2015-16 Water, Sewerage and Irrigation Performance Report

May 2017

Economic Regulation Authority
WESTERN AUSTRALIA

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Key points for 2015-16

This is the latest in a series of annual reports[1] published by the Economic Regulation Authority (**ERA**) that examines the potable (drinking) and non-potable water, sewerage and irrigation supply schemes in the State.

The report covers the 42 water schemes and 32 sewerage schemes that supply more than 1,000 connected properties. The report also examines the performance of the state's two largest irrigators, Ord Irrigation Cooperative Ltd and South West Irrigation Management Cooperative (Harvey Water).

The ERA separately publishes on its website the performance of the smaller service providers in the form of a set of data tables.[2]

The purpose of this report is to bring transparency and accountability to the performance of the larger water, sewerage and irrigation service providers, with a particular focus on examining the level of service provided to customers over time.

Water performance

There are 42 towns and cities in Western Australia with more than 1,000 properties connected to a water supply, including 11 new towns that have been added in 2015-16.[3] The review of town boundaries by the Water Corporation also resulted in the Port Hedland and South Hedland Schemes being merged together in 2015-16 to form the Hedland Scheme.

Groundwater continues to be the largest single source of water, providing almost half of the total sources of water in 2015-16. Water sourced from surface water has continued its long-term decline. The total volume of surface water has fallen by 78.5 per cent between 2010-11 and 2015-16. The decline is the result of the government's strategy to source more water from climate independent sources, such as marine desalination and recycling.[4]

The total volume of urban water supplied in Perth in 2015-16 is the highest in the past six years. The long- term upward trend in Perth's water supply is being driven by population growth and the consequential residential property development.

The average annual residential water supplied in regional towns continued on its long-term downward trend reaching the lowest amount in 2015-16 for the past six years. This is a result of ongoing water savings measures across the State.

The increase of 3.7 percent in water mains in 2015-16 was mostly due to land development. Since 2010-11, the length of installed water mains in Perth has grown by an average of 1.8 per cent per annum. Water main breaks in Perth reached the lowest number in 2015-16 in the last six years at 12 breaks per 100 kilometres of water main.

In 2015-16, water quality and service complaints per 1,000 connected properties for Perth and regional towns remained relatively unchanged compared to 2014-15. The average frequency of unplanned interruptions, which measures the average number of times the water

[1] Each report covers the year ending 30 June.

[2] https://www.erawa.com.au/water1/water-licensing/small-supplier-performance-data

[3] These towns have been added as the growth in properties connected to a water supply in these towns have reached 1,000 or more in 2015-16.

[4] Recycled water is used to reduce the use of drinking water for non-drinking purposes, such as irrigating open spaces.

supply to a customer is interrupted without at least 24 hours' notice, reached the highest number in the past six years for both Perth and the regional towns in 2015-16.

In 2015-16, the average duration of supply interruptions in Perth increased by 12.4 per cent, and in regional towns by 22.7 per cent. Excluding the 11 additional towns added in 2015-16 increases the average supply interruption duration for regional towns to 185.2 minutes, or 48.5 per cent higher than 2014-15. The biggest contributor to the large increase was long supply interruptions in Demark and Newman.

Sewerage performance

There are 32 sewerage schemes in Western Australia that service more than 1,000 connected properties, including the addition of 11 new towns and exclusion of Jurien which had less than 1,000 connected properties in 2015-16. Many of the significant variations in performance indicators for the regional towns are due to the addition of the 11 new towns.

Compared to 2014-15, the annual sewage collected per property in Perth and regional towns decreased by 3.8 per cent and 11.3 per cent, respectively. The volume of sewage collected in Perth and the average regional town in 2015-16 was the lowest in the past six years.

The reduction in sewage collected per property in Perth was the combined result of a slight decrease in total collected volume and a larger increase in sewerage connected properties. The total number of sewerage connected properties in Perth and the regional towns both increased, by 3.1 per cent and 13.8 per cent respectively. Excluding the 11 new towns reduces the regional town growth to 5.1 per cent. These figures are the highest in the past six years.

In 2015-16, the total length of sewer mains and channels in Perth and in regional towns increased by 1.7 per cent and 16.5 per cent respectively. The increase in the total length of Perth's sewer mains mirrors the growth in water mains, both driven by land development. The average number of properties served per kilometre of sewer main in Perth also increased by 1.6 per cent in 2015-16.

Compared to 2014-15, the number of breaks and chokes in Perth in 2015-16 increased by 5.7 per cent, and the regional average decreased by 41.5 per cent or 27.5 per cent if the effect of the 11 new towns is excluded.

In 2015-16, the regional town average for the number of sewerage service complaints was the lowest in the past six years, continuing the downward trend that began in 2011-12. This was a result of changes in the method of recording complaints by the Water Corporation in 2012-13.

The number of sewer overflows reported to the environmental regulator remained the same for Perth and decreased from 1.4 to 0.9 sewer overflows per 100kilometre of sewer main for regional towns in 2015-16. The Water Corporation commented that its sewer overflows were mainly caused by sewer main blockages and high rainfall events.

Combined water and sewerage performance

In 2015-16, the total volume of recycled water supplied increased by 8.8 per cent, comprising a 9.2 per cent increase in Perth and an 8.4 per cent increase in regional towns.

Between 2014-15 and 2015-16, the number of water and sewerage complaints per 1,000 connected properties in Perth and in the average regional town remained unchanged at 0.8 and 0.7 respectively.

In 2015-16, the number of billing and account complaints received from customers in Perth decreased from 0.3 to 0.2 per 1,000 connected properties, while the regional town average was unchanged. There were 27 regional towns that did not record any billing and account complaints.

In 2015-16, only 71.1 per cent of telephone calls to a Water Corporation operator were answered within 30 seconds, which is the lowest in the past six years.

Irrigation performance

The volume of water supplied by Harvey Water during 2015-16 increased by 2 per cent. Prior to 2013-14, the volume of water supplied was on a downward trend, because of reductions in Harvey Water's water allocations due to dry weather conditions and a contraction in the local dairy industry.

The volume of water supplied by Ord Irrigation decreased by 8.8 per cent in 2015-16. Despite the reduction, the supplied volume in 2015-16 was still much higher than the volumes supplied in the four years prior to 2014-15.

There was a 1.1 per cent reduction in the number of connection points on the Harvey Water networks in 2015-16, while the connection points on the Ord Irrigation networks were almost unchanged.

Over the past six years, the number of complaints received by both irrigators has been low.

Contents

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About this report

The Economic Regulation Authority (**ERA**) is the independent economic regulator in Western Australia responsible for administering the licensing schemes for water service providers.[5]

The ERA reports on the performance of water service providers to meet its obligation under the *Water Services Act 2012* to monitor and report to the Minister for Water on the operation of the water licensing scheme.[6] This is the 11th report published by the ERA that examines the performance of water service providers.

Performance reporting enhances transparency and accountability, and promotes greater integrity in the market. It also provides incentives for water service providers to improve performance, and helps to identify emerging issues requiring a compliance response.

This report covers water and sewerage supply schemes with more than 1,000 connected properties (see Appendix 4 for a list of the towns) and the state's two largest irrigators. Data for water and sewerage supply towns with less than 1,000 connected properties, and two small irrigators, is on the ERA website.[7]

Throughout the report, the data for Perth and the regional towns is reported separately, with the aggregated data for the latter being reported using the label 'regional town(s)'. In some places, the combined data for Perth and the regional towns is provided under the labels 'all towns' or 'all town average'.

The report is structured as follows:

- Part A – Water performance: this section looks at the sources of water in the state, uses of water supplied, spatial density of properties served by water mains, the number of water main breaks, number of connected properties to water supply, and the number and type of complaints.
- Part B – Sewerage performance: this section looks at the annual volume of sewage collected per property, percentage of treated sewage that is used to produce recycled water, properties served per kilometre of sewer main, the number of sewer main breaks and chokes, number of sewerage connected properties, number of sewerage service complaints, percentage of sewage treated by treatment level, and sewer overflows reported to the environmental regulator.[8]
- Part C – Combined water and sewerage performance: this section looks at total recycled water supplied, the uses of recycled water, total number of water and sewerage complaints, billing and account complaints, and the proportion of calls that are answered by a call centre operator within 30 seconds.
- Part D – Irrigation performance: this section looks at the performance of the Ord Irrigation Cooperative Ltd and South West irrigation Management Cooperative, including volume of water supplied for irrigation, number of customer service points of irrigation networks, carrier length, and number of customer service delivery complaints of the two irrigators.

[5] The licensing scheme for water providers is in Part 2 of the *Water Services Act 2012.*

[6] Section 207 of the *Water Services Act 2012*.

[7] https://www.erawa.com.au/water1/water-licensing/small-supplier-performance-data

[8] Department of Environment Regulation.

- Appendix 1 – Additional data (provides a breakdown of selected performance data by town)
- Appendix 2 - Water services licenses
- Appendix 3 - Water performance reporting
- Appendix 4 – List of water supply and sewerage schemes covered by this report
- Glossary

Part A: Water performance

Covered water supply schemes

There are 42 towns and cities in Western Australia with more than 1,000 properties connected to a water supply.

Perth is the largest water supply scheme, with more than 100,000 connected properties. There are seven towns with between 10,000 and 50,000 connected properties. The Water Corporation supplies all except two of the eight water supply schemes. The exceptions are Bunbury, which is supplied by Aqwest-Bunbury Water Corporation, and Busselton, which is supplied by Busselton Water Corporation.

Perth and the seven towns with more than 10,000 connected properties are also covered by the urban reporting framework[9] and included in the annual urban national performance report published by the Bureau of Meteorology.[10]

The remaining 34 schemes service 1,000 - 10,000 connected properties.

Prior to 2015-16, this report covered 24 towns. From 2015-16 onwards the number of covered towns has been expanded to include all of the Water Corporation's towns that supply 1,000 -10,000 connected properties. In 2015-16, this added 11 new towns.[11] The Water Corporation also advised the ERA that its review of town boundaries has resulted in the Port Hedland and South Hedland Schemes merging to form the Hedland Scheme.[12]

Appendix 3 gives for further background on water data reporting and Appendix 4 has a full list of town water supply schemes covered by this report.

Sources of water

Water is supplied from a number of different sources, which comprise the following:

- **Groundwater** - potable and non-potable water abstracted from aquifers and other 'below ground' water sources. This excludes volumes sourced from groundwater supplies that have been artificially recharged using sources of water that have been counted elsewhere, i.e. from rivers, desalination plants or sewage plants (recycling).
- **Surface water** - potable and non-potable water abstracted from surface water sources such as dams, rivers or irrigation channels.
- **Desalination** - potable and non-potable water sourced from desalination plants.
- **Bulk water** - Potable and non-potable water received from another utility or entity outside the reporting utility's geographic area of responsibility. The volume of water may include water subsequently exported (sold) to another utility.

[9] Refer to Appendix 3 for information about the urban framework, and water utilities' reporting obligations under the framework.

[10] National Performance Report – urban water utilities. The report available on the Bureau of Meteorology website: www.bom.gov/water/npr.

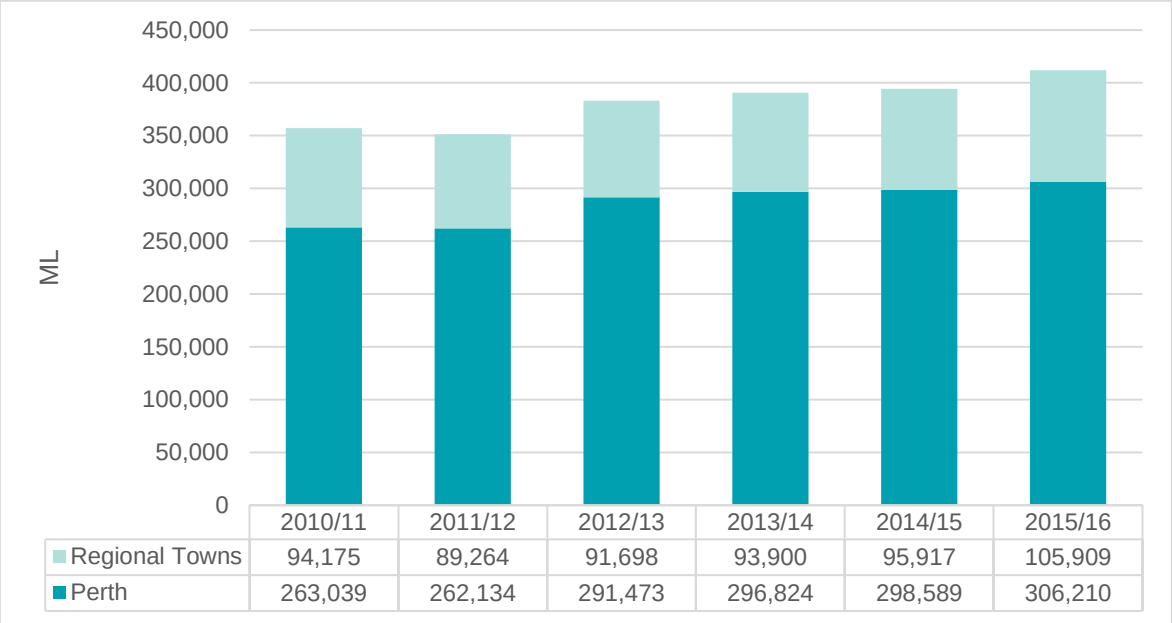
[11] These towns have been added as the number of properties connected to a water supply in these towns reached 1,000 or more in 2015-16.

[12] The Hedland Scheme is treated as a single town in this report.

- **Recycling** - treated effluent used by either the water utility itself, a business supplied by the water utility, or supplied through a third party pipe system for urban reuse.

Figure 1 shows the total volume of water sourced from all sources.

Figure 1: Total volume of water from all sources

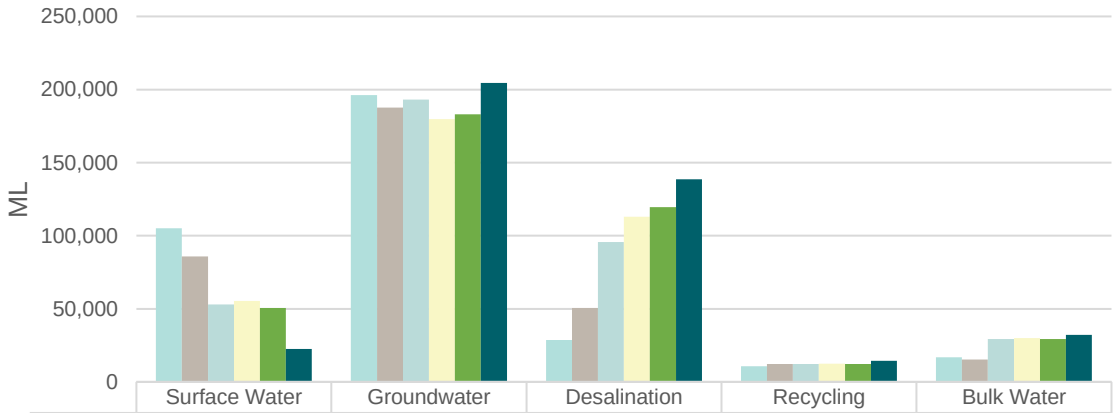


	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Regional Towns	94,175	89,264	91,698	93,900	95,917	105,909
Perth	263,039	262,134	291,473	296,824	298,589	306,210

In 2015-16, the total volume of water sourced increased by 4.5 per cent (from 394,506ML to 412,119ML), comprising a 2.6 per cent increase in water sourced for Perth and a 10.4 per cent increase in water sourced for regional towns. The large increase in the regional town volume is due to the inclusion of 11 additional towns in 2015-16.

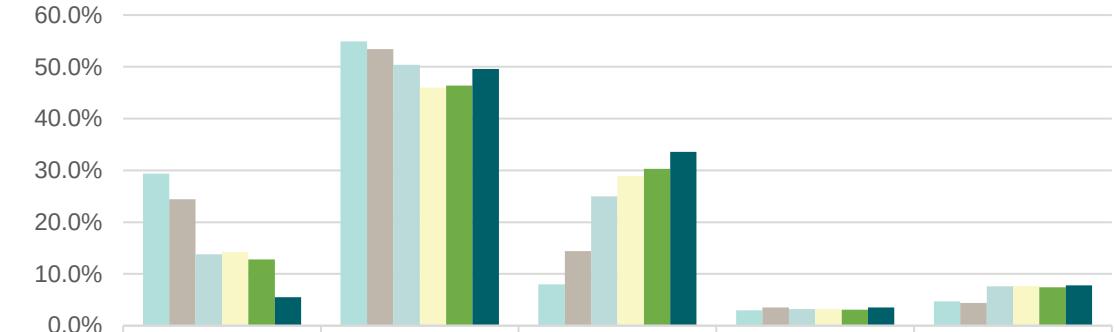
Figure 2 and Figure 3 provide a breakdown of the water source by volume and percentage respectively.

Figure 2: Sources of water by volume (all towns)



	Surface Water	Groundwater	Desalination	Recycling	Bulk Water
2010/11	105,090	196,208	28,541	10,608	16,767
2011/12	85,749	187,691	50,458	12,185	15,315
2012/13	52,885	193,191	95,770	12,119	29,206
2013/14	55,382	179,857	113,060	12,487	29,937
2014/15	50,637	182,996	119,457	12,124	29,290
2015/16	22,559	204,448	138,645	14,334	32,132

Figure 3: Sources of water by percentage (all towns)



	Surface Water	Groundwater	Desalination	Recycling	Bulk Water
2010/11	29.4%	54.9%	8.0%	3.0%	4.7%
2011/12	24.4%	53.4%	14.4%	3.5%	4.4%
2012/13	13.8%	50.4%	25.0%	3.2%	7.6%
2013/14	14.2%	46.0%	28.9%	3.2%	7.7%
2014/15	12.8%	46.4%	30.3%	3.1%	7.4%
2015/16	5.5%	49.6%	33.6%	3.5%	7.8%

Groundwater continues to be the largest single source of water, providing almost half of the total in 2015-16. The second largest source of water is marine desalination but, as discussed later in this report, this only supplies Perth.

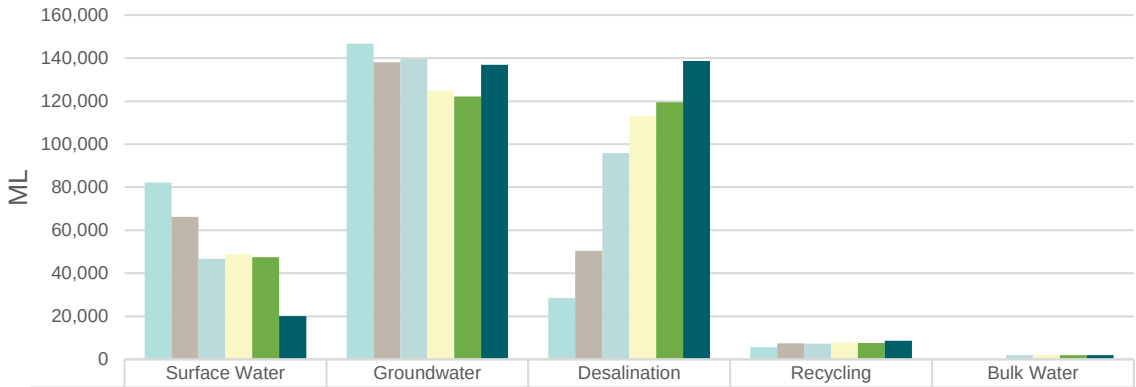
Water sourced from surface water has continued its long-term decline. Between 2010-11 and 2015-16, the total volume of surface water has fallen by 78.5 per cent (or 82,531ML). The decline is the result of the government's strategy to source more water from climate independent sources, such as marine desalination and recycling.[13]

The addition of the 11 new towns has slightly increased the volumes of water sourced from bulk water supply and recycling.

Figure 4 and Figure 5 provide a breakdown of Perth's water sources by volume and percentage respectively.

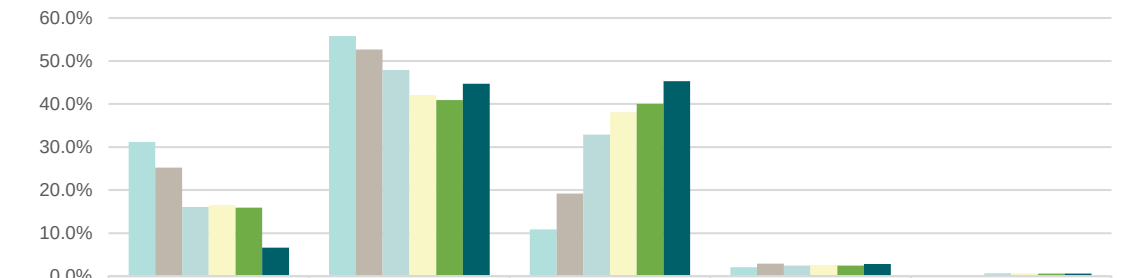
[13] Recycled water is used to reduce the use of drinking water for non-drinking purposes, such as irrigating open spaces.

Figure 4: Sources of water by volume (Perth only)



	Surface Water	Groundwater	Desalination	Recycling	Bulk Water
2010/11	82,117	146,745	28,541	5,636	0
2011/12	66,156	138,030	50,458	7,490	0
2012/13	46,786	139,622	95,770	7,356	1,939
2013/14	49,025	124,850	113,060	7,767	2,121
2014/15	47,519	122,127	119,457	7,564	1,922
2015/16	20,100	136,879	138,645	8,633	1,953

Figure 5: Sources of water by percentage (Perth only)



	Surface Water	Groundwater	Desalination	Recycling	Bulk Water
2010/11	31.2%	55.8%	10.9%	2.1%	0.0%
2011/12	25.2%	52.7%	19.2%	2.9%	0.0%
2012/13	16.1%	47.9%	32.9%	2.5%	0.7%
2013/14	16.5%	42.1%	38.1%	2.6%	0.7%
2014/15	15.9%	40.9%	40.0%	2.5%	0.6%
2015/16	6.6%	44.7%	45.3%	2.8%	0.6%

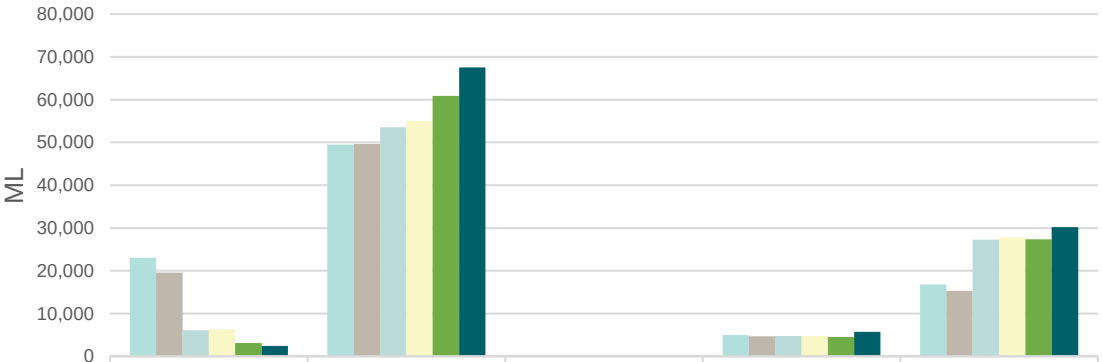
The volume of water sourced from groundwater and marine desalination both increased in 2015-16. Water sourced from groundwater increased by 10.8 per cent, and from marine desalination by 13.8 per cent. The shift to desalination is the result of the Water Corporation's water security strategy designed to tackle the effects of Western Australia's drying climate.

Figure 6 and Figure 7 provide a breakdown of water sources for regional towns by volume and percentage respectively.

Groundwater is the main source of water for regional towns. Water sourced from groundwater was 63.8 per cent of the total in 2015-16, which is the highest in the past six years.

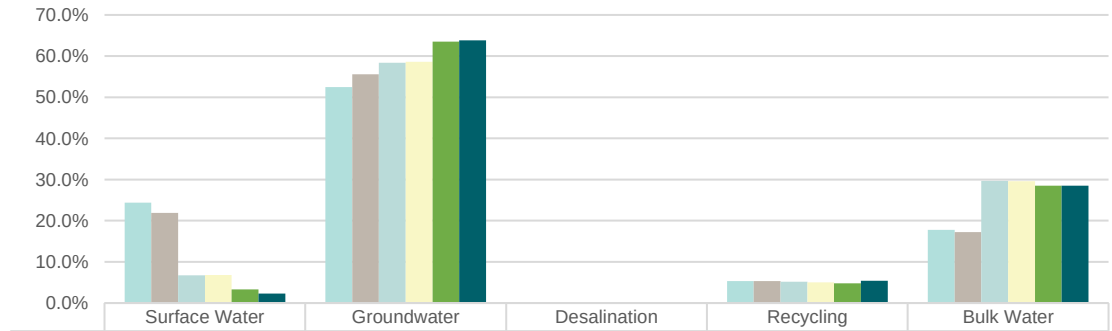
Over the past six years, an increased use of groundwater and bulk water has replaced surface water.[14] In 2015-16, the volume of water sourced from surface water was just over one tenth of the volume in 2010-11. This is further evidence of the move towards more climate resilient sources of water to combat the effects of a drying climate.

Figure 6: Sources of water by volume (Regional towns)



	Surface Water	Groundwater	Desalination	Recycling	Bulk Water
2010/11	22,973	49,463	0	4,972	16,767
2011/12	19,593	49,661	0	4,695	15,315
2012/13	6,099	53,569	0	4,763	27,267
2013/14	6,357	55,007	0	4,720	27,816
2014/15	3,118	60,869	0	4,560	27,368
2015/16	2,459	67,569	0	5,701	30,179

Figure 7: Sources of water by percentage (Regional Towns)



	Surface Water	Groundwater	Desalination	Recycling	Bulk Water
2010/11	24.4%	52.5%	0.0%	5.3%	17.8%
2011/12	21.9%	55.6%	0.0%	5.3%	17.2%
2012/13	6.7%	58.4%	0.0%	5.2%	29.7%
2013/14	6.8%	58.6%	0.0%	5.0%	29.6%
2014/15	3.3%	63.5%	0.0%	4.8%	28.5%
2015/16	2.3%	63.8%	0.0%	5.4%	28.5%

Uses of water supplied

Total urban water supplied

Total urban water supplied is the total metered volume of water (potable or non-potable) supplied to customers over the reporting period, plus estimated non-metered water supplied.

[14] Bulk water is water received from another utility or entity outside the reporting utility's geographic area of responsibility. The bulk water supplied to regional towns is water supplied from Water Corporation sources located outside the town boundary.

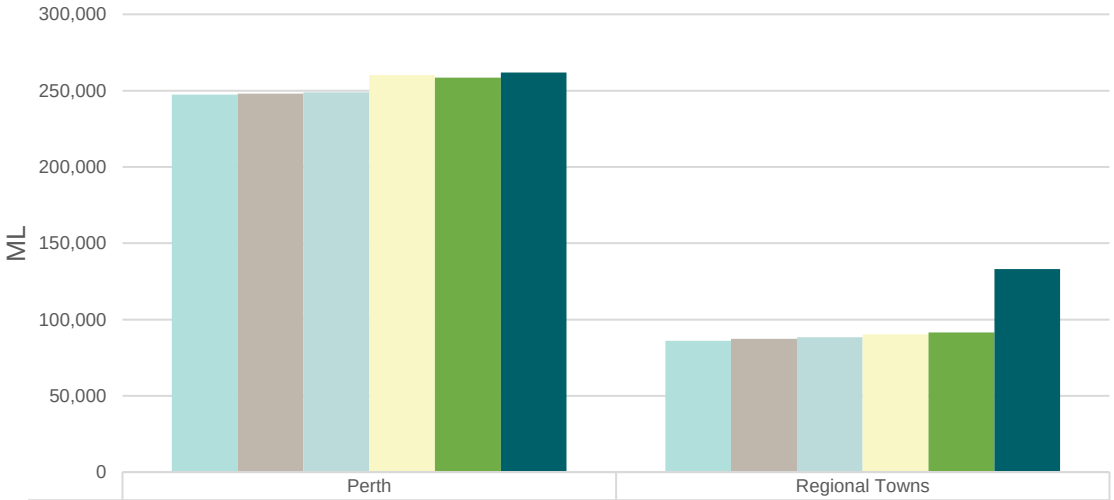
The components of urban water include residential, commercial, municipal and industrial uses and estimated water supplied for other uses. The difference between sourced and supplied water is the real water losses caused by mains breaks and leaks, metering errors, and stored water.

Figure 8 shows the total volume of urban water supplied in Perth and regional towns.

The total volume of urban water supplied in Perth in 2015-16 was the highest in the past six years. The long-term upward trend in Perth's water supply is driven by population growth, and the consequential residential property development.[15]

The volume of urban water supplied in regional towns increased by 45.5 per cent increase in 2015-16. The addition of the 11 new supply schemes, which together account for 7,631ML of urban water supplied, contributed to the increase.

Figure 8: Total urban water supplied



	Perth	Regional Towns
2010/11	247,303	85,980
2011/12	248,021	87,277
2012/13	248,818	88,437
2013/14	260,142	90,273
2014/15	258,498	91,464
2015/16	261,823	133,105

Average annual residential water supplied

Table 1 shows the average annual water supplied per residential property.

Table 1: Average annual water supplied per residential property (kL/property)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	264	250	249	254	244	240
Regional Town Average	338	323	320	318	306	284[16]

[15] Between 2011-12 and 2015-16, the population receiving a water supply in Perth has increased by 10.7 per cent (from 1.782 million to 1.972 million).

[16] The values prior to 2015-16 are different to the values in previous annual Water, Sewerage and Irrigation Performance reports, because the values for the Port Hedland and South Hedland Schemes have been combined into the single Hedland scheme.

In 2015-16, the average annual residential water supplied per property in Perth fell by 1.6 per cent and the regional town average fell by 7.2 per cent.[17]

The average annual residential water supplied in regional towns continued to its long-term downward trend. In 2015-16, average consumption was the lowest in the past six years.

The long term downward trend in residential water consumption is the result of water savings measures across the state.

In 2015-16, Wickham had the highest average annual residential water consumption at 550kL/property, followed by Kununurra at 481kL/property. Lancelin had the lowest average annual residential water consumption at 104kL/property.

Asset data

Water mains

Table 2 shows the total length of installed water mains.

Table 2: Length of water mains (kilometre)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	13,198	13,292	13,673	13,859	14,161	14,431
Regional Towns	5,732	5,817	5,457	5,584	5,719	6,187
Total	18,930	19,109	19,130	19,443	19,881	20,618

The increase in water mains is mostly due to land development. Since 2010-11, the length of installed water mains in Perth has grown by an average of 1.8 per cent per annum.

The length of water mains in regional towns grew by 8.2 per cent in 2015-16. The growth is all due to the 11 additional towns in 2015-16.[18]

The largest increase in the mains network during 2015-16 was in Collie (up by 17.9 per cent), while the length of the networks in Bridgetown/Hester and Pinjarra fell by 15.9 per cent and 11.1 per cent respectively. The Water Corporation commented that the change in reported water mains length for Bridgetown/Hester and Pinjarra was due to the introduction of an improved data reporting process used for the 2015-16 water mains length calculations.

Properties connected per kilometre of water main

The purpose of reporting properties connected per kilometre of water main provides information on the spatial density of properties served by water mains in the Perth metropolitan area and the average spatial density for the regional towns.

Table 3 shows the number of properties served per kilometre of water main.

Table 3: Properties served per kilometre of water main

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16

[17] Excluding the 11 additional towns that have been added in 2014-15 increases the average to 287kL/property, which is still a six year low.

[18] Excluding the 11 additional towns reduces the total to 5,704kilometre.

Perth	56	56	56	57	57	57
Regional Town Average	32	30	33	33	33	34

In 2015-16, the spatial density in Perth was 67.7 per cent higher than the regional town average.

There are some regional towns with high spatial densities, including Mandurah (53 properties per kilometre of main), Newman (48 properties per kilometre main) and Kalgoorlie-Boulder (46 properties per kilometre of main). Harvey/Wokalup had the lowest spatial density (17 properties per kilometre of main).

Bridgetown/Hester and Pinjarra recorded the highest growths in spatial density, up by 20 per cent (to 18 properties per kilometre of main) and 16 per cent (to 29 properties per kilometre of main) respectively.

Water main breaks

The number of water main breaks is influenced by a number of factors, including the type of mains infrastructure (above ground or below ground), the age of the mains, the standard of maintenance carried out by the service provider, and local conditions such as soil types and penetrating tree roots.

Table 4 shows the number of water main breaks per 100 kilometres of main.

Table 4: Water main breaks (per 100 kilometres of main)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth Total	12.7	12.5	13.3	13.0	15.0	12.0
Regional Town Average	18.8	20.2	19.6	21.6	20.9	19.5

Compared to 2014-15, there were 20 per cent fewer mains breaks in Perth. The 12 breaks per 100 kilometres of main recorded in 2015-16 is the lowest in the past six years.

On average, in 2015-16, there were 6.7 per cent fewer water mains breaks per 100 kilometres of main in regional towns.

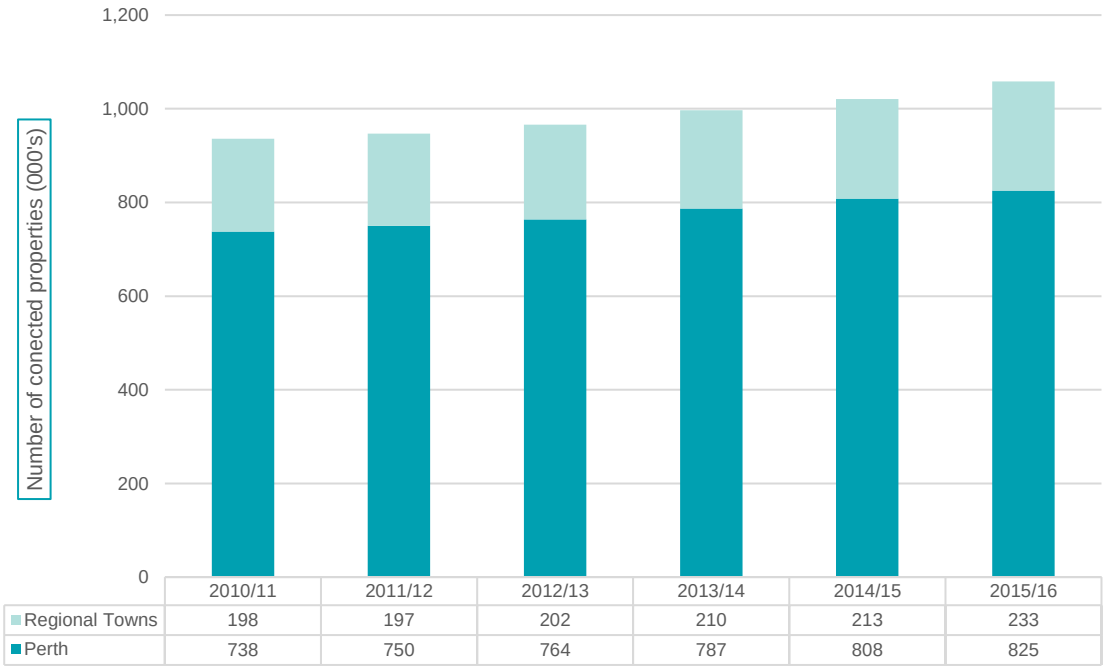
Bridgetown/Hester and Newman recorded the largest increases in water mains breaks, up by 86.7 per cent (to 28 per 100 kilometres of main) and 76.2 per cent (to 37 per 100 kilometres of main). The Water Corporation commented that these results are within historical performance levels and are consistent with the number of leaks and bursts since 2009-10.

Mount Barker and Narrogin recorded the largest number of water main breaks, both at 45 per 100 kilometres of main. Lancelin did not record any mains breaks and Dalyellup recorded two mains breaks per 100 kilometres of main.

Connected properties – water supply

Figure 9 shows the number of properties connected to a water supply in Perth and in the regional towns.

Figure 9: Total connected properties - water supply (000's)



	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Regional Towns	198	197	202	210	213	233
Perth	738	750	764	787	808	825

The number of connected properties in Perth increased by 2.1 per cent, and in the regional towns by 9.4 per cent from 2014-15. Most of the growth in regional town connections was due to the 11 new towns added in 2015-16. Excluding these towns reduces the growth to 1.9 per cent (217,000 connections).

In regional areas, the largest increases in connected properties occurred in Jurien (6.7 per cent) and Margaret River (4.2 per cent).

Customer service

Water quality complaints

Water quality complaints include any complaint about discolouration, taste, odour, stained washing, illness or cloudy water. The level of complaints is normalised to the number of connected properties (reported as number of complaints per 1,000 connected properties).

Table 5 shows the number of water quality complaints per 1,000 connected properties.

Table 5: Water quality complaints (per 1,000 connected properties)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	6.7	6.9	0.1	0.1	0.1	0.1
Regional Town Average	3.6	3.9	0.9	0.1	0.1	0.2

In 2015-16, the number of water quality complaints received from customers in Perth was unchanged at 0.1 per 1,000 connected properties. The average number of complaints from customers in regional towns increased from 0.1 to 0.2 per 1,000 connected properties.

Only six towns recorded complaints in 2015-16 – Albany (0.4), Australind/Eaton (0.3), Bunbury (1.8), Busselton (3.9), Collie (0.3) and Manjimup (2.9).

There was a notable increase in the number of complaints received by Aqwest (Bunbury) and Busselton Water in 2015-16. Complaints to Aqwest increased from 0.1 to 1.8 per 1,000 connected properties (there were 17,100 connected properties in 2015-16), and complaints to Busselton Water increased from 1.7 to 3.9 per 1,000 connected properties (there were 12,900 connected properties in 2015-16).

The large reduction in complaints after 2012-13 was the result of changes in the method of recording complaints made by the Water Corporation, Aqwest and Busselton Water. [19]

Water service complaints

Water service complaints include all complaints related to bursts, leaks, service interruptions, adequacy of service, water pressure and water reliability. The level of complaints is normalised to the number of connected properties (reported as number of complaints per 1,000 connected properties).

Table 6 shows the number of water service complaints per 1,000 connected properties.

Table 6: Water service complaints (per 1,000 connected properties)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	2.7	0.9	0.3	0.3	0.3	0.4
Regional Town Average	2.5	1.3	0.8	0.1	0.2	0.3

In 2015-16, water service complaints from customers in Perth and regional towns both increased slightly.[20]

Average duration of an unplanned water supply interruption

An unplanned water supply interruption occurs where the customer has not received at least 24 hours notification of the interruption to supply. The average time that a customer is without a drinking water supply is a partial indicator of service quality, the condition of the water network, and the standard of network management.

Table 7 details the average duration of unplanned interruptions in minutes per annum.

Table 7: Average duration of an unplanned supply interruption (minutes)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	114.0	118.0	129.7	117.0	96.0	107.9
Regional Town Average	88.3	102.3	91.2	93.8	124.7	153.0

[19] Water Corporation provided the following explanation for the large reduction in water and sewerage complaints: “Historically the Corporation always reported a much higher number of complaints than other water utilities. [….] The Corporation was unique in that it automatically recorded all contacts/call on these subjects as a complaint, unless there was evidence to the contrary. [….] Previously [queries regarding malfunctions] were also automatically treated as complaints. When talking with these customers it is apparent that most people are not actually complaining but simply querying why it is happening. When given an explanation and an [estimated] completion time [….], most customers are satisfied.”

[20] The regional supply scheme average is not affected by the inclusion of the 11 new supply schemes, because there were no complaints received from these customers in 2015-16.

In 2015-16, the average duration of supply interruptions in Perth increased by 12.4 per cent, and in regional towns by 22.7 per cent.

Excluding the 11 towns added in 2015-16 increases the average supply interruption duration for regional towns to 178.6 minutes, or 43.2 per cent higher than 2014-15.

In 2015-16, the highest average regional town unplanned supply interruption durations were in Denmark (2,572 minutes) and Newman (230 minutes). They were the two biggest contributors to the increase in the average duration of supply interruptions in regional towns (excluding the 11 additional towns).

The Water Corporation explained that the high average duration of unplanned supply interruptions in Denmark was mainly because of a property that had a single interruption of 23,187 minutes.[21] As the property was uninhabited and scheduled for demolition, repairing the fault that caused the supply interruption was a low priority. Repairing the fault that caused the supply interruption to the property also required a 17-minute interruption to 134 other customers. This single long interruption significantly increased the average unplanned supply interruption duration for Denmark.

The Water Corporation commented that the high average duration of unplanned supply interruptions in Newman was largely due to three mains faults, which affected 2,211 properties for a total of 752 minutes. Newman's reticulation and distribution infrastructure was designed and built prior to Water Corporation custodianship and does not conform to the normal design principles the Water Corporation employs. The whole town's water must be turned off each time a mains is repaired, as the mains cannot be isolated. The Water Corporation is currently investing in improvements to the system to allow for more flexible isolation of mains in Newman.

In 2015-16, Kambalda (18 minutes) followed by Lancelin (19 minutes) recorded the shortest average unplanned supply interruption durations.

Average frequency of unplanned interruptions

The average frequency of unplanned interruptions measures the average number of times the water supply to a customer is interrupted without at least 24 hours' notice. This is a partial indicator of service quality, reliability and customer satisfaction. The frequency of interruptions is normalised to the number of connected properties (reported as number of complaints per 1,000 connected properties).

Table 8 shows the average frequency of unplanned supply interruptions per 1,000 connected properties.

Table 8: Average frequency of unplanned supply interruptions (per 1,000 connected properties)

	2010-11	2011-12	2012-13	2013-14[22]	2014-15	2015-16
Perth	94.3	104.6	121.7	286.0	314.0	322.5
Regional Town Average	175.5	193.3	167.5	411.0	389.5	477.1

[21] The reported fault that caused water loss was due to blockage in tapping. This led to an unplanned work order to fix the fault.

[22] The increase from 2013-14 onwards follows a change in the definition of the indicator in the *2012-13 National Performance Framework: urban performance reporting indicators and definitions handbook,* to include mains to the meter connections in the calculation.

In 2015-16, the average frequency of unplanned interruptions in Perth and regional towns were both the highest in the past six years, at 322.5 per 1,000 connected properties and 477.1 per 1,000 connected properties respectively.

Excluding the 11 new regional towns added in 2015-16 changes the average frequency of supply interruptions in regional towns to 460.8, up by 48.5 per cent on 2014-15.

In 2015-16, the highest frequency of interruptions was in Newman (3,056 per 1000 properties), followed by Wickham (1,695 per 1,000 properties) and Jurien (1,438 per 1,000 properties).

The lowest frequency of interruptions was in Busselton (18.5 per 1,000 properties), followed by Kambalda (64.0 per 1,000 properties) and Pinjarra (65.0 per 1,000 properties).

Health

Water quality compliance

The total operating area supplied by water service providers is divided into a number of zones. The definition of a zone includes a range of criteria, such as an area served by one treatment plant, the design of the supply network, a geographical area with clear boundaries (town boundaries etc.) or other relevant environmental or health related factors.[23]

Table 9 shows the number of zones, and the percentage of the population resident in those zones, where the water supply complied with the microbiological health standards throughout 2015-16.

Table 9: Zones and percentage population where microbiological compliance was achieved in 2015-16

	Number of zones where microbiological compliance was achieved	Percentage of population where microbiological compliance was achieved
Perth	24	100
Regional Towns	37	100
All Towns	61	100

All 61 zones in the supply schemes covered by this report achieved 100 per cent compliance with the standards in 2015-16. This has been the case since reporting began in this format in 2008-09.

[23] A discussion on the criteria used to define a zone can be found on page 89 of the *2013-14 National Performance Framework: urban performance reporting indicators and definitions handbook*,

Part B: Sewerage performance

Covered sewerage schemes

There are 32 sewerage schemes in Western Australia that service more than 1,000 connected properties.

Perth is largest sewerage supply scheme, with approximately 754,000 connected properties. There are seven sewerage schemes with between 10,000 and 50,000 connected properties. The Water Corporation supplies all except Kalgoorlie-Boulder, which is supplied by the City of Kalgoorlie-Boulder.

The remaining 24 schemes service 1,000 -10,000 connected properties.

Prior to 2015-16, this report covered 22 towns. From 2015-16 onwards the number of covered towns has been expanded to include all of the Water Corporation's towns that supply more than 1,000 -10,000 connected properties, adding 11 new towns. The Water Corporation also advised the ERA that its review of town boundaries has resulted in the Port Hedland and South Hedland Schemes merging to form the Hedland Scheme. The town of Jurien will no longer be included, as it has less than 1,000 connected properties.[24]

Refer to Appendix 3 for further background on water data reporting and Appendix 4 for a full list of the town sewerage schemes covered by this report.

Sewage collected per property

Sewage collected is the total volume of sewage collected by the utility, measured as treatment plant inflow, plus sewage treated by another business on behalf of the water utility, e.g. a wholesaler.

Between 2014-15 and 2015-16, the total volume of sewage collected for sewerage schemes with more than 1,000 connected properties increased from 161.3GL to 162.4GL.

The total volume of sewage collected in Perth decreased by 0.8 per cent from 135.1GL to 134.0GL, while the total volume of sewage collected in regional towns increased by 8.6 per cent from 26.2GL to 28.4GL. The regional town volume growth is mostly due to the 11 additional towns in 2015-16. Without these towns, the total volume of sewage collected in 2015-16 was 26.5GL.

Table 10 shows the annual volume of sewage collected per property.

Table 10: Sewage collected per property (kL)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	182	189	187	190	185	178
Regional Town Average	176	193	185	188	177	130

[24] The number of sewerage connections in Jurien has been below 1,000 for several years, but this was only identified when the number of towns with greater than 1,000 connections were recently reviewed.

Compared to 2014-15, the annual sewage collected per property in Perth and regional towns fell by 3.8 per cent and 26.6 per cent respectively. The volume of sewage collected in Perth and the average regional town in 2015-16 are the lowest in the past six years.

The reduction in sewage collected per property in Perth is the combined result of a slight decrease in total collected volume and a larger increase in connected properties.

The volume of sewage collected per property in the average regional town has fallen because of the 11 new towns added in 2015-16. Excluding the increases attributable to the new towns, the average volume of sewage collected increased to 173.4kL per connected property, which is 2.3 per cent lower than 2014-15.

In 2015-16, Kununurra had the highest volume of sewage collected per property (231kL per property), followed by Wickham (229kL per property) and Harvey-Wokalup (216kL per property). The lowest volume of sewage collected per property was in Exmouth (73kL per property).

Recycled water (Percentage of effluent recycled)

The section discusses the percentage of treated sewage (effluent) used to produce recycled water. Recycled water can be used to irrigate parks and ovals, or for agricultural, industrial or commercial uses.

Table 11 shows the percentage of effluent used to produce recycled water.

Table 11: Recycled water - percentage of effluent recycled

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	7.4	8.0	7.9	7.0	7.0	7.6
Regional town average	48.7	48.4	54.1	54.5	54.0	64.3

Compared to 2014-15, the percentage of sewage effluent used to produce recycled water in Perth and in the average regional town both increased. The increase in the regional town average is because of the 11 new towns added in 2015-16. Excluding these towns reduces the average from 64.3 per cent to 54.6 per cent in 2015-16.

Table 11 shows that the percentage of sewage effluent recycled in Perth and in the average regional town has remained relatively constant over the past six years.

Asset data

Length of sewerage mains and channels (kilometre)

Sewer mains include all trunk, pressure and reticulation mains.

Table 12 shows the length of the sewer mains and channels.

Table 12: Length of sewer mains and channels (kilometre)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	11,198	11,271	11,443	11,637	12,053	12,254
Regional Towns	3,265	3,359	3,336	3,467	3,635	4,233
Total	14,463	14,630	14,779	15,104	15,688	16,487

In 2015-16, the total length of sewer mains and channels in Perth and in regional towns increased, by 1.7 per cent and 16.5 per cent, respectively. The increase in the total length of Perth's sewer mains mirrors the growth in water mains,[25] both driven by land development.

The large growth in regional town sewer mains is due to the 11 new towns added in 2015-16. Excluding the new towns results in regional towns increasing by three per cent (3,743 kilometre).

Properties served per kilometre of sewer main

The purpose of reporting on properties served per kilometre of sewer main is to provide information on the spatial density of properties served by sewer mains in the Perth metropolitan area, and on the average spatial density for the regional town supply schemes.

Table 13 shows the properties served per kilometre of sewer main.

Table 13: Properties served per kilometre of sewer main

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	60	61	61	61	61	62
Regional Town Average	45	41	43	43	41	39

During 2015-16, the number of properties served per kilometre of sewer main in Perth increased by 1.6 per cent. The regional town average spatial density decreased by 4.9 per cent, due to the 11 new towns added in 2015-16. Excluding the new towns results in a decrease of 2.4 per cent (40.1 properties per kilometre of main).

The regional towns with the highest spatial density in 2015-16 were Newman and Broome, at 52 properties per kilometre of main and 48 properties per kilometre of main respectively. The towns with the lowest spatial densities were Dongara-Denison and Margaret River, at 27 properties per kilometre or main and 28 properties per kilometre of main respectively.

Sewer main breaks and chokes

A choke is a confirmed partial or total blockage that may or may not result in a spill from the sewer system to the external environment. The number of breaks and chokes is a partial indicator of customer service and the condition of the sewerage network.

Table 14 shows the number of sewer main breaks and chokes per 100kilometre of main.

[25] Refer to Table 2.

Table 14: Sewer main breaks and chokes (per 100kilometre of main)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	19.3	18.6	16.1	17.0	17.6	18.6
Regional Town Average	27.4	24.9	24.6	24.2	23.6	22.0

Compared to 2014-15, the number of breaks and chokes in Perth increased by 5.7 per cent, and the regional average decreased by 6.8 per cent.

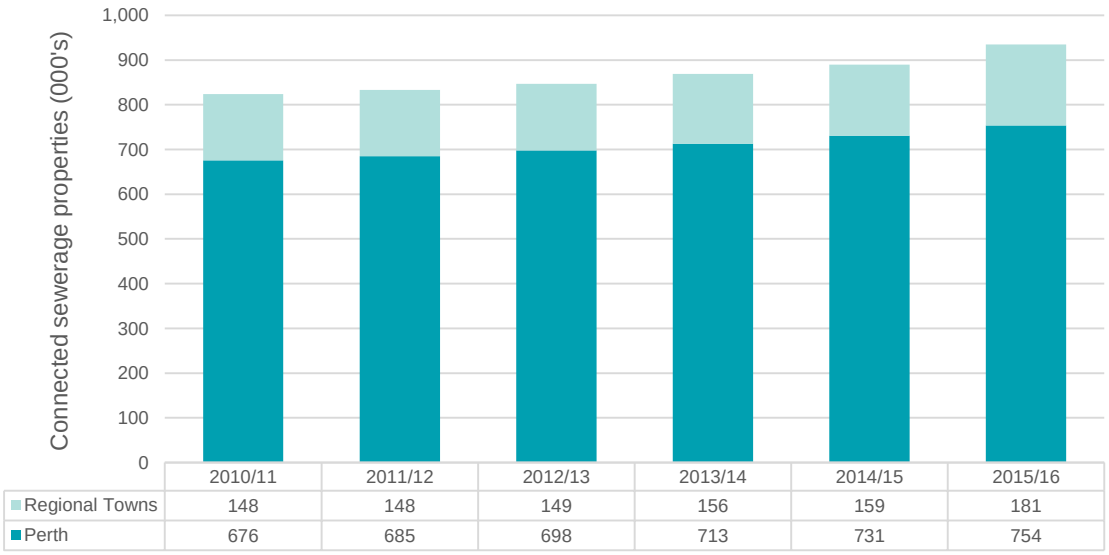
In 2015-16, Wickham and Narrogin recorded the highest levels of sewer main breaks and chokes at 97 and 70 per 100kilometre of main respectively. Busselton, Broome, Derby, and Dongara-Denison all had less than 5 sewer main breaks and chokes per 100kilometre of sewer main.

Customers

Total connected properties – sewerage

Figure 10 shows the number of sewerage connected properties.

Figure 10: Total connected properties - sewerage (000's)



	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Regional Towns	148	148	149	156	159	181
Perth	676	685	698	713	731	754

In 2015-16, the total number of sewerage connected properties in Perth and the regional towns both increased, by 3.1 per cent and 13.8 per cent respectively. Excluding the 11 new supply schemes reduces the regional town growth to 5.1 per cent (164,000 connected properties).

During the six years to 2015-16, the average annual increase in sewerage connected properties in Perth and the regional towns was 2.2 per cent and 2.1 per cent respectively.[26]

Sewerage service complaints

Reporting on sewerage service complains provides information on customer satisfaction with sewerage services, and provides a partial indicator of service quality and reliability.

[26] The regional town average growth figure excludes the 11 new towns.

The level of complaints is normalised to the number of connected properties (reported as number of complaints per 1,000 connected properties).

Sewerage service complaints include complaints concerning sewer blockages and spills, trade waste services, sewerage system reliability, sewage odours and all other sewerage issues.

Table 15 shows the number of sewerage service complaints per 1,000 connected properties.

Table 15: Sewerage service complaints (per 1,000 properties)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	1.4	0.4	0.2	0.1	0.0	0.1
Regional Town Average	2.4	1.2	0.6	0.3	0.2	0.1

In 2015-16, the number of sewerage service complaints in Perth and the regional towns were both 0.1 per 1,000 connections. The regional town average is the lowest in the past six years, continuing the downward trend that began in 2011-12. The large reduction in complaints after 2012-13 was the result of changes in the method of recording complaints by the Water Corporation.[27]

In 2015-16, only seven regional towns recorded any sewerage service complaints: Albany (0.2 per 1,000 properties), Busselton (0.2 per 1,000 properties), Collie (0.3 per 1,000 properties), Geraldton (0.2 per 1,000 properties), Hedland scheme (0.3 per 1,000 properties), Mandurah (0.1 per 1,000 properties) and Narrogin (0.5 per 1,000 properties).

Environment

Comparative sewage treatment levels

Reporting on comparative sewage levels shows the degree to which sewage is treated. This is an important cost driver for a water utility in terms of capital and operating costs. High-level treatment processes are more expensive than lower level processes.[28]

A breakdown of the all-town average percentage of sewage treated to a primary, secondary or tertiary level is shown in Table 16.

Table 16: Percentage of sewage treated by treatment level (all towns)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Primary Treatment	4.2	4.2	4.3	4.2	4.5	4.0
Secondary Treatment	7.3	7.4	7.3	7.1	6.9	7.5
Tertiary Treatment	88.5	88.4	88.5	87.8	88.6	88.5

[27] The reasons for the reduction are discussed in footnote 19 on page 20.

[28] Primary treatment separates suspended matter from effluent, secondary treatment removes up to 85 per cent of dissolved and suspended biological matter, and tertiary treatment disinfects and removes, or reduces the level of, nutrients.

Perth is the only town that treats sewerage to primary level only, which equated to four per cent of Perth's sewage treated in 2015-16. The remaining 96 per cent of Perth's sewage was treated to a tertiary level.

Ten of the 31 regional towns treated 100 per cent of their sewage to a tertiary level in 2015-16, with the remaining 21 towns treating 100 per cent of their sewage to a secondary level.

With 96 per cent of Perth's sewage and 100 per cent of ten regional towns' sewage treated to a tertiary level, this has contributed to the high percentage of sewage treated to a tertiary level for all towns as shown in table 16.

Sewer overflows reported to the environmental regulator

Reporting on sewer overflows reported to the environmental regulator provides information on the level of sewer overflows that may adversely impact on water quality, human health and ecosystem stability (if they occur in sensitive areas). The number of overflows indicates the condition and standard of operation of the sewerage system.

Table 17 shows the number of sewer overflows per 100kilometre of sewer main reported to the environmental regulator.[29]

Table 17: Sewer overflows reported to the environmental regulator (per 100kilometre of sewer main)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth Total	0.2	0.1	0.2	0.2	0.1	0.1
Regional Town Average	1.2	0.5	0.8	0.2	1.4	0.9

The number of reportable overflows varies each year, usually due to weather (such as storms or flooding) rather than poor sewer infrastructure maintenance. The Water Corporation commented that sewer main blockages and high rainfall events were the main cause of its sewer overflows.

[29] Department of Environment Regulation.

Part C: Combined water and sewerage performance

Total recycled water supplied

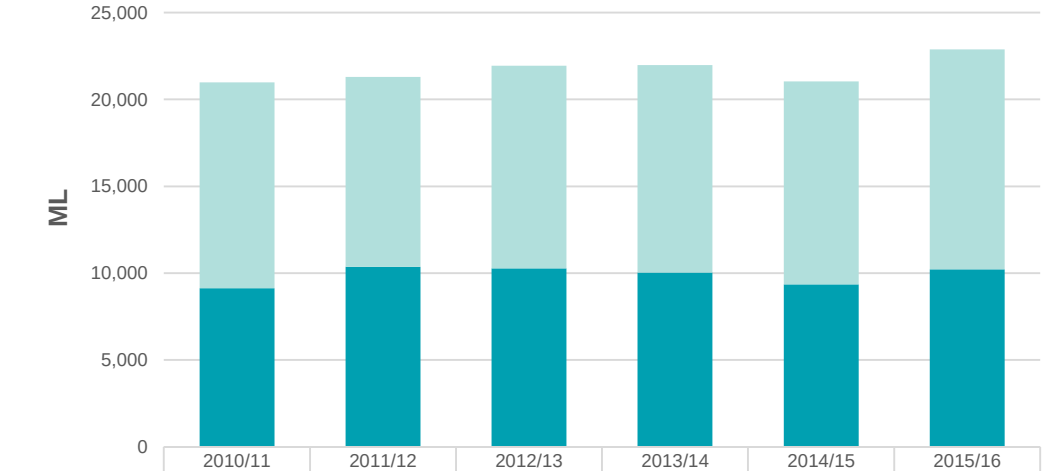
This section examines the supply of recycled water across all 45 water and sewerage supply schemes that supply more than 1,000 connected properties, covering 42 towns in total.

There are 22 towns that have water and sewerage schemes operated by the same service provider (Water Corporation). Three towns have water and sewerage schemes operated by different service providers[30] and the remaining 17 towns have a water supply operated by the Water Corporation.[31]

Total recycled water supplied is the sum of all treated effluent used by either the water utility itself, or supplied to another business, or supplied for urban reuse. The volume of recycled water supplied is an indirect measure of the volume of potable or non-potable water saved, had recycled water not been available.

Figure 11 shows the volume of recycled water supplied in Perth and in regional towns.

Figure 11: Total recycled water supplied (ML)



	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Regional Towns	11,844	10,927	11,666	11,941	11,679	12,665
Perth	9,134	10,370	10,273	10,029	9,354	10,212

In 2015-16, the total volume of recycled water supplied increased by 8.8 per cent, comprising a 9.2 per cent increase in water supplied in Perth and an 8.4 per cent increase in water supplied in regional towns.

Figure 11 shows that for the past six years there has been relatively little variation in the quantity of recycled water supplied in Perth and in regional towns.

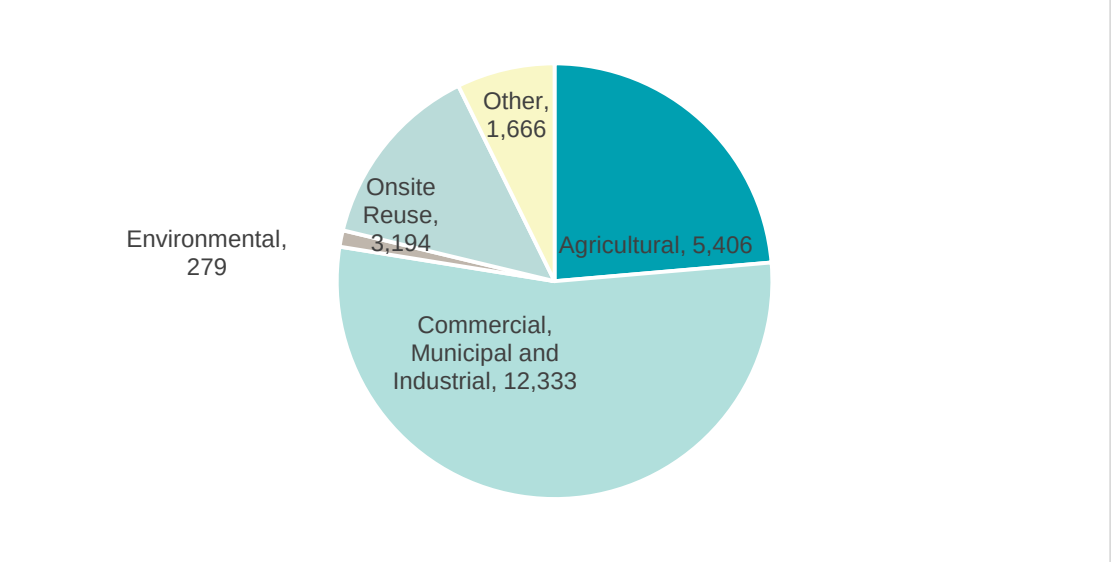
[30] The sewerage schemes in Bunbury and Busselton are operated by the Water Corporation, and the water supply schemes are provided by Aqwest and Busselton Water respectively. In Kalgoorlie-Boulder, the water supply scheme is operated by the Water Corporation and the sewerage scheme is operated by the City of Kalgoorlie-Boulder.

[31] In these towns the sewerage scheme has less than 1,000 connected properties.

Figure 12 provides a breakdown of the uses of recycled water.

The largest use of recycled water was in the commercial, municipal and industrial sector (53.9 per cent) followed by the agricultural sector (23.6 per cent) and on-site reuse[32] (14 per cent).

Figure 12: Uses of recycled water (ML) in 2015-16



Total water and sewerage complaints

This indicator reports on customer satisfaction with water and sewerage services and service quality and reliability. The number of complaints is normalised to the number of connected properties (reported as number of complaints per 1,000 connected properties).

Table 18 presents the combined water and sewerage complaints per 1,000 connected water properties for Perth and the 21 regional towns that have their water and sewerage services provided by the Water Corporation.

Table 18: Total water and sewerage complaints (per 1,000 connected properties)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	12.1	9.5	0.6	1.0	0.8	0.8
Regional Town Average	8.1	6.3	1.0	0.9	0.7	0.7

Between 2014-15 and 2015-16, the number of complaints per 1,000 connected properties in Perth and in the average regional town remained unchanged at 0.8 and 0.7 respectively.

Manjimup recorded the highest number of complaints (2.9 per 1,000 connected properties), followed by Collie (1.6 per 1,000 connected properties) and Narrogin (1.3 per 1,000 connected properties). Jurien, Kambalda, Katanning and Northam did not record any complaints.

[32] Onsite reuse is where recycled effluent is used for processes within a sewage treatment plant, such as cleaning.

Billing and account complaints – water and sewerage

The section discusses the level of billing and account complaints received for each utility's water supply and sewerage services. A billing and account complaint includes all complaints relating to account payment, financial loss or overcharging, billing errors and affordability. The number of complaints is normalised to the number of connected properties (reported as number of complaints per 1,000 connected properties).

Complaints about government pricing policy, tariff structures or when a correctly calculated bill is queried are excluded.

Table 19 presents the number of billing and account complaints per 1,000 connected properties[33] received from customers in Perth and the average regional town.

Table 19: Billing and account complaints - water and sewerage (per 1,000 connected properties)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Perth	1.4	1.4	0.2	0.5[34]	0.3[35]	0.2
Regional Town Average	1.4	1.0	0.2	0.6	0.4	0.4

In 2015-16, the number of billing and account complaints received from customers in Perth decreased from 0.3 to 0.2 per 1,000 connected properties, while the regional town average was unchanged.

Kalbarri recorded the highest number of billing and account complaints (1.2 per 1,000 connected properties), followed by Bunbury (1.1 per 1,000 properties). There were 27 regional towns that did not record any billing and account complaints.

Connect time to a call centre operator

This section discusses the proportion of calls answered by an operator within 30 seconds, where the customer has selected an option to speak with an operator.[36]

Water Corporation is the only water service provider that operates a call centre that is capable of recording performance data. Its Perth call centre handles calls from across the state.

Figure 13 shows the proportion of customer calls to the Water Corporation call centre answered within 30 seconds.

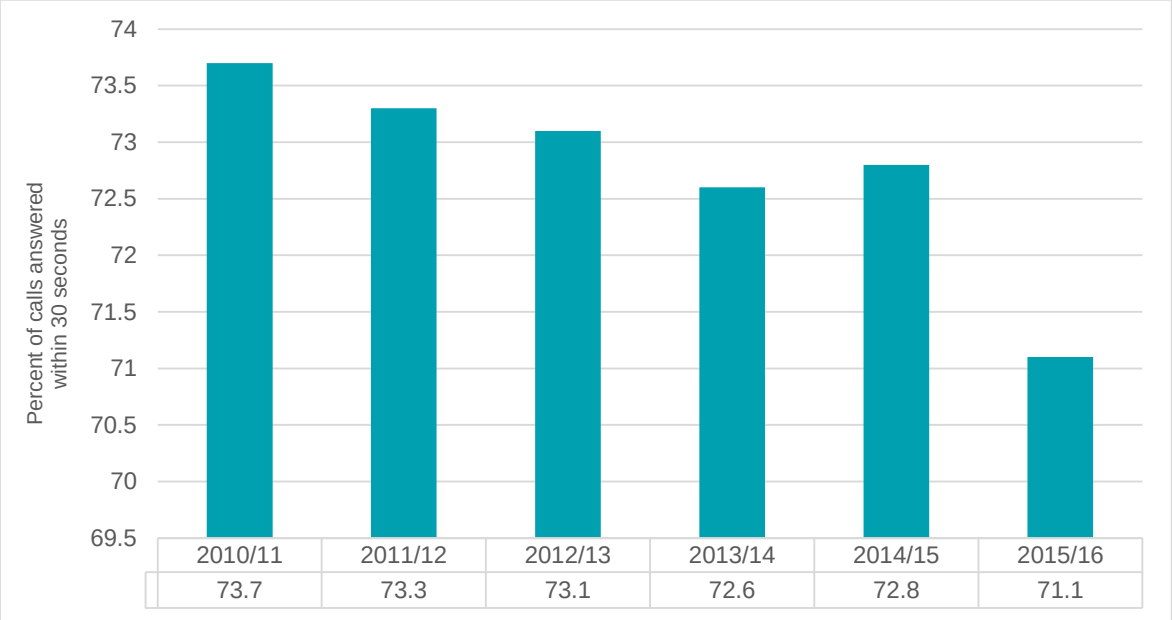
[33] The towns that have both water and sewerage supply schemes operated by the Water Corporation use the number of water connected properties to normalise the complaints.

[34] One billing and account complaint for water and sewerage per 1,000 connected properties in 2013-14 reported in past annual reports was not accurate.

[35] Zero billing and account complaints for water and sewerage per 1,000 connected properties in 2014-15 reported in the last annual report was not accurate.

[36] Utilities that operate a call centre capable of automatically recording operator responsiveness must report on this indicator. Utilities that have other telephone systems to handle customer calls may report this indicator on a voluntary basis.

Figure 13: Percentage of Water Corporation calls answered within 30 seconds



In 2015-16, 71.1 per cent of telephone calls to a Water Corporation operator were answered within 30 seconds, which is the lowest in the past six years. The percentage of calls answered within 30 seconds has followed an overall downward trend over the past six years.

Part D: Irrigation performance

Irrigator performance data included in this report

This section of the report discusses the performance of Western Australian irrigators. The two irrigators covered by this report are:

- Ord Irrigation Cooperative Ltd (Ord Irrigation); and
- South West Irrigation Management Cooperative (Harvey Water).

There are another two irrigators licensed by the ERA (Gascoyne Water Cooperative and Preston Valley Irrigation Cooperative). However, they are excluded from the report because of the relatively small scale of their operations compared to Ord Irrigation and Harvey Water.[37]

Volume of water supplied

Table 20 shows the total volume of water supplied for irrigation purposes.

Table 20: Volume of water supplied for irrigation (ML)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Harvey Water	59,876	46,096	41,807	56,310	52,397	53,456
Ord Irrigation Cooperative	117,369	118,816	100,637	95,772	146,541	133,699
Total	177,245	164,912	142,444	152,082	198,938	187,155

The volume of water supplied by Harvey Water increased by two per cent in 2015-16. Prior to 2013-14, the volume of water supplied was on a downward trend, because of reductions in Harvey Water's water allocations due to dry weather conditions and a contraction in the local dairy industry. A higher water allocation in 2013-14 reversed the downward trend, but the gains of 2013-14 have not continued into 2014-15 and 2015-16.

The volume of water supplied by Ord Irrigation decreased by 8.8 per cent in 2015-16. Despite the reduction, the supplied volume in 2015-16 was still much higher than the volumes supplied in the four years prior to 2014-15.

[37] Gascoyne Water and Preston Valley Irrigation Cooperative provide a small set of performance data, which is available on the ERA website:
https://www.erawa.com.au/water1/water-licensing/small-supplier-performance-data

Customer delivery points

Table 21 shows the number of customer service (water delivery) points on the irrigation networks.

Table 21: Number of customer service points on irrigation networks

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Harvey Water	1,744	1,760	1,751	1,759	1,786	1,767
Ord Irrigation Cooperative	283	270	271	269	268	269
Total	2,027	2,030	2,022	2,038	2,054	2,036

There was a 1.1 per cent reduction in the number of connection points on the Harvey Water networks in 2015-16, while the connection points on the Ord Irrigation networks were almost unchanged.

Carrier length (Gravity irrigation)

Table 22 shows the length of the pipes and channels in the gravity irrigation networks in 2015-16.

Table 22: Carrier length - gravity irrigation networks in 2015-16 (kilometre)

	Lined and unlined channel	Pipe	Total carrier length
Harvey Water	256	495	**751**
Ord Irrigation Cooperative	125	0	**125**
Total	381	495	**876**

Complaints

Table 23 shows the number of customer service complaints received by Ord Irrigation and Harvey Water.

Table 23: Number of customer service complaints

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Harvey Water	0	0	0	0	0	1
Ord Irrigation Cooperative	2	0	3	2	1	2

Over the past six years, the number of complaints received by both irrigators has been low. In fact, the single complaint received by Harvey Water in 2015-16 is the first time it has received a complaint over the past six years.

Appendix 1: Additional data

Table 24: Total urban water supplied (ML)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC towns						
Albany Scheme	3,701	3,702	3,609	3,953	4,445	4,460
Australind / Eaton	3,490	3,981	4,283	4,544	4,716	4,488
Bunbury (AQWEST)	5,686	5,491	5,528	5,799	5,830	6,654
Busselton Water	3,750	3,800	3,840	4,160	4,275	4,438
Geraldton	8,097	7,826	9,014	9,122	9,061	9,023
Kalgoorlie-Boulder	8,553	8,167	8,312	7,774	7,190	7,094
Mandurah Scheme	11,723	11,311	11,730	12,523	12,550	12,956
Perth	247,303	248,021	248,818	260,142	258,498	261,823
Minor towns						
Augusta	-	-	-	-	-	240
Bridgetown / Hester	356	504	437	467	487	563
Broome	5,525	5,737	5,836	6,021	5,788	6,405
Capel	-	-	-	-	-	335
Carnarvon	1,342	1,431	1,421	1,459	1,415	1,308
Collie	2,072	1,099	1,073	1,146	1,108	1,115
Dalyellup	-	-	-	-	-	1,161
Denmark	354	498	465	531	443	440
Derby	907	1,342	1,208	1,286	1,335	1,425
Dongara Denison	636	903	849	833	906	885
Donnybrook	-	-	-	-	-	411
Dunsborough / Yallingup	1,296	1,447	1,552	1,554	1,663	1,561
Esperance	1,590	1,794	1,708	1,806	1,744	1,652
Exmouth	-	-	-	-	-	1,041
Harvey / Wokalup	479	568	546	686	584	661
Jurien	259	376	374	396	387	372
Kalbarri	-	-	-	-	-	506
Kambalda	-	-	-	-	-	1,908
Karratha	5,266	5,162	5,530	4,934	5,661	5,692
Katanning	1,056	1,473	793	753	752	1,271
Kununurra	1,159	1,406	1,337	1,306	1,332	1,753
Lancelin	-	-	-	-	-	153
Manjimup	698	797	669	715	713	706
Margaret River Scheme	1,139	1,207	1,351	1,311	1,432	1,663
Merredin	627	625	746	567	565	559
Mount Barker	-	-	-	-	-	433
Narrogin	830	746	778	800	727	737
Newman	1,791	1,832	2,301	2,117	2,156	2,019
Northam	1,233	1,211	1,315	1,474	1,285	1,331
Pinjarra	2,389	2,035	1,012	1,215	1,105	1,110

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Hedland Scheme[38]	9,454	10,343	10,357	10,498	11,333	12,395
Waroona-Hamel	-	-	-	-	-	401
Wickham	-	-	-	-	-	1,042
York	522	463	463	523	475	466
Total	**333,283**	**335,298**	**337,255**	**350,414**	**349,962**	**394,928**
Total (excluding Perth)	**85,980**	**87,277**	**88,437**	**90,272**	**91,464**	**133,105**

[38] Prior to 2015/16, values are reported for Port Hedland and South Hedland. The Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

Table 25: Average annual residential water supplied (kL/property)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC towns						
Albany Scheme	190	188	179	188	188	178
Australind / Eaton	347	334	338	337	328	315
Bunbury (AQWEST)	266	255	254	267	264	238
Busselton Water	285	280	272	287	284	266
Geraldton	357	343	327	321	305	306
Kalgoorlie-Boulder	348	310	335	306	320	295
Mandurah Scheme	252	239	239	241	237	234
Perth	264	250	249	254	244	240
Minor towns						
Augusta	-	-	-	-	-	161
Bridgetown / Hester	191	230	183	194	194	189
Broome	512	499	504	448	446	469
Capel	-	-	-	-	-	282
Carnarvon	356	387	369	365	358	343
Collie	265	241	227	262	244	238
Dalyellup	-	-	-	-	-	358
Denmark	146	145	147	161	144	136
Derby	466	485	448	432	422	454
Dongara Denison	323	310	266	266	258	268
Donnybrook	-	-	-	-	-	263
Dunsborough / Yallingup	297	282	272	292	290	277
Esperance	236	231	228	239	236	220
Exmouth	-	-	-	-	-	408
Harvey / Wokalup	300	287	272	290	276	277
Jurien	181	180	177	180	183	177
Kalbarri	-	-	-	-	-	257
Kambalda	-	-	-	-	-	217
Karratha	502	460	473	444	462	445
Katanning	270	252	245	263	238	221
Kununurra	532	531	493	480	504	481
Lancelin	-	-	-	-	-	104
Manjimup	214	200	189	193	192	186
Margaret River Scheme	227	233	209	229	222	222
Merredin	302	280	275	271	258	237
Mount Barker	-	-	-	-	-	218
Narrogin	276	226	247	254	234	233
Newman	516	501	565	506	437	459
Northam	290	243	273	281	247	255
Pinjarra	284	285	280	298	286	281
Hedland Scheme[39]	1,084	1,012	1,047	985	890	428

[39] Prior to 2015/16, values are reported for Port Hedland and South Hedland. The Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Waroona-Hamel	-	-	-	-	-	266
Wickham	-	-	-	-	-	550
York	319	252	270	260	247	243
Average	**335**	**321**	**318**	**316**	**304**	**283**
Average (excluding Perth)	**338**	**323**	**320**	**318**	**306**	**284**

Table 26: Water main breaks (per 100kilometre of water main)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC towns						
Albany Scheme	12.0	8.1	13.8	12.0	11.3	11.4
Australind / Eaton	5.6	7.1	5.2	5.0	4.6	7.4
Bunbury (AQWEST)	10.3	10.2	12.0	10.0	12.0	13.5
Busselton Water	5.0	3.3	6.6	8.0	8.2	7.2
Geraldton	28.9	20.0	27.7	23.0	26.8	25.5
Kalgoorlie-Boulder	19.9	16.7	13.1	17.0	20.8	20.3
Mandurah Scheme	5.2	6.8	6.3	4.0	4.2	3.6
Perth	12.7	12.5	13.3	13.0	15.0	12.0
Minor towns						
Augusta	-	-	-	-	-	16
Bridgetown / Hester	28.0	27.7	17.6	21	15	28
Broome	21.8	24.9	8.2	6	9	5
Capel	-	-	-	-	-	13
Carnarvon	11.9	14.8	23.2	17	32	19
Collie	24.6	28.7	30.8	35	20	24
Dalyellup	-	-	-	-	-	2
Denmark	13.3	16.1	7.5	14	28	8
Derby	18.9	25.9	7.4	22	23	31
Dongara Denison	27.6	33.9	13.8	26	38	38
Donnybrook	-	-	-	-	-	11
Dunsborough / Yallingup	14.0	11.9	7.9	17	9	12
Esperance	18.8	23.7	15.6	25	11	12
Exmouth	-	-	-	-	-	34
Harvey / Wokalup	9.7	15.3	11.0	5	8	9
Jurien	4.9	10.2	4.1	16	16	16
Kalbarri	-	-	-	-	-	9
Kambalda	-	-	-	-	-	36
Karratha	28.9	25.9	20.5	18	33	25
Katanning	21.2	17.8	27.8	24	20	28
Kununurra	27.9	27.0	11.1	30	16	8
Lancelin	-	-	-	-	-	0
Manjimup	15.9	22.5	24.2	21	16	21
Margaret River Scheme	7.0	6.9	9.2	8	11	13
Merredin	20.8	31.2	42.3	58	59	35
Mount Barker	-	-	-	-	-	45
Narrogin	22.3	25.4	37.5	37	40	45
Newman	10.1	39.6	42.6	23	21	37
Northam	20.5	23.1	37.8	54	28	28
Pinjarra	14.1	7.0	8.3	16	13	5
Hedland scheme[40]	81.7	80.9	83.0	70	67	41

[40] Prior to 2015/16, values are reported for Port Hedland and South Hedland. Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Waroona-Hamel	-	-	-	-	-	9
Wickham	-	-	-	-	-	20
York	32.7	14.9	30.1	26	27	29
Average	**19.2**	**20.6**	**20.0**	**22.0**	**21.4**	**19.3**
Average (excluding Perth)	**19.5**	**20.9**	**20.2**	**22.3**	**21.6**	**19.5**

Table 27: Total connected properties – water supply (000's)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC Towns						
Albany Scheme	15.1	14.9	15.3	16.0	15.6	16.2
Australind / Eaton	10.0	10.3	10.6	11.0	11.3	11.5
Bunbury (AQWEST)	16.0	16.0	16.6	17.0	16.91	17.1
Busselton Water	11.1	11.4	11.6	12.0	12.5	12.9
Geraldton	17.0	17.2	18.1	19.0	18.8	19.0
Kalgoorlie-Boulder	14.0	14.1	14.2	14.0	14.5	14.6
Mandurah Scheme	41.5	42.2	43.0	45.0	46.1	47.3
Perth	738.0	750.0	763.5	787.0	808.0	825.3
Minor Towns						
Augusta	-	-	-	-	-	1.4
Bridgetown / Hester	1.5	1.6	1.6	1.6	1.7	1.7
Broome	6.8	6.9	7.1	7.5	7.6	7.7
Capel	-	-	-	-	-	1.1
Carnarvon	2.6	2.6	2.6	2.6	2.6	2.6
Collie	3.7	3.7	3.7	3.7	3.7	3.8
Dalyellup	-	-	-	-	-	2.7
Denmark	2.1	2.1	2.1	2.3	2.4	2.4
Derby	1.6	1.7	1.8	1.9	1.9	1.9
Dongara Denison	1.7	1.7	1.7	1.7	1.8	1.8
Donnybrook	-	-	-	-	-	1.3
Dunsborough / Yallingup	4.3	4.4	4.7	5.0	5.1	5.3
Esperance	5.3	5.4	5.4	5.5	5.5	5.6
Exmouth	-	-	-	-	-	1.8
Harvey / Wokalup	1.5	1.5	1.5	1.5	1.5	1.5
Jurien	1.5	1.4	1.5	1.5	1.5	1.6
Kalbarri	-	-	-	-	-	1.6
Kambalda	-	-	-	-	-	1.4
Karratha	8.6	7.5	7.8	8.5	8.6	8.6
Katanning	1.9	1.9	1.9	1.9	1.9	1.9
Kununurra	1.9	2.0	2.1	2.1	2.1	2.2
Lancelin	-	-	-	-	-	1.0
Manjimup	2.4	2.4	2.4	2.4	2.4	2.4
Margaret River Scheme	4.3	4.3	4.4	4.6	4.8	5.0
Merredin	1.7	1.6	1.6	1.6	1.6	1.6
Mount Barker	-	-	-	-	-	1.1
Narrogin	2.2	2.2	2.2	2.3	2.3	2.3
Newman	4.2	2.4	2.5	2.9	2.9	2.9
Northam	3.4	3.4	3.5	3.5	3.6	3.6
Pinjarra	2.0	2.0	2.1	2.2	2.2	2.3
Hedland scheme[41]	6.9	6.6	6.9	7.4	8.0	8.1

[41] Prior to 2015/16, values are reported for Port Hedland and South Hedland. Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Waroona-Hamel	-	-	-	-	-	1.2
Wickham	-	-	-	-	-	1.1
York	1.6	1.6	1.6	1.6	1.6	1.6
Total	**936.4**	**947.0**	**965.6**	**996.7**	**1021.0**	**1058.0**
Total (excluding Perth)	**198.4**	**197.0**	**202.1**	**209.7**	**213.0**	**232.7**

Table 28: Water service complaints (per 1,000 customers)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC towns						
Albany Scheme	2.1	0.8	0.2	0.2	0.2	0.4
Australind / Eaton	2.2	1.3	0.2	0.2	0.1	0.3
Bunbury (AQWEST)	4.3	7.3	5.5	0.2	0.2	0.3
Busselton Water	0.8	0.4	0.2	0.2	0.0	0.4
Geraldton	3.6	1.6	1.3	0.6	0.5	0.6
Kalgoorlie-Boulder	2.1	0.4	0.1	0.0	0.2	0.0
Mandurah Scheme	1.3	0.5	0.0	0.0	0.0	0.1
Perth	2.7	0.9	0.3	0.3	0.0	0.4
Minor towns						
Augusta	-	-	-	-	-	0.0
Bridgetown / Hester	1.3	0.6	1.3	0.0	0.0	3.5
Broome	1.9	0.9	0.3	0.8	0.1	0.3
Capel	-	-	-	-	-	0.0
Carnarvon	1.9	1.9	0.0	0.0	0.0	0.0
Collie	2.7	1.9	3.0	0.3	0.3	0.5
Dalyellup	-	-	-	-	-	0.0
Denmark	1.4	1.4	0.0	0.0	1.3	0.0
Derby	0.6	0.0	0.0	0.0	0.0	0.0
Dongara Denison	3.6	0.6	0.0	0.0	1.1	0.0
Donnybrook	-	-	-	-	-	0.8
Dunsborough / Yallingup	2.3	0.5	0.2	0.0	0.0	0.2
Esperance	3.4	6.3	0.6	0.2	0.2	0.2
Exmouth	-	-	-	-	-	1.1
Harvey / Wokalup	6.9	0.7	1.4	0.0	0.0	0.7
Jurien	2.0	0.0	0.0	0.0	0.0	0.0
Kalbarri	-	-	-	-	-	0.0
Kambalda	-	-	-	-	-	0.0
Karratha	1.7	0.8	0.1	0.0	0.0	0.5
Katanning	2.6	0.5	0.0	0.0	0.0	0.0
Kununurra	1.1	2.5	0.0	0.0	0.0	0.0
Lancelin	-	-	-	-	-	0.0
Manjimup	0.4	0.4	0.0	0.0	0.0	0.0
Margaret River Scheme	0.7	0.2	0.2	0.0	0.8	0.2
Merredin	4.2	2.4	1.2	0.0	0.6	0.0
Mount Barker	-	-	-	-	-	0.0
Narrogin	3.6	0.4	0.0	0.0	0.0	0.9
Newman	1.7	0.8	0.4	0.7	0.0	0.3
Northam	1.5	1.5	0.0	0.3	0.3	0.0
Pinjarra	1.0	2.0	0.0	0.0	0.0	0.0
Hedland scheme[42]	5.8	3.0	4.6	0.0	1.5	0.0

[42] Prior to 2015/16, values are reported for Port Hedland and South Hedland. Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Waroona-Hamel	-	-	-	-	-	0.0
Wickham	-	-	-	-	-	0.0
York	5.0	0.0	3.8	0.0	0.0	0.0
Average	**2.5**	**1.4**	**0.8**	**0.1**	**0.2**	**0.3**
Average (excluding Perth)	**2.5**	**1.4**	**0.8**	**0.1**	**0.2**	**0.3**

Table 29: Average duration of unplanned water supply interruption (minutes)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC towns						
Albany Scheme	121.0	145.0	123.8	123.0	120.8	132.0
Australind / Eaton		86.0	75.7	78.0	72.2	56.0
Bunbury (AQWEST)	50.0	61.8	56.7	48.0	43.0	61.0
Busselton Water	41.6	79.5	2.8	3.0	197.5	85.7
Geraldton	102.0	193.0	139.7	110.0	103.4	120.0
Kalgoorlie-Boulder	28.0	36.0	33.9	56.0	39.6	62.4
Mandurah Scheme	34.0	79.0	64.3	68.0	61.2	49.9
Perth	114.0	118.0	129.7	117.0	96.0	107.9
Minor towns						
Augusta	-	-	-	-	-	197.4
Bridgetown / Hester	120.0	154.0	66.0	142	150	104.0
Broome	74.0	143.0	35.0	117	40	29.0
Capel						59.0
Carnarvon	96.0	41.0	49.0	45	38	38.0
Collie	127.0	177.0	148.0	95	78	96.0
Dalyellup	-	-	-	-	-	61.0
Denmark	98.0	159.0	95.0	90	244	2,572.0
Derby	38.0	42.0	31.0	34	22	29.0
Dongara Denison	105.0	62.0	85.0	69	187	52.0
Donnybrook	-	-	-	-	-	139.0
Dunsborough / Yallingup	73.0	83.0	88.0	48	64	83.0
Esperance	65.0	83.0	90.0	149	83	105.0
Exmouth	-	-	-	-	-	75.0
Harvey / Wokalup	118.0	128.0	78.0	164	132	80.0
Jurien	74.0	54.0	97.0	42	55	73.0
Kalbarri	-	-	-	-	-	46.0
Kambalda	-	-	-	-	-	18.0
Karratha	108.0	41.0	60.0	54	52	61.0
Katanning	261.0	219.0	160.0	114	150	191.0
Kununurra	47.0	34.0	36.0	62	41	30.0
Lancelin	-	-	-	-	-	19.0
Manjimup	55.0	60.0	75.0	59	57	72.0
Margaret River Scheme	42.0	71.0	101.0	125	82	92.0
Merredin	58.0	83.0	86.0	97	250	139.0
Mount Barker	-	-	-	-	-	149.0
Narrogin	182.0	170.0	125.0	98	189	166.0
Newman	96.0	98.0	106.0	152	115	230.0
Northam	108.0	81.0	143.0	136	151	182.0
Pinjarra	62.0	73.0	47.0	56	84	117.0
Hedland scheme[43]	157.0	166.0	191.0	171	520	63.0

[43] Prior to 2015/16, values are reported for Port Hedland and South Hedland. Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Waroona-Hamel	-	-	-	-	-	61.0
Wickham	-	-	-	-	-	91.0
York	107.0	168.0	162.0	137	318	187.0
Average	**89.1**	**102.8**	**92.4**	**94.5**	**123.7**	**151.9**
Average (excluding Perth)	**88.3**	**102.3**	**91.2**	**93.8**	**124.7**	**153.0**

Table 30: Average frequency of unplanned interruptions

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC towns						
Albany Scheme	136.2	161.8	136.3	292.0	253.2	326.5
Australind / Eaton	47.0	64.8	40.4	246.0	268.3	467.7
Bunbury (AQWEST)	144.9	168.4	163.9	210.0	204.0	148.3
Busselton Water	1.1	1.0	127.5	175.0	165.0	18.5
Geraldton	262.7	289.7	604.3	829.0	1,097.4	940.7
Kalgoorlie-Boulder	54.8	65.6	21.9	357.0	398.0	524.9
Mandurah Scheme	47.8	62.6	35.9	123.0	152.0	181.1
Perth	94.3	104.6	121.7	286.0	314.0	322.6
Minor towns						
Augusta	-	-	-	-	-	127.0
Bridgetown / Hester	192.0	211.0	54.8	498.1	346	451.0
Broome	406.0	457.0	123.2	616.9	452	225.0
Capel	-	-	-	-	-	204.0
Carnarvon	100.0	68.0	35.9	131.3	154	165.0
Collie	231.0	249.0	281.7	332.7	334	126.0
Dalyellup	-	-	-	-	-	295.0
Denmark	130.0	440.0	297.1	351.3	518	520.0
Derby	62.0	191.0	90.6	287.4	179	502.0
Dongara Denison	423.0	197.0	294.1	1,290.8	2,348	847.0
Donnybrook	-	-	-	-	-	508.0
Dunsborough / Yallingup	162.0	198.0	189.2	401.2	204	255.0
Esperance	259.0	198.0	146.2	335.2	332	451.0
Exmouth	-	-	-	-	-	519.0
Harvey / Wokalup	189.0	275.0	85.9	221.9	158	270.0
Jurien	208.0	83.0	58.2	286.9	158	1,438.0
Kalbarri	-	-	-	-	-	312.0
Kambalda	-	-	-	-	-	64.0
Karratha	172.0	624.0	239.9	283.0	272	376.0
Katanning	136.0	207.0	252.1	335.1	427	813.0
Kununurra	206.0	56.0	55.8	287.1	376	168.0
Lancelin	-	-	-	-	-	74.0
Manjimup	64.0	60.0	132.9	199.7	149	132.0
Margaret River Scheme	45.0	30.0	32.3	96.0	142	155.0
Merredin	263.0	203.0	131.9	277.9	373	154.0
Mount Barker	-	-	-	-	-	465.0
Narrogin	111.0	136.0	179.5	288.4	175	256.0
Newman	299.0	403.0	248.5	1,734.8	485	3,056.0
Northam	83.0	45.0	44.7	232.8	180	369.0
Pinjarra	142.0	94.0	69.4	150.7	279	65.0
Hedland scheme[44]	609.0	454.0	710.8	1,297.9	832	336.0

[44] Prior to 2015/16, values are reported for Port Hedland and South Hedland. Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Waroona-Hamel	-	-	-	-	-	244.0
Wickham	-	-	-	-	-	1,695.0
York	78.0	105.0	139.0	160.2	274	88.0
Average	**172.9**	**190.4**	**166.0**	**406.9**	**387.1**	**444.1**
Average (excluding Perth)	**175.5**	**193.3**	**167.5**	**411.0**	**389.5**	**447.1**

Table 31: Sewage collected per property (kL per property)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC towns						
Albany	185	188	180	182	170	178
Australind / Eaton	160	159	163	160	159	156
Bunbury / Dalyellup	175	178	173	181	185	182
Busselton	175	178	149	148	146	144
Geraldton	153	157	153	152	149	143
Kalgoorlie/Boulder	180	179	177	166	156	149
Mandurah	136	144	141	145	144	143
Perth	182	189	187	190	185	178
Minor towns						
Broome	200	251	244	197	186	186
Carnarvon	-	-	-	-	-	0
Collie	169	194	175	201	164	154
Denmark	-	-	-	-	-	0
Derby	-	-	-	-	-	0
Dongara-Denison	-	-	-	-	-	0
Dunsborough	144	142	140	146	121	123
Esperance	177	202	191	192	168	157
Exmouth	-	-	-	-	-	73
Harvey-Wokalup	-	-	-	-	-	0
Jurien	73	73	89	101	96	-
Kalbarri	-	-	-	-	-	102
Kambalda	-	-	-	-	-	156
Karratha	201	261	229	211	211	195
Katanning	142	148	166	169	171	164
Kununurra	318	324	286	306	256	231
Manjimup	184	237	183	211	210	213
Margaret River scheme	-	-	-	-	-	151
Merredin	131	176	152	139	149	157
Narrogin	156	205	204	204	194	185
Newman	-	-	-	not applic	not applic	not applic
Northam	156	130	157	191	187	163
Pinjarra	-	-	-	-	-	118
Hedland scheme[45]	312	338	350	352	314	185
Wickham	-	-	-	-	-	229
Average	**177**	**193**	**185**	**188**	**177**	**132**
Average (excluding Perth)	**176**	**193**	**185**	**188**	**177**	**130**

[45] Prior to 2015/16, values are reported for Port Hedland and South Hedland. Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

Table 32: Recycled water (Percentage of effluent recycled)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC towns						
Albany	100.0	100.0	100.0	100.0	100.0	100.0
Australind / Eaton	100.0	100.0	100.0	100.0	100.0	101.3
Bunbury / Dalyellup	5.0	3.9	3.8	5.0	3.2	3.4
Busselton	20.0	18.0	16.6	15.0	14.0	13.3
Geraldton	14.7	13.6	13.8	13.0	12.7	12.3
Kalgoorlie/Boulder	100.0	100.0	72.4	56.0	97.0	64.8
Mandurah	1.5	2.4	2.1	2.0	2.4	2.4
Perth	7.4	8.0	7.9	7.0	7.0	7.6
Minor towns						
Broome	20.0	18.0	102.0	100.0	100.0	100.0
Carnarvon	-	-	-	-	-	89.0
Collie	0.0	0.0	0.0	0.0	0.0	0.0
Denmark	-	-	-	-	-	0.0
Derby	-	-	-	-	-	115.7
Dongara-Denison	-	-	-	-	-	88.1
Dunsborough	78.0	100.0	100.0	100.0	100.0	100.0
Esperance	30.0	25.0	16.0	15.0	12.1	4.2
Exmouth	-	-	-	-	-	90.9
Harvey-Wokalup	-	-	-	-	-	0.0
Jurien	0.0	0.0	0.0	0.0	0.0	-
Kalbarri	-	-	-	-	-	80.8
Kambalda	-	-	-	-	-	89.3
Karratha	66.0	51.0	50.0	49.1	51.4	90.8
Katanning	100.0	100.0	69.0	56.4	83.0	71.5
Kununurra	0.0	0.0	100.0	100.0	100.0	100.6
Manjimup	84.0	79.0	84.1	92.9	85.4	97.3
Margaret River scheme	-	-	-	-	-	179.1
Merredin	100.0	100.0	100.0	100.0	95.5	100.0
Narrogin	45.0	25.0	26.0	29.2	22.4	26.5
Newman	-	-	-	not applic	not applic	not applic
Northam	45.0	39.0	32.0	65.9	44.6	58.2
Pinjarra	-	-	-	-	-	135.3
Hedland scheme[46]	65.0	94.0	94.0	90.9	56.1	100.0
Wickham	-	-	-	-	-	0.0
Average	**46.7**	**46.5**	**51.9**	**52.3**	**51.8**	**65.2**
Average (excluding Perth)	**48.7**	**48.4**	**54.1**	**54.5**	**54.0**	**67.2**

[46] Prior to 2015/16, values are reported for Port Hedland and South Hedland. Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

Table 33: Sewer main breaks and chokes (per 100kilometre of sewer main)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC towns						
Albany	18.2	25.6	30.7	19.0	23.0	30.6
Australind / Eaton	5.0	6.1	6.5	6.0	10.4	7.9
Bunbury / Dalyellup	11.6	12.2	14.6	12.0	12.4	12.8
Busselton	8.4	5.4	8.4	3.0	4.0	3.7
Geraldton	6.7	8.8	14.3	7.0	10.7	8.7
Kalgoorlie/Boulder	73.1	63.7	24.4	30.0	18.0	27.0
Mandurah	11.1	8.1	9.4	8.0	7.5	9.0
Perth	19.3	18.6	16.1	17.0	17.5	18.6
Minor Towns						
Broome	7.6	3.0	1.6	4.0	1	3
Carnarvon	-	-	-	-	-	32
Collie	28.3	33.7	21.3	19.0	26	23
Denmark	-	-	-	-	-	16
Derby	-	-	-	-	-	3
Dongara-Denison	-	-	-	-	-	0.0
Dunsborough	11.0	6.2	12.6	9.0	4	10.0
Esperance	5.8	2.7	8.4	12.0	17	10
Exmouth	-	-	-	-	-	13
Harvey-Wokalup	-	-	-	-	-	16
Jurien	-	-	-	3.0	6	-
Kalbarri	-	-	-	-	-	5
Kambalda	-	-	-	-	-	14
Karratha	17.8	20.1	29.5	16.0	16	13
Katanning	82.8	52.4	54.8	62.0	62	53
Kununurra	40.8	20.5	7.4	23.0	27	34
Manjimup	8.1	14.0	18.0	18.0	8	16
Margaret River scheme	-	-	-	-	-	6
Merredin	29.7	32.4	32.4	25.0	39	36
Narrogin	61.7	57.8	62.2	82.0	81	70
Newman	25.3	37.5	48.8	40.0	25	44
Northam	68.4	48.8	46.4	64.0	46	38
Pinjarra	-	-	-	-	-	8
Hedland scheme[47]	25.7	39.5	39.5	22.0	28	23
Wickham	-	-	-	-	-	97
Average	**27.0**	**24.6**	**24.2**	**23.9**	**23.3**	**21.9**
Average (excluding Perth)	**27.4**	**24.9**	**24.6**	**24.2**	**23.6**	**22.0**

[47] Prior to 2015/16, values are reported for Port Hedland and South Hedland. Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

Table 34: Total connected properties – Sewerage (000's)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC towns						
Albany	11.3	11.1	11.4	12.0	11.7	12.0
Australind / Eaton	8.0	8.0	8.3	9.0	8.9	9.0
Bunbury / Dalyellup	15.8	16.2	16.6	17.0	16.8	18.0
Busselton	10.0	10.0	10.6	10.9	11.3	12.0
Geraldton	10.3	10.5	11.2	12.0	11.9	12.0
Kalgoorlie/Boulder	14.7	15.0	14.0	15.1	15.0	15.0
Mandurah	33.4	33.8	34.7	36.0	37.5	39.0
Perth	675.9	685.4	698.1	713.0	731.4	754.0
Minor Towns						
Broome	6.2	6.0	6.2	6.5	6.7	6.8
Carnarvon	-	-	-	-	-	1.4
Collie	3.0	3.2	3.2	3.2	3.3	3.3
Denmark	-	-	-	-	-	1.0
Derby	-	-	-	-	-	1.5
Dongara-Denison	-	-	-	-	-	1.2
Dunsborough	3.2	3.2	3.5	3.7	3.8	4.0
Esperance	3.7	3.7	3.8	3.9	4.0	4.1
Exmouth	-	-	-	-	-	1.5
Harvey-Wokalup	-	-	-	-	-	1.2
Jurien	0.6	0.6	0.7	0.7	0.7	-
Kalbarri	-	-	-	-	-	1.5
Kambalda	-	-	-	-	-	1.2
Karratha	8.2	8.6	7.2	7.8	7.9	8.0
Katanning	1.6	1.6	1.6	1.6	1.6	1.6
Kununurra	1.7	1.8	1.8	1.9	1.9	1.9
Manjimup	1.7	1.7	1.7	1.7	1.7	1.8
Margaret River scheme	-	-	-	-	-	3.5
Merredin	1.4	1.3	1.4	1.4	1.4	1.4
Narrogin	1.9	1.9	1.9	1.9	1.9	1.9
Newman	4.0	2.3	2.4	2.5	2.7	2.7
Northam	2.8	2.8	2.8	2.9	2.9	2.9
Pinjarra	-	-	-	-	-	2.0
Hedland scheme[48]	4.1	3.8	4.0	4.2	4.8	7.0
Wickham	-	-	-	-	-	1.0
Total	**824**	**833**	**847**	**869**	**890**	**935**
Total (excluding Perth)	**148**	**148**	**149**	**156**	**159**	**181**

[48] Prior to 2015/16, values are reported for Port Hedland and South Hedland. Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

Table 35: Sewerage service complaints (per 1,000 customers)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC Towns						
Albany	1.1	0.8	0.3	0.1	0.2	0.2
Australind / Eaton	4.1	2.4	0.1	0.1	0.0	0.0
Bunbury / Dalyellup	0.4	1.6	0.2	0.1	0.1	0.0
Busselton	1.0	0.4	0.3	0.1	0.2	0.2
Geraldton	1.3	0.7	0.2	0.7	0.8	0.2
Kalgoorlie/Boulder	24.6	12.3	4.1	4.2	3.0	0.0
Mandurah	0.8	0.3	0.1	0.0	0.0	0.1
Perth	1.4	0.4	0.2	0.1	0.0	0.1
Minor Towns						
Broome	0.2	0.0	0.0	0.0	0.0	0.0
Carnarvon	-	-	-	-	-	0.0
Collie	0.7	0.0	0.0	0.0	0.0	0.3
Denmark	-	-	-	-	-	0.0
Derby	-	-	-	-	-	0.0
Dongara-Denison	-	-	-	-	-	0.0
Dunsborough	2.2	1.2	0.0	0.0	0.0	0.0
Esperance	0.5	0.0	0.0	0.0	0.2	0.0
Exmouth	-	-	-	-	-	0.0
Harvey-Wokalup	-	-	-	-	-	0.0
Jurien	0.0	0.0	0.0	0.0	0.0	-
Kalbarri	-	-	-	-	-	0.0
Kambalda	-	-	-	-	-	0.0
Karratha	1.3	0.4	0.0	0.0	0.0	0.0
Katanning	1.3	1.3	0.6	0.0	0.0	0.0
Kununurra	1.8	1.1	1.1	0.0	0.0	0.0
Manjimup	0.6	1.2	1.2	0.0	0.0	0.0
Margaret River scheme	-	-	-	-	-	0.0
Merredin	2.9	0.7	3.0	0.0	0.0	0.0
Narrogin	1.6	0.5	0.5	0.0	0.0	0.5
Newman	1.0	0.0	0.0	0.0	0.0	0.0
Northam	1.4	0.4	0.0	0.3	0.3	0.0
Pinjarra	-	-	-	-	-	0.0
Hedland scheme[49]	1.2	0.0	0.0	0.0	0.0	0.3
Wickham	-	-	-	-	-	0.0
Average	**2.3**	**1.2**	**0.5**	**0.3**	**0.2**	**0.1**
Average (excluding Perth)	**2.4**	**1.2**	**0.6**	**0.3**	**0.2**	**0.1**

[49] Prior to 2015/16, values are reported for Port Hedland and South Hedland. Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

Table 36: Total recycled water supplied (ML)

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
NWC towns						
Albany (W/S)	1993	1929	2051	2114	2009	2131
Australind / Eaton (W/S)	1209	1257	1350	1378	1433	1469
Bunbury (W)	0	0	0	0	0	0
Bunbury / Dalyellup (S)	138	111	110	148	102	109
Busselton (W)	0	0	0	0	0	0
Busselton (S)	291	265	261	245	230	225
Geraldton (W/S)	233	223	235	237	221	216
Kalgoorlie/Boulder (W)	0	0	0	0	0	0
Kalgoorlie/Boulder (S)	2289	1817	1793	1410	1607	1449
Mandurah (W/S)	70	119	104	119	131	137
Perth (W/S)	9134	10370	10273	10029	9354	10212
Minor towns						
Augusta (W)	-	-	-	-	-	0
Bridgetown/Hester (W)	20	35	35	43	33	37
Broome (W/S)	1094	737	869	949	963	863
Capel (W)	-	-	-	-	-	85
Carnarvon (W)	283	257	231	236	229	207
Collie (W/S)	0	0	0	0	0	0
Dalyellup (W)	-	-	-	-	-	0
Denmark (W)	0	0	0	0	0	0
Derby (W)	300	273	270	248	291	340
Dongara / Denison (W)	0	125	148	143	139	125
Donnybrook (W)	-	-	-	-	-	101
Dunsborough (W/S)	356	461	495	515	462	493
Esperance (W/S)	149	132	84	72	67	23
Exmouth (W/S)	-	-	-	-	-	100
Harvey/Wokalup (W)	0	0	0	0	0	0
Jurien (W/S)	0	0	0	0	0	0
Kalbarri (W/S)	-	-	-	-	-	119
Kambalda (W/S)	-	-	-	-	-	172
Karratha (W/S)	999	789	842	599	603	818
Katanning (W/S)	226	232	178	150	205	166
Kununurra (W/S)	0	0	546	528	459	452
Lancelin (W)	-	-	-	-	-	0
Manjimup (W/S)	256	313	259	337	339	364
Margaret River scheme (W)	397	421	429	932	821	946
Merredin (W/S)	102	116	102	91	105	148
Mount Barker (W)	-	-	-	-	-	0
Narrogin (W/S)	135	96	101	114	83	85
Newman (W/S)	0	0	0	0	not applic	not applic
Northam (W/S)	146	126	120	226	157	207
Pingarra (W)	198	273	268	319	343	323

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Hedland scheme (W/S)[50]	268	176	176	176	62	734
Waroona-Hamel (W)	-	-	-	-	-	0
Wickham (W)	-	-	-	-	-	0
York (W)	22	28	22	30	22	21
Total	**20,978**	**21,297**	**21,939**	**21,970**	**21,034**	**22,877**
Total (excluding Perth)	**11,844**	**10,927**	**11,666**	**11,941**	**11,680**	**12,665**

[50] Prior to 2015/16, values are reported for Port Hedland and South Hedland. Water Corporation advised the ERA that the values should have been combined and reported under the Hedland Scheme. Refer to the ERA's past annual Water, Sewerage and Irrigation Performance reports for values for Port Hedland and South Hedland prior to 2015/16.

Appendix 2: Water services licenses

There are four classes of water service that require a licence:[51]

- Water supply services (both potable and non-potable services)
- Sewerage services
- Irrigation services
- Drainage services

A licence may be granted for more than one class of service. For example, a sewerage and water supply licence may be granted to a sewerage service provider to enable them to supply recycled effluent.

The licence specifies the area(s) of the State in which the service is to be provided. Where a licence covers more than one service it is possible for the operating area for each service to be different.

There are 19 licensed water service providers in the State as follows.

Licensee	Water supply	Sewerage	Irrigation	Drainage
Aquasol Pty Ltd	√	√		
Bunbury Water Corporation (trading as Aqwest) (potable)	√			
Busselton Water Corporation (trading as Busselton Water) (potable)	√			
City of Kalgoorlie Boulder		√		
Gascoyne Water Cooperative (non-potable)			√	
Hamersley Iron	√	√		
Moama Lifestyle Villages Pty Ltd (non-potable)		√		
Ord Irrigation Cooperative (non-potable)			√	
Peel Water	√	√		
Preston Valley Irrigation Cooperative (non-potable)	√		√	
Robe River Mining Co (potable)		√		
Rottnest Island Authority	√	√		√
South West Irrigation Management Cooperative (non-potable)	√		√	
Water Corporation	√	√	√	√
WA Sewage (non-potable)		√		
Four local government authorities:[52] (non-potable)		√		

[51] In accordance with the *Water Services Act 2012*, Part 2.

[52] During 2015-16, the Minister for Water granted a class exemption to 15 local government authorities that were previously licensed by the ERA for sewerage and non-potable water services. Four local government authorities remain licensed. See *Class Exemption Order,* published 24 June 2016, Government Gazette, Western Australia.

The four largest water services providers in Western Australia are Aqwest, Busselton Water, City of Kalgoorlie-Boulder and Water Corporation.

The Water Corporations Act 1995 established Water Corporation and the Western Australian Government owns it. It is the State's largest water service provider, supplying over 1.25 million connected properties, and managing $16.7 billion of water supply, sewerage, drainage and bulk water (for irrigation) assets.[53]

Aqwest and Busselton Water both became corporations in November 2013.[54] They service approximately 17,100 and 12,900 connected properties, and manage water supply assets of approximately $88.4 million and $71 million, respectively.

The City of Kalgoorlie-Boulder provides sewerage services to the town of Kalgoorlie-Boulder. The City services approximately 15,000 connected properties and manages approximately $22.4 million in sewerage and water assets.

[53] Water Corporation Annual Report 2015-16, accessed on 9 January 2017.

[54] Until November 2013, Aqwest and Busselton Water were government statutory authorities operating under the *Water Boards Act 1904* (1904 Act). Following amendments to the 1904 Act, both Aqwest and Busselton Water became corporations, although they continue to trade under the same names.

Appendix 3: Water performance reporting

Since April 2006, Western Australia has reported water data under the National Water Initiative Agreement (**NWI Agreement**). Under the NWI Agreement, all States and Territories report independently, publicly and on an annual basis to benchmark data on the pricing and service quality of urban and rural water delivery agencies.

The signatories to the NWI Agreement initially developed performance reporting frameworks for urban utilities (**urban framework**) and rural water delivery agencies (**rural framework**), but reporting under the latter was discontinued in 2013-14.[55]

The States and Territories are represented in the NWI by the agencies that are responsible for regulating water supply services in each jurisdiction. The ERA performs the roles of both the data coordinator and audit coordinator for Western Australia.

The Urban Framework comprises a handbook with performance indicators and definitions, which are revised and published annually. The Urban Framework captures all urban water services providers, that service 10,000 or more connected properties.

In Western Australia, four licensees fall within the Urban Framework and included in the annual national performance report published by the Bureau of Meteorology.[56] These licenses are: Aqwest (water only); Busselton Water (water only); City of Kalgoorlie-Boulder (sewerage only); and the Water Corporation (water and sewerage).[57]

The licenses captured by the Urban Framework include a condition requiring these licensees to provide the ERA with annual performance data in accordance with the Urban Framework.

The water performance reporting handbook relevant to the 2016 reporting period was published by the ERA in April 2016. The reporting handbook sets out standard performance reporting obligations for each type of supply service: potable water, non-potable water, sewerage and irrigation.[58]

The reporting requirements of service providers that are captured by the Urban Framework, are aligned with the framework. The ERA has also published reporting datasheets to collect data from the service providers.

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[55] The original signatory representing the Commonwealth in the NWI was the National Water Commission (NWC). In September 2014, the Australian Government made a decision to abolish the NWC and the administering responsibility of the Urban Framework was transferred solely to the Bureau of Meteorology. The Rural Framework was discontinued due to the limited ability to compare the performance of the rural water service providers covered by the Framework.

[56] The urban national performance reports benchmark the pricing and service quality of Australian water utilities. Further information on the urban national performance report can be found on the Bureau of Meteorology website, http://www.bom.gov.au/water/npr/

[57] The Water Corporation supplies eight towns that are captured by the Urban Framework: Albany, Australind/Eaton, Bunbury (sewerage only), Busselton (sewerage only) Geraldton, Kalgoorlie-Boulder (water only), Mandurah and Perth.

[58] Drainage licenses include service and performance standards in relation to drainage services, however, licensees are not required to include these in their annual license performance report.

Appendix 4: List of water supply and sewerage schemes in Western Australia

Schemes with 10,000 or more connected properties	Water supply	Sewerage
Albany	√	√
Australind-Eaton	√	√
Bunbury	√	√
Busselton	√	√
City of Kalgoorlie-Boulder	√	√
Geraldton	√	√
Mandurah	√	√
Perth	√	√
Schemes with 1,000 – 9,999 connected properties	**Water supply**	**Sewerage**
Augusta*	√	
Bridgetown – Hester	√	
Broome	√	√
Capel*	√	
Carnarvon**	√	√
Collie	√	√
Dalyellup *	√	
Denmark	√	√
Derby**	√	√
Dongara Denison**	√	√
Donnybrook*	√	
Dunsborough - Yallingup	√	√
Esperance	√	√
Exmouth*	√	√
Harvey – Wokalup**	√	√
Jurien	√	
Kalbarri *	√	√
Kambalda*	√	√
Karratha	√	√
Katanning	√	√
Kununurra	√	√
Lancelin*	√	
Manjimup	√	√
Margaret River Scheme**	√	√
Merredin	√	√
Mount Barker*	√	
Narrogin	√	√
Newman	√	√
Northam	√	√
Pinjarra**	√	√
Hedland Scheme	√	√

Waroona–Hamel*	√	
Wickham*	√	√
York	√	

Schemes marked with one asterisk denote newly added water supply and sewerage schemes in 2015-16. Schemes marked with two asterisks denote newly added sewerage schemes only in 2015-16.

Glossary

Term	Definition
Bulk water	Potable and non-potable water received from another utility or entity outside the reporting utility's geographic area of responsibility. The volume of water may include water subsequently exported (sold) to another utility.
Desalination	Potable and non-potable water sourced from desalination plants.
Groundwater	Potable and non-potable water abstracted from aquifers and other 'below ground' water sources. This excludes volumes sourced from groundwater supplies that have been artificially recharged using sources of water that have been counted elsewhere i.e., from rivers, desalination plants or sewage plants (recycling).
Non-potable water	Water that is not safe to drink or to use for food preparation, but can be used for non-drinking purposes such as the irrigation of lawns or industrial processes.
Onsite reuse	Water used for processes within a sewage treatment plant, such as cleaning.
Potable water	Water that is safe to drink or to use for food preparation.
Primary sewage treatment	Removes suspended matter by settling it at the bottom of the tank.
Secondary sewage treatment	Removes up to 85 per cent of dissolved and suspended biological matter.
Surface water	Potable and non-potable water abstracted from surface water sources such as dams, rivers or irrigation channels.
Tertiary sewage treatment	Disinfects and removes, or reduces the level of, nutrients.