Water, Wastewater and Irrigation Performance Report 2010

March 2011

Economic Regulation Authority
WESTERN AUSTRALIA

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Purpose of the Report

The purpose of this report is to bring transparency and accountability to the performance of the providers of water, wastewater and irrigation services in Western Australia.

The objectives of this report are to:

- report on the performance of water, wastewater and irrigation supply schemes operated by Western Australian water service providers that are licensed by the Economic Regulation Authority (Authority);
- highlight comparative performance outcomes for the different towns covered by the report; and
- examine service performance over time.

The report is based on the performance data provided to the Authority by water licensees in accordance with the performance reporting obligations set out in the licences and covers four areas:

- Part A examines water service performance in 32 major Western Australian towns, and small potable and non-potable water licensees[1];
- Part B examines wastewater service performance in 22 major Western Australian towns, and small wastewater licensees[2];
- Part C examines service performance in major towns where the data is applicable to both water and wastewater services[3]; and
- Part D examines service performance for four irrigators.

The report presents performance against selected indicators for water, wastewater and irrigation services. The majority of the performance indicators are consistent with the performance indicators defined in the National Performance Frameworks for Urban Water Utilities and Rural Water Service Providers.

Background

Legislation

The Water Services Licensing Act 1995 (Act) includes provisions for the licensing of water services. Part 3 of the Act sets out the provisions pertaining to the licensing scheme for water service providers. The Act defines four classes of water operating licence: water supply services (covers both potable and non-potable services), sewerage services, irrigation services and drainage services. Part 2 of the Act includes provisions for the Authority to administer the licensing scheme provided for in Part 3 of the Act, and to monitor the performance of the providers of water services.

[1] Major towns are defined as having >1,000 properties connected to the water supply network.

[2] Major towns are defined as having >1,000 properties connected to the sewage collection network.

[3] The number of towns / schemes may vary for some indicators as some towns have their water and sewerage services provided by difference licensees.

Section 24 and Schedule 1(h) of the Act provide for water operating licences to include conditions requiring licensees to provide to the Authority, in the manner and form approved by the Authority, specified information on any matter relevant to the operation of the licence, the operation of the licensing scheme or the performance of the Authority's functions under the Act. Water supply, sewerage, irrigation and drainage licences include conditions requiring the licensee to provide to the Authority non-financial performance data on an annual basis. The data to be provided by licensees is defined in the Authority's Water Compliance Reporting Manual (Reporting Manual).[4]

Current Structure of Water Services Industry in WA

There are a total of 30 water service providers licensed to operate in Western Australia. These are:

- The Water Corporation: water supply, sewerage, irrigation and drainage services.
- Bunbury Water Board (trading as Aqwest) and Busselton Water: water supply services.
- City of Kalgoorlie-Boulder: non-potable water supply and sewerage services.
- Moama Lifestyle Villages Pty Ltd: non potable water supply and sewerage services.[5]
- Rottnest Island Authority (RIA): water supply, sewerage and drainage services.
- Hamersley Iron: water supply and sewerage services.
- The Shire of Denmark: non-potable water supply services.
- 18 local government authorities: non-potable water supply and sewerage services.[6]
- Gascoyne Water Cooperative (Gascoyne Water), South West Irrigation Management Cooperative (Harvey Water), Ord Irrigation Cooperative (Ord Irrigation) and Preston Valley Irrigation Cooperative (Preston Valley): non-potable water supply and irrigation services.

The Water Corporation is owned by the Western Australian Government and was established by the Water Corporation Act 1995. The Water Corporation is Western Australia's largest water service provider, serving almost two million people and managing more than $13 billion of water supply, wastewater, drainage and bulk water (for irrigation) infrastructure.[7]

Aqwest and Busselton Water are government statutory authorities operating under the Water Boards Act 1904. Aqwest and Busselton Water service approximately 16,000 and 11,000 connected properties, and manage infrastructure of approximately $94 million and $49 million, respectively.[8]

The City of Kalgoorlie-Boulder provides sewerage services to the town of Kalgoorlie-Boulder. The City of Kalgoorlie-Boulder services approximately 14,000 connected

[4] See section titled 'Water Compliance Reporting Manual' for further details on the manual.

[5] Moama Lifestyle Villages Pty Ltd was issued with a water services operating licence on 7 September 2010.

[6] A list of the local government licensees supplying non-potable water and sewerage services is available in the Small Sewerage Service Provider Performance section of this report.

[7] See Water Corporation's 2010 Annual Report for more details.

[8] See Busselton Water's 2009/10 Annual Report and Aqwest's 2010 Annual Report for more details.

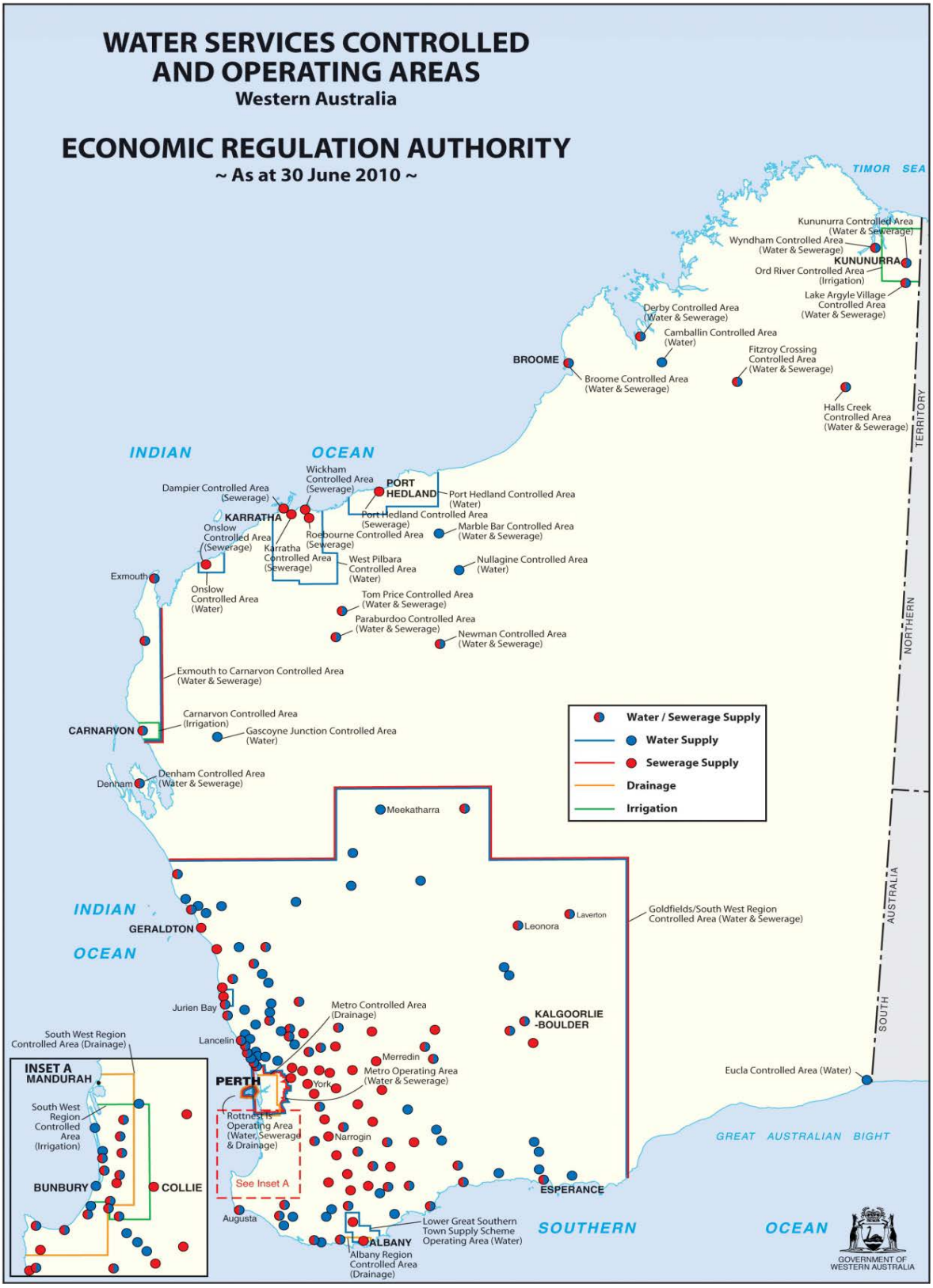
properties and manages approximately $26.7 million in sewerage and effluent infrastructure.

The RIA operates water and electricity services on Rottnest Island.

Hamersley Iron operates water supply and sewerage services in Tom Price, Paraburdoo and Dampier. Pilbara Iron, a division of Rio Tinto, is the asset manager for the water supply schemes operated by Hamersley Iron.

Figure 1 shows the locations of the controlled and operating areas for water services.

Figure 1: Water Services Controlled and Operating Areas



There are 18 local government authorities operating simple sewerage and non-potable water supply schemes that service the local community. Throughout the report, the term 'all towns' refers to all of the towns that are captured by the indicator in question, *including* Perth. The term 'regional towns' means all of the towns that are captured by the indicator in question, *excluding* Perth.

National Water Initiative Agreement

In April 2006, Western Australia became a signatory of the National Water Initiative Agreement (**NWI Agreement**), joining the Commonwealth and the other States and Territories. The Commonwealth is represented by the National Water Commission (**NWC**) and the States and Territories are represented by the agencies that are responsible for regulating water supply services in that jurisdiction. The Authority performs the roles of both the Data Coordinator and Audit Coordinator for Western Australia.

Under the NWI Agreement, the signatories agreed to report independently, publicly and on an annual basis, benchmarking data on the pricing and service quality of urban and rural water delivery agencies. The signatories to the NWI Agreement have developed performance reporting frameworks for urban utilities (**Urban Framework**) and for rural water delivery agencies (**Rural Framework**). The Urban and Rural Frameworks each comprise a handbook with performance indicators and definitions, which are revised and published annually. Further information on the NWI Agreement and the performance reporting frameworks can be found on the National Water Commission's website.[9]

This report provides performance data on all licensees who supply more than 1,000 connected properties, as well as all towns in WA serviced by the Water Corporation with more than 1,000 connected properties.

The Urban Framework captures all urban utilities that service 10,000 or more connected properties. In Western Australia there are four licensees that are captured by the Urban Framework: Aqwest (water only), Busselton Water (water only), City of Kalgoorlie-Boulder (sewerage only) and the Water Corporation (water and sewerage).[10]

The Rural Framework captures all rural water service delivery agencies that provide more than 4GL of water for irrigation services. In Western Australia there are two licensees that are captured by the Rural Framework: Harvey Water and Ord Irrigation.[11] This report includes two smaller irrigators: Gascoyne Water and Preston Valley Irrigation Cooperative.

The licences of the service providers that are captured by the NWI Urban and Rural Frameworks include a condition requiring these licensees to provide the Authority with annual performance data in accordance with the relevant framework.

[9] http://www.nwc.gov.au/nwi/index.cfm

[10] The Water Corporation services 6 towns that are captured by the Urban Framework: Albany, Bunbury (sewerage only), Geraldton (water only), Kalgoorlie-Boulder (water only), Mandurah and Perth.

[11] Irrigators for whom the additional recurrent expenditure on collecting and supplying performance data exceeds more than 1% of total revenue are not required to report. For this reason, Gascoyne Water is not subject to the Rural Framework.

Water Compliance Reporting Manual

The current Reporting Manual was published by the Authority in June 2010. The Reporting Manual sets out standard performance reporting obligations for each type of supply service: potable water, non-potable water, sewerage and irrigation.[12] In the case of large service providers, who are captured by the NWI Agreement, the reporting requirements are aligned with the Urban Framework and Rural Framework. The reporting requirements for the remaining, smaller, service providers have been aligned, where possible, to a sub-set of the Urban and Rural Framework indicators. This ensures that, where possible, there is consistency of performance reporting for all service providers in Western Australia.

The impact of changes to the Performance Reporting Framework over time

This is the fifth report published by the Authority that examines the performance of water, wastewater and irrigation service providers in Western Australia. The previous reports covered the eight years to 2008/09.[13] Since the publication of the 2005 report, the State signed the NWI Agreement. The transition to national performance reporting frameworks for the relevant urban and rural service providers has impacted on the ability of the Authority to report historical data. Data for some indicators can only be reported for one to two years, depending upon the completeness and reliability of the data. In addition, some 2009/10 national performance reporting framework indicators have changed from the previous year, and this has also impacted on the reporting of historical data. Where available, data for selected indicators has been provided for up to six years.

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

[13] Water, Wastewater and Irrigation Performance Report 2005, Water, Wastewater and Irrigation Performance Report 2007, Water, Wastewater and Irrigation Performance Report 2008 and Water, Wastewater and Irrigation Performance Report 2009 all of which are available on the Authority's website:

http://www.era.wa.gov.au/2/257/51/publications.pm

Highlights

Water Supply

Total sourced water for all towns in 2009/10 was 360,260ML, an increase of 1.1% from 2008/2009. Compared to 2008/09, the proportion of water sourced from groundwater has decreased from 51.5% to 44.1% (or 24,647ML), the percentage of water sourced from surface water increased from 31.9% to 39.4% and water sourced from desalination fell from 9.3% to 8.9%. During 2009/10, the relative proportions of sourced water for Perth followed the same pattern as the all town values.

By 30 June 2010, there were 923,000 connected properties for water supply, an increase of 3.0% from the previous year. Since 2004/05, connected properties in Perth have grown by 11.7%, while regional towns have seen growth of 20.0%.

Compared to 2008/09, total urban water supplied increased by 2.7% (to 339,195ML), of which 73.6% was supplied to Perth. During 2009/10, the state-wide average consumption per residential property was 357kL.[14] In regional towns, average consumption was 360kL per property, which was 30.4% higher than the 276kL consumed by the average Perth property.

In 2009/10, the state-wide number of water quality complaints made by customers increased by 5.4%. Perth recorded an increase of 21.5% while the average regional town recorded an increase of 2.8%.

State-wide water service complaints decreased by 72.5%, comprising a 72.8% decrease in regional towns and a 76.2% fall in Perth.[15]

In 2009/10, the average duration of an unplanned water supply interruption for all towns was 82.8 minutes, down from 91.5 minutes in 2008/09. Over the same period, there was a 26% decrease in the frequency of interruptions for all towns.

Wastewater Services

During 2009/10, the state-wide total volume of sewage collected increased by 1.6%, to 148,650ML. Total sewage collected in Perth was 124,560ML, equivalent to 49.9% of the total urban water supplied (249,612ML) and total sewage collected in regional towns was 24,090ML, equivalent to 26.9% of total urban water supplied (89,583ML). Compared to 2008/09, there was a 2.1% fall, to 185kL, in the all town average volume of sewage collected per property.

The state-wide total volume of recycled water supplied increased from 18,263ML, in 2008/09, to 19,076ML in 2009/10. This was driven by the 8.5% increase in recycled water supplied by regional towns. In contrast, Perth recorded a 1.1% fall in the volume of recycled water supplied.

Compared to 2008/09, the total number of sewerage connected properties in all towns increased by 2.8%, to 801,000 properties.[16] Sewerage connected properties in Perth

[14] This is an unweighted average (i.e. it does not take into account the number of connections serviced in each town).

[15] The reduction in Perth and regional towns was mostly due to Water Corporation revising its methodology for recording complaints to be more in line with industry standards.

increased by 3.0%, to 659,000 properties and in regional towns there was a 2.2% increase to 142,000 properties.

In 2009/10, the average town had 57.4% of its sewage treated to a secondary level and 42.4% of its sewage treated to a tertiary level, virtually unchanged from 2008/09. In Perth, approximately 95.2% of sewage was treated to a tertiary level, which contrasts with the average regional town, where only 39.7% of sewage was treated to a tertiary level.

In 2009/10, the total volume of recycled water supplied was 19,076ML, of which 56.6% was supplied to commercial, municipal and industrial users. This is a reduction of 10.1%, or 1,218ML, compared to the previous year. Perth accounted for 39.6% of the total volume of recycled water supplied. In 2009/10, Perth recycled 6.1% of the total effluent treated, compared to 52.2% in the average regional town.

Compared to 2008/09, the average number of sewerage service complaints for all towns fell by 63.5% to 2.7 per 1,000 properties. Perth recorded a 66.1% reduction, to 2.1 sewerage service complaints per 1,000 properties and regional towns recorded a 64.0% reduction, to 2.7 per 1,000 properties.[17]

Irrigation Services

In 2009/10, there were decreases in both the volume of irrigation water supplied and the volume of non-potable water supplied. The volume of irrigation water supplied was 188.7GL, down 12.9% from 2008/09. Gascoyne Water increased its supply volume (by 23.4% to 6.86GL) as did Harvey Water (by 2% to 67GL). The volume of water supplied by Ord Irrigation decreased by 21.2% (to 114GL) and Preston Valley decreased by 9.9% (to 0.84GL).

In 2009/10, the total volume of water supplied for non-irrigation purposes (including non-potable water) was 2.2GL, down 16.4% from 2008/09. Gascoyne Water supplied 131ML (121ML in 2008/09) and Harvey Water supplied 2.07GL (2.51GL in 2008/09).

There were 1,951 irrigation connections and 397 non-potable water connections. Harvey Water had the largest number of connections, accounting for 71.2% of the irrigation connections and 77.6% of the non-potable water connections.

The water supplied by irrigators accounted for 36% (190.9GL[18]) of all water supplied in the state in 2009/10 (530.1GL).[19]

[16] Rounded to the nearest 1,000.

[17] See footnote 15.

[18] Includes both irrigation and non-potable water.

[19] The sum of urban water supplied and the total volume of water supplied to irrigators for irrigation and non-potable purposes.

PART A: WATER PERFORMANCE INFORMATION

Large Water Service Provider Performance

Covered Water Supply Schemes

Large water service providers cover water supply schemes with more than 1,000 connected properties, which include the following 32 towns/schemes:

Albany Scheme	**Denmark**	**Kalgoorlie-Boulder**	**Narrogin**
Australind / Eaton	**Derby**	**Karratha**	**Newman**
Bridgetown / Hester	**Dongara / Port Denison**	**Katanning**	**Northam**
Broome	**Dunsborough / Yallingup**	**Kununurra**	**Perth**
Bunbury	**Esperance**	**Mandurah**	**Pinjarra**
Busselton	**Geraldton**	**Manjimup**	**Port Hedland**
Carnarvon	**Harvey / Wokalup**	**Margaret River Scheme**	**South Hedland**
Collie	**Jurien**	**Merredin**	**York**

With the exception of Bunbury and Busselton, which are supplied by Aqwest and Busselton Water respectively, all of the town water supply schemes are supplied by the Water Corporation.

Water is supplied from a number of different sources, which comprise the following[20]:

- 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 supplier - potable and non-potable water purchased from another utility or entity outside a utility's geographic area of responsibility. The volume of water may include water which is subsequently exported (sold) to another utility.
- Recycling - treated effluent that is 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.

[20] More detailed definitions of water sources can be found in Appendix 2.

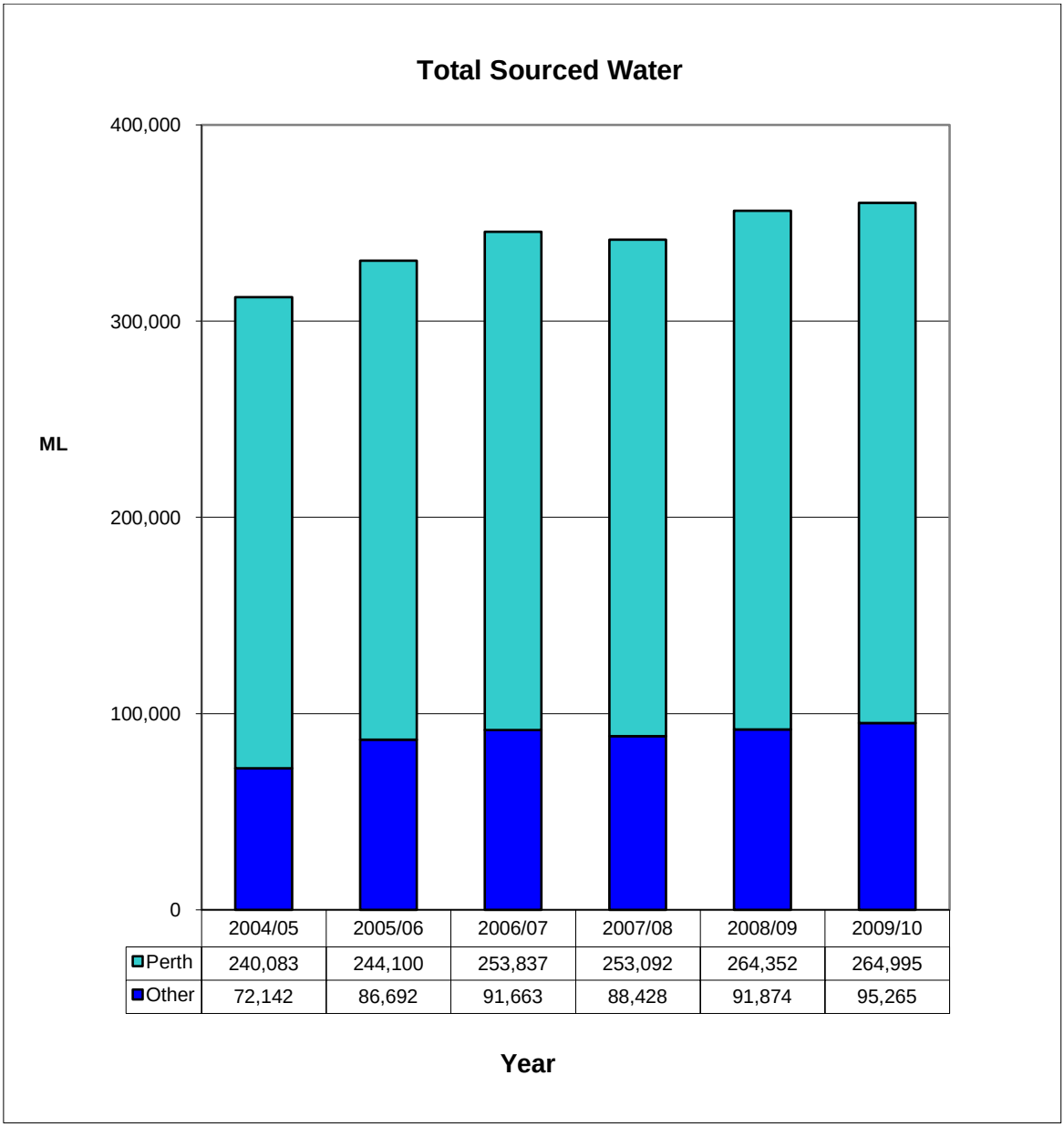
Sources of Water

Total Sourced Water

Total sourced water includes water abstracted from water sources that include surface water, groundwater, desalination, recycled water and water received from a bulk supplier.[21]

Figure 2 shows that total water sourced for all towns in 2009/10 has increased by 1.1% (to 360,260ML), compared to 2008/09, and increased by 15.4% over the period 2004/05 to 2009/10. Compared to 2008/09, water sourced for Perth remained relatively unchanged, and for regional towns increased by 3.7%, compared to 2008/09. In 2009/10, 73.6% of total water sourced was supplied to Perth.

Figure 2: Total volume of water sourced from all sources

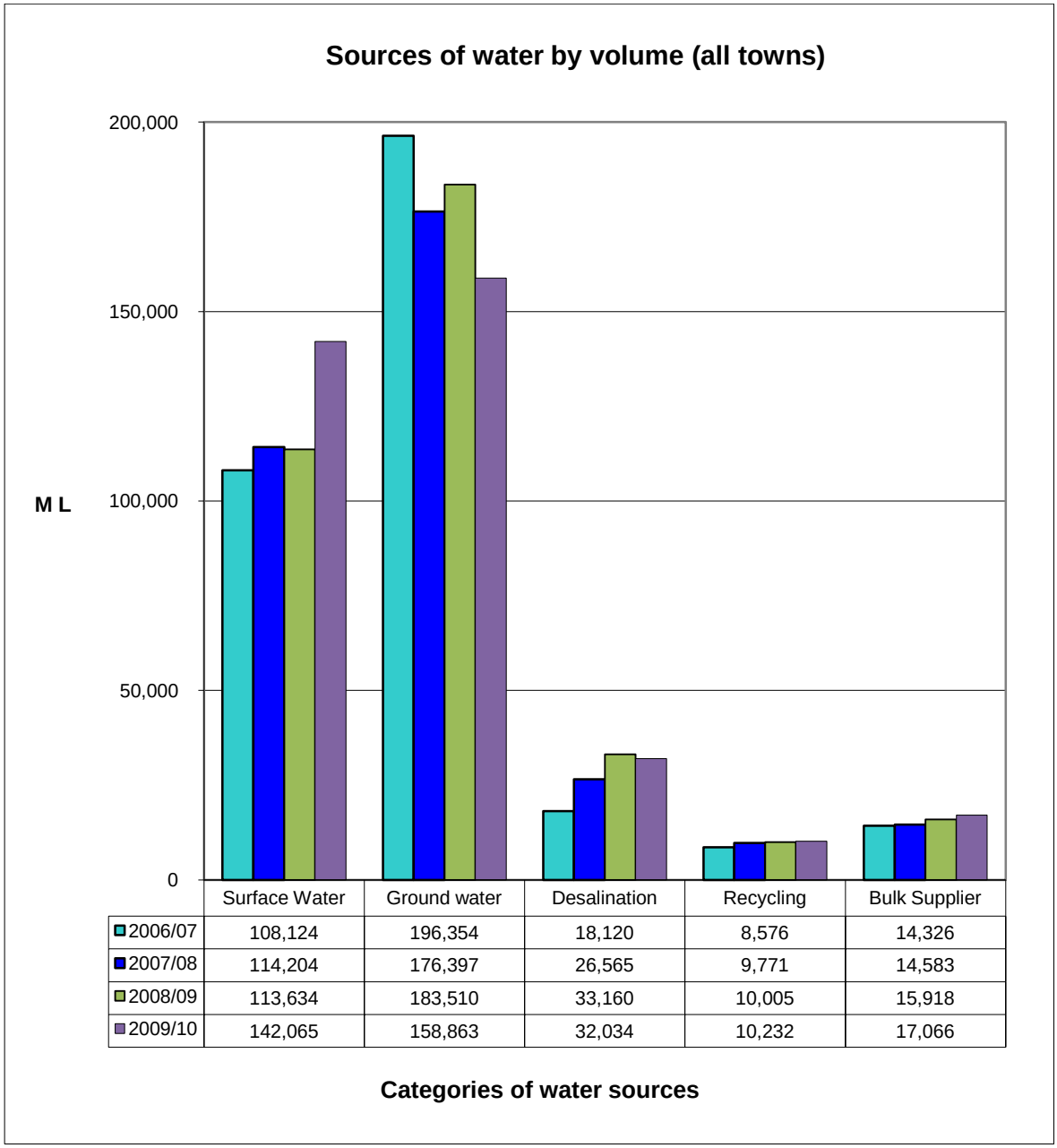


	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Perth	240,083	244,100	253,837	253,092	264,352	264,995
Other	72,142	86,692	91,663	88,428	91,874	95,265

[21] For years 2002/03 to 2004/05, total sourced water includes impounding reservoir and groundwater only.

Figure 3 shows that, in 2009/10, the volume of water sourced from surface water and bulk supplier has increased by 25.0% and 7.2% respectively, compared to 2008/09. Water sourced from groundwater has decreased by 13.4% over the same period. The Kwinana desalination plant began supplying water to Perth in November 2006. Desalination accounted for 12.1% of Perth's total sourced water in 2009/10, decreasing from 12.5% in 2008/09.

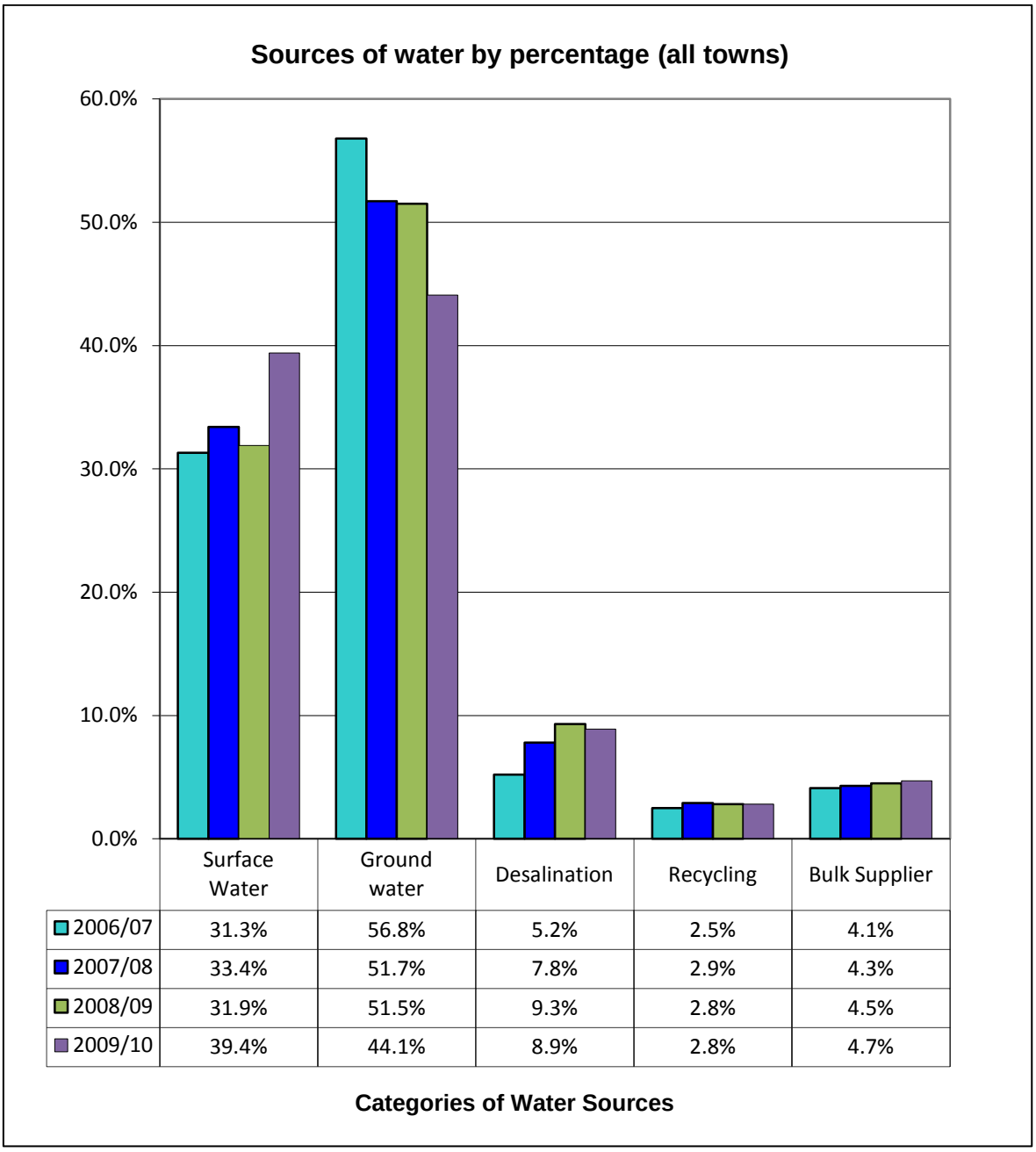
Figure 3: Sources of water by volume (all towns)



	Surface Water	Ground water	Desalination	Recycling	Bulk Supplier
2006/07	108,124	196,354	18,120	8,576	14,326
2007/08	114,204	176,397	26,565	9,771	14,583
2008/09	113,634	183,510	33,160	10,005	15,918
2009/10	142,065	158,863	32,034	10,232	17,066

Figure 4 shows that, compared to 2008/09, surface water and bulk suppliers provided an increased percentage of the total water sourced. Correspondingly, the percentage of water sourced from groundwater and desalination has decreased over the same period. Water sourced from recycling remained unchanged from 2008/09 levels.

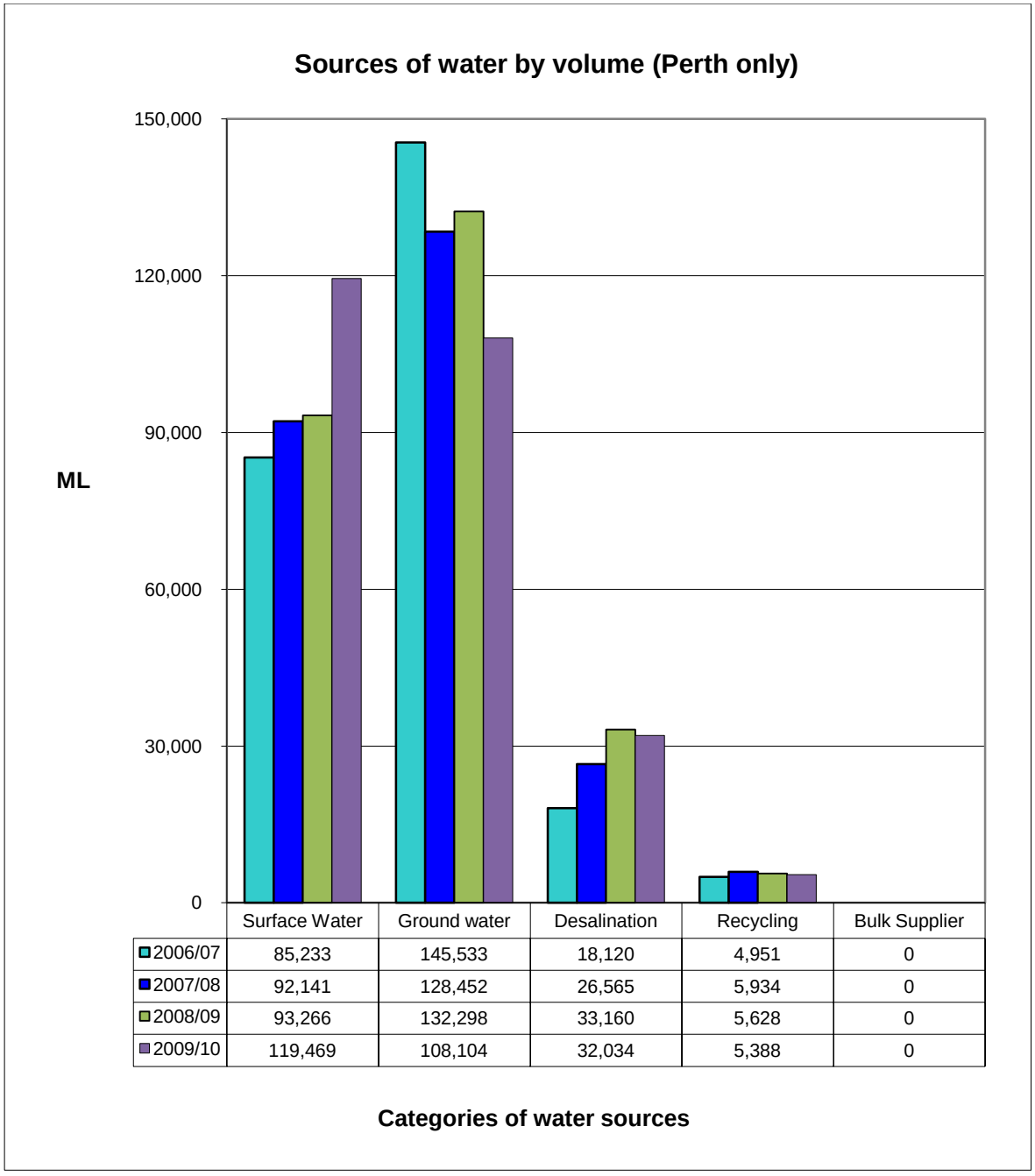
Figure 4: Sources of water by percentage (all towns)



	Surface Water	Ground water	Desalination	Recycling	Bulk Supplier
2006/07	31.3%	56.8%	5.2%	2.5%	4.1%
2007/08	33.4%	51.7%	7.8%	2.9%	4.3%
2008/09	31.9%	51.5%	9.3%	2.8%	4.5%
2009/10	39.4%	44.1%	8.9%	2.8%	4.7%

Figure 5 shows that, compared to 2008/09, the volume of water sourced from surface water for Perth increased. Water sourced from groundwater, desalination and recycling has decreased over the same period.

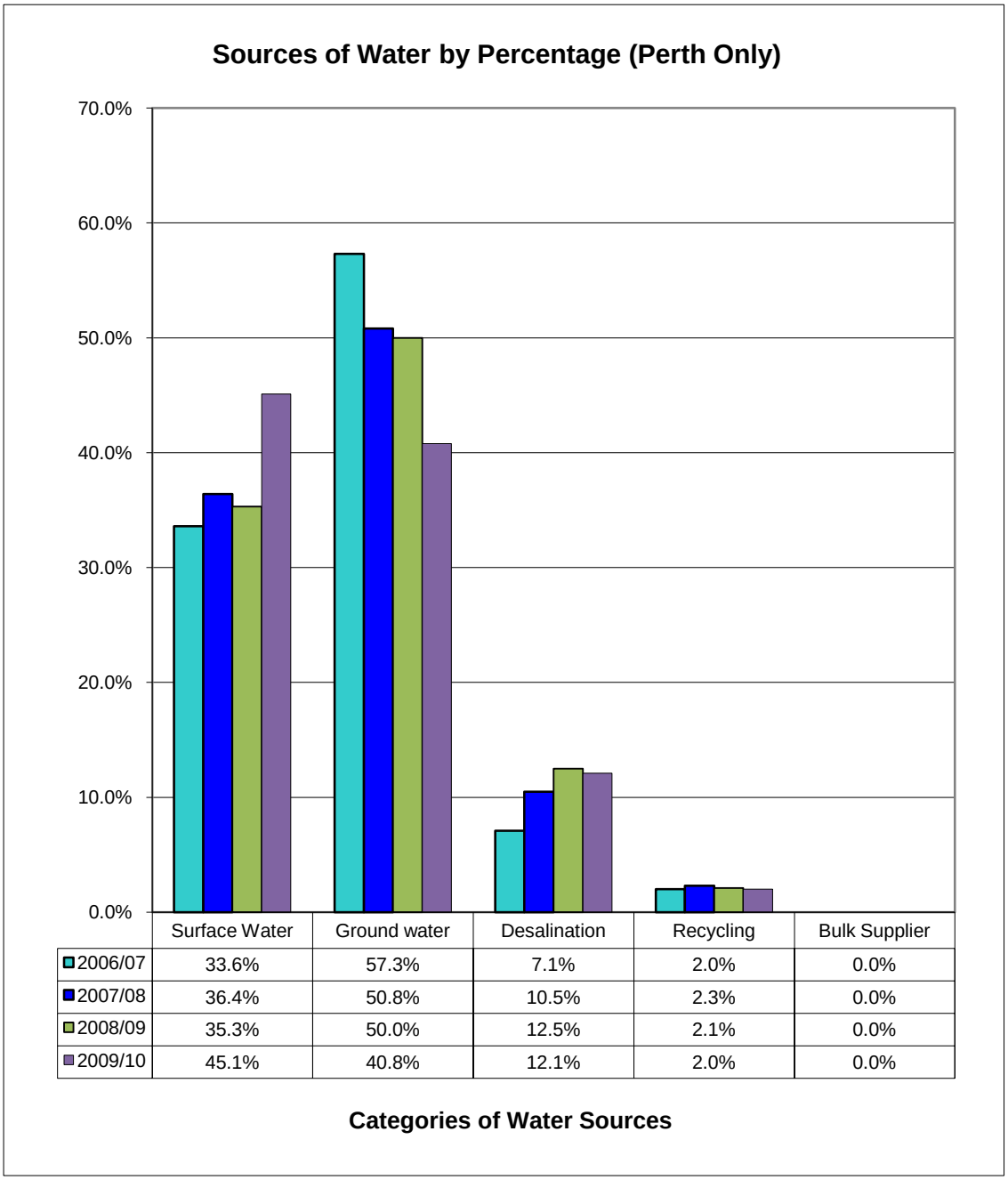
Figure 5: Sources of water by volume (Perth only)



	Surface Water	Ground water	Desalination	Recycling	Bulk Supplier
2006/07	85,233	145,533	18,120	4,951	0
2007/08	92,141	128,452	26,565	5,934	0
2008/09	93,266	132,298	33,160	5,628	0
2009/10	119,469	108,104	32,034	5,388	0

Figure 6 shows that, in 2009/10, groundwater and surface water together accounted for almost 86% of Perth's total sourced water. Since 2008/09, the proportion of water sourced from groundwater has fallen, and this has been matched by a corresponding increase in water sourced from surface water sources. This was due to increased inflows into Perth's dams during the winter of 2009 and the need to reduce the volume of water taken from the Gnangara Mound.

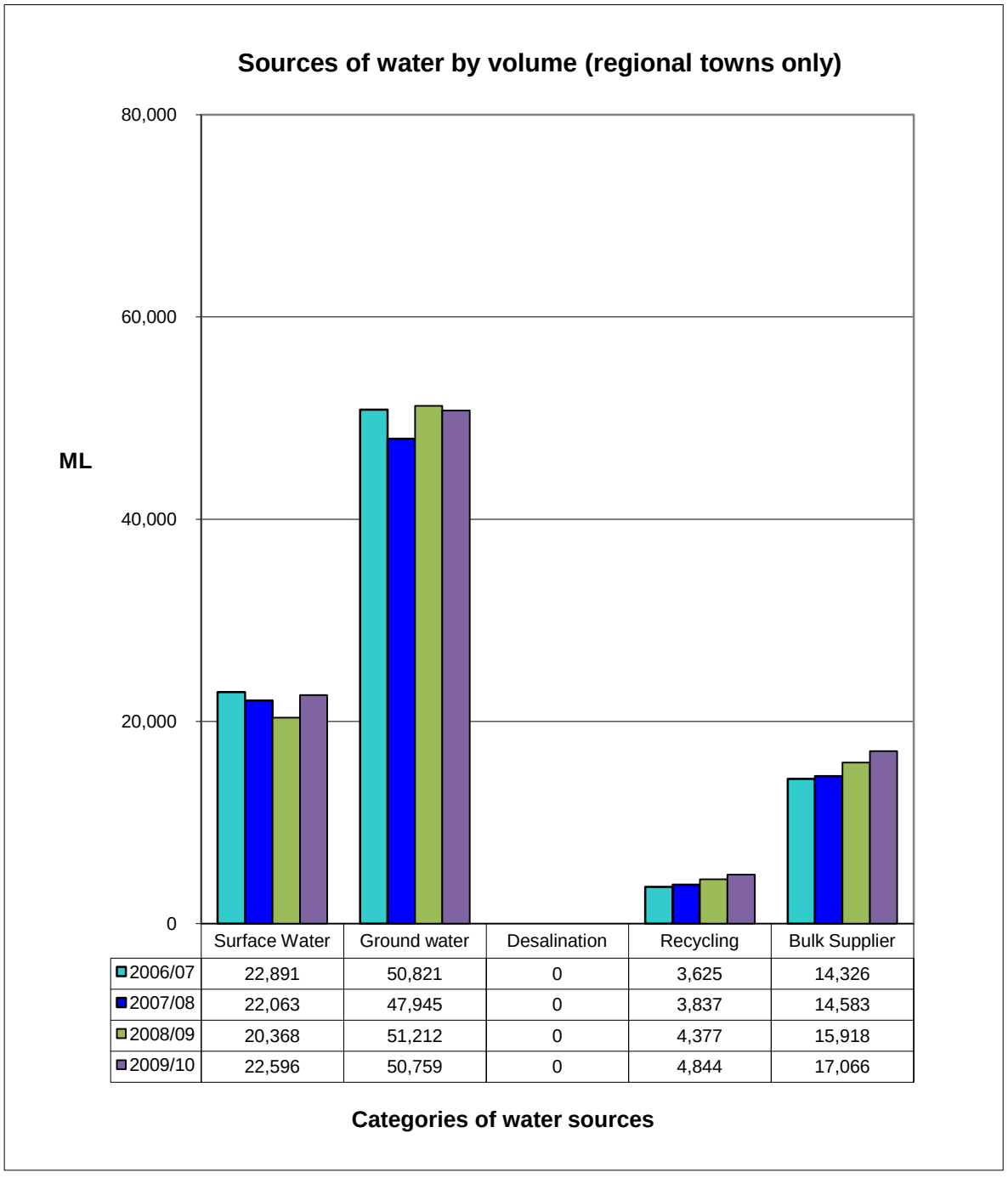
Figure 6: Sources of water by percentage (Perth only)



	Surface Water	Ground water	Desalination	Recycling	Bulk Supplier
2006/07	33.6%	57.3%	7.1%	2.0%	0.0%
2007/08	36.4%	50.8%	10.5%	2.3%	0.0%
2008/09	35.3%	50.0%	12.5%	2.1%	0.0%
2009/10	45.1%	40.8%	12.1%	2.0%	0.0%

Figure 7 shows that, in 2009/10, the majority of the total volume of water sourced for regional towns came from groundwater sources. Comparing 2009/10 with 2008/09, it can be seen that the increase in the total volume of water supplied to regional towns has been supplied from sources other than groundwater. Of particular note was the 7.2% increase in the volume sourced from a bulk supplier.

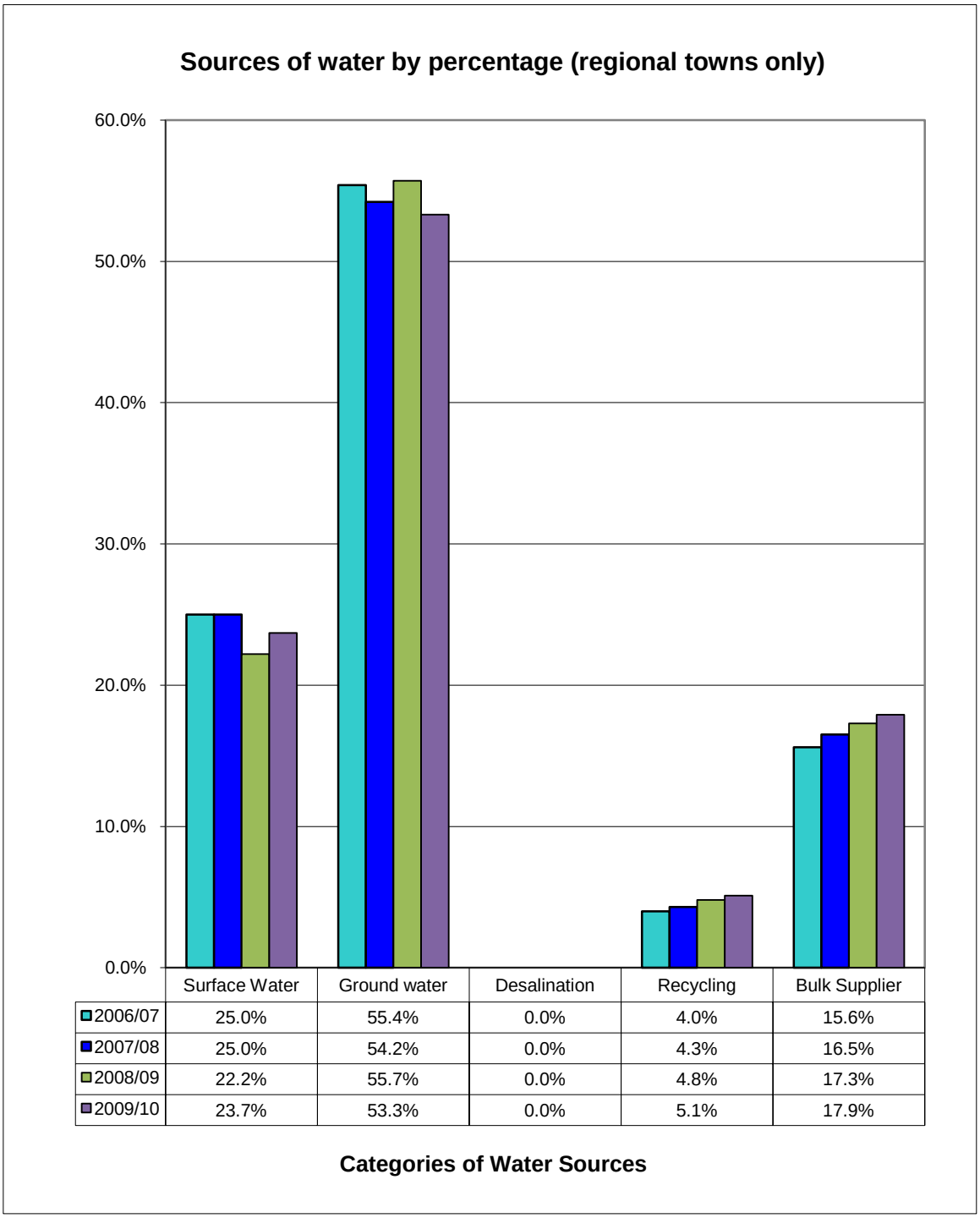
Figure 7: Sources of water by volume (regional towns only)



	Surface Water	Ground water	Desalination	Recycling	Bulk Supplier
2006/07	22,891	50,821	0	3,625	14,326
2007/08	22,063	47,945	0	3,837	14,583
2008/09	20,368	51,212	0	4,377	15,918
2009/10	22,596	50,759	0	4,844	17,066

Figure 8 shows that in 2009/10, groundwater accounted for 53.3% of total sourced water for regional towns. Since 2006/07, the proportion of water sourced from recycling and bulk supplier has increased each year. In 2006/07, recycled water and bulk water combined provided 19.6% of the total sourced water. By 2009/10 this had increased to 23% of the total.

Figure 8: Sources of water percentage (regional towns only)



	Surface Water	Ground water	Desalination	Recycling	Bulk Supplier
2006/07	25.0%	55.4%	0.0%	4.0%	15.6%
2007/08	25.0%	54.2%	0.0%	4.3%	16.5%
2008/09	22.2%	55.7%	0.0%	4.8%	17.3%
2009/10	23.7%	53.3%	0.0%	5.1%	17.9%

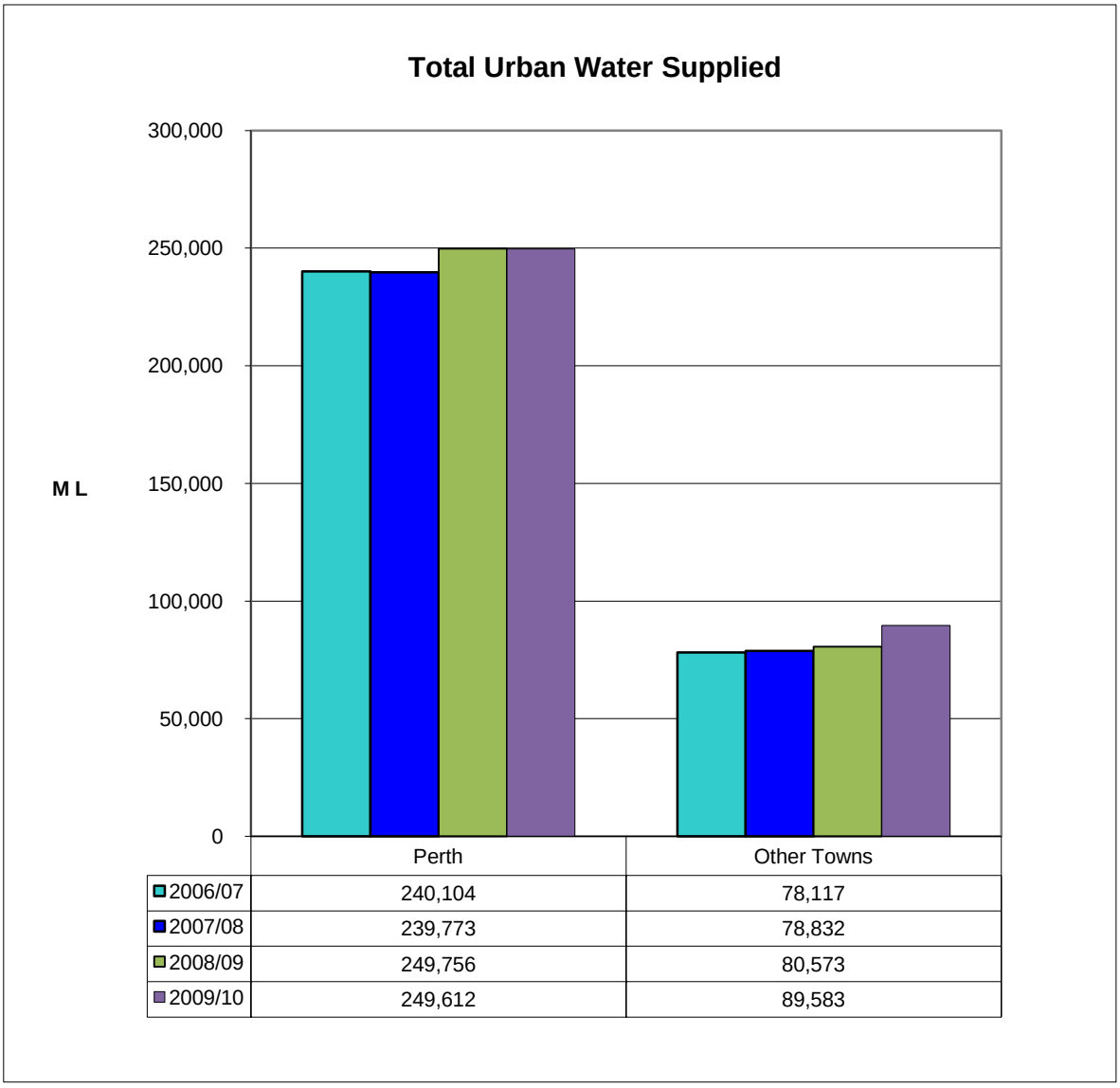
Uses of Water Supplied

Total Urban Water Supplied

Total urban water supplied is defined as the total metered volume of water (potable or non-potable), supplied to customers over the reporting period, plus estimated non-metered water supplied. Total urban water comprises the sum of residential, commercial, municipal and industrial water supplied and other estimated water supplied.

Figure 9 shows that the total urban water supplied for all towns in 2009/10 was 339,195ML, of which 73.6% was supplied to Perth. The volume of water supplied to Perth remained relatively unchanged compared to 2008/09. Compared to 2008/09, the volume supplied to regional towns increased by 11.2%.

Figure 9: Total urban water supplied



	Perth	Other Towns
2006/07	240,104	78,117
2007/08	239,773	78,832
2008/09	249,756	80,573
2009/10	249,612	89,583

Average Annual Residential Water Supplied

Table 1 shows that, in 2009/10, the average annual residential water supplied per property in regional towns was 30.4% more than that supplied in Perth. The volume of water supplied per property has been impacted by water efficiency measures. Measures have been in place for Perth since 2001, and, in 2007, permanent water efficiency measures came into effect throughout Western Australia.

Across the state, Port Hedland had the highest average annual residential water consumption and Denmark had the lowest consumption. This is reflective of the very different climatic conditions in these towns.

Table 1: Average annual residential water supplied per property

Data	Average annual residential water supplied per property (kL/property)			Percentage Change
	2007/08	2008/09	2009/10	%
Average of all towns[22]	352	346	357	3.2
Perth	268	277	276	-0.4
Average of regional towns	355	348	360	3.4
Highest (Port Hedland)	648	624	639	2.4
Lowest (Denmark)	154	152	156	2.6

Asset

Water Mains

In 2009/10, the length of water mains was 12,997km in Perth and 5,621km in regional towns, an increase of 1.1% and 1.4% respectively, compared to 2008/09. The total length of water mains across the state in 2009/10 was 9% higher than in 2004/05.

Table 2: Length of water mains (km)

Data	Length of water mains (km)					
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Perth	12,045	12,267	12,527	12,737	12,861	12,997
Regional towns	5,031	5,079	5,279	5,433	5,543	5,621
Total	17,076	17,346	17,806	18,170	18,404	18,618

In the six years to 2009/10, the growth in Perth's mains has averaged 1.5% per annum, while growth in regional towns has averaged 2.2% per annum.

[22] This is an unweighted average (i.e. it does not take into account the number of connections serviced in each town).

Properties Connected per km of Water Main

The purpose of this indicator is to report on the spatial density of properties served by water mains. Table 3 shows that, in 2009/10, 56 properties were served per km of water main in Perth, compared to 31 properties in the average regional town. The highest density of properties served was in Newman (72) and the lowest density was in Merredin and Carnarvon (13).

Table 3: Properties served (per km of water main)

Data	Properties served (per km of water main)			Percentage Change
	2007/08	2008/09	2009/10	%
Average of all towns	31	32	32	0.0
Perth	54	55	56	1.8
Average of regional towns	30	31	31	0.0
Highest in 2009/10 (Newman)	71	70	72	2.9
Lowest in 2009/10 (Merredin and Carnarvon)	13	13	13	0.0

Water Main Breaks

Table 4 shows that, in the three years to 2009/10, the level of mains breaks in Perth has been lower than that in the average regional town. Margaret River had the lowest level of water main breaks (3.5), while Port Hedland (59.2) had the greatest number of water main breaks. The level of water main breaks is influenced by the type of mains infrastructure (above ground and below ground), the age of the mains and local geological conditions, particularly soil types.

Table 4: Water main breaks (per 100km of water main)

Data	Water main breaks (per 100 km of water main)			Percentage Change
	2007/08	2008/09	2009/10	
Average of all towns	17.5	18.6	18.5	-0.5
Perth	14.0	15.3	13.4	-12.4
Average of regional towns	17.6	18.7	18.7	0.0
Highest in 2009/10 (Port Hedland)	76.5	56.0	59.2	5.7
Lowest in 2009/10 (Margaret River)	5.8	7.1	3.5	-50.7
Largest % increase in 2009/10 (Dongara Denison)	11.3	22.5	58.9	161.8
Largest % decrease in 2009/10 (Newman)	14.8	30.8	10.2	-66.9

Water Treatment Plants Providing Full Treatment

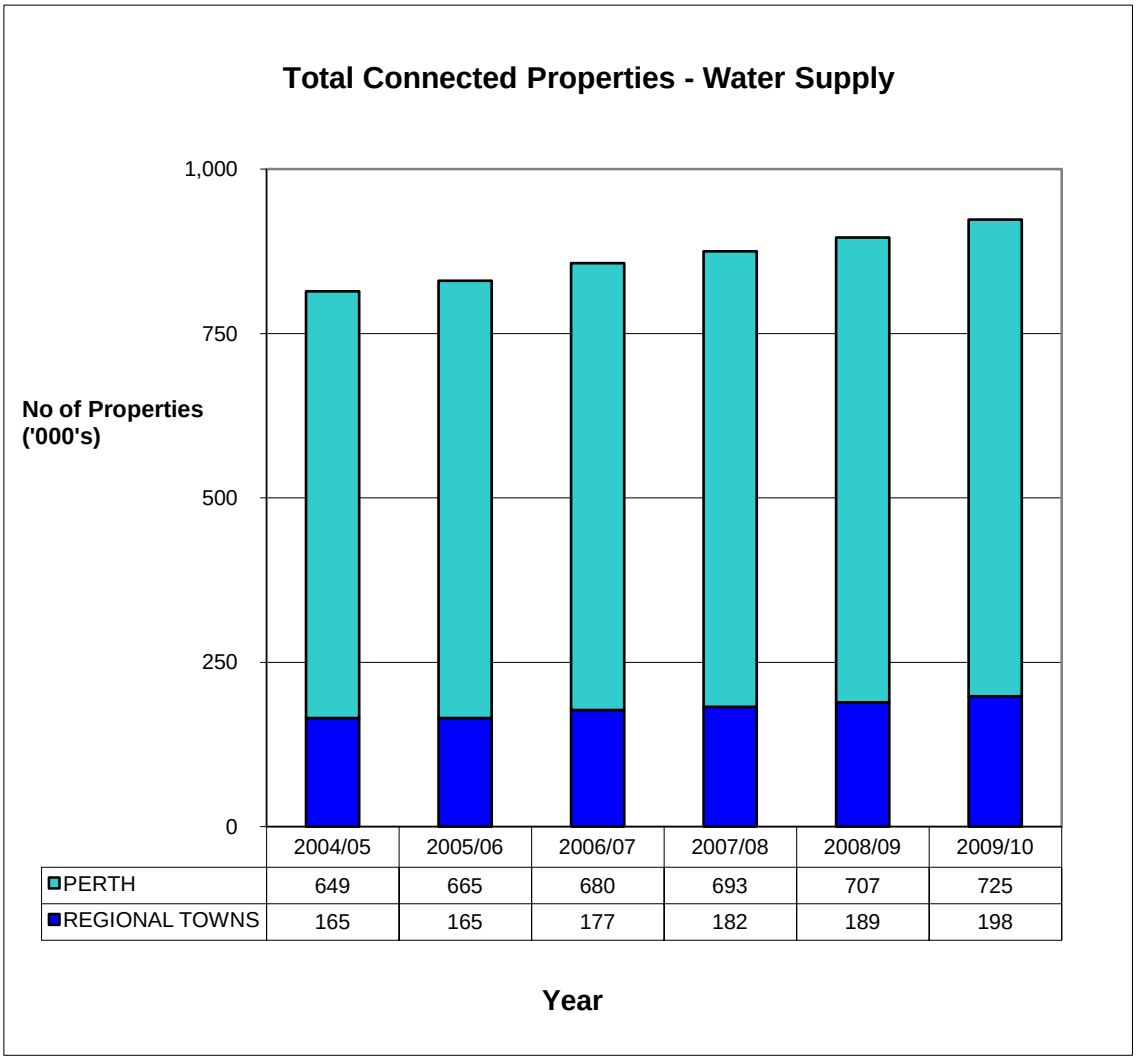
The definition of a water treatment plant providing full treatment can be found in Appendix 2. The number of full treatment plants impacts on a utility's relative operating cost, as the operational cost of a full treatment plant is higher than a treatment plant that provides lower order treatment processes. In 2009/10, Perth had 8 of the 26 treatment plants providing full treatment across the state, which is unchanged from 2008/09. The remaining towns were supplied by 18 full treatment plants, which implies that some towns were supplied by treatment plants with lower order treatment processes.

Customers

Connected Properties

The definition of a connected water property can be found in Appendix 2. Figure 10 shows that during 2009/10, the total number of connected properties in the state grew by 3.0% to 923,000 properties. The number of connected properties in Perth increased by 2.5% and in regional towns by 4.8%. Since 2004/05, Perth has experienced an 11.7% growth in connected properties, while regional towns have experienced growth of 20.0%.

Figure 10: Total connected properties - water supply



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
PERTH	649	665	680	693	707	725
REGIONAL TOWNS	165	165	177	182	189	198

Customer Service

Water Quality Complaints

Water quality complaints include any complaint regarding discolouration, taste, odour, stained washing, illness or cloudy water.[23] Table 5 shows that, in 2009/10, the average number of complaints for all towns increased by 5.4%. The increase was driven by a 21.5% increase in the number of complaints for Perth.

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

Data		Water Quality Complaints (per 1,000 properties)			Percentage Change
		2007/08	2008/09	2009/10	%
Average of all towns		4.3	3.7	3.9	5.4
Perth		6.0	6.5	7.9	21.5
Average of regional towns		4.3	3.6	3.7	2.8
Highest in 2009/10 (Australind/Eaton)		20.3	8.9	18.8	111.2
Largest decrease and lowest in 2009/10	Jurien	0.7	0.7	0.0	-100.0
	Kununurra	3.0	0.6		
	Port Hedland	1.0	0.5		
Largest increase in 2009/10 (Katanning)		3.1	0.5	4.7	840.0

Water Service Complaints

Water service complaints include all complaints related to bursts, leaks, service interruptions, adequacy of service, water pressure and water reliability (see Appendix 2).[24]

Table 6 shows that, in 2009/10, Perth recorded a 76.2% decrease in the number of water service complaints (per 1,000 properties) and regional towns recorded a 72.8% decrease in the average number of water service complaints. The large reduction in complaints was due to the Water Corporation revising its methodology for recording complaints to be more in line with industry standards. The highest level of, and the largest percentage increase in, complaints was recorded for Collie. For the fourth successive year, Busselton recorded the lowest level of complaints, whilst Denmark recorded the largest percentage decrease of water service complaints (96.6%).

[23] For the definition of water complaints see Appendix 2.

[24] For the definition of water complaints see Appendix 2.

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

Data	Water Service Complaints (per 1,000 properties)			Percentage Change
	2007/08	2008/09	2009/10	%
Average of all towns	29.3	18.2	5.0	-72.5
Perth	21.5	24.4	5.8	-76.2
Average of regional towns	29.5	18.0	4.9	-72.8
Largest increase and highest no. of complaints in 2009/10 (Collie)	15.9	23.0	25.8	12.2
Lowest no. of complaints in 2009/10 (Busselton)	1.0	0.3	0.2	-33.3
Largest decrease in 2009/10 (Denmark)	27.2	29.8	1.0	-96.6

Average Duration of an Unplanned Water Supply Interruption

An unplanned water supply interruption is defined as when the customer has not received at least 24 hours notification of the interruption to supply. The average duration that a customer is without a drinking water supply is a partial indicator of: customer service, the condition of the water network and the standard of network management. Table 7 shows that, compared to 2008/09, the average duration of an unplanned water supply interruption fell by 9.5% in regional towns and by 11.1% in Perth

Table 7: Average duration of an unplanned water supply interruption

Data	Average Duration of an unplanned water supply interruption (minutes)			Percentage Change
	2007/08	2008/09	2009/10	%
Average of all towns	99.7	91.5[25]	82.8	-9.5
Perth	132.4	141.0	125.4	-11.1
Average of regional towns	98.7	89.9	81.4	-9.5
Highest no. in 2009/10 (Harvey Wokalup)	77.1	74.0	221.1	198.9
Lowest no. in 2009/10 (Kununurra)	19.6	15.0	17.8	18.7

[25] This figure was reported incorrectly in the 2008/2009 report as 91.0.

Average Frequency of Unplanned Interruptions

The average frequency of unplanned interruptions measures the average number of times an unplanned water supply interruption occurs to the water supply to an individual customer and is a partial indicator of service quality, reliability and customer satisfaction.

Table 8 shows that, in 2009/10, the average customer in a regional town experienced significantly more supply interruptions than a customer in Perth. Newman recorded the highest interruption frequency. Unlike Perth, the average frequency of interruptions in regional towns varies significantly from year to year.

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

Data	Average frequency of unplanned interruptions (per 1,000 properties)			Percentage Change
	2007/08	2008/09	2009/10	%
Average of all towns	132.4	165.2	122.3	-26.0
Perth	66.0	67.5	65.6	-2.8
Average of regional towns	134.6	168.4	124.1	-26.3
Highest no. of interruptions in 2009/10 (Newman)	244.0	77.0	355.0	361.0
Largest decrease and lowest no. of interruptions in 2009/10 (Jurien)	25.0	875.0	1.0	-99.9
Largest increase in 2009/10 (Esperance)	63.0	57.0	344	503.5

Health – Water Quality Compliance

The definition of a water supply zone can be found in Appendix 2. Table 9 and Table 10 show that all zones across the state achieved 100% compliance with the microbiological and chemical health standards in 2009/10.

Table 9: Zones and populations (%) where microbiological compliance was achieved

Data	Number of zones where microbiological compliance was achieved – 2009/10	Percentage of population where microbiological compliance was achieved – 2009/10
All Towns	60	100.0
Perth	24	100.0
Regional Towns	36	100.0

Table 10: Zones where chemical compliance was achieved

Data	Number of zones where chemical compliance was achieved - 2009/10
All Towns	60
Perth	24
Regional Towns	36

Small Water Service Providers Performance

Small Potable Water Providers

Rottnest Island Authority and Hamersley Iron[26] are the only two small potable water providers licensed by the Authority.

The potable water for Paraburdoo and Tom Price is sourced from artesian bores, while the potable water supply for Dampier is sourced from bulk water supplied by the Water Corporation.

RIA is licensed to supply potable water on Rottnest Island. Saline water bores supply a desalination plant, whose output is then pumped into storage tanks for distribution to customers. Compared to 2008/09, the number of connected properties on the RIA and Hamersley Iron networks remained unchanged at 421 and 2,402 respectively. Table 11 shows that, in 2009/10, the total volume of potable water supplied by RIA was virtually unchanged while the volume supplied by Hamersley Iron increased by 14.6%, compared to 2008/09.

Table 11: Volume of potable water supplied

Data	Volume of Potable water supplied (kL)		
	2007/08	2008/09	2009/10
Rottnest Island Authority	118,879	146,000	146,100
Hamersley Iron	3,829,894	3,272,000	3,749,000
Total	3,948,773	3,418,000	3,895,000

Table 12 shows that in 2009/10, RIA recorded 10.0 water main breaks per 100km of water main, unchanged from the previous year, while Hamersley Iron recorded a 30.4% reduction in the number of breaks.

Table 12: Water main breaks (per 100km)

Data	Water Main Breaks (per 100km)		
	2007/08	2008/09	2009/10
Rottnest Island Authority	-	10.0	10.0
Hamersley Iron	-	21.7	15.1

Table 13 shows that the average frequency of unplanned interruptions (per 1,000 properties) was 14.3 for RIA and 119.1 for Hamersley Iron, which is a 29.1% decrease from 2008/09.

Table 13: Frequency of unplanned interruptions (per 1,000 properties)

Data	Frequency of unplanned interruptions (per 1000 properties)		
	2007/08	2008/09	2009/10
Rottnest Island Authority	-	14.3	14.3
Hamersley Iron	-	168[27]	119.1

[26] Hamersley Iron operates water and sewerage services in Tom Price, Paraburdoo and Dampier.

[27] The figure was reported incorrectly in the 2008/09 as 3.3.

Small Non-Potable Water Providers

The Shire of Denmark was the only small non-potable water licensed provider during 2009/10.

The Shire of Denmark has a licence to supply non-potable water to 203 leasehold holiday use lots at Peaceful Bay, which is primarily used for watering the gardens and toilet flushing. The assets consist of a production bore, storage dam and pumping station. Table 14 shows that, in 2009/10, the volume of non-potable water supplied by the Shire of Denmark has remained unchanged from that supplied in 2008/09.

Table 14: Key Statistics - Shire of Denmark (Peaceful Bay)

Data	Key Statistics – Shire of Denmark		
	2007/08	2008/09	2009/10
Volume of non-potable water supplied (kL)	40,000	20,000	20,000
Length of water supply mains (km)	4.7	2.2	2.2
No. of water service connections	203	203	203
No. of leaks and bursts	1	1	1
Percentage of customers who, within one hour of reporting an emergency, were advised of the nature and timing of the action to be undertaken by the licensee.	-	100	92.3
Percentage of customer complaints resolved within 15 business days	-	100	100.0

PART B: WASTEWATER PERFORMANCE INFORMATION

Large Sewerage Service Providers Performance

Covered Wastewater Schemes

Large wastewater service providers capture wastewater supply schemes with more than 1,000 connected properties, including the following 22 towns:

Albany	**Collie**	**Kalgoorlie-Boulder**	**Manjimup**	**Perth**
Australind/Eaton	**Dunsborough/Yallingup**	**Karratha**	**Merredin**	**South Hedland**
Broome	**Esperance**	**Katanning**	**Narrogin**	
Bunbury	**Geraldton**	**Kununurra**	**Newman**	
Busselton	**Jurien**	**Mandurah**	**Northam**	

All of the wastewater schemes are managed by the Water Corporation, with the exception of Kalgoorlie-Boulder, which is managed by the City of Kalgoorlie-Boulder.

For a number of wastewater indicators, data is not available for Newman and occasionally other towns.[28] Where this is the case, the average has been calculated by excluding those towns.

Sewage Collected per Property

Sewage collected is defined as 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., wholesaler. The purpose of this indicator is to provide a measure of the volume of sewage collected by the utility.

During 2009/10, the state-wide total volume of sewage collected increased by 1.6%, to 148,650ML. Total sewage collected in Perth was 124,560ML, equivalent to 49.9% of the total urban water supplied (249,612ML) and total sewage collected in regional towns was 24,090ML, equivalent to 26.9% of total urban water supplied (89,583ML).

Table 15: Sewage Collected per Property

Data	Sewage collected per property (kL per property)			Percentage Change
	2007/08	2008/09	2009/10	%
Average of all towns	194	189	185	-2.1
Perth	198	191	189	-1.0
Average of regional towns	194	189	185	-2.1
Largest volume of sewage collected per property in 2009/10 (Kununurra)	380	359	297	-17.3
Smallest volume of sewage collected per property in 2009/10 (Jurien)	75	78	73	-6.4
Largest % increase in sewage collected per property in 2009/10 (Northam)	136	145	187	29.0
Largest % decrease in sewage collected per property in 2009/10 (Merredin)	159	176	126	-28.4

[28] Data for Newman is unavailable on some indicators because the Water Corporation only manages the wastewater collection system while the wastewater treatment plant is managed by the Shire of East Pilbara.

Table 15 shows that, compared to 2008/09, the average volume of sewage collected per property for regional towns fell by 2.1% to 185kL. Over the same period, sewage collected per property in Perth fell by 1.0%. Of the 21 towns that provided data, 11 reported decreases and ten reported increases in the volume of sewage collected per property.

Uses of Recycled Water

Total Recycled Water Supplied

Total recycled water supplied is the sum of all treated effluent that is used by either the water utility itself, a business supplied by the water utility, or supplied through a third pipe system for urban reuse. The volume of recycled water supplied is an indirect measure of the volume of potable/non-potable scheme water that might have been consumed had recycled water not been available.

Figure 11 shows that, in 2009/10, commercial, municipal and industrial uses account for 56.6% of the total volume of recycled water supplied, followed by agricultural uses (21.7%) and on-site uses (12.6%).

Figure 11: Total Recycled Water Supplied

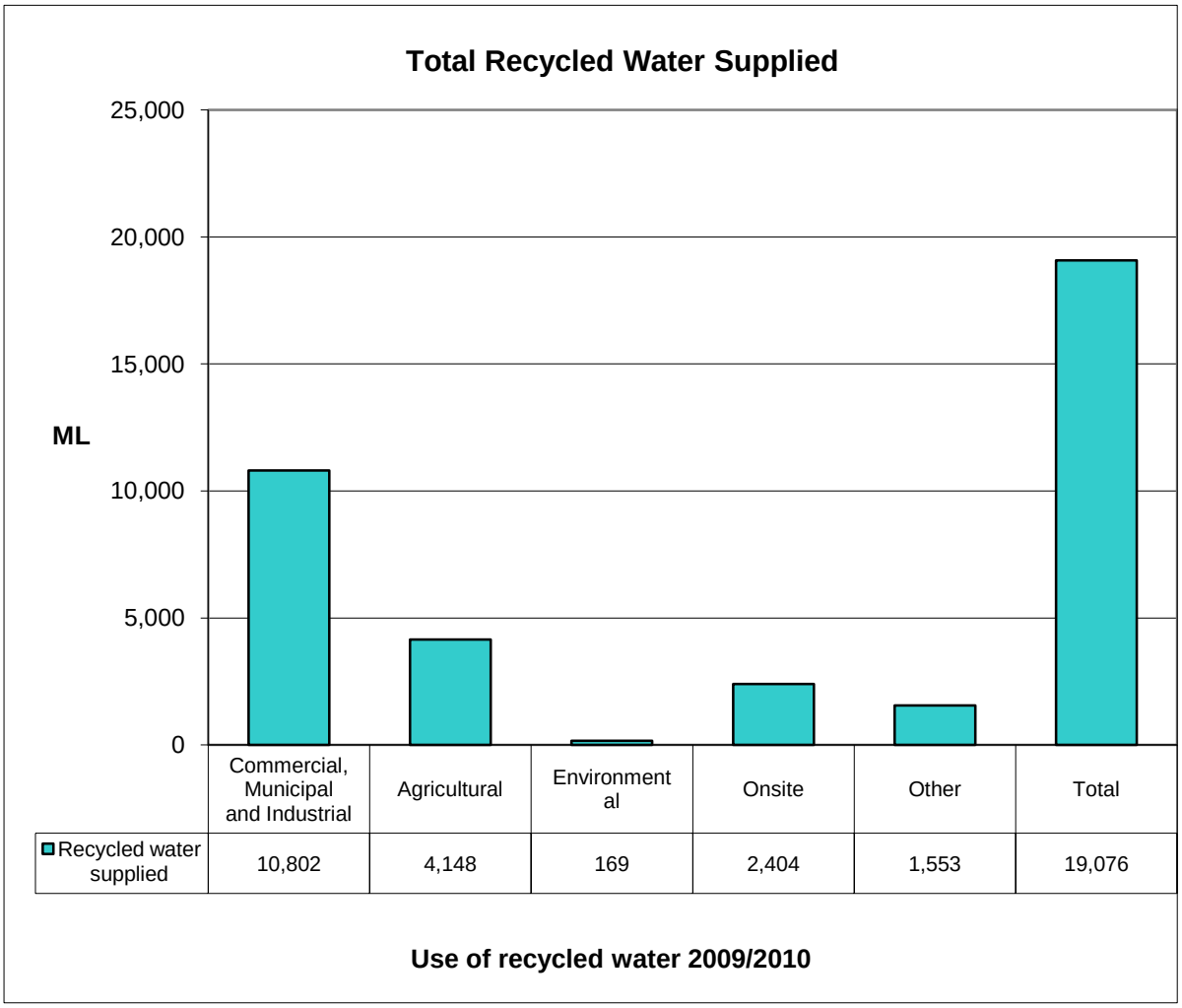


Table 16 shows that, in 2009/10, 39.6% of the total recycled water was supplied to Perth. The volume of recycled water in Perth decreased, but the state-wide total volume increased, due to more water being recycled by regional towns. The average volume of recycled water supplied in regional towns was 372ML per town, although seven towns reported no recycled water was supplied, which was also the case in 2008/09.

Table 16: Total Recycled Water Supplied

Data[29]	Total Recycled Water Supplied (ML)		
	2007/08	2008/09	2009/10
Average of all towns	540	571	596
Perth	7,947	7,635	7,551
Average of all regional towns	302	343	372
All Town total	17,295	18,263	19,076

Recycled Water (% of Effluent Recycled)

This indicator measures the percentage of treated sewage (effluent) that is used to supply recycled water. Table 17 shows that, in 2009/10, Perth recycled 6.1% of treated effluent, compared to 52.2% in the average regional town. Four towns (Manjimup, Australind/Eaton, Katanning and Merredin) recycled all of their effluent and three towns (Collie, Jurien and Kununurra) did not recycle any effluent.

Table 17: Recycled Water (% of Effluent Recycled)

Data	Recycled Water (% of Effluent Recycled)			Percentage Change
	2007/08	2008/09	2009/10	%
Average of all towns	44.5	48.9[30]	50.0	2.2
Perth	6.4	6.2	6.1	-1.6
Average of regional towns[31]	46.4	51.0[32]	52.2	2.4

[29] No data was provided for Busselton (water) and Kalgoorlie-Boulder (water) and Newman in 2009/010.

[30] This figure was reported incorrectly in the 2008-09 report as 49.5.

[31] Data for Newman is not available.

[32] This figure was reported incorrectly in the 2008-09 report as 51.7.

Asset

Length of Sewerage Mains and Channels (km)

Sewer mains include all trunk, pressure and reticulation mains. Compared to 2008/09, the total length of sewerage mains and channels for all towns increased by 1.1% (to 14,211km). Perth accounted for 77.5% of the total length of sewerage mains and channels.

Table 18: Length of Sewerage Mains and Channels

Data	Length of Sewerage Mains and Channels (km)					
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Perth	10,032	10,273	10,502	10,716	10,886	11,007
Regional towns	2,669	2,800	2,917	3,077	3,176	3,204
Total	12,701	13,073	13,419	13,793	14,062	14,211

Properties served per km of Sewer Main

The purpose of this indicator is to report on the spatial density of properties served by sewerage mains. In 2009/10, there were 60 properties per km of sewer mains in Perth compared to 44 properties in the average regional town. Newman reported the highest density of properties served, at 87 per km of main, while Jurien reported the lowest density at 20 properties per km of main.

Table 19: Properties served per km of Sewer Main

Data	Properties served per km of Sewer Main			Percentage Change
	2007/08	2008/09	2009/10	%
Average of all towns	43	43	45	4.7
Perth	58	59	60	1.7
Average of regional towns	42	43	44	2.3
Highest no. of properties served per km of sewer main in 2009/10 (Newman)	84	83	87	4.8
Lowest no. of properties served per km of sewer main in 200/10 (Jurien)	18	19	20	5.3
Largest % increase in 2009/10 (Kununurra)	44	43	47	9.3
Largest % decrease in 2009/10 (Kalgoorlie-Boulder)	67	69	66	-4.3

Sewer Main Breaks and Chokes

The purpose of this indicator is to report on the number of sewer main breaks and chokes in the sewerage system operated by the water utility. It is a partial indicator of customer service and the condition of the sewerage network, and may also be used to compare customer service. A choke is defined as a confirmed partial or total blockage that may or may not result in a spill from the sewer system to the external environment.

The definition of this indicator has changed this year to exclude property connection sewers. Therefore there is no comparable data for this indicator.

Table 20: Sewer Main Breaks and Chokes per 100km of Sewer Main

Data	Sewer Main Breaks and Chokes (No. per 100 km)
	2009/10
Average of all towns	24.2
Perth	22.2
Average of regional towns	24.3
Highest no. of sewer main breaks and chokes per 100 km in 2008/09 (Narrogin)	81.7
Lowest no. of sewer main breaks and chokes per 100 km in 2008/09 (Jurien)	0.0

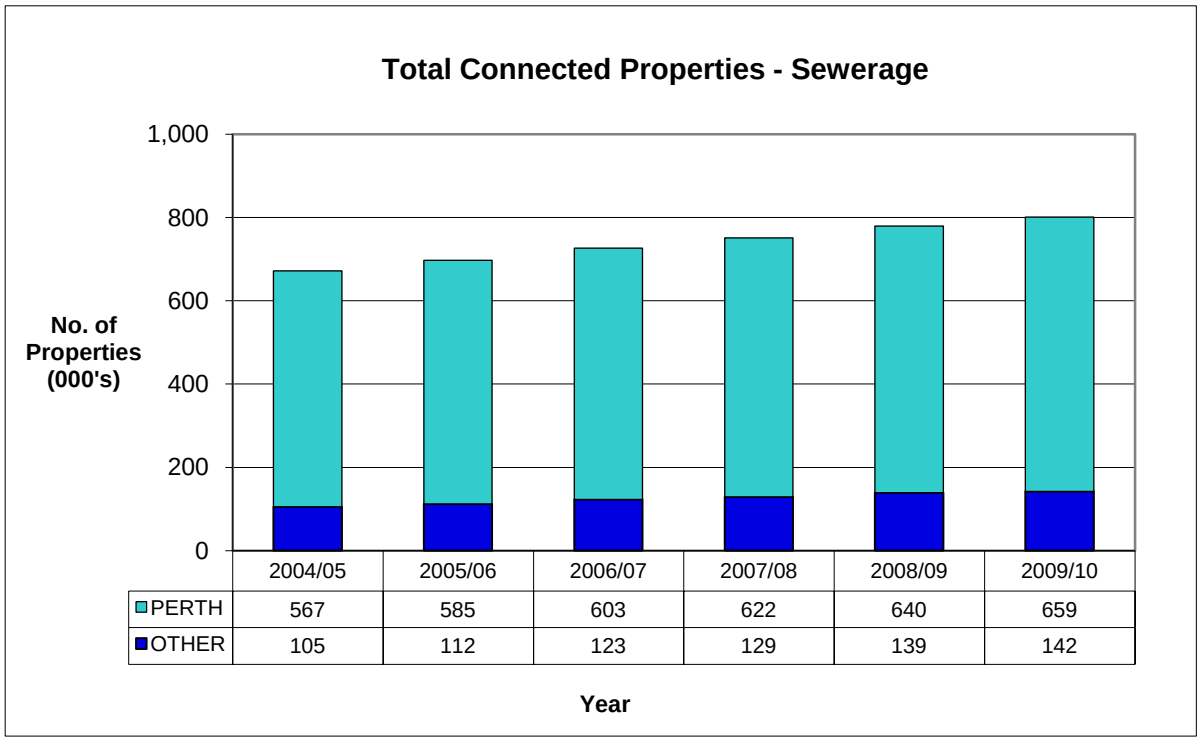
Customers

Total Connected Properties – Sewerage

The definition of a connected sewerage property can be found in Appendix 2. In 2009/10, the number of connected properties continued to rise, as it has done for the past five years. The state-wide total number of connected properties for sewerage services was 801,000, with Perth accounting for 82.3% of the total.

Figure 12 details the number of connected sewerage properties in Perth and regional towns for the six years to 2009/10. Since 2004/05, the total number of connected properties has increased by 19.2%, which is equivalent to an annual growth rate of 3.6%. The average annual growth of connected properties in regional towns (6.2%) was twice that in Perth (3.0%).

Figure 12: Total Connected Properties - Sewerage



Sewerage Service Complaints (per 1,000 properties)

The purpose of this indicator is to report customer satisfaction with sewerage services and provide a partial indicator of service quality and reliability. Sewerage service complaints include all complaints concerning sewer blockages and spills, trade waste services, sewerage system reliability, sewage odours and all other sewerage issues. It does not include complaints relating to government pricing policy, tariff structures or other non applicable areas of the business.

Table 21 shows that, compared to 2008/09, the state-wide level of sewerage service complaints decreased by 63.5%. Perth recorded a 66.1% reduction in complaints and the average regional town recorded a 64% reduction in complaints. The large reduction in complaints was due to the Water Corporation revising its methodology for recording complaints to be more in line with industry standards.

Kalgoorlie-Boulder recorded the highest number of service complaints (26.4), while Dunsborough recorded the lowest number and largest decrease of service complaints.

Table 21: Sewerage Service Complaints (per 1,000 properties)

Data	Number of Sewerage Service Complaints (per 1,000 properties)			Percentage Change
	2007/08	2008/09	2009/10	%
Average of all towns	7.9	7.4	2.7	-63.5
Perth	6.8	6.2	2.1	-66.1
Average of regional towns	8.0	7.5	2.7	-64.0
Highest no. of sewerage service complaints (per 1,000 properties) in 2009/10 (Kalgoorlie-Boulder)	30.3	28.6	26.4	-7.7
Largest % decrease and lowest no. of sewerage service complaints (per 1,000 properties) in 2009/10 (Dunsborough)	5.0	4.4	0.0	-100.0
Largest % increase in 2009/10 (South Hedland)	8.0	2.7	3.6	33.3

Environment

Comparative Sewage Treatment Levels

The purpose of these indicators is to report on the degree to which sewage requires treatment. This is an important cost driver for a water utility with respect to both capital costs and operating costs, as higher order treatment processes are more expensive than lower order processes. Definitions of the different levels of sewage treatment can be found in Appendix 2.

In 2009/10, the average town had approximately 58% of its sewage treated to a secondary level and approximately 42% of its sewage treated to a tertiary level, which is relatively unchanged from previous years. For Perth, 95.2% of sewage was treated to a tertiary level and 4.8% to a primary level. This contrasts with the average regional town[33], where 39.7% of sewage was treated to a tertiary level and 60.3% to a secondary level.

Percent of Sewage Treated Volume that was Compliant

The purpose of this indicator is to demonstrate the water utility's ongoing compliance with environmental standards in relation to the environment into which the treatment plant discharges. The sewage treatment plant compliance percentage is the number of scheduled samples that complied with the environmental standards divided by the total number of scheduled samples in the reporting period.

In 2009/10, the following 20 towns achieved 100% compliance:

Albany	**Esperance**	**Manjimup**
Australind/Eaton	**Geraldton**	**Merredin**
Broome	**Jurien**	**Narrogin**
Bunbury/Dalyellup	**Karratha**	**Northam**
Busselton	**Katanning**	**Perth**
Collie	**Kununurra**	**South Hedland**
Dunsborough/Yallingup	**Mandurah**	

Table 22 shows that, in 2009/10, 97.1% of the volume of sewage treated in the average regional town was compliant with environmental standards, up from 96.2% in 2008/09. The largest increase in the percentage of sewage treated that was compliant was in Mandurah (from 83.0% to 100%).

Table 22: Percent of Sewage Treated Volume that was Compliant

Data[34]	Percent of sewage treated volume that was compliant		
	2007/08	2008/09	2009/10
Average % of all towns	94.5	96.3	97.2
Perth	100.00	100.0	100.0
Average % for regional towns	94.3	96.2	97.1

[33] Does not include Newman as data is not available.

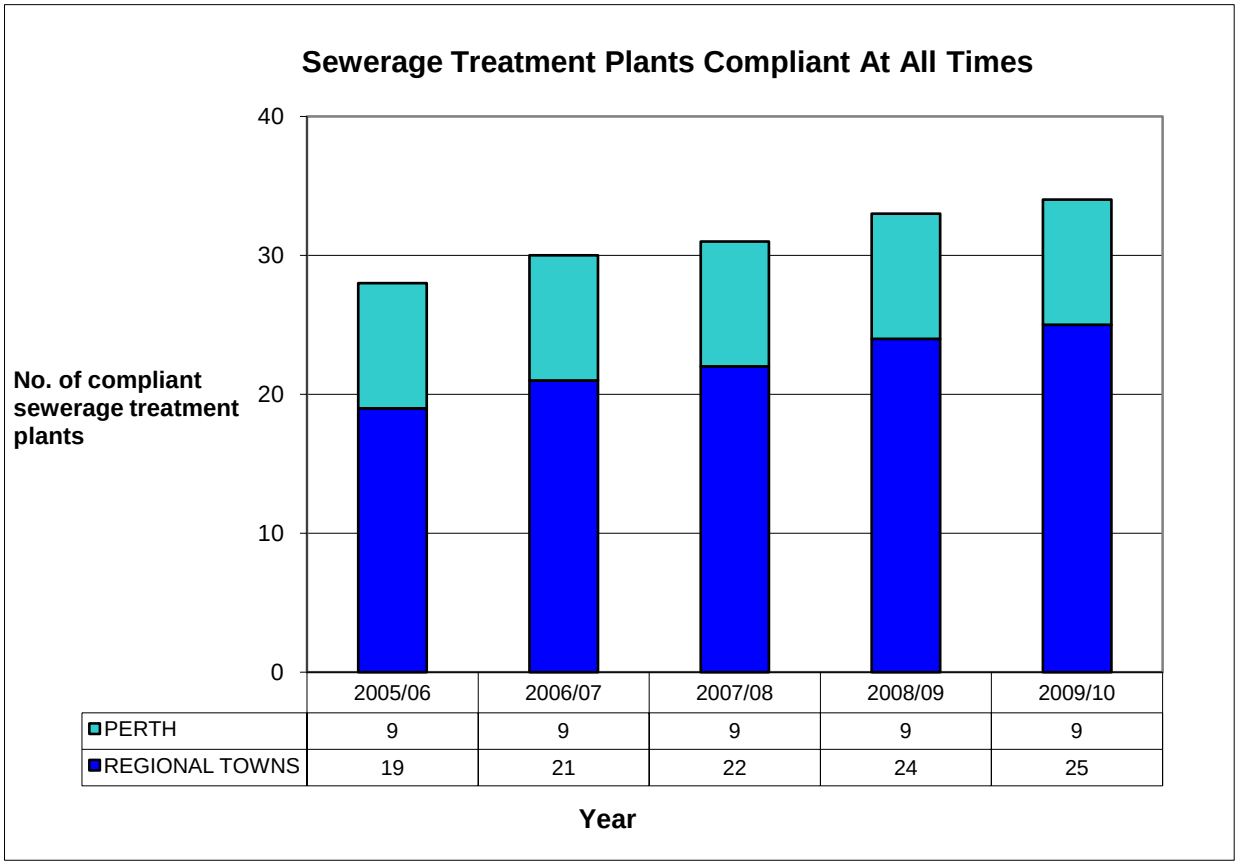
[34] Does not include Newman as data is not available.

Number of Sewage Treatment Plants Compliant at All Times

The purpose of this indicator is to report on the number of sewage treatment plants that were compliant with the environmental licence conditions related to sewage treatment plant effluent discharge at all times during the reporting period. This gives an indication of the overall performance of the utility's sewage treatment and, if problems exist, whether they are localised or more widespread.

Figure 13 shows that the number of Perth sewage treatment plants compliant at all times (9) has remained unchanged since 2005/06. All 25 of the sewage treatment plants in regional towns were compliant, compared to 2008/09 where 24 of the 25 plants were compliant.

Figure 13: Sewage Treatment Plants Compliant at all Times



Sewer Overflows to the Environment (per 100 km of main)

The purpose of this indicator is to report sewer overflows that may adversely impact on water quality, human health and ecosystem stability (where they occur in sensitive areas). The number of overflows may be used as an indicator of the condition of the sewerage network, as an indication of how effectively the network is being managed and may also be used to compare customer service. The definition of sewer overflows to the environment can be found in Appendix 2.

In 2009/10, Perth experienced 1.1 sewer overflows per 100km of sewer main that were reported to the environmental regulator, which is a 450% increase from 2008/09. The increase was due to the storm event in March 2010, which resulted in a high number of overflows. Regional towns averaged 0.5 overflows per 100km, which is a 50% decrease from 2008/09.

Small Sewerage Service Provider Performance

Providers

The Authority licences 20 small suppliers of sewerage services in Western Australia:

Hamersley Iron	**Shire of East Pilbara**	**Shire of Moora**
Rottnest Island Authority	**Shire of Gnowangerup**	**Shire of Morawa**
Shire of Brookton	**Shire of Goomalling**	**Shire of Ravensthorpe**
Shire of Coolgardie	**Shire of Jerramungup**	**Shire of Victoria Plains**
Shire of Dalwallinu	**Shire of Kent**	**Shire of Wickepin**
Shire of Dowerin	**Shire of Koorda**	**Shire of Yilgarn-Southern Cross**[35]
Shire of Dumbleyung	**Shire of Lake Grace**	**Shire of Yilgarn-Marvel Loch**

Table 23 shows that, during 2009/10, the total length of sewer mains in the small sewerage providers' schemes increased by 2.4% to 213km. Hamersley Iron operates the longest sewer mains of any of the small sewerage suppliers at 85km (spread over three towns) and the Shire of Gnowangerup operates the shortest sewer mains at 2.4km.

Table 23: Summary of data for small sewerage suppliers

Data	All Small Sewerage Suppliers		
	2007/08	2008/09	2009/10
Total length of sewer mains (km)	210	208[36]	213
Total no. of sewerage connections	6,847	6,812	6,821

The total number of sewerage connections has remained relatively constant over the three years to 2009/010.

All of the small sewerage licensees reported that 100% of customer complaints were resolved within 15 business days.[37]

The data for the frequency of sewer breaks and chokes ranges widely for the small sewerage licensees. The highest frequency was recorded by the Shire of Moora with 139.3 sewer breaks and chokes per 100km of sewer main.

Licensees are required to report on the overflows that were required to be reported to the environmental regulator. The Shire of Moora recorded the highest frequency on this indicator, with 17.4 overflows per 100km.

The performance indicator regarding emergency calls requires licensees to report the percentage of customers who, within one hour of reporting an emergency, were advised of the nature and timing of the action to be undertaken by the licensee. A number of licensees did not receive any emergency calls. Of those licensees who did receive emergency calls, all achieved 100% compliance with the standard.

[35] The Shire of Yilgarn operates two sewerage schemes, located at the Southern Cross town site and Marvel Loch town site respectively. While they are operated under a single licence, the two schemes are considered separately for the purposes of this report.

[36] The figure was reported incorrectly in the 2008/09 report as 251.

[37] Excludes those licensees who did not receive any complaints.

PART C: COMBINED WATER AND WASTEWATER PERFORMANCE INFORMATION

Performance Data Format

The performance data for all the towns/schemes in this section has been provided in a format consistent with the Urban Framework for water delivery and wastewater providers. Part C provides performance data for major towns or schemes where the data is applicable to both water and wastewater services.

Total Water and Sewerage Complaints

This indicator compares total complaints reported to operators that provide both water and wastewater supply services in the same town.

The following 29 WA towns/schemes are included in the analysis of this indicator:

Albany
Australind / Eaton
Bridgetown/Hester
Broome
Carnarvon
Collie
Denmark
Derby
Dongara / Port Denison
Dunsborough
Esperance
Geraldton
Harvey/Wokalup
Jurien
Karratha
Katanning
Kununurra
Mandurah
Manjimup
Margaret River Scheme
Merredin
Narrogin
Newman
Northam
Perth
Pinjarra
Port Hedland
South Hedland
York

The purpose of this indicator is to report customer satisfaction with water and sewerage services and provide an indicator of service quality and reliability. For a definition of a complaint see Appendix 2. The levels of complaints are normalised to per 1,000 connected properties.

Table 24 shows that, compared to 2008/09, customer complaints in Perth and regional towns fell. The large reduction in complaints was due to the Water Corporation revising its methodology for recording complaints to be more in line with industry standards. Jurien recorded the lowest number of complaints (2.7), while Collie recorded the highest number of complaints (33.2). Dunsborough recorded the highest percentage decrease of complaints (82.4%).

Table 24: Total Water and Sewerage Complaints (per 1,000 properties)

Data	Total water and sewerage complaints (per 1,000 properties)			Percentage Change
	2007/08	2008/09[38]	2009/10	%
Average of all towns[39]	40.1	25.5[40]	11.3	-55.7
Perth	34.6	37.7	16.8	-55.4
Average of regional towns	40.2	24.9[41]	11.1	-55.4
Largest % decrease of total complaints in 2009/10 (Dunsborough)	17.6	20.4	3.6	-82.4
Highest no. of total complaints in 2009/10 (Collie)	30.6	40.6	33.2	-18.2
Lowest no. of total complaints in 2009/10 (Jurien)	7.1	14.0	2.7	-80.7

[38] As a result of changes to NWI reporting requirements for 2008/09, service providers are not required to report where they do not provide both water and sewerage services in a town.

[39] As a result of the change identified in the previous footnote, the following towns are no longer included: Bridgetown/Hester, Carnarvon, Denmark, Derby, Dongara/Port Denison, Harvey/Wokalup, Margaret River Scheme, Pinjarra, Port Hedland and York. Because of this, the 2008/09 data cannot be directly compared to 2007/08 data the time series.

[40] This figure was recorded incorrectly in 2008/09 as 24.6.

[41] This figure was recorded incorrectly in 2008/09 as 25.2.

Billing and Account Complaints - Water and Sewerage

The following 35 WA towns/schemes are included in the analysis of this indicator and include, if applicable, water and wastewater schemes managed by different operators, for the same town.[42]

Albany	**Collie**	**Kalgoorlie-Boulder (W)**	**Narrogin**
Australind / Eaton	**Denmark**	**Kalgoorlie-Boulder (S)**	**Newman**
Bridgetown/Hester	**Derby**	**Karratha**	**Northam**
Broome	**Dongara / Port Denison**	**Katanning**	**Perth**
Bunbury (W)	**Dunsborough**	**Kununurra**	**Pinjarra**
Bunbury / Dalyellup (S)	**Esperance**	**Mandurah**	**Port Hedland**
Busselton (W)	**Geraldton**	**Manjimup**	**South Hedland**
Busselton (S)	**Harvey/Wokalup**	**Margaret River Scheme**	**York**
Carnarvon	**Jurien**	**Merredin**	

W = Water only S = Sewerage only

The purpose of this indicator is to report on the level of billing and account complaints received for the 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. Complaints regarding government pricing policy, tariff structures or when a correctly calculated bill is queried are excluded. The number of complaints has been normalised to the number of connected properties in 000's.

Table 25: Billing and Account Complaints - Water and Sewerage

Data		Billing and Account Complaints - water and sewerage (per 1,000 properties)			Percentage Change
		2007/08	2008/09	2009/10	%
Average of all towns		1.0	1.0	1.3	30.0
Perth		1.0	1.2	1.2	0.0
Average of regional towns		1.0	1.0	1.3	30.0
Highest number of complaints in 2009/10 (Margaret River Scheme)		1.1	1.3	3.4	161.5
Lowest number of complaints	Derby	0.0	2.0	0.0	-100.0
	Harvey/Wokalup	0.7	0.7	0.0	-100.0
	Newman	0.6	0.6	0.0	-100.0

Table 25 shows that, in 2009/10, the level of complaints made by customers in Perth remained unchanged from the previous year, while the level of complaints in regional towns increased.

In 2009/10, three towns recorded zero complaints[43] while customers in the Margaret River Scheme recorded the highest number of complaints (3.4 per 1,000 properties).

[42] This indicator allows schemes that only supply sewerage or water, to be compared with providers providing both services in the same town.

[43] Derby, Harvey/Wokalup and Newman recorded no complaints.

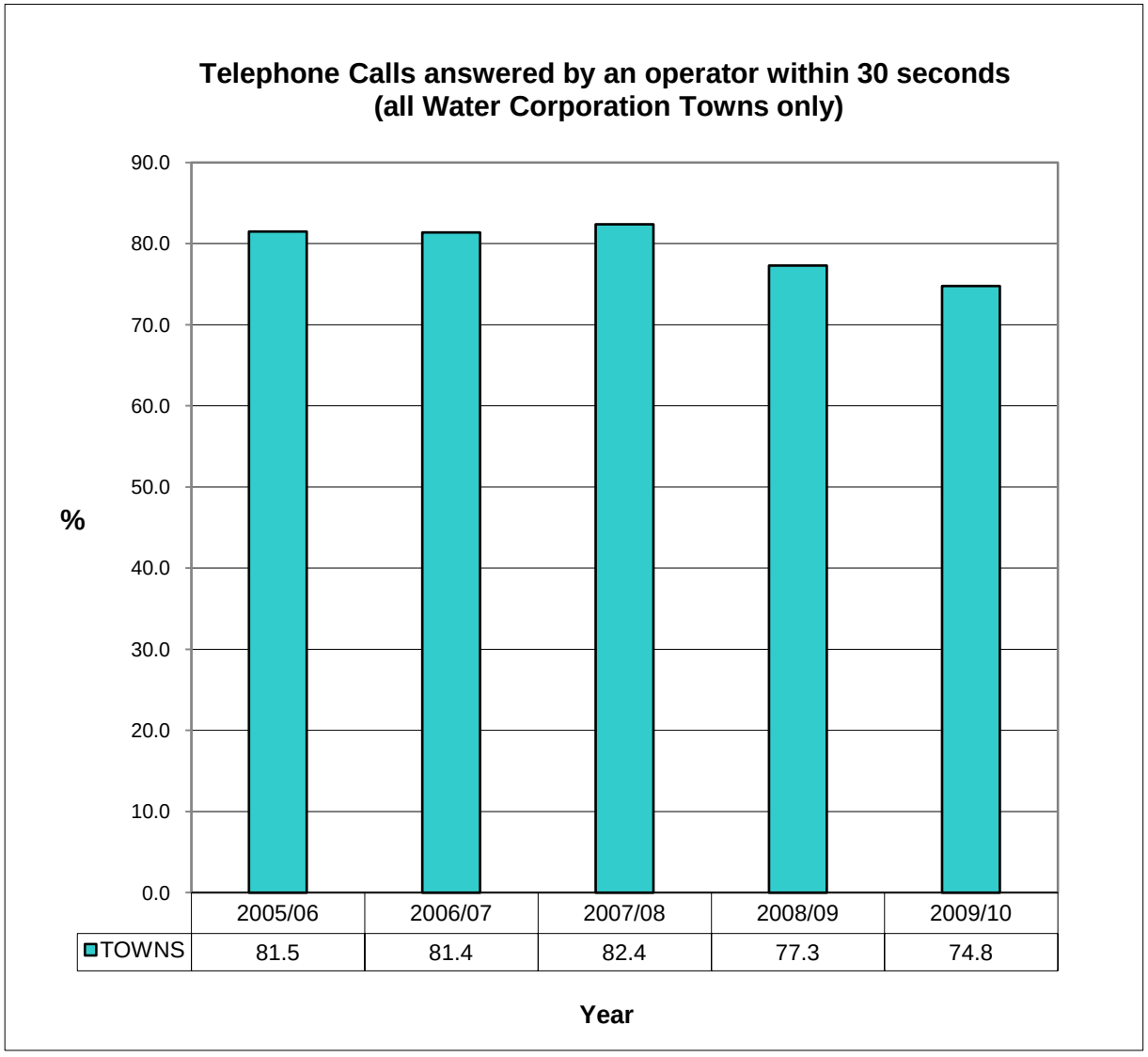
Connect Time to a Telephone Operator

The purpose of this indicator is to report on the proportion of calls that are answered by an operator within 30 seconds, where the customer has selected an option indicating they wish to speak with an operator.

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.

Water Corporation is the only water service provider that operates a state-wide customer call centre, covering both water and wastewater enquiries. In 2009/10, 74.8% of telephone calls to a Water Corporation operator were answered within 30 seconds, down from 77.3% in the previous year.

Figure 14: Telephone Calls Answered by an Operator within 30 Seconds



PART D: IRRIGATION PERFORMANCE INFORMATION

Irrigator Performance

This is the fifth report examining the performance of Western Australian irrigators. The irrigators licensed by the Authority in regional Western Australia are:

- Gascoyne Water Cooperative Ltd (**Gascoyne Water**);
- Preston Valley Irrigation Cooperative (**Preston Valley**);
- Ord Irrigation Cooperative Ltd (**Ord Irrigation**); and
- South West Irrigation Management Cooperative (**Harvey Water**).

The data presented in this report is taken from the annual licence performance reports provided to the Authority (by Gascoyne Water and Preston Valley) and from data provided through the NWI Rural Framework (by Harvey Water and Ord Irrigation).

Volume of Water Supplied

Table 26 shows that, compared to 2008/09, the total volume of water supplied for irrigation fell by 12.9%, and the total volume of non-potable water supplied fell by 16.4%. Ord Irrigation supplied 60.4% of the total state-wide irrigation water and Harvey Water supplied 94.1% of the total state-wide non-potable water.

Table 26: Volume of Irrigation Water and Non-Potable Water Supplied

Data	Volume of irrigation water supplied (kL)			Volume of non-potable water supplied (kL)		
	2007/08	2008/09	2009/10	2007/08	2008/09	2009/10
Gascoyne Water	4,605,800	5,557,000	6,858,000	88,500	121,000	131,000
Ord Irrigation	135,777,000	144,649,000	114,049,000	0	0	0
Preston Valley	765,000	929,000	837,000	31,000	0	0
Harvey Water	62,086,000	65,608,000[44]	66,965,000	1,990,200	2,514,000	2,073,000
Total	203,233,800	216,743,000[45]	188,709,000	2,109,700	2,635,000	2,204,000

Irrigation and Non-Potable Water Connections

Table 27 details the number of irrigation and non-potable water supply connections in 2009/10. Harvey Water accounted for 71.2% of the total state-wide irrigation connections and 77.6% of the total state-wide non-potable water connections. Comparing Table 27 with Table 26, it can be seen that the average volume of irrigation water per customer connection in the Ord Irrigation network (403,000kL) is eight times higher than that of the Harvey Water network (48,176kL).

[44] This figure for Harvey Water has been corrected as the figure reported in the 2008/09 report was the total sum of irrigation and non-potable water supplied i.e. 68,122,000.

[45] The total figure has been amended to reflect the correction in the above footnote.

Table 27: Number of Irrigation Connections and Non-Potable Water Supply Connections

Data[46]	Irrigation connections			Non-potable water supply connections		
	2007/08	2008/09	2009/10	2007/08	2008/09	2009/10
Gascoyne Water	179	187	187	82	86	89
Ord Irrigation	273	268	283	0	0	0
Preston Valley	68	86	91	35	0	0
Harvey Water	1,252	1,392	1,390	560	292	308
Total	1,772	1,933	1,951	677	378	397

Other Performance Indicators - Large Irrigators

Carrier Length (Gravity Irrigation)

In 2009/10, unlined channels accounted for 100% of the total carrier length for Ord Irrigation's gravity irrigation network.[47] In contrast, pipe accounted for 62.2% of Harvey Water's overall carrier length.[48]

Table 28: Carrier Length (Gravity Irrigation)

Data	Carrier Length (Gravity Irrigation) in 2009/10 (km)				
	Unlined Channel	Lined Channel	Pipe	Drainage – Unlined Channel	Total Carrier
Ord Irrigation	124.0	0.0	0.0	169.8	293.8
Harvey Water	172.0	83.0	453.0	0.0	708.0[49]
Total	296.0	83.0	453.0	169.8	1001.8

[46] For large irrigators the relevant indicator is the total of customer service points.

[47] For a definition for pipe see Appendix 3 (under carrier types).

[48] For a definition for carrier length see Appendix 3.

[49] Harvey Water provided a total figure of 728.0km, which includes 20km of natural waterway.

Complaints – Large Irrigators

Table 29 details the complaints made to Ord Irrigation and Harvey Water during the three years to 2009/10. In 2009/10, Ord Irrigation recorded four service delivery complaints, while Harvey Water did not record any service delivery complaints. Neither service provider recorded any complaints related to billing and accounts.

Table 29: Complaints for Large Irrigators

Data	Large Irrigators - Customer complaints								
	No. of customer service delivery complaints	No. of Billing and Account complaints	Total Complaints	No. of customer service delivery complaints	No. of Billing and Account complaints	Total Complaints	No. of customer service delivery complaints	No. of Billing and Account complaints	Total Complaints
	2007/08			2008/09			2009/10		
Ord Irrigation	0	0	0	5	0	5	4	0	4
Harvey Water	3	0	3	4	0	4	0	0	0
Total	3	0	3	9	0	9	4	0	4

Unaccounted For Irrigation Water

Table 30 shows that, in total, 22% of the total supply network intake volume for large suppliers is not accounted for in the volumes supplied to customers, which is a 3% increase from 2008/09. In general, the main causes of losses are evaporation during delivery and leakage from channels.

Table 30: Unaccounted for Irrigation Water

Data	Unaccounted for Irrigation Water for Large Irrigators								
	Total supply network intake volume (ML)	Unaccounted Irrigation Water[50] (ML)	Supply Network Delivery Efficiency (%)	Total supply network intake volume (ML)	Unaccounted Irrigation Water[51] (ML)	Supply Network Delivery Efficiency (%)	Total supply network intake volume (ML)	Unaccounted Irrigation Water[52] (ML)	Supply Network Delivery Efficiency (%)
	2007/08			2008/09			2009/10		
Ord Irrigation	213,907	78,130	63	178,740	34,091	81	151,154	37,105	75
Harvey Water	84,745	22,659	73	87,977	17,895	80	88,060	16,622	81
Total/ Average	298,652	100,789	66	266,717	51,986	81	239,214	53,727	78

[50] For Rural Framework definitions of unaccounted for water and supply network delivery efficiency see Appendix 4.

[51] For Rural Framework definitions of unaccounted for water and supply network delivery efficiency see Appendix 4.

[52] For Rural Framework definitions of unaccounted for water and supply network delivery efficiency see Appendix 4.

Other Performance Indicators - Small Irrigators

Written Customer Complaints

The only small irrigation agency to receive customer complaints received in 2009/10 was Gascoyne Water, who reported that 100% of the 14 complaints received were resolved within 15 business days.

Quality of Irrigation Water Supplied

The irrigation water quality standard in Gascoyne Water's and Preston Valley's licence is less than 1,200 mg/L of total dissolved solids (TDS). Gascoyne Water did not report the amount of TDS in the water that they supplied in 2009/10, while Preston Valley have reported a TDS value of 457mg/L for the water that they supplied.

APPENDICES

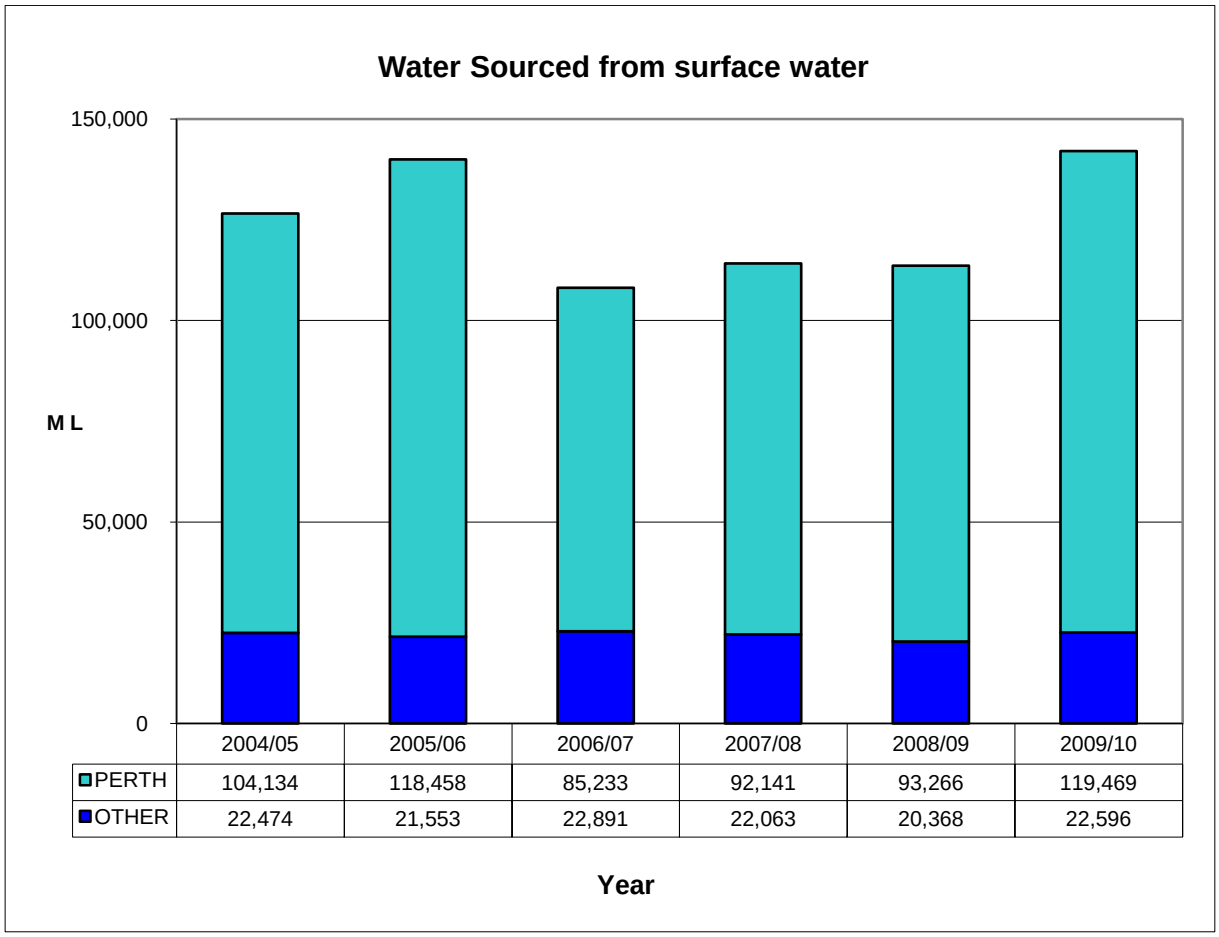
Appendix 1: Perth Data

This appendix contains graphs and information on historical data from the reports published by the Authority and its predecessor the Office of Water Regulation. Some of the indicators in those reports have an equivalent indicator in the NWI Urban Framework, which means that it has been possible to construct time series data for up to eight years.

Water Sourced from Surface Water

Surface water is water abstracted from dams, rivers or irrigation channels. Figure 15 shows the total volume of water sourced from surface water (142,065ML) increased by 25%, compared to 2008/09 (113,634ML). The volume of surface water sourced for consumption in Perth increased by 28.1% compared to 2008/09, and the volume of surface water sourced for other towns increased by 10.9%. The average annual volume of water sourced during the three years to 2009/10 (123,301ML) is 1.3% lower than the average annual volume sourced during the three years to 2006/07 and 0.6% lower than the average annual volume sourced during the six years to 2009/10.

Figure 15: Total volume of water sourced from surface water (all towns)



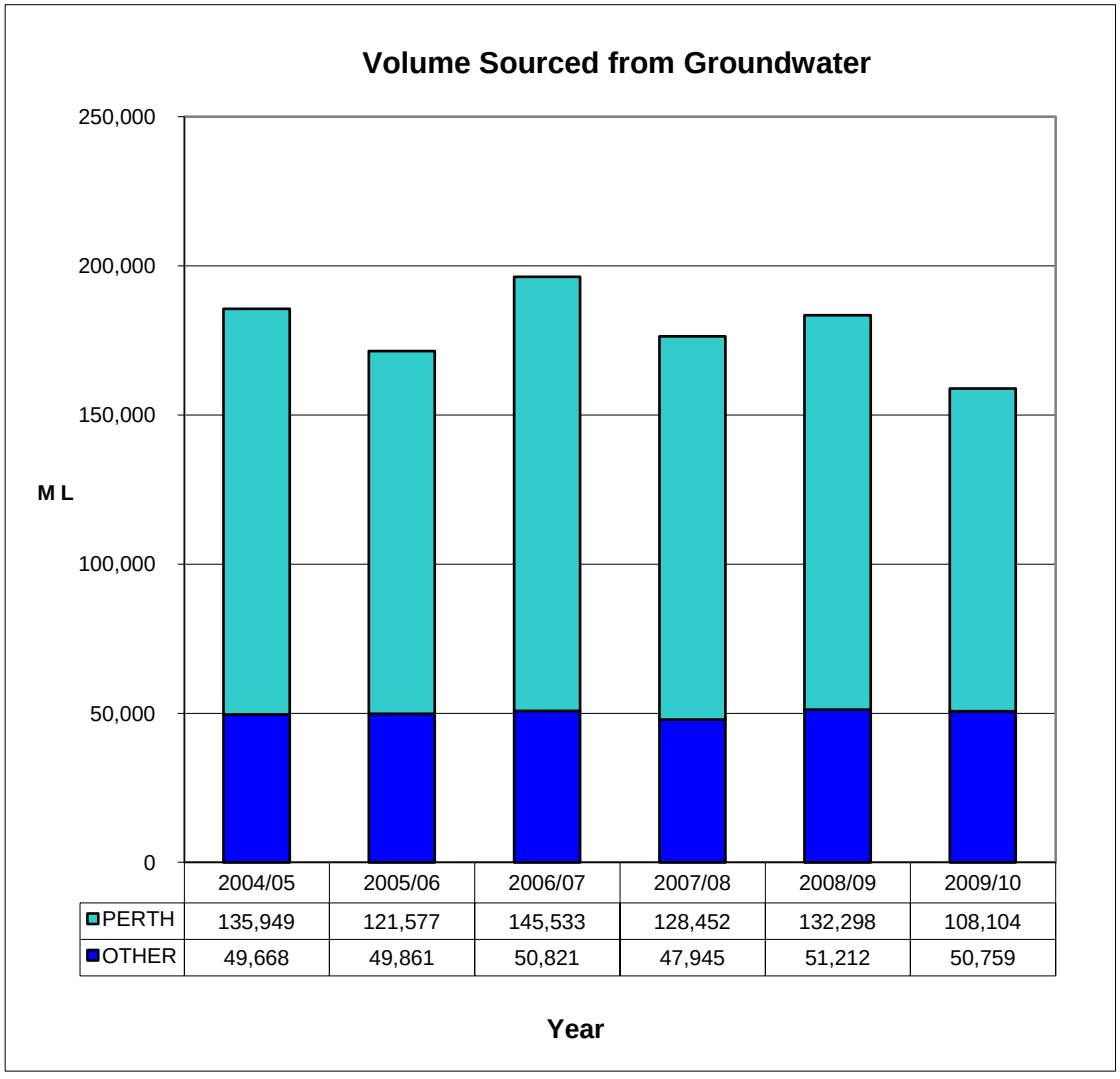
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
PERTH	104,134	118,458	85,233	92,141	93,266	119,469
OTHER	22,474	21,553	22,891	22,063	20,368	22,596

Water Sourced from Groundwater

Groundwater is water abstracted from aquifers and other "below ground" sources. It excludes volumes sourced from groundwater supplies that have been artificially recharged using sources of water that have been accounted for elsewhere i.e., from rivers, desalination or recycling sewage plants.

Figure 16 shows that the total volume sourced from groundwater (158,863ML) decreased by 13.4%, compared to 2008/09 (183,510ML). The volume of groundwater sourced for consumption in Perth (108,104ML) decreased by 18.3%, over the same period. The average annual volume of water sourced during the three years to 2009/10 (172,923ML) is 6.3% lower than the average annual volume during the three years to 2006/07 and 3.2 % lower than the average annual volume sourced during the six years to 2009/10.

Figure 16: Total volume of water sourced from groundwater (all towns)

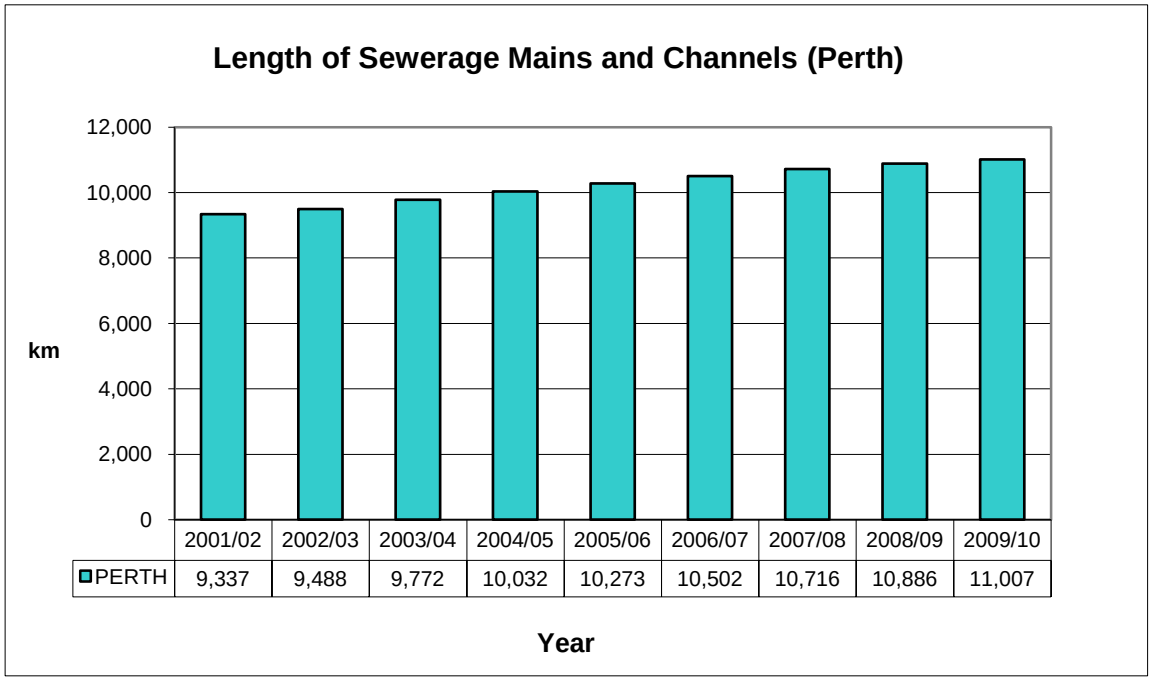


	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
PERTH	135,949	121,577	145,533	128,452	132,298	108,104
OTHER	49,668	49,861	50,821	47,945	51,212	50,759

Infrastructure and Connected Properties

Figure 17 details the length of sewerage mains and channels in Perth for the eight years to 2009/10. Since 2001/02, the size of the Perth sewer main system has increased by 17.9%, which is equivalent to an annual growth rate of 2%.

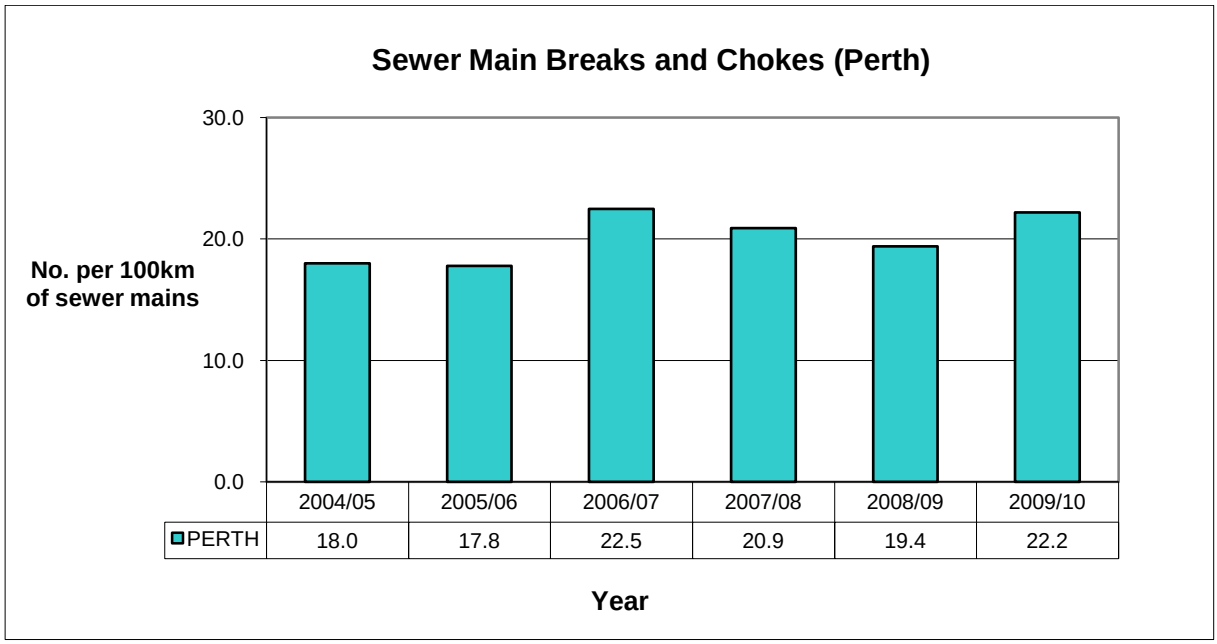
Figure 17: Length of Sewerage Mains and Channels (Perth)



Sewer Main Breaks and Chokes

Figure 18 shows the level of sewer main breaks and chokes over the six years to 2009/10. The average level of breaks during this period is 20.1. It can be seen that the average level of breaks over the 3 years to 2009/10 (20.8) is higher than the six year average.

Figure 18: Sewer Main Breaks and Chokes



Appendix 2: Summary of National Performance Framework Urban Definitions

Please note this is a summary of some of the main definitions for reporting urban indicators used under the National Performance Framework, mentioned in this report. Further details can be found in the National Performance Framework – 2009-10 Urban Performance Reporting Indicators and Definitions Handbook. This document can be obtained from the National Water Commission website (http://www.nwc.gov.au).

Data/Indicator	Definition
Average sewerage interruption (minutes)	A sewerage interruption is any event causing a significant reduction of sewerage service due to any cause. Interruptions exclude those caused by breaks or chokes in the property connection sewer.
Average Duration of an unplanned water supply interruption	A water supply interruption is any event causing total loss of water supply due to any cause. An unplanned water supply interruption is when the customer has not received at least 24 hours notification of the interruption. If the customer notifies the utility they are without water, the duration commences at the time of notification. This time is measured in minutes.
Biosolids	The stabilised organic solids derived from sewage treatment processes.
Complaint	Australian Standards define a complaint as an "expression of dissatisfaction made to an organization, related to its products, or the complaints-handling process itself, where a response or resolution is explicitly or implicitly expected." (AS ISO 10002-2006). Water Quality Complaints - The total number of complaints received by the water business that relate to water quality, including water quality complaints resulting from operational practices. With respect to water quality, this is any complaint regarding discolouration, taste, odour, stained washing, illness or cloudy water (e.g., caused by oxygenation), etc. ***Note:*** A water utility must be able to differentiate a 'query' versus a complaint' in order to be materially compliant for this indicator. A query can be defined as "A request by a customer for information about a product or service provided by the service provider that does not reflect dissatisfaction." Water Service Complaints - The total number of water service complaints received by the water utility. This includes all complaints concerning bursts, leaks, service interruptions, adequacy of service, water pressure and water reliability. It does not include complaints relating to government pricing policy or tariff structures. Sewerage Service Complaints - The total number of complaints received by the sewerage utility that relate to sewerage service quality and reliability. Includes all complaints concerning sewer blockages and spills, sewage odours, trade waste services, sewerage system reliability and all other sewerage issues. It does not include complaints relating to government pricing policy or tariff structures.
Connect time to a telephone operator	The total number of calls received by a retailer that were handled by an operator or customer service operator, and in the case of an IVR (interactive voice response) system covers the number of calls where the customer has selected the relevant operator option. This is expressed as a percentage of calls answered by an operator within 30 seconds.
Overflow (Sewage)	This is when untreated sewage spills or discharges and escapes from the sewerage system (i.e., pumping stations, pipes, maintenance holes or designed overflow structures) to the external environment, and is required to be reported to the environmental regulator as per the utility's license.

Data/Indicator	Definition
	Overflows are those caused by system faults originating in the system under the water utility's responsibility.
Length of water mains	The total length of water mains, including all transfer, distribution, reticulation mains and recycled water distribution and reticulation mains delivering water for urban areas.
Length of sewer mains and channels	The total length of mains and channels, including all trunk, pressure and reticulation mains. It does not include lengths associated with property connection sewers or conduits carrying treated effluent.
Primary treatment	The first major treatment process in a sewage treatment facility, principally designed to remove a substantial amount of suspended matter, but little or no colloidal or dissolved matter.
Residential water supplied	Total metered and estimated non-metered, potable and non-potable water supplied to residential properties for the reporting period.
Secondary treatment	Typically, a biological treatment process that is designed to remove approximately 85 per cent of the Biological Oxygen Demand (BOD) and influent suspended solids. Some nutrients may incidentally be removed, and ammonia may be converted to nitrate.
Sewer main breaks and chokes	Breaks or Leaks - A break or leak is a failure of the sewer main which results in an interruption to the sewerage service. Choke - A confirmed partial or total blockage that may or may not result in a spill to the external environment from the sewer system.
Sewer mains	Sewer reticulation mains include all gravity sewer mains, all pressure mains (including common effluent pipelines, rising mains etc) and all vacuum system mains of any diameter. This excludes property connection sewers and pipelines carrying treated effluent.
Tertiary or advanced (sewage) treatment	Principally designed to remove nutrients, such as phosphorus (typically <2 mg/L) and/or nitrogen (typically <15 mg/L). A high percentage of effluent suspended solids (typically >95 per cent) are also removed. Tertiary treatment may additionally target other contaminants of concern, e.g., toxicants and salt for discharges into sensitive waterways or reuse applications where high quality recycled water is required.
Total number of water main breaks	The total number of main breaks, bursts and leaks in all diameter mains for the reporting period. Breaks exclude those in the property service (i.e., mains to meter connection) and weeps or seepages associated with above ground mains that can be fixed without shutting down the main.
Total connected properties – water supply	A connected water/sewerage property is: 1. connected to the licensee's water system 2. the subject of billing for water supply—fixed and/or consumption, and 3. any property which, at the end of the reporting period, is connected to the water system and is separately billed for water services—fixed and/or consumption.
Total connected properties – sewerage	A connected sewerage property is: 1. connected to the licensee's sewerage system 2. the subject of billing for sewerage collection—fixed and/or consumption, and 3. any property which, at the end of the reporting period, is connected to the sewerage system and is separately billed for sewerage services—fixed and/or consumption.
Total recycled water supplied	The sum of all treated effluent that is 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. Evaporation is excluded. The parameters are the

Data/Indicator	Definition
	total sewage collected and the volume of effluent recycled. Recycled water can be used for on-site reuse, agriculture, irrigation, industry, potable or any other use external to the treatment process.
Total sewage collected	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., wholesaler. Where only treatment plant outflow is measured, record this value and comment appropriately. This measure should equal the sum of volumes reported for residential, non-residential and non-trade sewage collected and trade sewage collected.
Total sourced water	This is the sum of the volumes as supplied from dams, river extraction, groundwater, desalination, recycling and bulk supplier.
Total urban water supplied	The total metered volume of water (potable or non-potable) supplied to customers over the reporting period plus estimated non-metered water supplied. This comprises the sum of residential water supplied, commercial, municipal and industrial water supplied and other water supplied (includes estimated non-metered water supplied).
Volume of recycled water supplied - residential	Total metered and estimated non-metered consumption of recycled water by residential properties for the reporting period. This would generally occur via a third pipe system.
Volume of recycled water supplied – commercial, municipal and industrial	Total metered and estimated non-metered consumption of recycled water by commercial, municipal and industrial properties for the reporting period. For example, recycled water supplied to golf courses, heavy industry and commercial areas.
Volume of recycled water supplied - agricultural	Total metered and estimated non-metered consumption of recycled water for agricultural purposes. For example, recycled water supplied to irrigate crops, forestry or agricultural products including livestock.
Volume of recycled water supplied - environmental	Recycled water discharged to a waterway for environmental purposes as prescribed by the environmental regulator. There must be a quality characteristic that is a net benefit to the environment as determined by the relevant regulator.
Volume of recycled water supplied – On-site	Recycled water used on-site external to the treatment process.
Volume of recycled water supplied – Other	Total estimated non-metered recycled water supplied to other users. This may include estimated water used for fire fighting, mains flushing, losses (due to customer meter errors, leakage or contractors) or any other consumption due to operations.
Volume of water sourced from surface water	The total volume of water (potable and non-potable) abstracted by the utility from surface water sources such as dams, rivers or irrigation channels during the reporting period.
Volume of water sourced from groundwater	The total volume of water (potable and non-potable) abstracted from groundwater during the reporting period. To avoid double counting, 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). Other forms of artificial recharge (i.e., storm water) not counted elsewhere are to be included.
Volume of water sourced from desalination	The total volume of water (potable and non-potable) sourced from desalination plants during the reporting period.
Volume of water	The total volume of water supplied by the water utility sourced from recycled

Data/Indicator	Definition
sourced from recycling	water during the reporting period including recycled water from direct or indirect reuse. This should be the sum of residential, industrial/commercial, municipal irrigation and on-site substitution (where it replaces potable water). Water supplied for agribusiness by the utility should also be included where potable water (or raw supply to the potable system) would normally be used.
Volume of water received from bulk supplier	The total volume of water (potable and non-potable) purchased from another utility or entity outside a utility's geographic area of responsibility. The volume of water will include water which is subsequently exported (sold) to another utility.
Water treatment plant	An individual location receiving raw or partially treated water for treatment and ultimate delivery to customers. There may be more than one water treatment plant at an individual facility. Secondary or booster disinfection plants are not included, even where they have pH correction. Water treatment plants that provide fluoridation are classified as disinfection only. Disinfection only - The water treatment plant solely disinfects the water prior to supply to customers. This does not include booster disinfection plants or stations. Further treatment - The water treatment plant provides additional processes to serve a particular purpose. Whilst not meeting the requirements of full treatment (defined below), it may address some of the elements of full treatment. Full treatment - Generally, the water treatment plant is a substantial structure involving multiple treatment methods to achieve high quality water. The treatment plant would generally include processes that remove colour and/or turbidity as well as providing filtration and disinfection. In addition to the above, it may include processes for taste and/or odour reduction, softening, pH correction and the targeted removal of elements and compounds such as iron, manganese, nitrates and pesticides.
Zone	A water supply zone will generally be defined by each water business using criteria such as: ▪ A discrete area of similar water quality, e.g., served by one water treatment plant. ▪ An area able to be described by its boundaries. ▪ The nature and design of the water supply system (including the location of service reservoirs, pump stations, tanks, and trunk systems etc). ▪ The source and nature of the source of the drinking supply. ▪ The treatment components of the supply system. ▪ Australian Drinking Water Guidelines Framework for Management of Drinking Water Quality.

Appendix 3: Summary of Water Efficiency Measures and Restriction Stages

Permanent Water Efficiency Measures

In 2001, a two day a week sprinkler roster was introduced for those areas served by the Integrated Water Supply Scheme, to meet demand at a time of very poor rainfall.

Permanent water efficiency measures came into effect throughout Western Australia on 1 October 2007 with the passing of the Water Agencies (Water Use) By-laws 2007. These by-laws were later repealed by the Water Agencies (Water Use) By-laws 2010, on 1 April 2010.

For the purposes of the efficiency measures, Western Australia has been divided into four areas which are defined in Part 1 of the by-laws.

Winter Sprinkler Bans

The State Government has announced that a permanent winter sprinkler ban will be in force from 1 June to 31 August each year for Perth, Mandurah and the south west of the state.

Perth Scheme Water Users

For Perth, Stage 6 water restrictions apply from 1 June to 31 August of each year and Stage 4 water restrictions apply for the remainder of the year with watering allowed on two nominated days only, based on the last digit of house numbers.

Perth Garden Bore Owners

Under the water efficiency measures that came into effect on 1 October 2007, garden bore owners in Perth and Mandurah may only water their gardens using bores three days a week. The three day watering roster for garden bore owners works on the same roster as the two day a week scheme water users, plus an additional day.

State Government Agencies & Business Customers

Since 1 July 2007 the WA State Government's water efficiency measures require all businesses (who consume over 20,000 kL of scheme water per meter reading year) and all State Government Agencies bound by Policy 14 of Department of Housing and Works, Office Accommodation Policies August 2004 to complete an annual water management assessment and submit a water efficiency management plan.

Local Councils

The implementation of the water efficiency measures will ensure that Local Councils using bore water in metropolitan Perth, through the Western Australian Local Government Association, comply with the state-wide daytime sprinkler ban. This includes amendment of Local Government Authority and Government Department water allocation licences to include the daytime sprinkler ban condition. All local councils using scheme water for reticulation must comply with the daytime sprinkler ban.

Local government authorities must develop and submit water efficiency plans to the Department of Water.

Water Restriction Stages

There are seven water restriction stages in Western Australia. The water restriction stages are set out in Schedule 2 of the Water Agencies (Water Use) By-laws 2010.

Appendix 4: Summary of National Performance Framework Rural Definitions

Please note this is a summary of some of the main definitions for reporting rural indicators used under the Urban Framework, mentioned in this report. Further details can be found in the National Performance Framework – 2009-10 Rural Performance Reporting Indicators and Definitions Handbook. This document can be obtained from the National Water Commission website (http://www.nwc.gov.au).

Data/Indicator	Definition
Carrier Types	Carrier types in supply and drainage networks are as follows: ▪ Lined channel – an earthen channel lined with a low permeability material; ▪ Unlined channel – an earthen open channel without internal lining; ▪ Natural waterway – a stream or other naturally formed watercourse; and ▪ Pipe – a closed conveyance or carrier regardless of material, size or shape which conveys water typically for supply service. It is also a buried perforated carrier to collect subsurface drainage water.
Characteristic	The characteristics comprise information about rural water service providers, their businesses, reporting entities if applicable, service categories, individual services, and service related assets including water supply or drainage collection networks, customer service details and the like.
Customer Billing and Account Complaints	The total number of billing or account complaints received relating to billing activities and accounts issued by the reporting entity for rural water services. Complaints from separate customers arising from the same cause count as separate complaints.
Customer service Indicators	This indicator set reflects the 'quality of service provision' and therefore provides insights and indications into customer service performance. The indicators reflect the extent to which customer service intent has been met and matters such as the availability of assets to operate during the reporting period as well as customer complaint information.
Customer Service Points	A legitimate water service location that may or may not have a measurement device at which a customer is provided with a rural water service from a rural water service provider. This could be either a water supply or a drainage collection point. A water service location where two or more customers take water (for example via a shared pump) is counted as a single customer service point.
Environmental and Water Management Indicators	This indicator set provides insights into the degree and effectiveness of measurement devices, supply or extraction over legitimate allocation availability, the measurable efficiency of water supply networks, and the presence of environmental management plans. In comparison to the urban sector, the broad objective of comparable indicators in respect of environmental performance is more difficult to achieve in the rural water sector given the diverse nature and manner of services provided by rural water service providers.

Data/Indicator	Definition
Rural water service delivery complaints	A complaint is an expression of dissatisfaction made to an organisation, related to its products, or the complaints-handling process itself, where a response or resolution is explicitly or implicitly expected. A complaint can be a written or verbal expression of dissatisfaction about an action, proposed action or failure to act by the water service provider, its employees or contractors. Complaints from separate customers arising from the same cause count as separate complaints. Service Delivery complaints include leaks, service interruptions, metering, overuse, adequacy of service and water pressure (in the case of pressurised water supply networks) or flow rate (in the case of gravity supply networks). Water quality complaints are excluded with the exception of water supply networks where the supply is supplemented directly by water sourced from drainage infrastructure or from urban or industrial wastewater treatment plants. Complaints regarding ordering, affordability, customer administration, billing and account complaints, complaints in regard to customer ordering networks associated with water-on-order water supply networks or regulated surface water supplies are excluded from this measure.
Rural Water Service Provider	An organisation that provides a rural water service or services in one or more of the following five rural water service categories: ▪ Regulated River Supply Service ▪ Network Supply Service (see above) ▪ Drainage Service ▪ Surface Water Diversion Service ▪ Groundwater Diversion Service
Supply network delivery efficiency	The percentage of measured inflow volume to a supply network that is delivered via customer service points and other planned deliveries from the supply network.
Supply Network Intake Volume	Total volume of water diverted (or extracted) for supply into a raw water supply network for the reporting period, whether measured directly with a compliant supply measurement device or a provider approved supply measurement device, or a provider approved indirect measurement method from each of the following sources: ▪ Surface water (from all sources including any drainage water that enters the supply network by gravity or pumping); ▪ Groundwater (including any drainage water that is pumped into the supply network); and ▪ Treated wastewater from urban supply networks.
Unaccounted for Water	The difference between the measured intake volume to a supply network and the total deliveries from the supply network. Unaccounted water will include unintended outflows (e.g., due to operational margins or errors), evaporation, seepage, leakage, measurement error and theft.
Volume supplied at customer service points	Total volume of water supplied via customer service points over the reporting period whether measured directly with a compliant supply measurement device or a provider approved supply measurement device or indirectly by a method approved by the reporting provider such as deeming. Estimates of deemed water supplied reflect the estimated supply for billing purposes regardless of the amount actually taken by the customer.