Water, Wastewater and Irrigation Performance Report 2009

June 2010

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 different 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 29 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.
- Hamersley Iron: water supply and sewerage services.
- Rottnest Island Authority (**RIA**): water supply, sewerage and drainage services.
- The Shire of Denmark: non-potable water supply services.
- 18 local government authorities: non-potable water supply and sewerage services.[5]
- 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 $12.3 billion of water supply, sewerage and drainage infrastructure.[6]

Aqwest and Busselton Water are government statutory authorities operating under the *Water Boards Act 1904*. Aqwest and Busselton Water service approximately 15,500 and 11,000 connected properties respectively, and manage infrastructure of approximately $76 million and $42 million respectively.[7]

The City of Kalgoorlie-Boulder provides sewerage services to the town of Kalgoorlie-Boulder. The City of Kalgoorlie-Boulder services approximately 14,000 connected properties and manages approximately $26.7 million in sewerage and effluent infrastructure.

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.

The RIA operates water and electricity services on Rottnest Island.

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

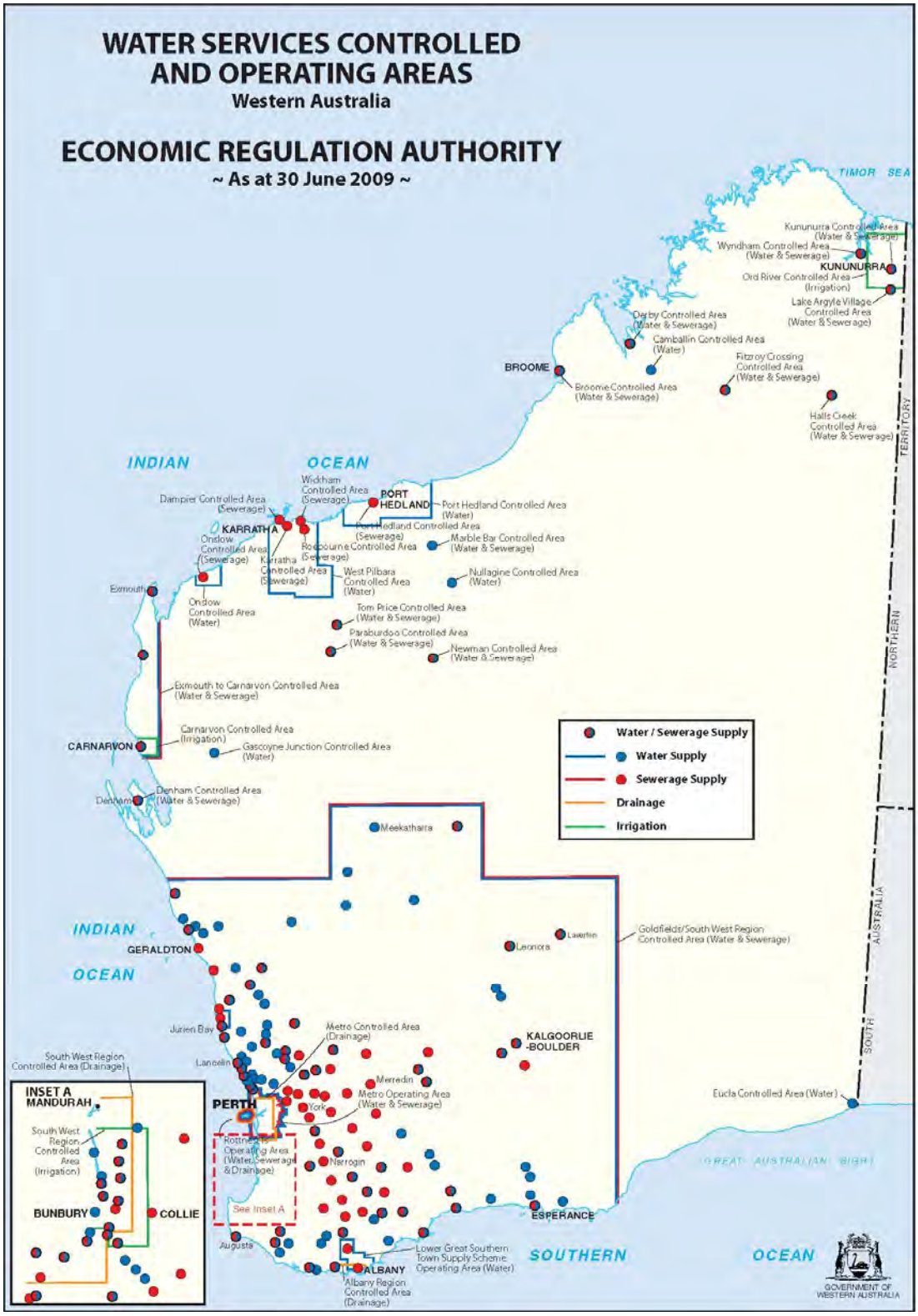
[5] A list of the local government licensees supplying non-potable water and sewerage services is available in the Small Sewerage Service Provider Performance section of this report.

[6] See Water Corporation's 2009 Annual Report for more details.

[7] See Busselton Water's 2008/09 Annual Report and Aqwest's 2009 Annual Report for more details.

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. The Authority is the data 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.[8]

The NWC has published three reports on urban utilities, covering the three years to 2007/08 and two reports on rural water services, covering the two years to 2007/08. The urban and rural reports for 2008/09 were published in April 2010. 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).[9]

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.[10] This report includes the smaller operators of 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.

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

[9] 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.

[10] 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 March 2009. The Reporting Manual sets out standard performance reporting obligations for each type of supply service: potable water, non-potable water, sewerage and irrigation.[11] 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 will facilitate consistency of performance reporting for all service providers in Western Australia.

The new performance reporting obligations for smaller service providers, based on a sub-set of the indicators in the Urban and Rural Frameworks, became operational for the 2008/09 reporting period covered by this report.

The Impact of Changes to the Performance Reporting Framework

This is the fourth report published by the Authority that examines the performance of water, wastewater and irrigation service providers in Western Australia. The previous reports covered the seven years to 2007/08.[12] 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 2008/09 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.

Highlights

Water Supply

Total sourced water for all towns in 2008/09 was 356,226ML, an increase of 4.3% from 2007/08. Since 2007/08, the proportion of drinking water sourced from desalination increased from 7.8% to 9.3% (or 33,160ML). Over the same period, the percentage of water sourced from surface water fell from 33.4% to 31.9% and the percentage sourced from groundwater remained relatively unchanged at 51.5%. During 2008/09, the relative proportion of sourced water for Perth followed the same pattern. In 2008/09, groundwater accounted for 50.0% of Perth's drinking water, down from 57.3% in 2006/07.

By June 2009, there were 896,000 connected properties for water supply, an increase of 2.4% from the previous year. Total urban water supplied was 330,329ML, an increase of 3.7% compared to 2007/08, of which 75.6% was supplied to Perth. During 2008/09, an average of 346kL of water was supplied per residential property. In regional towns, average

[11] 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.

[12] Water, Wastewater and Irrigation Performance Report 2005, Water, Wastewater and Irrigation Performance Report 2007 and Water, Wastewater and Irrigation Performance Report 2008, all of which are available on the Authority's website: http://www.era.wa.gov.au/2/257/51/publications.pm

consumption was 348kL per property, 25.6% more than the 277kL consumed by the average residential Perth property.

In regard to customer service, the number of water quality complaints made by Perth customers increased by 8.3% in 2008/09, however, in regional towns the number of complaints fell by 16.3%.

The average duration of an unplanned water supply interruption for all towns in 2008/09 was 91.0 minutes, down from 99.7 minutes in 2007/08. There was, however, an increase in the frequency of interruptions for all towns, from 132.4 (per 1,000 properties) in 2007/08 to 165.2 in 2008/09.

Wastewater Services

During 2008/09, the total volume of sewage collected (146,241ML) was virtually unchanged from 2007/08. There was a fall in the average volume of sewage collected per property for all towns, from 194kL in 2007/08 to 189kL in 2008/09. In 2008/09, total sewage collected in Perth totalled 122,249ML, or 48.9% of the total urban water supplied in Perth (249,756ML). The total volume of recycled water supplied increased from 17,295ML in 2007/08 to 18,263ML in 2008/09, due in part to an increase in the percent of effluent that was recycled in 2008/09.

Compared to 2007/08, the total number of connected properties in all towns increased by 3.7% (to 779,000[13]). Perth experienced an increase in the number of connected properties of 2.9%, to 640,000 connections. Regional towns experienced a 7.8% increase in the number of connected properties, to a total of 139,000 connected properties.

In 2008/09, the total volume of recycled water supplied was 18,263ML, of which 65.8% was supplied to commercial, municipal and industrial users. Perth accounted for 41.8% of the total volume of recycled water supplied. In 2008/09, Perth recycled 6.2% of the total effluent treated, compared to 51.7% in the average regional town.

There was a 6.3% improvement in the number of sewerage service complaints made by customers from all towns. There was also an improvement in the number of sewer main breaks and chokes, with the average for all towns falling to 26.3 per 100km in 2008/09, down from 29.2 per 100km in 2007/08. Consistent with previous years, Perth customers continued to experience a smaller number of breaks and chokes than customers in regional towns. In Perth, the number of sewer main breaks and chokes per 100km of sewer main in 2008/09 was 19.4, a fall of 7.2% compared to 2007/08. In 2008/09, the average number of breaks and chokes in regional towns decreased by 10.1% to 26.6 per 100km.

In 2008/09, the average number of sewerage service complaints for all towns (7.4 per 1,000 properties) decreased by 6.3%, compared with 2007/08. Perth recorded 6.2 sewerage service complaints per 1,000 properties, a fall of 8.8% compared to 2007/08.

In 2008/09, the average town had 58.1% of its sewage treated to a secondary level and 41.8% of its sewage treated to a tertiary level, virtually unchanged from 2007/08. In Perth, approximately 95% of sewage was treated to a tertiary level, which contrasts with the average regional town, where only 39% of sewage was treated to a tertiary level.

[13] Rounded to the nearest 1,000.

Irrigation Services

In 2008/09, there were increases in both the volume of irrigation water supplied and the volume of non-potable water supplied. The volume of irrigation water supplied in 2008/09 was 219.3GL, an increase of 7.9% compared to 2007/08. Gascoyne Water increased its supply volume (by 20.7% to 5.6GL) and the other irrigators also reported an increase in supply. The volume of water supplied by Ord Irrigation increased by 6.5% (to 144.6GL), Preston Valley increased by 21.4% (to 0.9GL) and Harvey Water increased by 9.7% (to 68.1GL).

In 2008/09, the total volume of water supplied for non-irrigation purposes (including non-potable water) was 2.64GL, an increase of 24.9% compared to 2007/08. Gascoyne Water supplied 121.0ML (88.5ML in 2007/08), Harvey Water supplied 2.51GL (1.99GL in 2007/08) and Preston Valley did not supply any water for non-irrigation purposes (31ML in 2007/08).

In 2008/09, there were 1,933 irrigation connections and 378 non-potable water connections. Harvey Water accounted for 72% of the irrigation connections and 77% of the non-potable water connections.

The water supplied by irrigators accounted for 40.2% (221.9GL[14]) of all water supplied in the state in 2008/09 (552.2GL[15]).

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

[15] 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:[16]

- 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 will 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.

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.[17]

Figure 2 shows that total water sourced for all towns in 2008/09 has increased by 4.3% (to 356,226ML), compared to 2007/08, and increased by 14.6% over the period 2003/04 to 2008/09. In 2008/09, water sourced for Perth increased by 4.4% and regional towns increased by 3.9%, compared to 2007/08. In 2008/09, 74.2% of total water sourced was supplied to Perth.

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

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

Figure 2: Total volume of water sourced from all sources

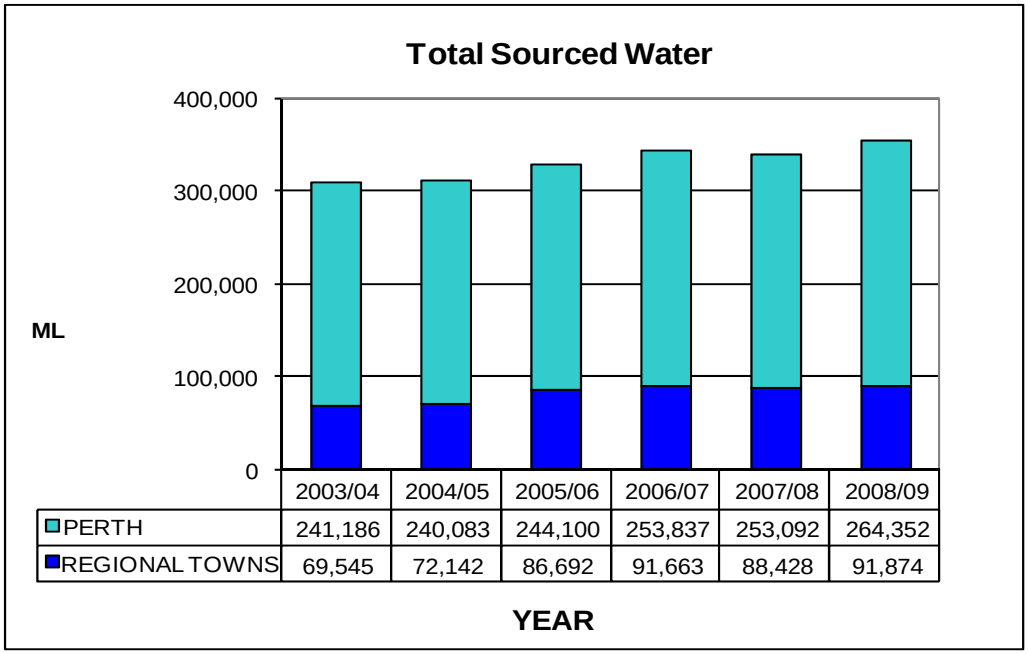


Figure 3 shows that in 2008/09, the volume of water sourced from ground water, desalination, recycling and bulk supplier has increased by 4.0%, 24.8%, 2.4% and 9.2% respectively, compared to 2007/08. Water sourced from surface water has decreased by 0.5% over the same period. The Kwinana desalination plant began supplying water to Perth in November 2006. Desalination accounted for 10.5% of Perth's total sourced water in 2007/08, increasing to 12.5% in 2008/09.

Figure 3: Sources of water by volume (All Towns)

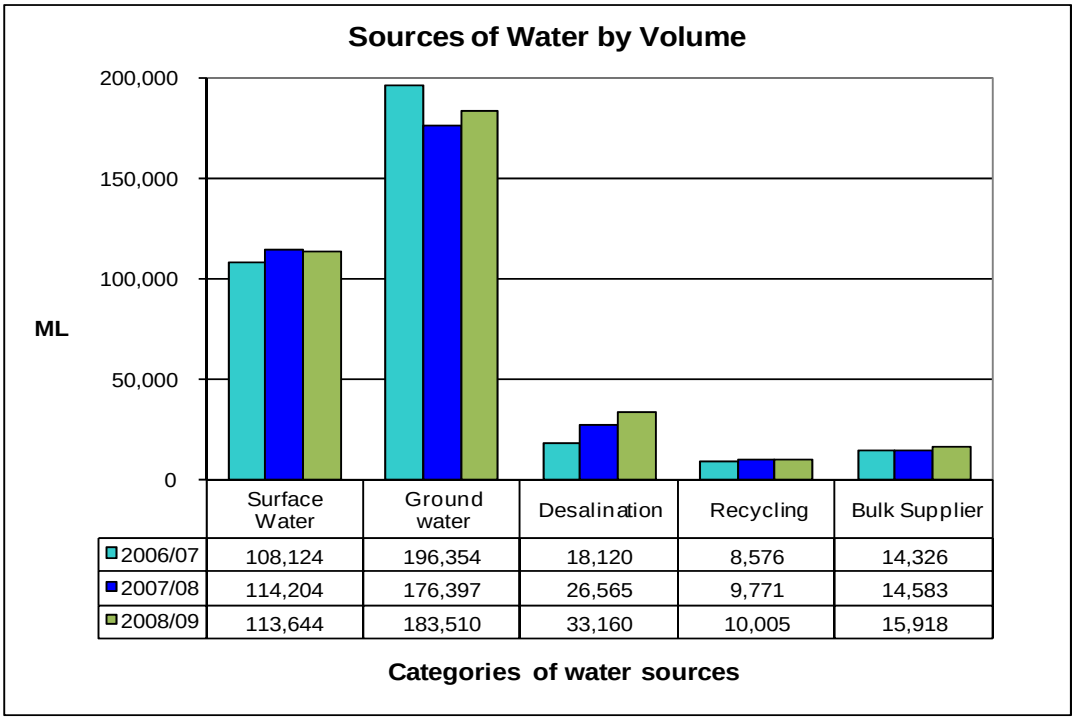


Figure 4 shows that, in 2008/09, desalination sources and bulk suppliers provided an increased percentage of the total water sourced, compared to 2007/08. Correspondingly, the percentage of water sourced from surface water, groundwater and recycling has decreased over the same period.

Figure 4: Sources of water by percentage (All Towns)

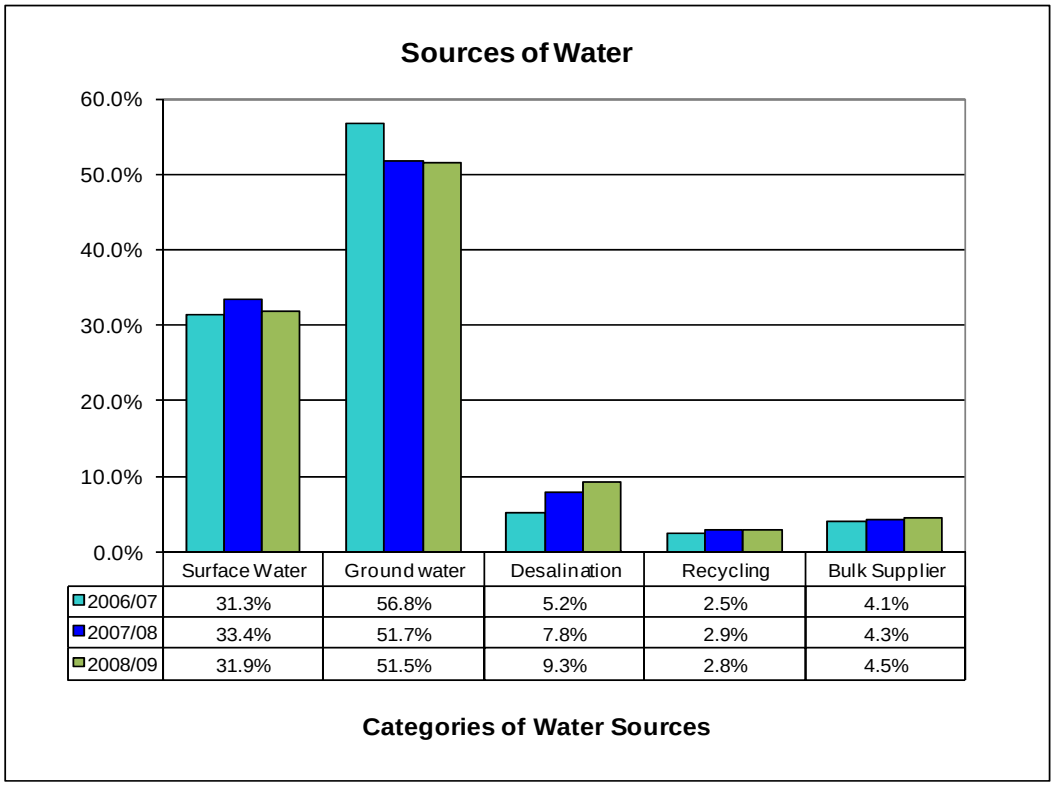


Figure 5 shows that, in 2008/09, the volume of water sourced from surface water, groundwater and desalination for Perth increased, compared to 2007/08. Water sourced from recycling has decreased over the same period.

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

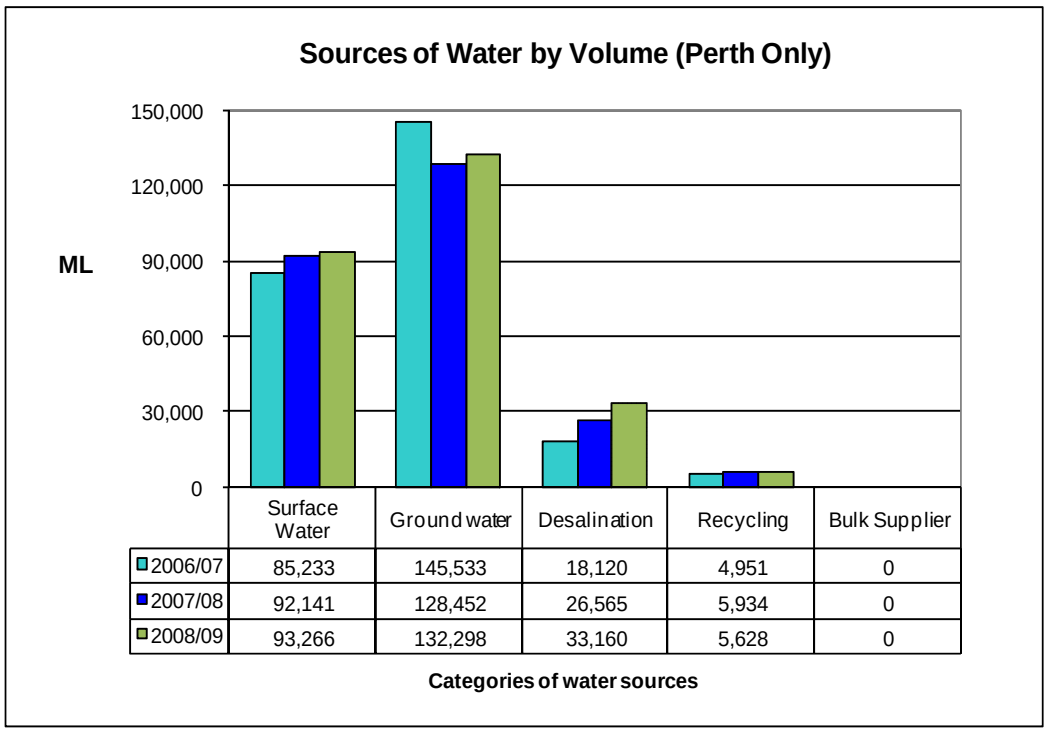


Figure 6 shows that in 2008/09, groundwater accounted for 50.0% of Perth's total sourced water. Surface water accounted for 35.3% of the total sourced water, down from 36.4% in 2007/08. The increased proportion of water sourced from the Kwinana desalination plant

has facilitated a corresponding reduction in the proportion of groundwater used to supply Perth's drinking water supply.

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

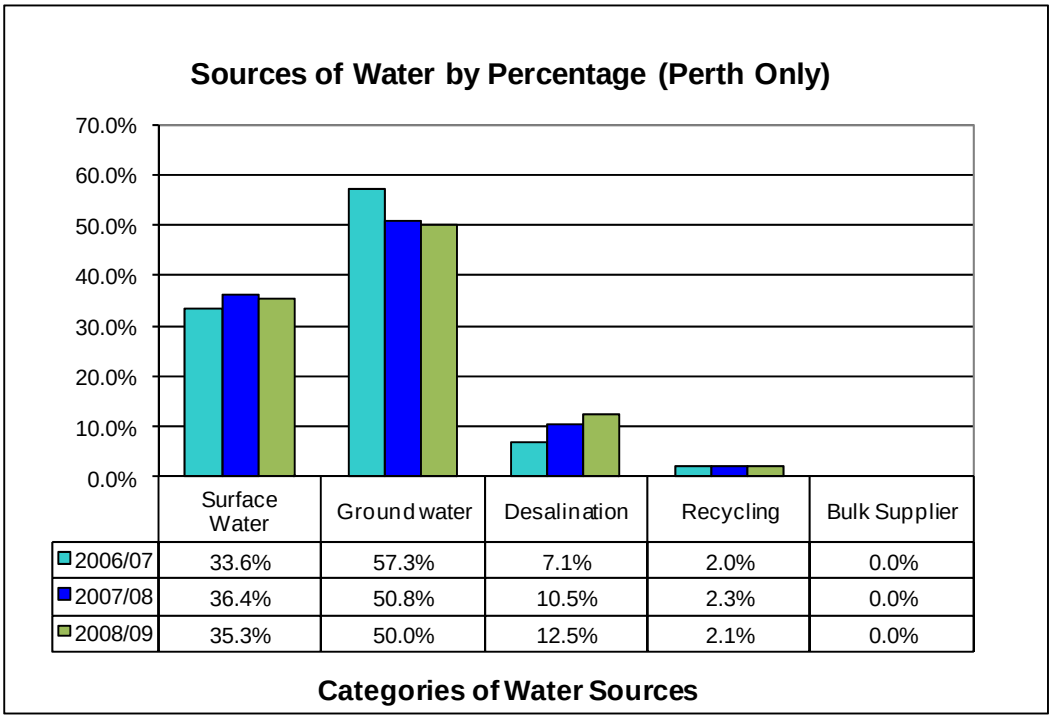


Figure 7 shows that, in 2008/09, the volume of water sourced from groundwater, recycling and bulk supplier for regional towns increased, compared to 2007/08. Correspondingly, water sourced from surface water has decreased over the same period.

Figure 7: Sources of water by volume (Regional Towns only)

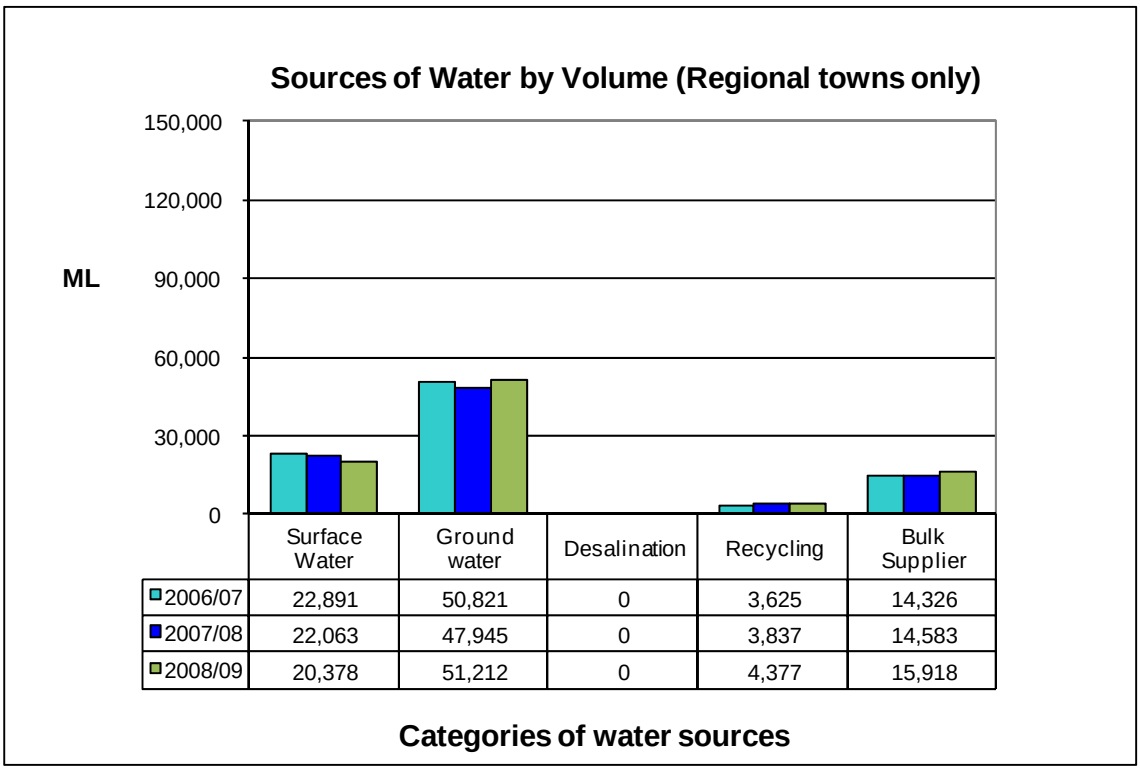
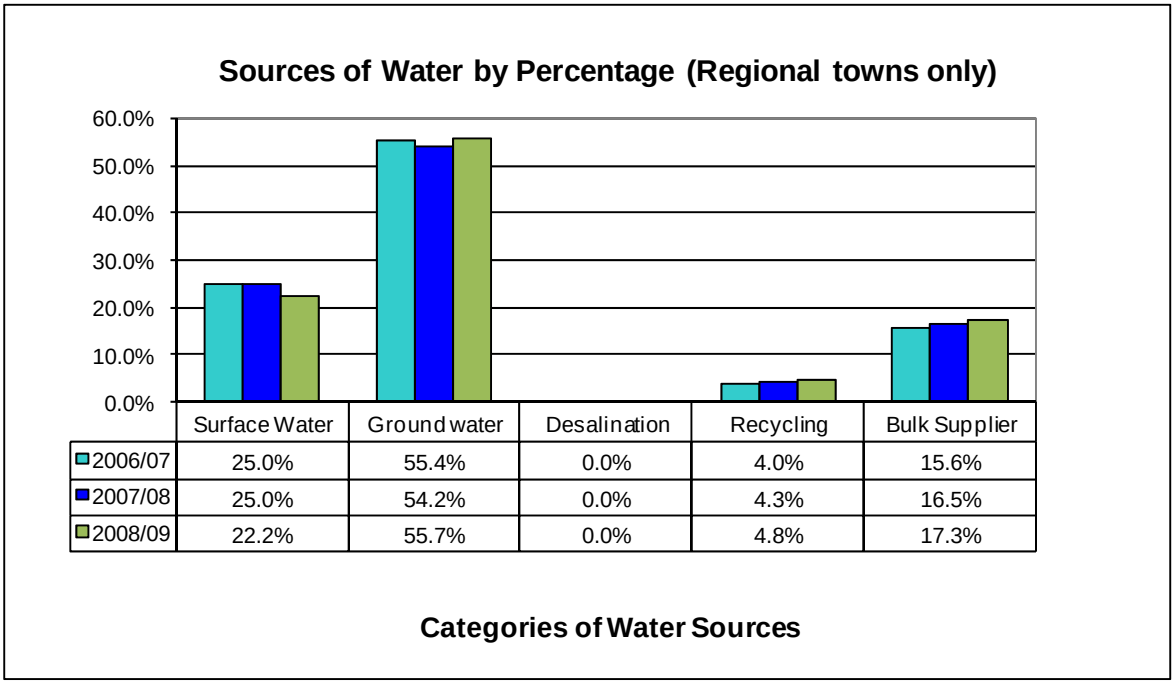


Figure 8 shows that in 2008/09, groundwater accounted for 55.7% of total sourced water for regional towns, up from 54.2% in 2007/08. Surface water accounted for 22.2% of the total sourced water, down from 25.0% in 2007/08.

Figure 8: Sources of water by 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%

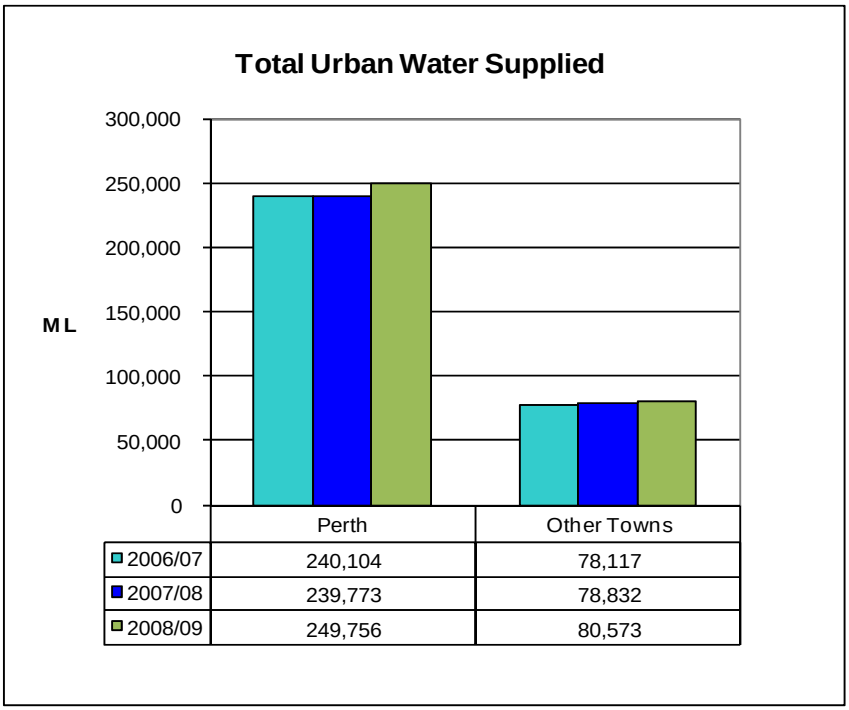
Uses of Water Supplied

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 in 2008/09 was 330,329ML, of which 75.6% was supplied to Perth. The volume of water supplied to Perth increased by 4.2%, compared to 2007/08, and the volume supplied to regional towns increased by 2.2% over the corresponding period.

Figure 9: Total urban water supplied[18]



Average Annual Residential Water Supplied

Table 1 shows that, in 2008/09, the average annual residential water supplied per property in Perth was 20.4% less than that supplied to regional towns. 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 very different climatic conditions in these towns and the stage 5 water restrictions in Denmark.

Table 1: Average annual residential water supplied per property

Data	Average annual residential water supplied per property (kL/property)			Percentage Change
	2006/07	2007/08	2008/09	%
Average of all towns	382	352	346	-1.7
Perth	281	268	277	3.4
Average of regional towns	385[19]	355[20]	348	-2.0
Highest (Port Hedland)	663	648	624	-3.7
Lowest (Denmark)	190	154	152	-1.3

[18] Water Corporation provided amended data for 2006/07 for Geraldton, Mandurah and Perth. Historical data has been amended to reflect these amendments.

[19] Correction from 389kL from the *Water, Wastewater and Irrigation Performance Report 2008*.

[20] Correction from 359kL from the *Water, Wastewater and Irrigation Performance Report 2008*.

Asset

Water Mains

In 2008/09, the length of water mains was 12,861km in Perth and 5,543km in regional towns. During 2008/09, the length of water mains increased by 1.0% in Perth and by 2.0% in regional towns. The total length of water mains across the state in 2008/09 was 10.6% higher than in 2003/04.

Table 2: Length of Water Mains (km)

Data	Length of water mains (km)					
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Perth	11,818	12,045	12,267	12,527	12,737	12,861
Regional towns	4,815	5,031	5,079	5,279	5,433	5,543
Total	16,633	17,076	17,346	17,806	18,170	18,404

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 2008/09, 55 properties were served per km of water main in Perth, compared to 31 properties in the average regional town. The highest number of properties served was in Newman (70) and the lowest was in Merredin and Carnarvon (13).

Table 3: Properties served (per kilometre of Water Main)

Data	Properties served (per km of water main)			Percentage Change
	2006/07	2007/08	2008/09	%
Average of all towns	30	31	32	3.2
Perth	54	54	55	1.9
Average of regional towns	30	30	31	3.3
Highest in 2008/09 (Newman)	57	71	70	-1.4
Lowest in 2008/09 (Merredin and Carnarvon)	13	13	13	0.0

Water Main Breaks

Table 4 shows that in 2008/09, Perth had 15.3 breaks per 100km of water main, compared to 18.7 breaks for the average regional town. Mandurah had the lowest level of water main breaks (4.2), while Port Hedland (56.0) had the greatest number of water main breaks.[21] 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.

[21] Port Hedland had a large number of breaks due to ageing pipes. The Water Corporation has advised that capital projects addressing the problem have been planned.

Table 4: Water Main Breaks (per 100km of Water Main)

Data	Water main breaks (per 100 km of water main)			Percentage Change
	2006/07	2007/08	2008/09	%
Average of all towns	19.6	17.5	18.6	6.3
Perth	13.0	14.0	15.3	9.3
Average of regional towns	19.8	17.6	18.7	6.3
Highest in 2008/09 (Port Hedland)	70.1	76.5	56.0	-26.8
Lowest in 2008/09 (Mandurah)	5.9	5.0	4.2	-16
Largest % increase in 2008/09 (Harvey Wokalup)	12.1	5.2	15.6	200.0
Largest % decrease in 2008/09 (Jurien)	5.1	19.6	4.9	-75.0

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 2008/09, Perth had 8 of the 25 treatment plants providing full treatment across the state. The remaining towns were supplied by 17 full treatment plants, which means that some towns were supplied by treatment plants with lower order treatment processes. These figures have not changed from the previous two years.

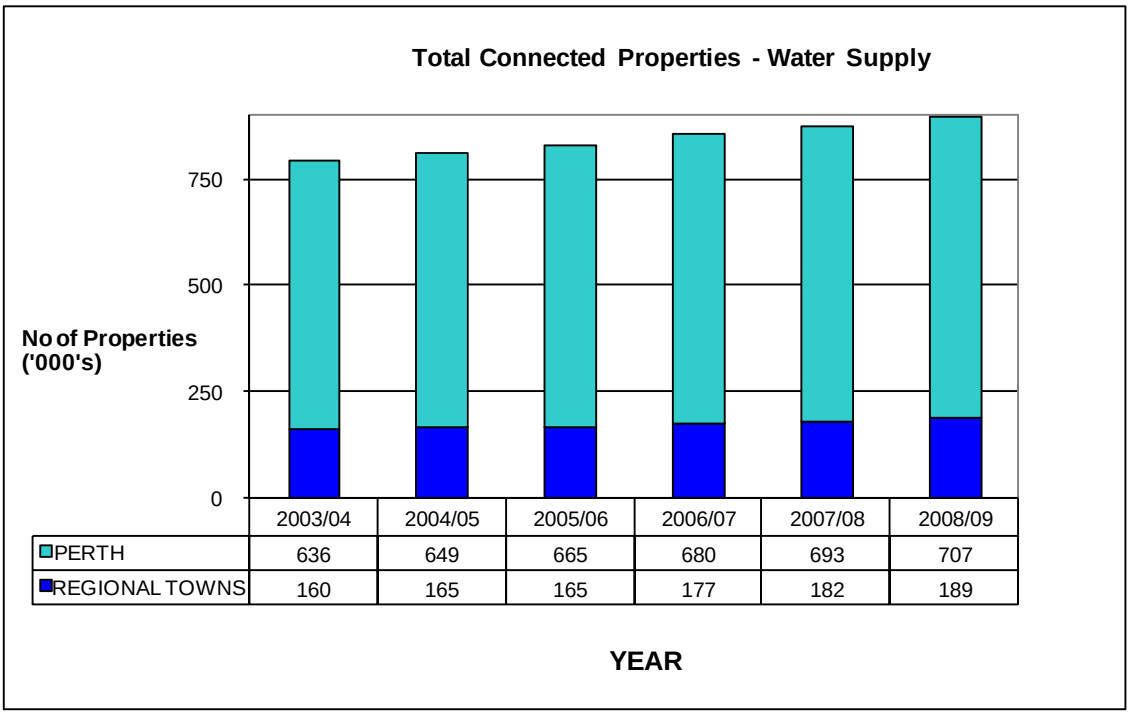
Customers

Connected Properties

The definition of a connected water property can be found in Appendix 2. Figure 10 shows that during 2008/09, the total number of connected properties in the state grew by 2.4% to 896,000 properties. The number of connected properties in Perth increased by 2.0% and in regional towns by 3.8%. Since 2003/04, Perth has experienced growth of 11.2%, while regional towns have experienced growth of 18.1%.

The higher rate of growth in connected properties in regional towns, compared to Perth, correlates with other statistics in this report, such as length of water mains. This suggests that there is a proportionately higher rate of water infrastructure development in regional towns.

Figure 10: Total Connected Properties – Water Supply



Customer Service

Water Quality Complaints

Water quality complaints include any complaint regarding discolouration, taste, odour, stained washing, illness or cloudy water.[22] Table 5 shows that, in 2008/09, the average number of complaints for all towns decreased by 14.0% compared to 2007/08. The decrease was driven by a 16.3% decrease in the average number of complaints for regional towns.

Table 5: Water Quality Complaints (per 1,000 properties)

Data	Water Quality Complaints (per 1,000 properties)			Percentage Change
	2006/07	2007/08	2008/09	%
Average of all towns	5.8	4.3	3.7	-14.0
Perth	6.8	6.0	6.5	8.3
Average of regional towns	5.8	4.3	3.6	-16.3
Largest increase and highest no. of complaints in 2008/09 (York)	6.4	4.1	19.8	382.9
Largest decrease and lowest no. of complaints in 2008/09 (South Hedland)	0.0	1.2	0.2	-83.3

[22] The definition of water complaints has changed this year so that only actual complaints, not queries, are counted. See Appendix 2 for further details.

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).[23]

Table 6 shows that, in 2008/09, Perth recorded a 13.5% increase in the number of water service complaints (per 1,000 properties), while there was a 39.0% fall in the average number of complaints for regional towns. The highest level of complaints (51.6) and the largest percentage increase (135.6%) was recorded for Dongara/Port Denison.[24] For the third successive year, Busselton recorded the lowest level of complaints (0.3 per 1,000 properties).

Table 6: Water Service Complaints (per 1,000 properties)

Data[25]	Water Service Complaints (per 1,000 properties)			Percentage Change
	2006/07	2007/08	2008/09	%
Average of all towns	25.2	29.3	18.2	-37.9
Perth	21.7	21.5	24.4	13.5
Average of regional towns	25.3	29.5	18	-39.0
Highest no. of complaints in 2008/09 (Dongara/Port Denison)	107.6	21.9	51.6	135.6
Lowest no. of complaints in 2008/09 (Busselton)	0.7	1.0	0.3	-70.0
Largest increase in 2008/09 (Dongara/Port Denison)	107.6	21.9	51.6	135.6
Largest decrease in 2008/09 (Pinjarra[26])	32.8	361.6	18.2	-95.0

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 network management. Table 7 shows that, in 2008/09, the average duration of an unplanned water supply interruption fell by 9.4% in regional towns and increased by 6.5% in Perth, compared to 2007/08.

[23] The definition of water complaints has changed this year so that only actual complaints, not queries, are counted. See Appendix 2 for further detail on the definition of a complaint.

[24] The Water Corporation advised that the increase in number of water service complaints was a result of no water service associated with planned valve replacement works in October 2008.

[25] Bunbury (Aqwest) data was not provided for 2006/07.

[26] The high level of complaints for Pinjarra in 2007/08 were largely due to an incident involving damage to a water main by a third party contractor that interrupted services to around 500 connections, as well as a major interruption in July 2007.

Table 7: Average Duration of an Unplanned Water Supply Interruption

Data	Average Duration of an unplanned water supply interruption (minutes)	
	2007/08	2008/09
Average of all towns	99.7	91.0
Perth	132.4	141.0
Average of regional towns	98.7	89.4
Highest no. in 2008/09 (Pinjarra)	360.2	242.0
Lowest no. in 2008/09 (Kununurra)	19.6	15.0

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 2008/09, the average customer in a regional town experienced significantly more supply interruptions than a customer in Perth. Pinjarra recorded the highest interruption frequency.[27] Jurien recorded the largest percentage increase[28] in supply interruptions and Australind/Eaton experienced the largest decrease in supply interruptions.[29]

Table 8: Average Frequency of Unplanned Interruptions (per 1,000 properties)

Data	Average frequency of unplanned interruptions (per 1,000 properties)			Percentage Change
	2006/07	2007/08	2008/09	%
Average of all towns	149.2	132.4	165.2	24.8
Perth	63.5	66.0	67.5	2.3
Average of regional towns	151.9	134.6	168.4	25.1
Highest no. of interruptions in 2008/09 (Pinjarra)	157.2	782.0	1,312.0	67.8
Lowest no. of interruptions in 2008/09 (Manjimup)	32.6	0.0	7.0	-
Largest increase in 2008/09 (Jurien)	0.7	25.0	875.0	3,400.0
Largest decrease in 2008/09 (Australind/Eaton)	117.0	217.0	11.0	-94.9

[27] There was one major event (damage to water mains) that affected a large number of properties. This resulted in an increase in the average frequency of unplanned interruptions compared to 2007/08.

[28] The Water Corporation advised that the increase in the average frequency of unplanned interruptions was due to a major shut down associated with a burst in February 2009, which affected 1,150 properties.

[29] The Water Corporation advised that the reduction in the average frequency of unplanned interruptions was due to there being a number of bursts in 2007/08 requiring large shuts-offs (27 events with 72 average properties affected compared to seven events with average of 14 properties affected in 2008/09).

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 2008/09.

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

Data	Number of zones where microbiological compliance was achieved - 2008/09	Percentage of population where microbiological compliance was achieved - 2008/09
All Towns	66/66	100%
Perth	24/24	100%
Regional Towns	42/42	100%

Table 10: Zones where chemical compliance was achieved

Data	Number of zones where chemical compliance was achieved - 2008/09
All Towns	65/65
Perth	24/24
Regional Towns	41/41

Small Water Service Providers Performance

Small Potable Water Providers

RIA and Hamersley Iron[30] 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. Currently, RIA supplies potable water to 421 residential and non-residential properties. Saline water bores supply a desalination plant, whose output is then pumped into storage tanks for distribution to customers.

Table 11 shows that, in 2008/09, the total volume of potable water supplied by RIA increased by 22.8% and the volume supplied by Hamersley Iron decreased by 14.6%, compared to 2007/08.

Table 11: Volume of Potable Water Supplied

Data	Volume of Potable water supplied (kL)		
	2006/07	2007/08	2008/09
Rottnest Island Authority	144,553	118,879	146,000
Hamersley Iron	3,617,077	3,829,894	3,272,000
Total	3,761,630	3,948,773	3,418,000

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

Compared to 2007/08, the number of connected properties on the RIA and Hamersley Iron networks remained unchanged at 421 and 2,402 respectively. Similarly, the length of water mains for both providers has also remained unchanged since 2006/07.

In 2008/09, RIA recorded 10.0 water main breaks per 100km of water main, while Hamersley Iron recorded 21.7 breaks.[31] The average frequency of unplanned interruptions (per 1,000 properties) was 14.3 for RIA and 3.3 for Hamersley Iron.[32]

The indicator for customer complaints was amended for the 2008/09 reporting year. Whereas in previous years licensees recorded the number of complaints received, for 2008/09 they were required to report how many customer complaints were resolved within 15 business days. RIA recorded 100% on this indicator. Hamersley Iron did not receive any complaints so were unable to report on this indicator.

Small Non-Potable Water Providers

The Shire of Denmark was the only small non-potable water provider licensed by the Authority during 2008/09.

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 12 shows that, in 2008/09, the volume of non-potable water supplied by the Shire of Denmark has decreased by 50.0%, compared to 2007/08.[33]

Table 12: Key Statistics - Shire of Denmark (Peaceful Bay)

Data	Key Statistics – Shire of Denmark		
	2006/07	2007/08	2008/09
Volume of non-potable water supplied (kL)	45,000	40,000[34]	20,000[35]
Length of water supply mains (km)	1.8	4.7[36]	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
Percentage of customer complaints resolved within 15 business days	-	-	100

[31] The indicator definition for the number of water main breaks was amended for the collection of 2008/09 data as a result of aligning performance reporting indicators with the NWI. Therefore, there is no comparable data for this indicator.

[32] This indicator has changed from 2007/08, therefore there is no comparable data.

[33] Caution has to be exercised in interpreting this result as volume of water supplied is estimated rather than metered.

[34] This is the average of the range in volume (35,000 to 45,000 kL) that is estimated by the Shire of Denmark to be provided as the non-potable supply is not metered.

[35] The reduction in volume from 2007/08 was due to water efficiency measures introduced by the Shire of Denmark.

[36] This figure included bore line and reticulated mains in its calculation of the length of the water supply mains.

PART B: WASTEWATER PERFORMANCE INFORMATION

Large Sewerage Service Provider Performance

Covered Wastewater Schemes

Large wastewater service providers captures wastewater supply schemes with more than 1,000 connected properties, which include the following 22 towns:

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

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.[37] 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.

Table 13: Sewage Collected per Property

Data[38]	Sewage collected per property (kL per property)			Percentage Change
	2006/07	2007/08	2008/09	%
Average of all towns	191	194	189	-2.6
Perth	192	198	191	-3.5
Average of regional towns	191	194	189	-2.6
Largest volume of sewage collected per property in 2008/09 (Kununurra)	321	380	359	-5.5
Smallest volume of sewage collected per property in 2008/09 (Jurien)	95	75	78	4.0
Largest % increase in sewage collected per property in 2008/09 (Merredin)	164	159	176	10.7
Largest % decrease in sewage collected per property in 2008/09 (Katanning)	213	178	145	-18.5

Table 13 shows that, in 2008/09, the average volume of sewage collected per property for regional towns was 189kL, a decrease of 2.6% compared to 2007/08. Over the same period,

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

[38] Data for Newman is not available.

sewage collected per property in Perth decreased by 3.5%. Of the 21 towns that provided data, 13 reported decreases and eight 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 commercial, municipal and industrial uses account for 65.8% of the volume of recycled water supplied, followed by agricultural uses (21.7%) and on-site uses (11.4%).

Figure 11: Total Recycled Water Supplied

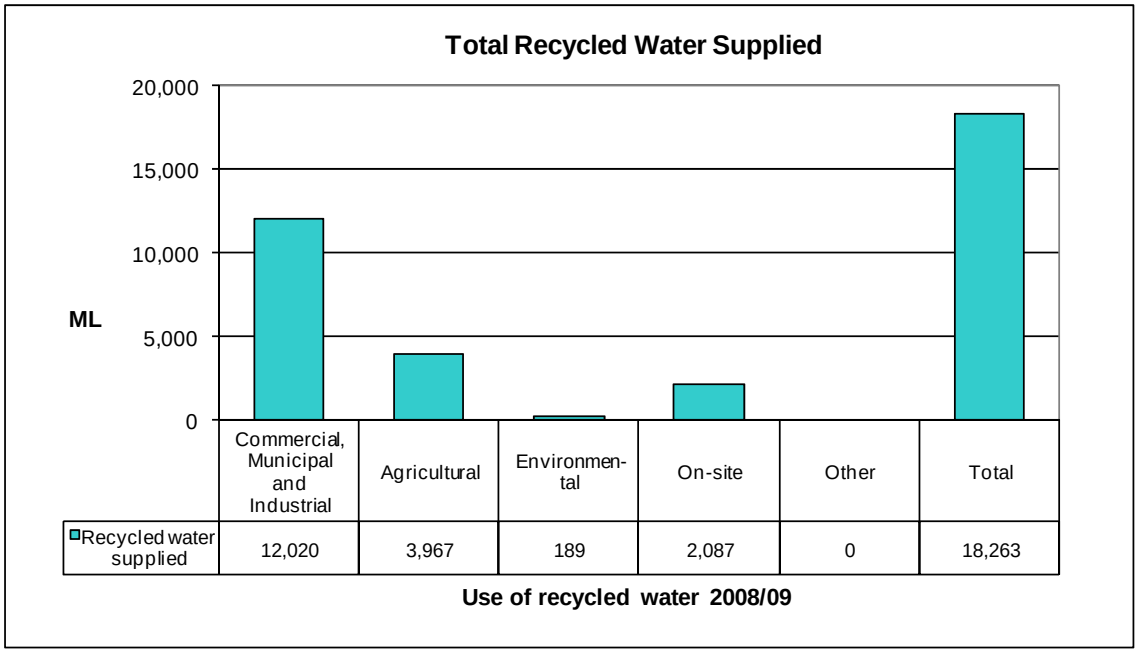


Table 14 shows that, in 2008/09, 41.8% of the total recycled water was supplied to Perth. The volume of recycled water in Perth decreased, while the state-wide total volume increased, due to more water being recycled by regional towns. The average volume of recycled water supplied in regional towns was 343ML per town, although seven towns reported no recycled water was supplied, which was also the case in 2007/08.

Table 14: Total Recycled Water Supplied

Data[39]	Total Recycled Water Supplied (ML)	
	2007/08	2008/09
Average of all towns	540	571
Perth	7,947	7,635
Average of all regional towns	302	343
Highest volume (Perth)	7,947	7,635
All Town total	17,295	18,263

Recycled Water (% of Effluent Recycled)

This indicator measures the percentage of treated sewage (effluent) that is used to supply recycled water.[40] Table 15 shows that, in 2008/09, Perth recycled 6.2% of treated effluent, compared to 51.7% in the average regional town. Five towns (Manjimup, Albany, Australind/Eaton, Katanning and Merredin) recycled all of their effluent and three towns (Collie, Jurien and Kununurra) did not recycle any effluent.

Table 15: Recycled Water (% of Effluent Recycled)

Data	Recycled Water (% of Effluent Recycled)			Percentage Change
	2006/07	2007/08	2008/09	%
Average of all towns[41]	49.5	44.5	49.5	11.2
Perth	6.0	6.4[42]	6.2	-3.1
Average of regional towns[43]	51.7	46.4	51.7	11.4

Asset

Length of Sewerage Mains and Channels (km)

Sewer mains include all trunk, pressure and reticulation mains. In 2008/09, the total length of sewerage mains and channels for all towns increased by 2.0% (to approximately 14,000km), compared to 2007/08. In 2008/09, Perth accounted for 77.4% of the sewerage mains and channels.

[39] Excluding Busselton (water), Kalgoorlie-Boulder (water) and Newman (water). No data was provided for Busselton (water) and Kalgoorlie-Boulder (water) in 2007/08. Data for Newman was unavailable.

[40] The definition of this indicator has changed from 2007/08. For 2008/09, the total volume of treated effluent should exclude the volume of bulk recycled water purchased from another utility or business.

[41] No data was provided for Bunbury for 2006/07. Data for Newman is not available on this indicator.

[42] In 2007/08, data on this indicator from the Water Corporation was rounded to the nearest whole percentage, so a value of 6% was reported in the 2007/08 Performance Report.

[43] No data was provided for Bunbury for 2006/07. Data for Newman is not available.

Table 16: Length of Sewerage Mains and Channels

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

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 2008/09, there were 59 properties per km of sewer main in Perth compared to 43 properties in the average regional town. In 2008/09, Newman reported the highest density of properties served, at 83 per km of main, while Jurien reported the lowest density at 19 properties per km of main.

Table 17: Properties served per km of Sewer Main

Data	Properties served per km of Sewer Main			Percentage Change
	2006/07	2007/08	2008/09	%
Average of all towns	42	43	43	0.0
Perth	57	58	59	1.7
Average of regional towns	41	42	43	2.4
Highest no. of properties served per km of sewer main in 2008/09 (Newman)	67	84	83	-1.2
Lowest no. of properties served per km of sewer main in 2008/09 (Jurien)	20	18	19	5.6
Largest % increase in 2008/09 (Karratha[44])	66	67	73	9.0
Largest % decrease in 2008/09 (Manjimup)	37	38	32	-15.8

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.

In 2008/09, Perth had 27.1% fewer sewer main breaks and chokes per 100km of sewer mains than the average regional town. Compared to 2007/08, the level of breaks and chokes for Perth decreased by 7.2%, while the average regional town recorded a decrease of 10.1% over the same period.

[44] The Water Corporation advised that the increase in the number of connected sewer properties has been driven by the resources boom, which has seen continuing subdivision development activity. These new subdivisions have a higher connection density than the existing scheme.

In 2008/09, Jurien had the lowest number of sewer main breaks and chokes (3.4) and Kalgoorlie-Boulder had the highest number (160.8).[45]

Table 18: Sewer Main Breaks and Chokes per 100km of Sewer Main

Data	Sewer Main Breaks and Chokes (No. per 100 km)			Percentage Change
	2006/07	2007/08	2008/09	%
Average of all towns	25.5	29.2	26.3	-9.9
Perth	22.5	20.9	19.4	-7.2
Average of regional towns	25.6	29.6	26.6	-10.1
Highest no. of sewer main breaks and chokes per 100 km in 2008/09 (Kalgoorlie-Boulder)	137.2	159.6	160.8	0.8
Lowest no. of sewer main breaks and chokes per 100 km in 2008/09 (Jurien)	3.9	3.4	3.4	0.0
Largest % increase in sewer main breaks and chokes per 100 km in 2008/09 (Northam)	24.0	37.9	52.0	37.2
Largest % decrease in sewer main breaks and chokes per 100 km in 2008/09 (South Hedland)	13.8	19.9	6.9	-65.3

Customers

Total Connected Properties – Sewerage

The definition of a connected sewerage property can be found in Appendix 2. In 2008/09, the number of connected properties continued to rise, as it has done for the past five years. The total number of connected properties for sewerage services was 779,000, with Perth accounting for 82.2% of the total.

Sewerage Service Complaints (per 1,000 properties)

The purpose of this indicator is to report customer satisfaction with sewerage service 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 19 shows that the overall level of sewerage service complaints recorded in 2008/09 decreased by 6.3%, compared to 2007/08. Compared to 2007/08, Perth recorded 8.8% less service complaints and the average regional town 6.3% less service complaints. Kalgoorlie-Boulder recorded the highest level of service complaints (28.6), while Jurien recorded the lowest number of service complaints (1.7).

[45] The City of Kalgoorlie-Boulder has been investing in a programme of work to reline the oldest and other vulnerable parts of their sewer system. However, the work has not yet led to a reduction in the level of breaks and chokes.

Table 19: Sewerage Service Complaints (per 1,000 properties)

Data	Number of Sewerage Service Complaints (per 1,000 properties)			Percentage Change
	2006/07	2007/08	2008/09	%
Average of all towns	8.8	7.9	7.4	-6.3
Perth	8.7	6.8	6.2	-8.8
Average of regional towns	8.8	8.0	7.5	-6.3
Highest no. of sewerage service complaints (per 1,000 properties) in 2008/09 (Kalgoorlie-Boulder)	29.9	30.3	28.6	-5.6
Lowest no. of sewerage service complaints (per 1,000 properties) in 2008/09 (Jurien)	2.0	1.9	1.7	-10.5
Largest % increase in 2008/09 (Esperance)	3.0	0.9	3.4	277.8
Largest % decrease in 2008/09 (South Hedland)	7.7	8.0	2.7	-66.3

Environment

Comparative Sewage Treatment Levels

The purpose of this set of 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 2008/09, 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 unchanged from previous years.

In 2008/09, 95.1% of Perth's sewage was treated to a tertiary level and 4.9% to a primary level. This contrasts with the average regional town,[46] where 39.1% of sewage was treated to a tertiary level and 60.9% 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 2008/09, the following 19 towns achieved 100% compliance:

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

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

Table 20 shows that, in 2008/09, 96.2% of the volume of sewage treated in the average regional town was compliant with environmental standards, compared to 94.3% in 2007/08. In 2008/09, the largest increase in the percentage of sewage treated that was compliant was in Kalgoorlie-Boulder (from 12.5% to 40%).[47]

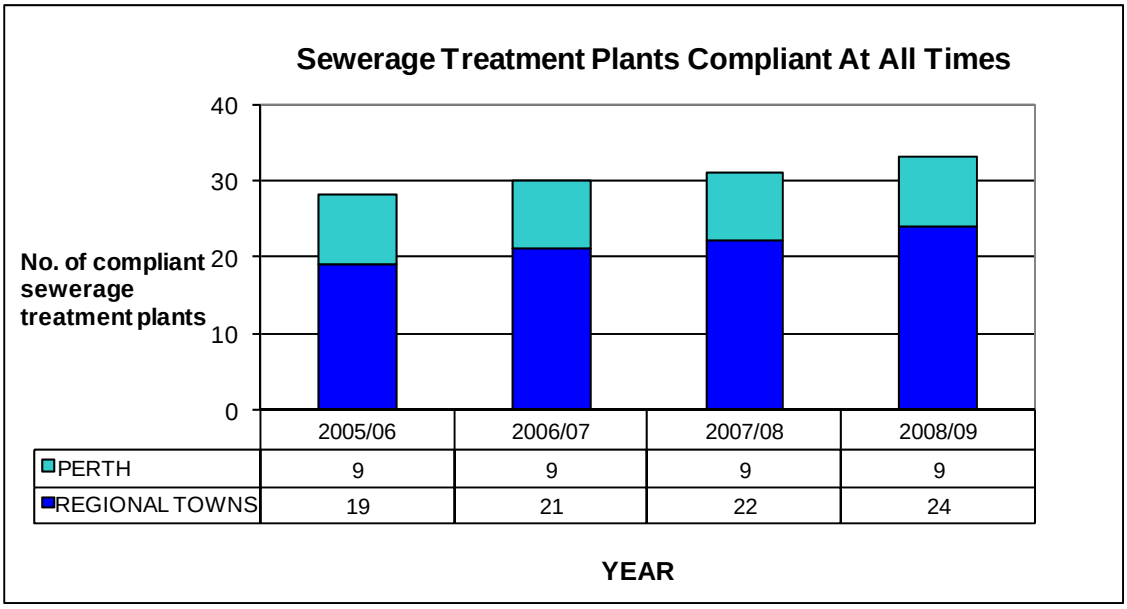
Table 20: Percent of Sewage Treated Volume that was Compliant

Data[48]	Percent of sewage treated volume that was compliant		
	2006/07	2007/08	2008/09
Average % of all towns	91.6	94.5	96.3
Perth	100.00	100.00	100.0
Average % of regional towns	91.2	94.3	96.2

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 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 12: Sewage Treatment Plants Compliant at all Times



The number of Perth sewage treatment plants compliant at all times (9) has remained unchanged since 2005/06. In 2008/09, the number of compliant sewage treatment plants in regional towns increased from 22 to 24, compared to 2007/08.[49]

[47] In 2007/08, the City of Kalgoorlie-Boulder had recorded a fall of on this indicator, from 45.8% to 12.5%.

[48] Data for Newman not available.

[49] The Australind/Eaton treatment plant achieved compliance in 2008/09 and the number of sewage treatment plants in Geraldton increased from two to three, with all three plants achieving compliance in 2008/09.

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 2008/09, Perth experienced 0.2 sewer overflows per 100km of main that were reported to the environmental regulator and regional towns averaged 1.0 per 100km. The definition of this indicator has changed from last year, as last year's indicator required all overflows to be reported, not just those that required the environmental regulator to be informed. Therefore, there is no comparable data from last year.

Small Sewerage Service Provider Performance

Providers

The Authority licences 20 small suppliers of sewerage services in Western Australia including 18 local government authorities, Rottnest Island Authority and Hamersley Iron:

Hamersley Iron
Rottnest Island Authority
Shire of Brookton
Shire of Coolgardie
Shire of Dalwallinu
Shire of Dowerin
Shire of Dumbleyung
Shire of East Pilbara
Shire of Gnowangerup
Shire of Goomalling
Shire of Jerramungup
Shire of Kent
Shire of Koorda
Shire of Lake Grace
Shire of Moora
Shire of Morawa
Shire of Ravensthorpe
Shire of Victoria Plains
Shire of Wickepin
Shire of Yilgarn-Southern Cross[50]
Shire of Yilgarn-Marvel Loch

For 2008/09, a number of indicators against which small sewerage licensees were required to report changed from 2007/08, which was a result of indicators being aligned with the NWI Urban Framework. As a result, it is difficult to provide comparative data, and therefore most of the following indicators will report data for 2008/09 only.

Table 21 shows that, in 2008/09, the total length of sewer mains in the small sewerage providers' schemes was 251km, an increase of 19.5% from 2007/08. Hamersley Iron operates the longest sewer mains of any of the small sewerage suppliers at 85km and the Shire of Gnowangerup operates the shortest sewer mains at 2.4km.

Table 21: Summary of data for small sewerage suppliers

Data	All Small Sewerage Suppliers		
	2006/07	2007/08	2008/09
Total length of sewer mains (km)	210	210	251
Total no. of sewerage connections	6,811	6,847	6,812

The total number of sewerage connections has remained fairly constant over the three years to 2008/09.

[50] 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.

As was the case with small non-potable water providers, the indicator for customer complaints was amended for the 2008/09 reporting year. All small sewerage licensees reported that 100% of customer complaints were resolved within 15 business days.[51]

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 Dalwallinu, with 306 sewer breaks and chokes per 100km of sewer main.

The performance indicator for reporting sewer overflows has been amended so that licensees are only required to report on the overflows that were required to be reported to the environmental regulator. RIA recorded the highest frequency on this indicator, with 66 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 who did receive emergency calls, 85.7% of small sewerage licensees achieved 100% on this indicator.[52]

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

[52] The two licensees who did not achieve 100% were the Shire of Coolgardie and RIA, who recorded 90.0% and 92.3% respectively.

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

Data	Total water and sewerage complaints (per 1,000 properties)			Percentage Change
	2006/07	2007/08	2008/09[53]	%
Average of all towns[54]	36.4	40.1	24.6	-38.7
Perth	37.3	34.6	37.7	9.0
Average of regional towns	36.4	40.2	25.2	-37.3
Highest no. of total complaints in 2008/09 (Albany)	36.6	35.8	49.7	38.8
Largest % increase in 2008/09 (Jurien)	5.1	7.1	14.0	97.2
Lowest no. of total complaints in 2008/09 (Kununurra)	12.1	16.1	9.3	-42.2
Largest % decrease in 2008/09 (Geraldton)	46.1	67.4	37.1	-45.0

[53] 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.

[54] 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, variation in this indicator compared to 2007/08 is not necessarily indicative of the time series trend.

Table 22 shows that, in 2008/09, customers in Perth made 37.7 complaints, compared to 25.2 complaints in the average regional town. Kununurra recorded the lowest number of complaints (9.3), while Albany recorded the highest number of complaints (49.7), a 38.8% increase on the previous year.

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.[55]

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

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 23: Billing and Account Complaints - Water and Sewerage

Data[56]		Billing and Account Complaints - water and sewerage (per 1,000 properties)			Percentage Change
		2006/07	2007/08	2008/09	%
Average of all towns		1.0	1.0	1.0	0.0
Perth		1.1	1.0	1.2	20.0
Average of regional towns		1.0	1.0	1.0	0.0
Highest number of complaints in 2008/09	Collie	1.4	2.3	2.5	8.7
	Denmark	1.6	4.6	2.5	-45.7
Lowest number of complaints	Carnarvon	1.2	0.8	0.0	-100.0
	Dongara/Port Denison	1.4	0.6	0.0	-100.0
	Katanning	0.5	0.5	0.0	-100.0
	Merredin	2.6	0.0	0.0	n/a

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

[56] No data provided for Bunbury for 2006/07.

Table 23 shows that, in 2008/09, customers in Perth made 1.2 complaints, which is slightly higher than for the average regional town, which recorded 1.0 complaint. In 2008/09, four towns recorded no complaints[57] while customers in Collie and Denmark recorded the highest number of complaints (2.5).

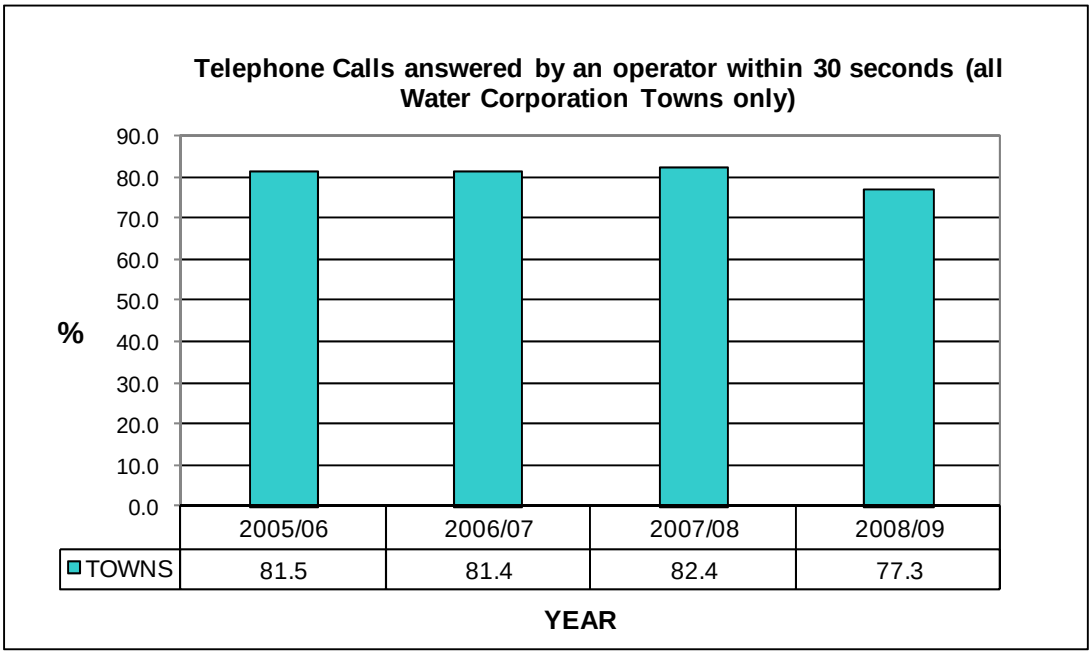
Connect Time to a Telephone Operator

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 2008/09, 77.3% of telephone calls to a Water Corporation operator were answered within 30 seconds, down from 82.4% in the previous year.

Figure 13: Telephone Calls Answered by an Operator within 30 Seconds



[57] Carnarvon, Dongara/Port Denison, Katanning and Merredin recorded no complaints,

PART D: IRRIGATION PERFORMANCE INFORMATION

Irrigator Performance

This is the fourth time that the Authority has reported on the performance of irrigation suppliers. 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 contained 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 Rural Framework (by Harvey Water and Ord Irrigation).

Volume of Water Supplied

Table 24 shows that, in 2008/09, the total volume of water supplied for irrigation increased by 7.9% and the total volume of non-potable water supplied increased by 24.9%, compared to 2007/08. Ord Irrigation accounted for 66.0% of the total irrigation water supplied and Harvey Water accounted for 95.4% of the total non-potable water supplied.

Table 24: Volume of Irrigation Water and Non-Potable Water Supplied

Data	Volume of irrigation water supplied (kL)			Volume of non-potable water supplied (kL)		
	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
Gascoyne Water	5,299,600	4,605,800	5,557,000	79,800	88,500	121,000
Ord Irrigation	181,792,000[58]	135,777,000	144,649,000	0	0	0
Preston Valley	991,000	765,000	929,000	28,000	31,000	0
Harvey Water	66,321,000[59]	62,086,000	68,122,000	11,533,000[60]	1,990,200	2,514,000
Total	247,092,600	203,233,800	219,257,000	3,987,800	2,109,700	2,635,000

Irrigation and Non-Potable Water Connections

Table 25 details the number of irrigation and non-potable water supply connections in 2008/09. Harvey Water accounted for 72.0% of the total irrigation connections and 77.2% of the total non-potable water connections.

[58] This is an amended figure for 2006/07provided by Ord Irrigation.

[59] This is an amended figure for 2006/07provided by Harvey Water.

[60] This is an amended figure for 2006/07provided by Harvey Water.

Table 25: Number of Irrigation Connections and Non-Potable Water Supply Connections

Data[61]	Irrigation connections			Non-potable water supply connections		
	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
Gascoyne Water	175	179	187	73	82	86
Ord Irrigation	273	273	268	0	0	0
Preston Valley	68	68	86	68	35	0
Harvey Water	1,697	1,252	1,392	114	560	292
Total	2,213	1,772	1,933	255	677	378

Other Performance Indicators - Large Irrigators

Carrier Length (Gravity Irrigation)

In 2008/09, unlined channels accounted for 42.2% of the total carrier length for Ord Irrigation's gravity irrigation network.[62] In contrast, pipe accounted for 61% of Harvey Water's overall carrier length.[63]

Table 26: Carrier Length (Gravity Irrigation)

Data	Carrier Length (Gravity Irrigation) in 2008/09 (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	430.0	0.0	685.0[64]
Total	296.0	83.0	430.0	169.8	978.8

Complaints – Large Irrigators

Ord Irrigation recorded five service delivery complaints, while Harvey Water recorded four complaints. Neither service provider recorded any complaints related to billing and accounts.

Table 27: 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
	2007/08			2008/09		
Ord Irrigation	0	0	0	5	0	5
Harvey Water	3	0	3	4	0	4
Total	3	0	3	9	0	9

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

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

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

[64] Harvey Water provided a total figure of 705.0km, which includes 20km of natural waterway.

Unaccounted For Irrigation Water

Table 28 shows that, in total, 19% of the total supply network intake volume for large suppliers is not accounted for in the volumes supplied to customers, which is a significant improvement from 2007/08, when the figure was 34%. The main causes of losses are evaporation during delivery and leakage from channels. It can be seen that both Harvey Water and Ord Irrigation have improved the delivery efficiency of their supply networks.

Table 28: Unaccounted for Irrigation Water

Data	Unaccounted for Irrigation Water for Large Irrigators					
	Total supply network intake volume (ML)	Unaccounted Irrigation Water[65] (ML)	Supply Network Delivery Efficiency (%)	Total supply network intake volume (ML)	Unaccounted Irrigation Water[66] (ML)	Supply Network Delivery Efficiency (%)
	2007/08			2008/09		
Ord Irrigation	213,907	78,130	63	178,740	34,091	81
Harvey Water	84,745	22,659	73	87,977	17,895	80
Total	298,652	100,789	66	266,717	51,986	81

Other Performance Indicators - Small Irrigators

Written Customer Complaints

The only small irrigation agency to receive written customer complaints in 2008/09 was Gascoyne Water, who reported that 100% of these complaints were resolved within 15 business days.

Quality of Irrigation Water Supplied

The irrigation water quality standard as per Gascoyne Water's and Preston Valley's licence is less than 1,200 mg/L of total dissolved solids (TDS). Gascoyne Water stated that in the three years to 2008/09 they met the standard, but did not quantify the amount of TDS. Preston Valley have reported a range of TDS in the three years to 2008/09, between 410 and 530mg/L.

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

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

APPENDICES

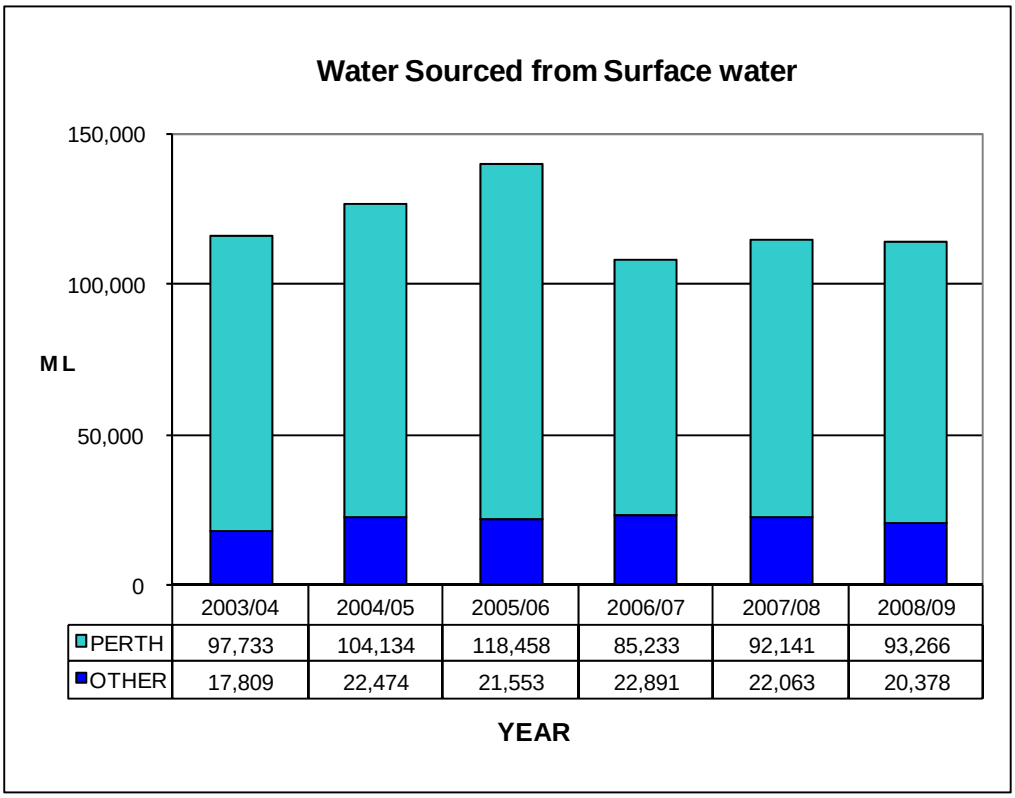
Appendix 1: Perth Data

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 14 shows that, in 2008/09, the total volume of water sourced from surface water (113,644ML) decreased by 0.5%, compared to 2007/08 (114,204ML). The volume of surface water sourced for consumption in Perth increased by 1.2% in 2008/09, compared to 2007/08, but the volume of surface water sourced for other towns decreased by 7.6% over the same period. It can be seen that the average volume of water sourced during the three years to 2008/09 (111,991ML) is 12.1% lower than the average volume sourced during the three years to 2005/06 (127,387ML).

Figure 14: Total volume of water sourced from surface water- All Towns



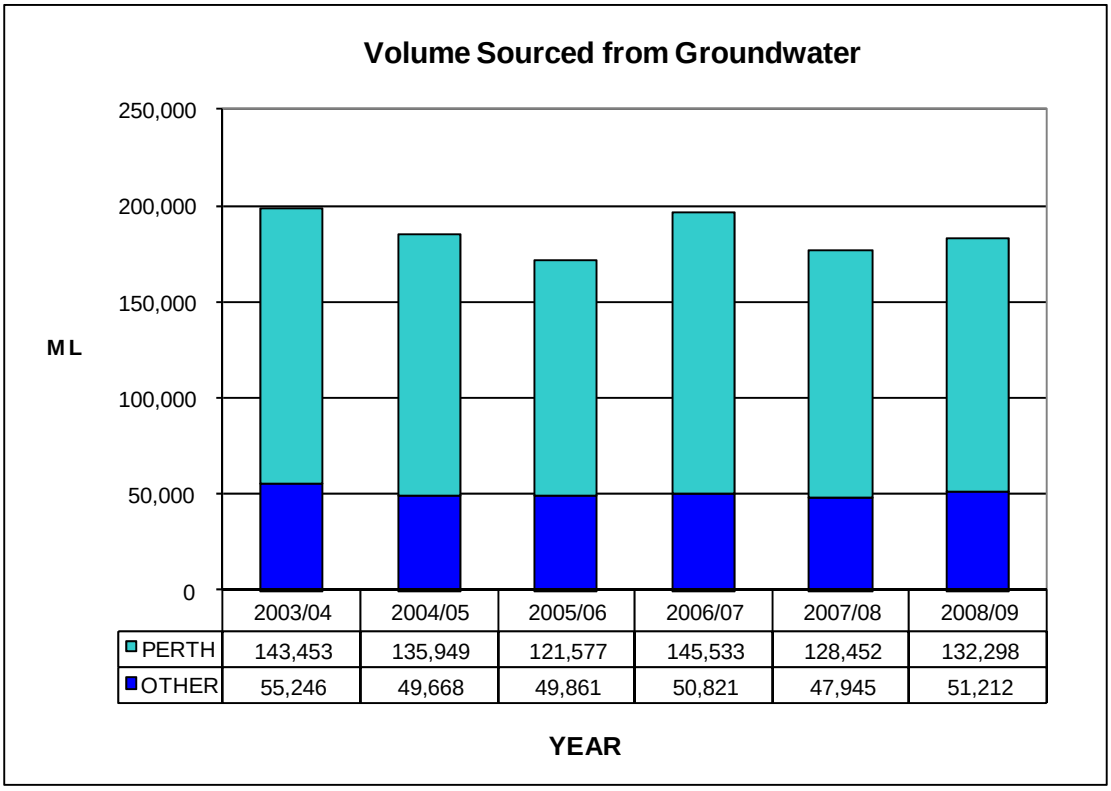
Water Sourced from Groundwater

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 15 shows that, in 2008/09, the total volume sourced from groundwater (183,510ML) increased by 4.0% compared to 2007/08 (176,397ML). The volume of groundwater sourced for consumption in Perth (132,298ML) increased by 3.0%, compared to 2007/08. It can be

seen that the average volume of water sourced during the three years to 2008/09 (185,420ML) is almost the same as the average volume sourced during the three years to 2005/06 (185,251ML).

Figure 15: Total volume of water sourced from groundwater

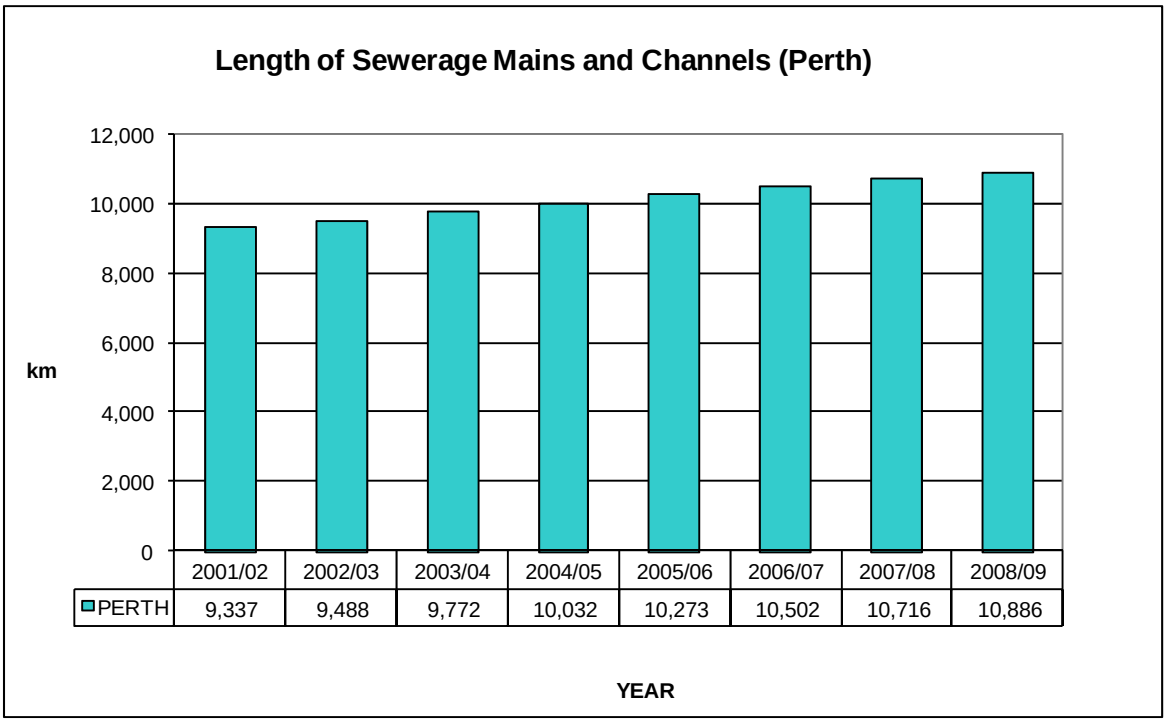


	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
PERTH	143,453	135,949	121,577	145,533	128,452	132,298
OTHER	55,246	49,668	49,861	50,821	47,945	51,212

Infrastructure and Connected Properties

Figure 16 details the length of sewerage mains and channels in Perth for the eight years to 2008/09. Since 2001/02, the size of the Perth sewer main system has increased by 16.6%, which is equivalent to an annual growth rate of 2.2%.

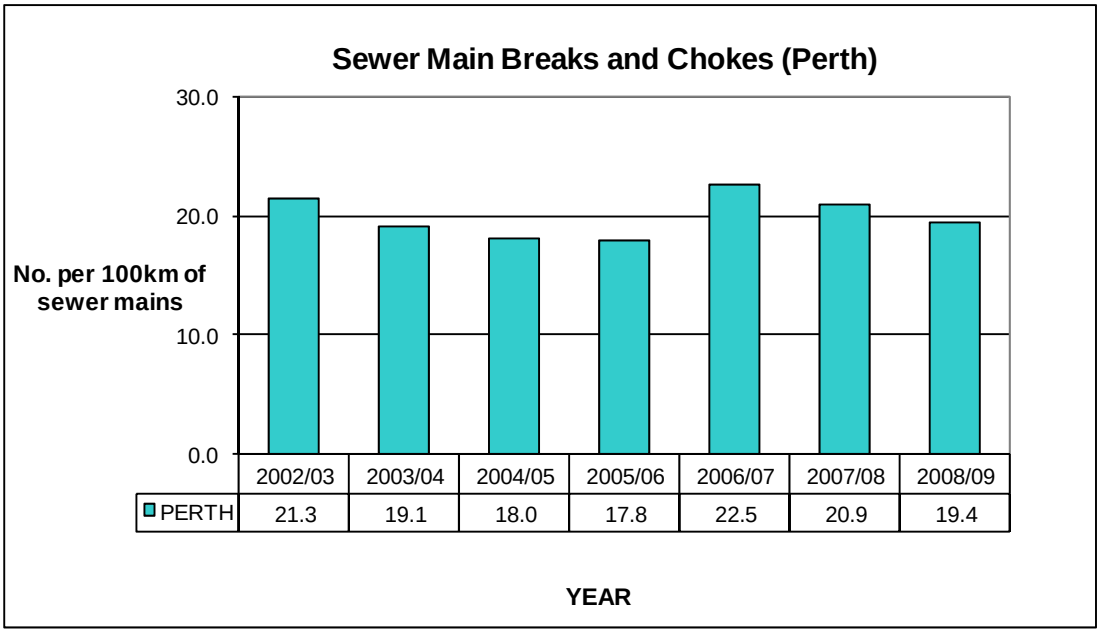
Figure 16: Length of Sewerage Mains and Channels (Perth)



Sewer Main Breaks and Chokes

Figure 17 shows the level of sewer main breaks and chokes over the seven years to 2008/09. The average level of breaks during this period is 19.9. It can be seen that the average level of breaks over the 3 years to 2008/09 (20.9) is higher than the long term average.

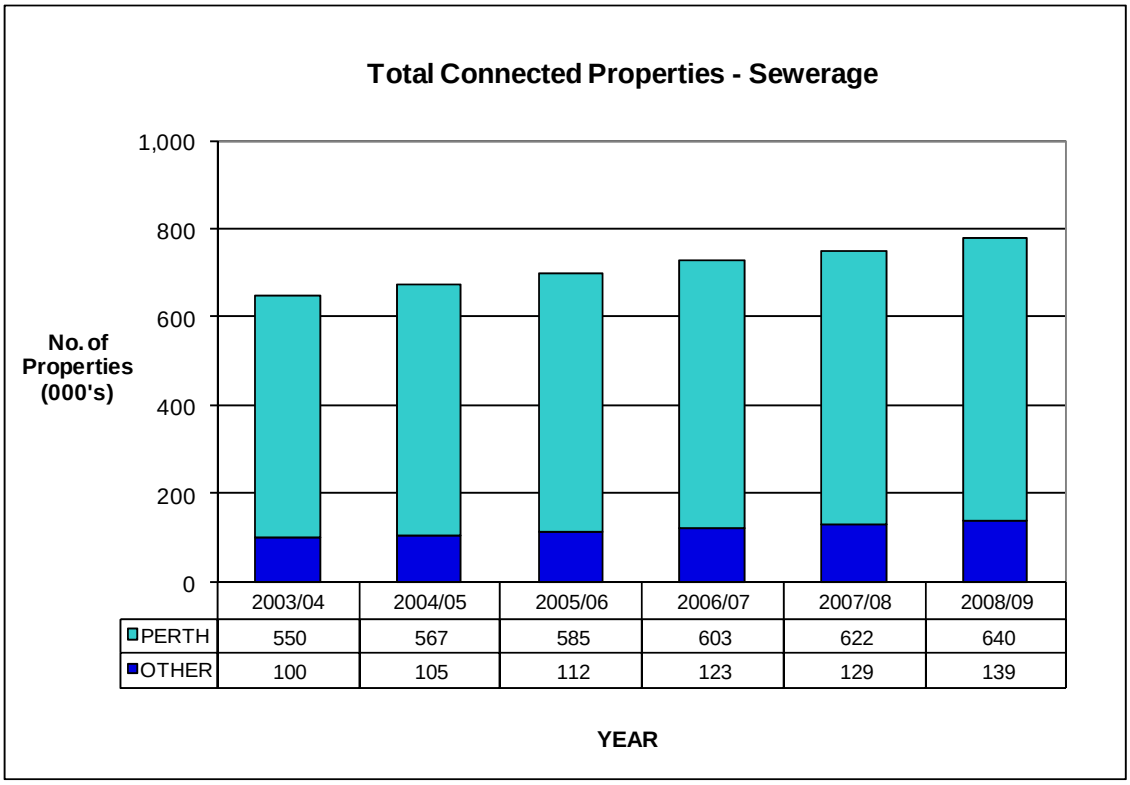
Figure 17: Sewer Mains Breaks and Chokes (Perth)



Total Connected Sewerage Properties

Figure 18 details the number of connected sewerage properties in Perth and regional towns for the six years to 2008/09. Since 2003/04, the total number of connected properties has increased by 19.8%, which is equivalent to an annual growth rate of 3.1%. The average annual growth of connected properties in regional towns (5.6%) was over twice that in Perth (2.6%).

Figure 18: Total Connected Properties - Sewerage



	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
PERTH	550	567	585	603	622	640
OTHER	100	105	112	123	129	139

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 – 2008-09 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

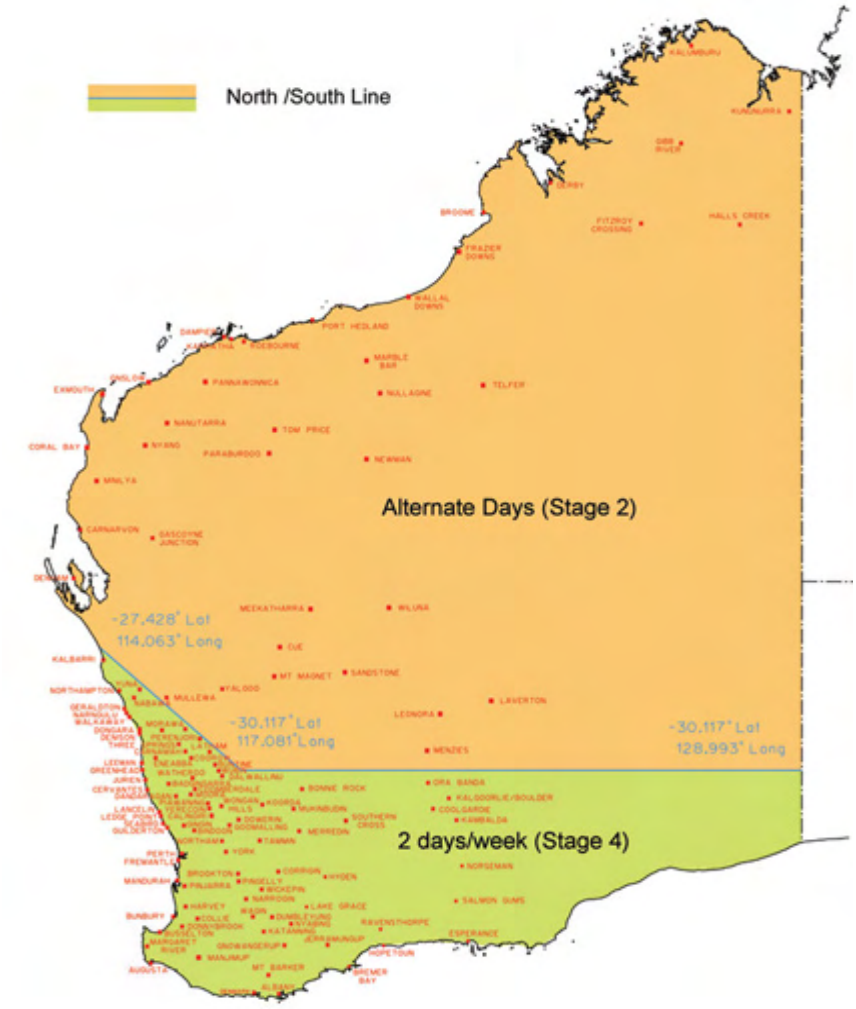
Permanent Water Efficiency Measures

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*.

For the purposes of the efficiency measures, Western Australia has been split into two zones, a Northern Zone and a Southern Zone. The Northern and Southern Zones are described in Figure 19.[67]

Figure 19: WA Water Restriction Zones



In the Northern Zone, watering is only allowed on nominated alternate days (as per stage 2). In the Southern Zone, watering is allowed on two nominated days (as per stage 4). These zones are the new base watering regime throughout Western Australia.

[67] Source: Water Corporation website: http://www.thinking50.com.au/go/publications/information-sheets (Permanent Water Efficiency Measures - Information Sheet).

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 some towns in the south west of the state.

Perth Scheme Water Users

For Perth, Stage 4 water restrictions apply (see the definition below), 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 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.

Country Councils using groundwater or surface water will be required to comply with the new watering regime by 1 July 2009.[68] Local government authorities must develop and submit water efficiency plans to the Department of Water.

Water Restriction Stages

There are seven water restriction stages which are as follows:

Stage 1

(1) A person must not water a lawn or garden except by -

(a) reticulation during the period between 6.00 p.m. and 9.00 am;

(b) a hand held hose with one outlet; or

(c) a hand held watering can.

Stage 2

(1) A person must not water a lawn or garden except by -

(a) reticulation during the period between 6.00 p.m. and 9.00 am commencing -

(i) on any even number day of the month if the relevant property has an even street/ Iot number;

(ii) on any odd number day of the month if the relevant property has an odd street/ Iot number;

(b) a hand held hose with one outlet; or

[68] Source: Water Corporation web site: http://www.thinking50.com.au/go/publications/information-sheets (Permanent Water Efficiency Measures - Information Sheet).

(c) a hand held watering can.

(2) A person must not spray a building, path, paved area or road except to the minimum extent necessary for -

(a) fire fighting;

(b) the cleaning of the building, path, paved area or road so as to avoid a threat to public health; or

(c) the construction or repair of the building, path, paved area or road.

(3) A person must not fill a swimming pool except to the minimum extent necessary to maintain the proper functioning of the pool by replacing water lost through evaporation or ordinary use.

Stage 3

(1) A person must not water a lawn or garden except by -

(a) reticulation during the period between 6.00 p.m. and 9.00 am commencing -

(i) on any Saturday, Monday or Thursday if the relevant property has an even street /lot number;

(ii) on any Sunday, Tuesday or Friday if the relevant property has an odd street /lot number.

(b) a hand held hose with one outlet; or

(c) a hand held watering can.

(2) & (3) As for Stage 2 (2) & (3)

Stage 4

(1) A person must not water a lawn or garden except by -

(a) reticulation during the period between 6.00 p.m. and 9.00 am on one or both of 2 days of the week;

(b) a hand held hose with one outlet: or

(c) a hand held watering can.

(2) & (3) As for Stage 2 (2) & (3).

Stage 5

(1) A person must not water a lawn or garden except by -

(a) reticulation during the period between 6.00 p.m. and 9.00 am on one day of the week;

(b) a hand held hose with one outlet; or (c) a hand held watering can.

(2) & (3) As for Stage 2 (2) & (3).

Stage 6

(1) A person must not water a lawn or garden except by -

(a) a hand held hose with one outlet; or (b) a hand held watering can.

(2) & (3) As for Stage 2 (2) & (3).

Stage 7

(1) A person must not water a lawn or garden except by a hand held watering can;

(2) As for Stage 2 (2);

(3) A person must not fill a swimming pool.

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 – 2008-09 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.