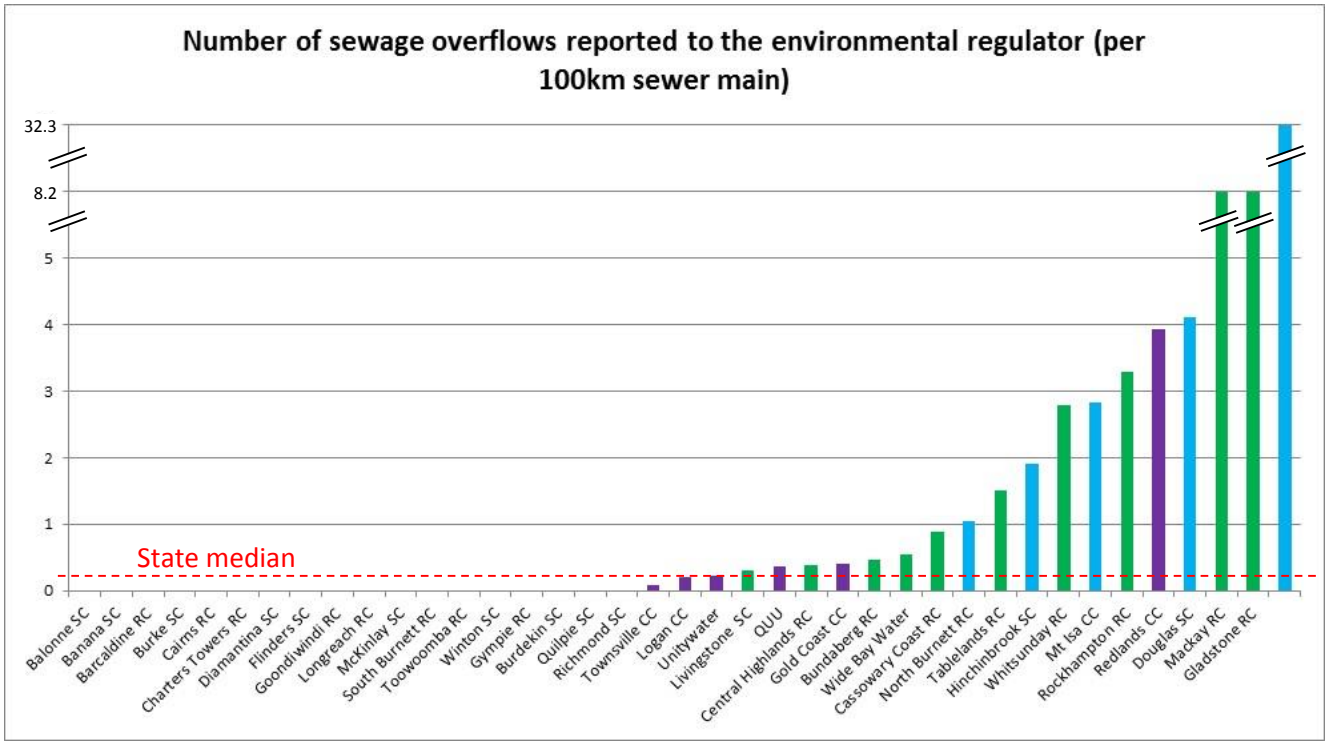

Figure 8. Number of sewage overflows reported to the environmental regulator (per 100 km sewer main)[5].

[4] Note: figures for smaller SPs may be skewed towards higher values due to their relatively short main lengths.

[5] Note: figures for smaller SPs may be skewed towards higher values due to their relatively short main lengths.

Note: This figure shows ranked values for the number of sewage overflows reported to the environmental regulator (per 100 km sewer main) for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (orange), medium SP with between 1,000 and 9,999 connections (blue), large SP with between 10,000 and 50,000 connections (green), and extra-large SP with more than 50,000 connections (purple). The 2013/14 Statewide median value for the number of sewage overflows reported to the environmental regulator (total, annual) is 0.19 per 100 km sewer main. Each bar represents one SP.

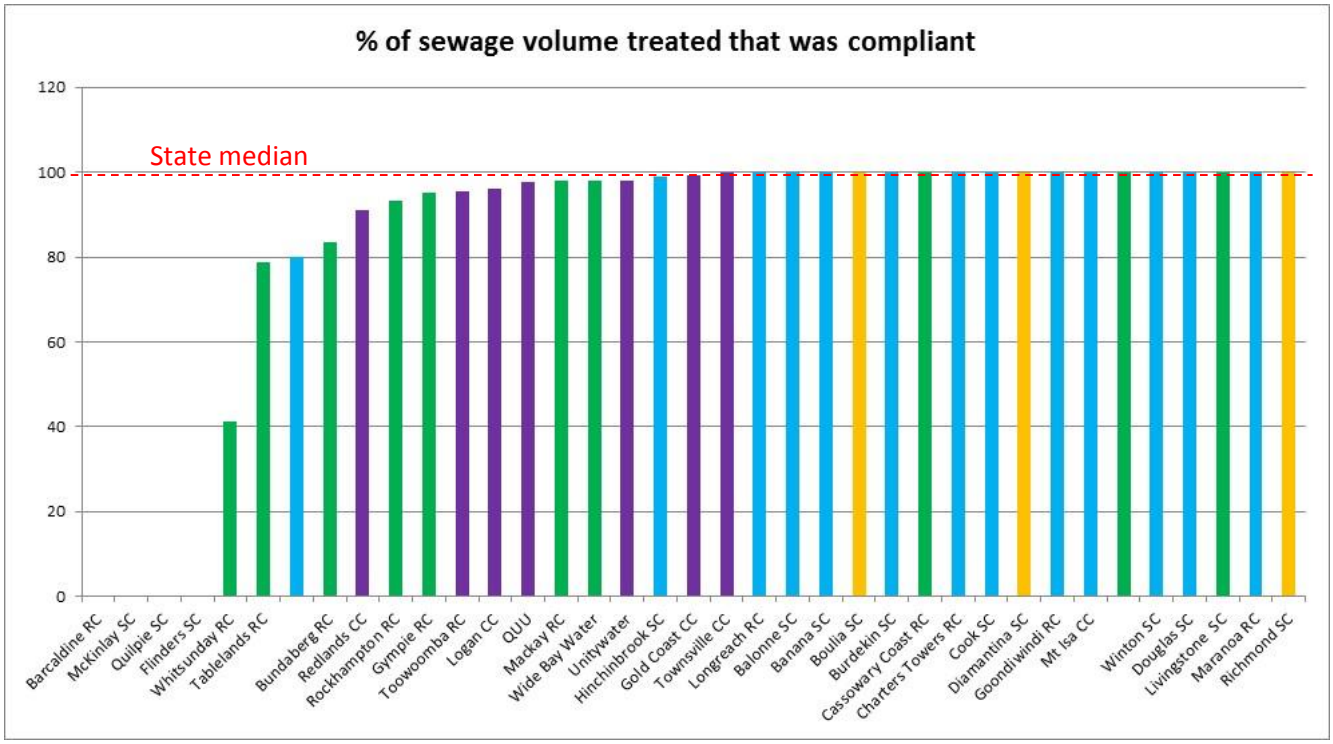

Figure 9. Percent of sewage volume treated that was compliant.

Note: This figure shows ranked values for the percent of sewage volume treated that was compliant for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (orange), medium SP with between 1,000 and 9,999 connections (blue), large SP with between 10,000 and 50,000 connections (green), and extra-large SP with more than 50,000 connections (purple). The 2013/14 Statewide median value for the percent of sewage volume treated that was compliant is 99%. Each bar represents one SP.

Potable Water Supply

Capacity and viability

The average reported annual potable water supplied per connection for the State was 474 kL in 2013/14 which is slightly down on previous years (509 kL (2012/13) and 501 kL (2011/12)).

The reported total capital expenditure on water supply was $285,792,108 for 2013/14. The Statewide median for average capital expenditure was $212 per property. In addition, the reported total operating costs to supply water from across the State was $1,209,718,430 at a median average cost of $635 per property for the State. The median typical residential bill for water supply was $704.

Capital expenditure

Capital expenditure will vary markedly from year-to-year, particularly for Service Providers with a smaller number of water assets, but still provides a snapshot of investment across the industry.

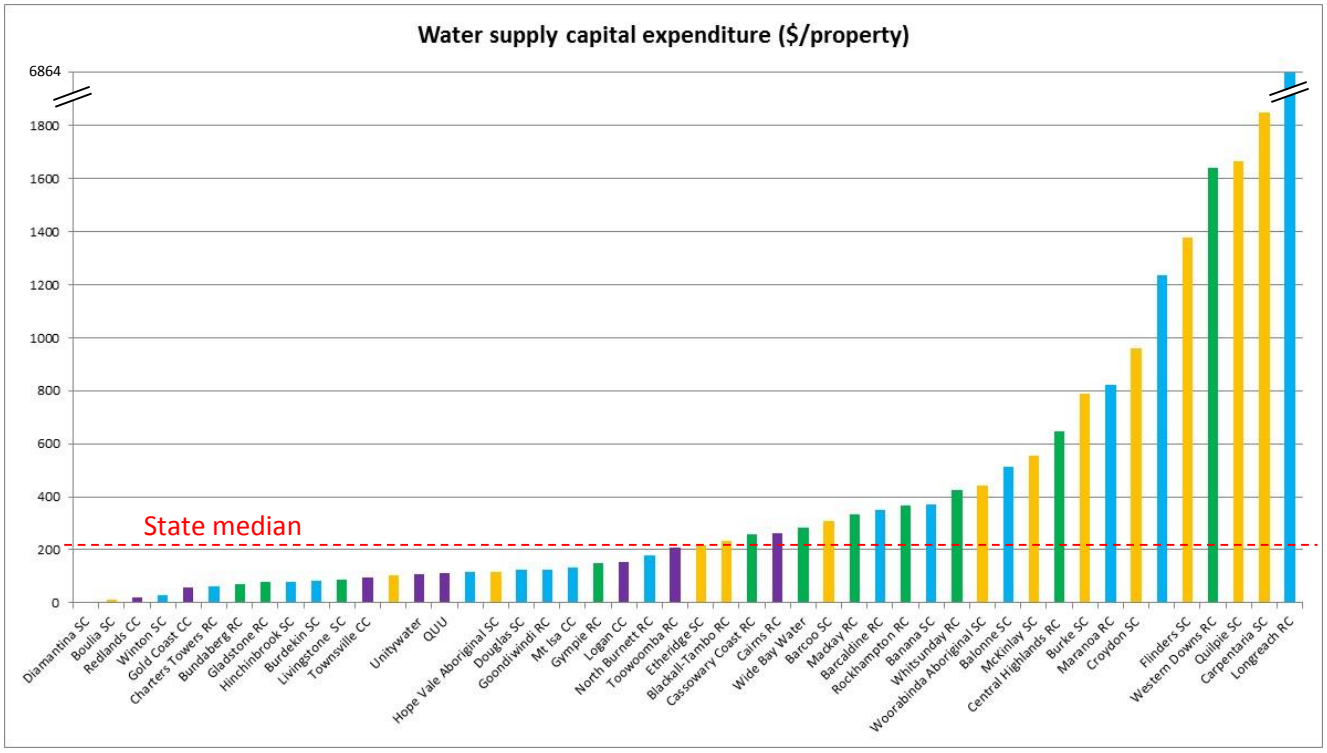

Figure 10. Water supply capital expenditure ($/property)[6].

Note: This figure shows ranked values of water supply capital expenditure ($/property) for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (**orange**), medium SP with between 1,000 and 9,999 connections (**blue**), large SP with between 10,000 and 50,000 connections (**green**), and extra-large SP with more than 50,000 connections (**purple**). The 2013/14 Statewide median value for water supply capital expenditure is $212 per property. Each bar represents one SP.

Operating costs

Service Providers with cost reflective pricing and effective and efficient systems will have lower operating costs and thus provide better value for money to their customers. The components of operating cost (operation, maintenance and administration) are:

- Water resource access charge or resource rent tax.
- Purchases of raw, treated or recycled water
- Salaries and wages
- Overheads on salaries and wages
- Materials/chemicals/energy
- Contracts
- Accommodation
- All other operating costs that would normally be reported
- Items expensed from work in progress (capitalised expense items) and pensioner remission expenses
- Competitive neutrality adjustments, they may include but not be limited to, land tax, debits tax, stamp duties and council rates

Service Providers that maintain major storage dams for their water supply have larger capital expenditure and operating costs.

[6] Note: figures for smaller SPs may be skewed towards higher values due to their very low populations.

The amount of treatment needed for the water sourced will affect the operation costs. However, larger water treatment plants can generally reduce this cost, relatively, through economies of scale.

The topography and location of the water supply will also affect operation costs through the amount of pumping needed to move the water to the treatment plant and then on to the customer. Again, high numbers of connections within urban areas provide economies of density which will help to reduce this cost, relatively. With higher levels of water pumping (e.g. in hilly areas) come associated increases in energy costs.

Service Providers with a number of separate water supply systems, larger areas of low density service (i.e. low numbers of properties serviced per km of main) and those with higher numbers of, and smaller, water treatment plants will generally need more employees to effectively manage their systems and thus have higher costs.

Maintenance costs of water supply infrastructure is related to several factors, such as the age and condition of the assets, the soil reactivity (shrink-swell rating), water pressures and the density of connected properties.

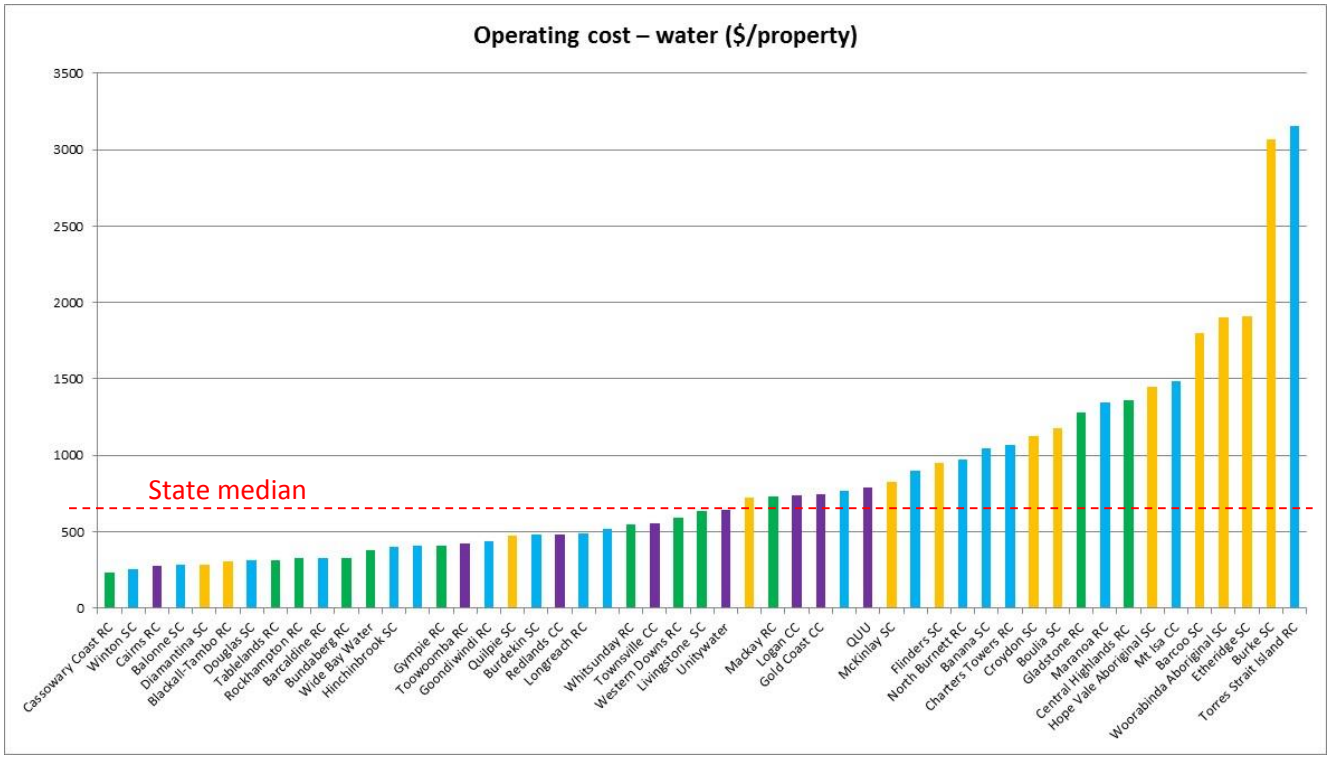

Figure 11. Operating costs – water ($/property)[7].

Note: This figure shows ranked values of operating costs – water ($/property) for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (**orange**), medium SP with between 1,000 and 9,999 connections (**blue**), large SP with between 10,000 and 50,000 connections (**green**), and extra-large SP with more than 50,000 connections (**purple**). The 2013/14 Statewide median value for operating costs – water is $635 per property. Each bar represents one SP.

Typical residential bill

The 'typical residential bill – water' is the dollar amount of the typical residential water bill for the financial year, including special levies. If the bill is cost-reflective and a Service Providers' operations are run as

[7] Note: figures for smaller SPs may be skewed towards higher values due to their very low populations.

effectively and efficiently as possible, then the typical residential bill should be minimised and the Service Provider should be providing value for money to the community. The aim for a Service Provider should be to provide agreed levels of service at the lowest, but importantly sustainable, residential bill.

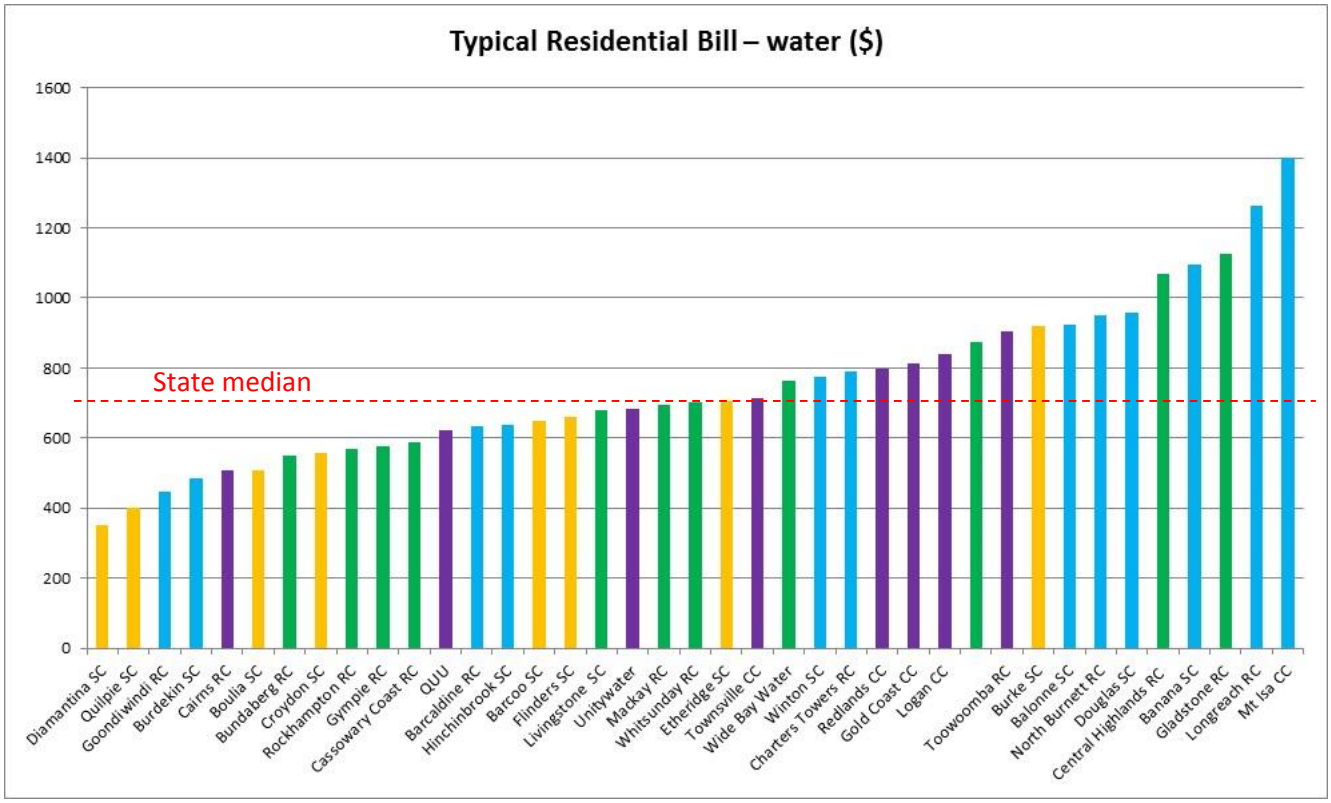

Figure 12. Typical residential bill – water ($).

Note: This figure shows ranked values of the typical residential bill – water ($) for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (**orange**), medium SP with between 1,000 and 9,999 connections (**blue**), large SP with between 10,000 and 50,000 connections (**green**), and extra-large SP with more than 50,000 connections (**purple**). The 2013/14 Statewide median value for the typical residential bill – water is $704. Each bar represents one SP.

Economic real rate of return

The financial performance of most Service Providers is intricately linked with their owner councils, making it difficult to assess the financial performance of the water supply operations.

In addition, an important distinction must be made between the category of (usually large) councils that can be categorised as financially sustainable and can provide dividends to their stakeholders, and the smaller and often remote councils. In the latter, small populations (and thus rate bases) can mean that capital investment in water infrastructure is difficult or impossible and relies on funding assistance and subsidies from other sources of income. In some cases even operating costs can be difficult to meet.

One comparator of financial performance is the Economic Real Rate of Return (ERRR). The ERRR (water) is the revenue from water business operations less operating expenses for the water business divided by written down replacement cost of operational water assets. An appropriate value for ERRR is difficult to determine for Service Providers but should be at least positive with a margin to allow for return on capital (NWC and WSAA, 2010). OTTER (2011) suggested that an ERRR of around 7% was required for full cost recovery in the Tasmanian urban water industry while the Productivity Commission questioned the appropriateness of NWC and NSW Office of Water definitions of full cost recovery as an ERRR “greater than or equal to zero” (see PC, 2011, p. 386).

Conclusive comparisons are hard to draw because of the range and diversity of service providers listed and the small number of data. The Statewide median value for ERRR (water) was 3.3%.

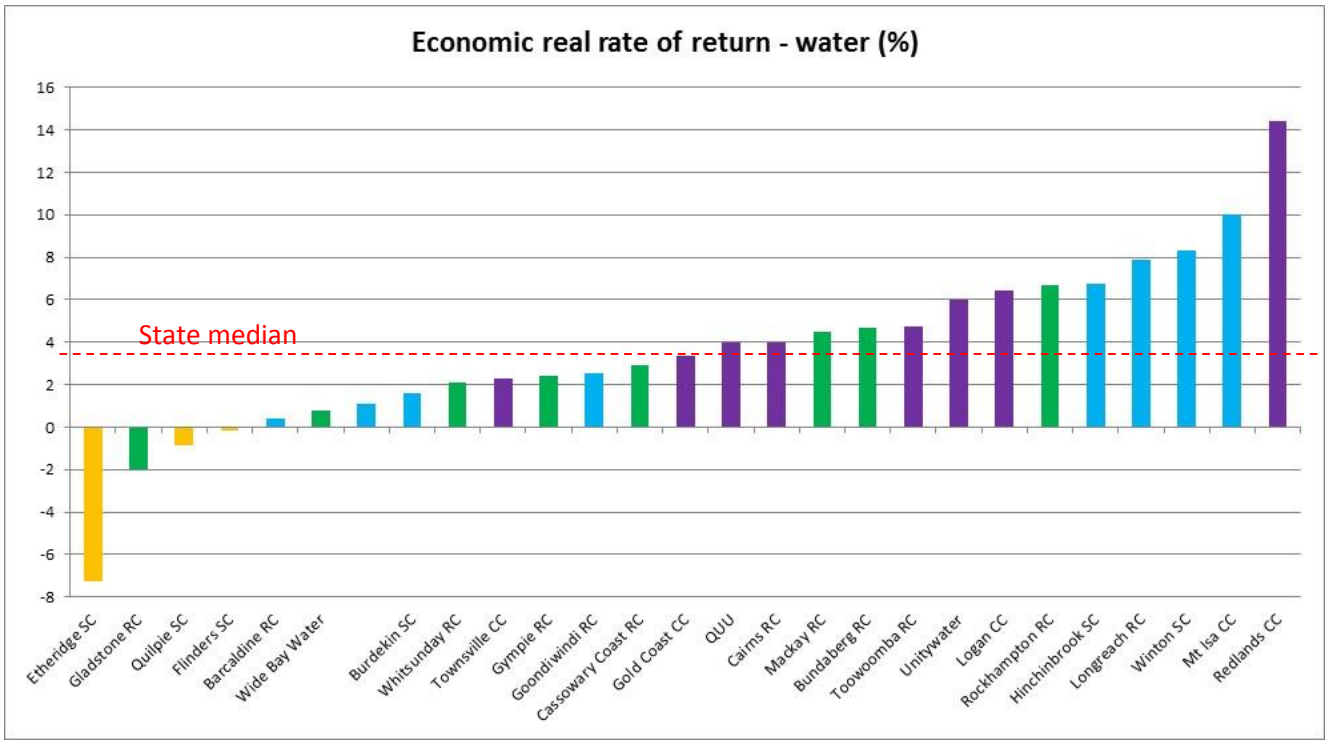

Figure 13. Economic real rate of return (ERRR) – water (%).

Note: This figure shows ranked values of the ERRR – water (%) for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (**orange**), medium SP with between 1,000 and 9,999 connections (**blue**), large SP with between 10,000 and 50,000 connections (**green**), and extra-large SP with more than 50,000 connections (**purple**). The 2013/14 Statewide median value for the ERRR – water is 3.3%. Each bar represents one SP.

Customer service

Water service complaints

During 2013/14 a total of 18,905 water related complaints were reported across the State. The Statewide median number of complaints per 1,000 connections was 8.4.

Condition of assets

Water main breaks

The Statewide median for the number of water main breaks that were recorded per 100 km of main during 2013/14 was 14.1.

Real water losses

The Statewide median for the amount of reported real water losses for 2013/14 was 110 litres per service connection per day.

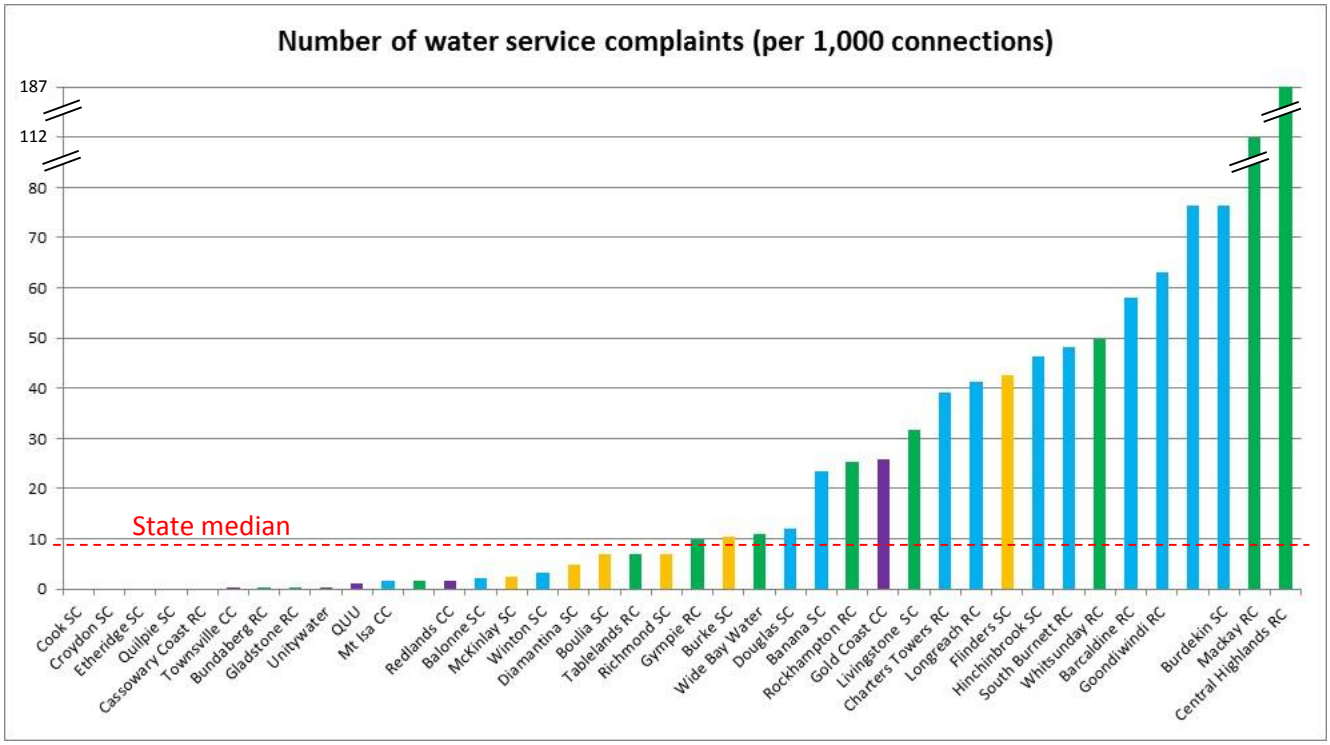

Figure 14. Number of water service complaints (per 1,000 connections)[8].

Note: This figure shows ranked values for the number of water service complaints per 1,000 connections for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (**orange**), medium SP with between 1,000 and 9,999 connections (**blue**), large SP with between 10,000 and 50,000 connections (**green**), and extra-large SP with more than 50,000 connections (**purple**). The 2013/14 Statewide median value for number of water service complaints per 1,000 connections is 8.4. Each bar represents one SP.

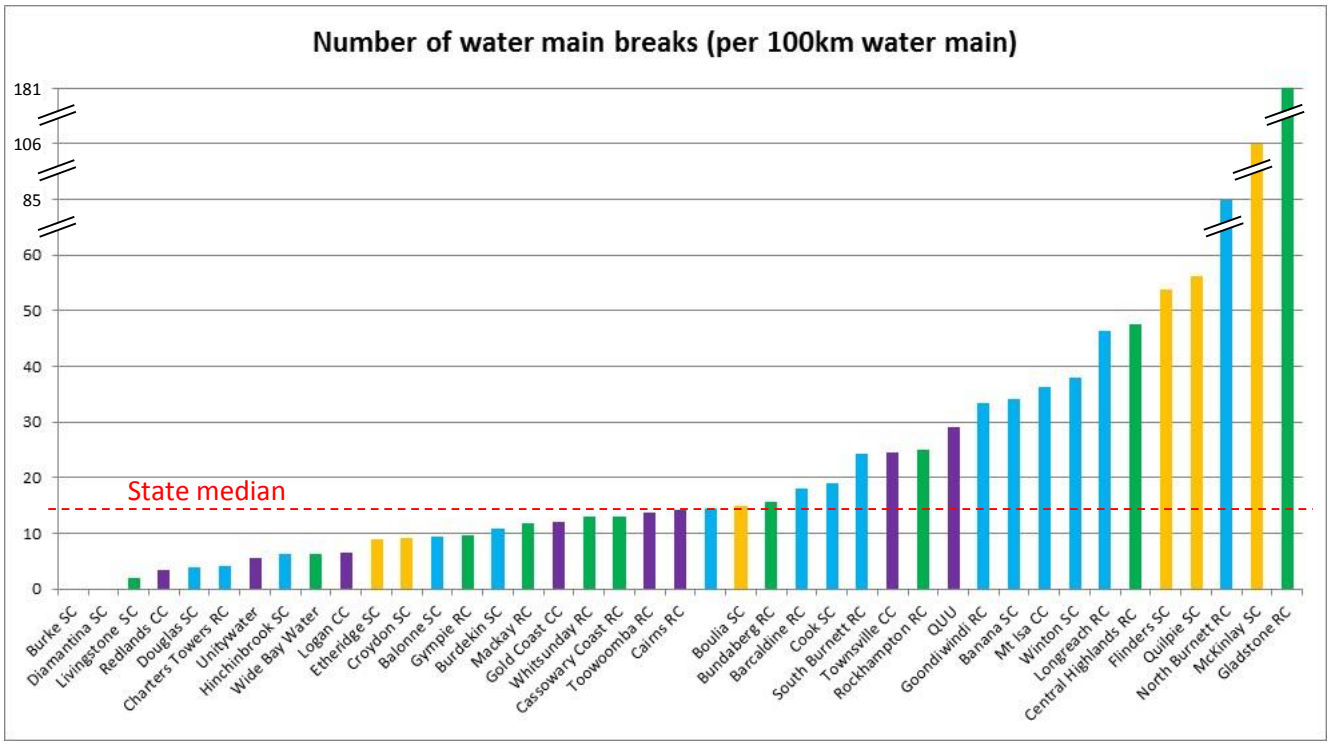

Figure 15. Number of water main breaks per 100 km of water main[9].

[8] Note: figures for smaller SPs may be skewed towards higher values due to their very low populations.

[9] Note: figures for smaller SPs may be skewed towards higher values due to their relatively short main lengths.

Note: This figure shows ranked values for the number of water main breaks per 100 km of water main for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (orange), medium SP with between 1,000 and 9,999 connections (blue), large SP with between 10,000 and 50,000 connections (green), and extra-large SP with more than 50,000 connections (purple). The 2013/14 Statewide median value for the number of water main breaks is 14.1 per 100 km of water main. Each bar represents one SP.

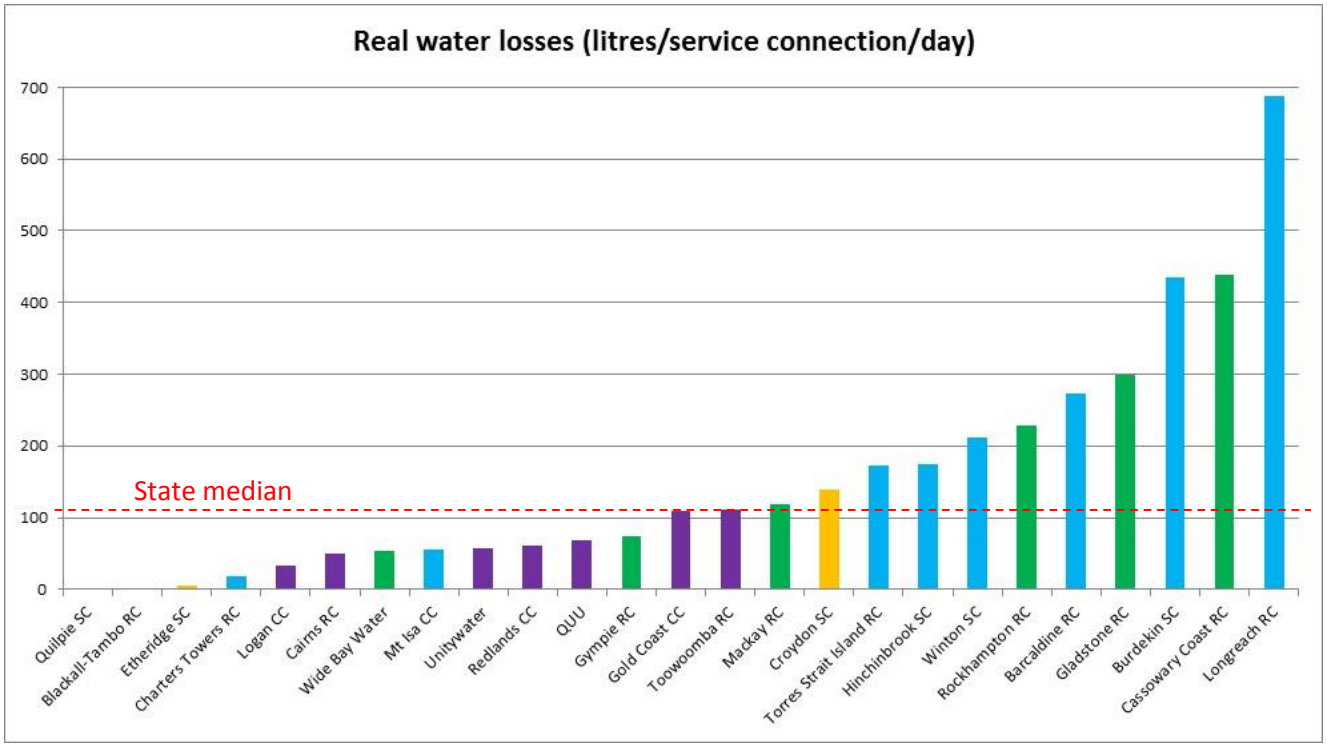

Figure 16. Real water losses (litres/service connection/day).

Note: This figure shows ranked values for real water losses (litres/service connection/day) for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (orange), medium SP with between 1,000 and 9,999 connections (blue), large SP with between 10,000 and 50,000 connections (green), and extra-large SP with more than 50,000 connections (purple). The 2013/14 Statewide median value for real water losses (litres/service connection/day) is 110 litres per service connection per day. Each bar represents one SP.

Performance

Microbiological compliance

The Statewide median for the percent of total population where microbiological compliance was achieved in 2013/14 was 100%.

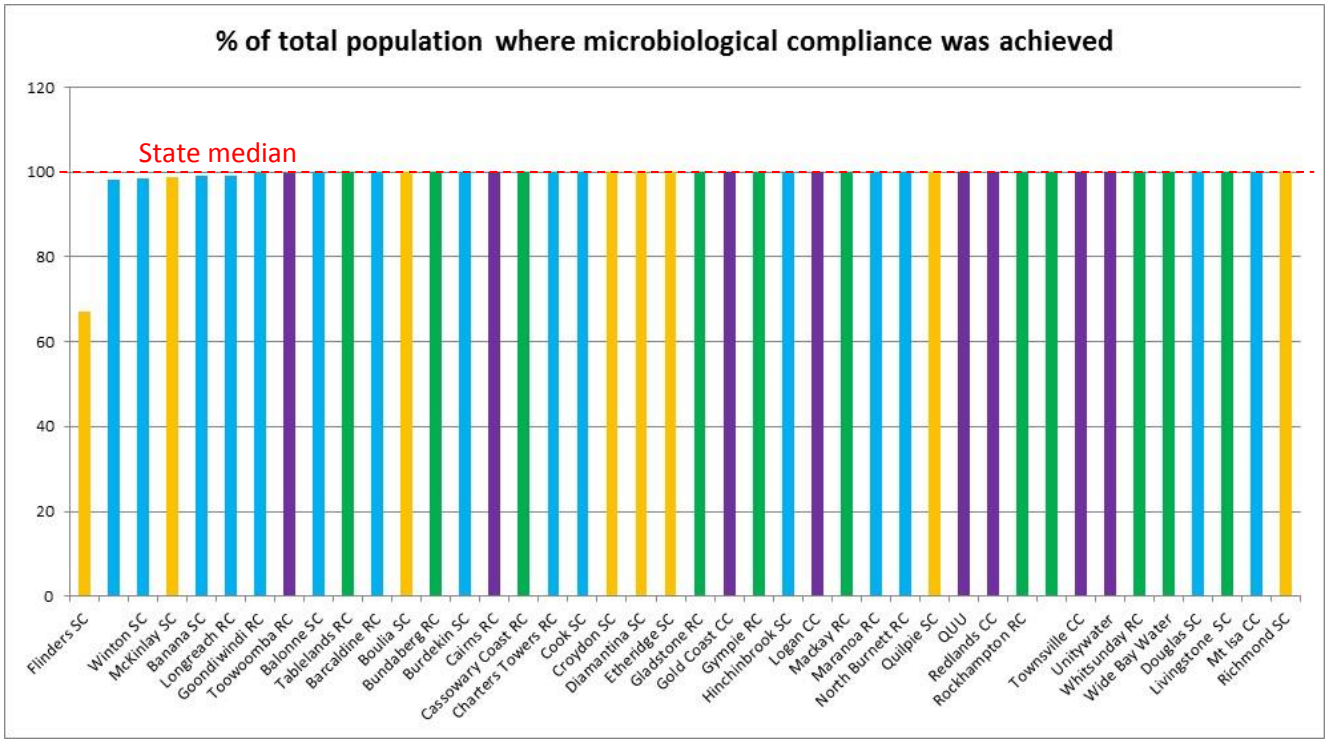

Figure 17. Percent of total population where microbiological compliance was achieved.

Note: This figure shows ranked values for the percent of total population where microbiological compliance was achieved for each Service Provider (SP) who reported in 2013/14 in 4 groups based on the number of connected properties served – small SP with less than 1,000 connections (**orange**), medium SP with between 1,000 and 9,999 connections (**blue**), large SP with between 10,000 and 50,000 connections (**green**), and extra-large SP with more than 50,000 connections (**purple**). The 2013/14 Statewide median value for the percent of total population where microbiological compliance was achieved is 100%. Each bar represents one SP.

References

NWC and WSAA (National Water Commission and Water Services Association of Australia). 2010. National Performance Report 2009-10: Urban Water Utilities, NWC, Canberra.

OTTER (Office of the Tasmanian Economic Regulator). 2011. Tasmanian Water and Sewerage State of the Industry Report 2009-10. Tasmanian Government, Hobart.

PC (Productivity Commission). 2011. Australia's Urban Water Sector, Report No. 55, Final Inquiry Report, Volume 1, Canberra.

Data used here was extracted from* qldwater's *SWIM database on 15/05/2015 as provided by Water Service Providers but* qldwater *and the WSP(s) involved offer no warranty as to its accuracy and are not liable for any loss or damage however caused, suffered or incurred by other parties in connection with the Data.