

Water, Wastewater and Irrigation Performance Report 2008

April 2009

Economic Regulation Authority



WESTERN AUSTRALIA

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For further information, contact:

Economic Regulation Authority
Perth, Western Australia
Phone: (08) 9213 1900

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1 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 delivery agencies;
- Highlight comparative performance outcomes for the different towns served within Western Australia; and
- Examine service performance variations over time.

This report focuses on the performance data provided to the Authority by water licensees in accordance with the performance reporting obligations set out in their licences. The report comprises four parts:

- Part A provides water performance data on 32 major Western Australian towns¹ and small potable and non-potable water licensees;
- Part B provides wastewater performance data for 22 major Western Australian towns² and small wastewater licensees;
- Part C provides performance data for major towns or schemes³ where the data is applicable to both water and wastewater services; and
- Part D provides performance data for the 4 Western Australian irrigators.

This report presents the performance of licensees against selected indicators for water, wastewater and irrigation services along with information about the maximum and minimum values as well as highest and lowest percentage variations, where relevant. For major towns the data sets have been collected in accordance with the performance indicators defined in the National Performance Framework for Urban Water Utilities (Urban Framework) and Rural Water Service Providers (Rural Framework).

2 Background

2.1 Legislation

The *Water Services Licensing Act 1995* (Act) includes provision for the licensing of water services. In particular, Part 3 of the Act sets out the provisions pertaining to the licensing scheme for water service providers. The Act defines 4 classes of water operating licence: water supply services (covers both potable and non-potable services), sewerage services, irrigation services and drainage services. Among other things, 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 services 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 and irrigation licences include conditions requiring the licensee to provide to the Authority non-financial performance data on an annual basis. The data required to be provided by licensees is set out in the Water Compliance Reporting Manual.

2.2 Current Structure of water services industry in WA

There are a total of 29 water service providers licensed to operate in Western Australia:

- The Water Corporation: water supply, sewerage, irrigation and drainage supply;
- Aqwest – Bunbury Water Board and Busselton Water Board: water supply;
- City of Kalgoorlie-Boulder: sewerage and non-potable water;
- Hamersley Iron: water supply and sewerage;
- Rottnest Island Authority: water supply, sewerage services and drainage;
- The Shire of Denmark: non-potable water;
- 18 local government authorities⁴: sewerage and non-potable water; and
- Gascoyne Water Cooperative, Harvey Water (SWIMCO), Ord Irrigation Cooperative and Preston Valley Irrigation Cooperative: irrigation and non-potable water.

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 Western Australians and managing more than \$11.5 billion in water supply, sewerage and drainage infrastructure⁵. The Water Corporation supplies a range of services, including the supply of potable drinking water to urban and regional areas, the bulk supply of water to regional areas, the receipt, treatment and management of wastewater in urban and regional areas and the management of drainage systems in urban and regional areas.

Bunbury Water Board - Aqwest is a government statutory authority operating under the *Water Boards Act 1904*. It provides potable water services to the regional centre of Bunbury.

Busselton Water Board is a government statutory authority operating under the *Water Boards Act 1904*. It provides potable water services to the regional centre of Busselton.

2.3 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

⁴ See section 7.1.1 for a list of the local government licensees supplying sewerage and non-potable water services.

⁵ See Water Corporation 2008 Annual Report

regulating water supply services. 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 first report on urban water utilities, covering the 2005/06 reporting year, was published by the NWC in May 2007. The second report on urban water utilities covering the 2006/07 year was published by the NWC in May 2008. The third 2007/08 urban water utility and rural service delivery agency reports will be published by the NWC in April 2009.

The signatories to the NWI Agreement have developed a performance reporting framework for urban utilities (Urban Framework) and a performance reporting framework for rural water delivery agencies (Rural Framework). The Urban and Rural Frameworks each comprise a handbook with performance indicators and definitions. The performance indicators are subject to independent audit at least once every 3 years. Further information on the NWI Agreement and the performance reporting framework can be found on the National Water Commission's web site⁶.

The Urban Framework captures all urban utilities that service 10,000 or more connected properties. In Western Australia there are 4 licensees that are captured by the Urban Framework: Aqwest – Bunbury Water Board (water only), Busselton Water Board (water only), City of Kalgoorlie-Boulder (sewerage) and the Water Corporation⁷.

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 2 licensees that are captured by the Rural Framework: Harvey Water⁸ and Ord Irrigation Cooperative.

The Authority has amended the licences of the licensees that are captured by the NWI Urban and Rural Frameworks to require them to provide to the Authority annual performance information in accordance with the relevant Framework.

2.4 Review of water licences

The Authority has recently completed a review of water services licences. The objectives of the review were to:

- utilise best practice principles of utility licensing;
- reflect the current regulatory environment and promote consistent licence regulation across the utility sector (the Authority also licenses electricity and gas service providers);
- improve consistency between operating licences;
- enhance consumer protection, including scope for improved compliance; and
- reduce the regulatory burden by removing spent, redundant or inappropriate licence provisions.

An outcome of the review was to replace the provision of information clauses in licences⁹ with a new generic condition requiring licensees to provide to the Authority any information that the Authority may require in connection with its functions under the Act in

⁶ <http://www.nwc.gov.au/nwi/index.cfm>

⁷ 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.

⁸ Harvey Water is also known as South West Irrigation Management Cooperative (SWIMCO).

⁹ The provision of information condition in each licence included a schedule of performance indicators and definitions.

the time, manner and form specified by the Authority. With regard to the provision of performance information, the Authority has adopted the same model as that used in gas and electricity licensing, where the information reporting requirements are placed into a separate compliance reporting manual.

The Water Compliance Reporting Manual (WCRM) was published by the Authority in August 2008. The WCRM sets out standard performance reporting obligations for each type of supply service: potable water, non-potable water, sewerage and irrigation. 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, will become operational in the 2008/09 reporting period.

3 Summary of Performance Information

This is the third report published by the Authority that examines the performance of water, wastewater and irrigation service providers in Western Australia. The previous reports, covering the periods of 2004/05 and 2006/07¹⁰, presented performance information for urban water and wastewater supply schemes with more than 1,000 connected properties and the 4 irrigation supply schemes, which was based on the performance reporting obligations embedded within the licences.

Since the publication of the 2004/05 report, the State has signed the National Water Initiative Agreement (NWI Agreement)¹¹. The transition to national performance reporting frameworks for the captured urban and rural supply schemes has impacted on the ability of the Authority to report historical data. Some indicator data can only be reported for 1 to 2 years depending upon the completeness and reliability of the data. In addition, some 2007/08 national performance reporting framework indicators have changed from the previous year and this has also impacted on reporting historical data. Some indicator information has been provided for up to 7 years, where indicators can be mapped from the previous data format to the format of the relevant national performance framework. Complete sets of water, wastewater and irrigation performance data are available in statistics tables published on the Authority's web site¹².

3.1 Drinking Water Supply

The water supply performance information in this report covers 32 water supply schemes¹³ that have more than 1,000 connected properties. This includes locations serviced by Aqwest – Bunbury Water Board, Busselton Water Board and the Water Corporation.

¹⁰ Water, Wastewater and Irrigation report 2005 and Water, Wastewater and Irrigation report 2007 which are available on the Authority's web site: <http://www.era.wa.gov.au/2/257/51/publications.pm>

¹¹ See section 2.3 for more information on the NWI Agreement.

¹² http://www.era.wa.gov.au/2/429/51/licence_statist.pm

¹³ For a full list of water supply schemes see section 4.1.

Between 2006/07 and 2007/08, the number of connected properties increased by 2.3% to 875,000. Perth experienced an increase in connected properties of 1.9% to a total of 693,000. The other towns (excluding Perth), experienced an increase in connected properties of 4.0%, to a total of 182,000 connected properties.

In 2007/08, total sourced water has decreased by 1.1% to 341,520ML, compared to 2006/07. Over the same period, water sourced for Perth decreased by 0.3%, to 253,092ML. The proportion of water sourced from groundwater sources decreased by 10.2% to 176,397ML, while water sourced from surface water sources increased by 5.6% to 114,204ML. 2007/08 was the first full year of operation for the new Kwinana desalination plant. In 2007/08, the plant supplied 10.5% (26,565ML) of Perth's total sourced water. Recycling contributed 2.9% of total water sourced in 2007/08, up from 2.5% in 2006/07.

In 2007/08, the total urban water supplied was 318,605ML, an increase of 1.8% compared to 2006/07, of which 75.3% was supplied to Perth. Urban water supplied to the other towns increased by 1.3% to 78,832ML over the corresponding period.

In 2007/08, the average residential property in Perth consumed 268kL of water, down 4.6% compared to 2006/07. However, over the same period, the average consumption in regional towns fell by 7.7% to 359kL. In 2007/08, the highest average consumption was 648kL/annum (Port Hedland) and the lowest consumption was 154kL/annum (Denmark). The difference in water consumption levels between Perth and regional towns can be partly explained by the fact that Perth's water restrictions applied for the full 2007/08 year, whereas other towns, such as Bunbury and Busselton have only been subject to water restrictions from 1 October 2007.

3.2 Wastewater Services

The performance information in this report covers 22 sewerage schemes¹⁴ that have more than 1,000 connected properties. This includes towns serviced by the City of Kalgoorlie-Boulder and the Water Corporation.

Between 2006/07 and 2007/08, the number of connected properties in all towns has increased by 3.6% to 749,000. Perth experienced an increase in connected properties of 3.2% to 622,000 connections. The other towns (excluding Perth) experienced an increase in connected properties of 5.8%, to a total of 127,000 connected properties.

In 2007/08, the average volume of sewage collected per property in all towns was 194kL, an increase of 1.6% compared to 2006/07. Over the same period, the volume of sewage collected per property in Perth was 198kL, an increase of 3.1% compared to 2006/07.

In 2007/08 the total sewerage collected in Perth totalled 123,225ML, or 51.4% of the total urban water supplied (239,773ML), compared to 49.3% for the previous year.

In 2007/08, the total volume of recycled water supplied was 17,296ML¹⁵, of which 64.8% was supplied to commercial, municipal and industrial users. Perth accounted for 46% of the total volume of recycled water supplied. In 2007/08, Perth recycled 6% of the total effluent treated, compared to 46% in the average regional town.

¹⁴ For a full list of schemes see section 6.1.

¹⁵ For 2007/08, this includes water service providers who supply recycled water.

In Perth, the number of sewer main breaks and chokes per 100 km of sewer main in 2007/08 was 20.9, a fall of 7.1%, compared to 2006/07. In contrast, the average number of breaks and chokes in the other towns¹⁶ increased by 15.6% to 29.6.

In 2007/08, the average number of sewerage service complaints¹⁷ for all towns was 7.9 per 1,000 properties, a decrease of 10.2% compared with 2006/07. Perth recorded 6.8 sewerage service complaints per 1,000 properties, a fall of 21.8% compared to 2006/07.

In 2007/08, the average town had approximately 58% of its sewage treated to a secondary level and approximately 42% of its sewerage treated to a tertiary level, unchanged from 2006/07. In Perth, 94% of sewage was treated to a tertiary level, in contrast to the average regional town, where only 39% of sewage was treated to a tertiary level.

3.3 Irrigation Services

In 2007/08, the total volume of water supplied for irrigation was 203.2GL, a decrease of 17.7% compared to 2006/07. Gascoyne Water Cooperative Ltd (GWC) decreased its supply volume by 13.1% to 4.6GL, Ord Irrigation Cooperative Ltd (Ord Irrigation) fell by 22.8% to 135.8GL, Preston Valley Irrigation Cooperative (Preston Valley) fell by 22.8% to 0.77GL and SWIMCO (Harvey Water) fell by 4.5% to 62.1GL. The Ord Irrigation decrease can be explained by seasonal variations in rainfall which affects the amount of irrigation water supplied.

In 2007/08, the total volume of water supplied for non-irrigation purposes (including non-potable) was 2.11GL, a decrease of 47.1% compared to 2006/07. GWC supplied 88.5ML (79.8ML in 2006/07), Harvey Water supplied 1.99GL (3.88GL in 2006/07) and Preston Valley supplied 31ML (28ML in 2006/07).

Customers of agencies providing irrigation services received 39.2% (205.3GL¹⁸) of all water supplied to both urban and rural customers in 2007/08 (523.9GL¹⁹).

In 2007/08, there was 1,772 total irrigation connections and 677 total non-potable water connections. Harvey Water accounted for 71% of irrigation connections and 83% of non-potable water connections.

¹⁶ City of Kalgoorlie Boulder has provided an amended figure of 137.2 sewer main breaks and chokes per 100 km of sewer main, for 2006/07.

¹⁷ In 2007/08 this NWI indicator was changed to now include sewerage odour complaints per 1,000 properties, historical data has been amended to reflect the new definition.

¹⁸ Includes both irrigation and non-potable water

¹⁹ Total urban water supplied plus total volume of water supplied to irrigators for irrigation and non-potable purposes for 2007/08.

PART A: WATER PERFORMANCE INFORMATION

4 Large Water Service Provider Performance

4.1 Covered Water Supply Schemes

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

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

With the exception of Bunbury, which is supplied by Aqwest-Bunbury Water Board, and Busselton, which is supplied by the Busselton Water Board, all of the town water supply schemes are supplied by the Water Corporation. The performance data for all the above 32 towns has been reported in a format consistent with the national performance framework for urban²⁰ water delivery agencies.

4.2 Sources of Water

4.2.1 Total Sourced Water

Total sourced water includes water abstracted from various water sources including surface water, groundwater, desalination, recycled water and water received from a bulk supplier²¹.

Figure 1 shows that total water sourced for the 32 towns has decreased by 1.1% (to 341,520ML) in 2007/08 compared to 2006/07 and increased by 9.9% over the period 2003/04 to 2006/07. Water sourced for Perth decreased by 0.3% and other towns decreased by 3.5% in 2007/08. In 2007/08, Pinjarra had the largest percentage increase of sourced water (43.4%), while Denmark the largest percentage decrease (16.7%).

In 2007/08, 74.1% of total water sourced was supplied to Perth, compared to 73.5% in 2006/07.

²⁰ Urban includes both metropolitan and non-metropolitan water delivery agencies.

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

Figure 1: Total volume of water sourced from all sources

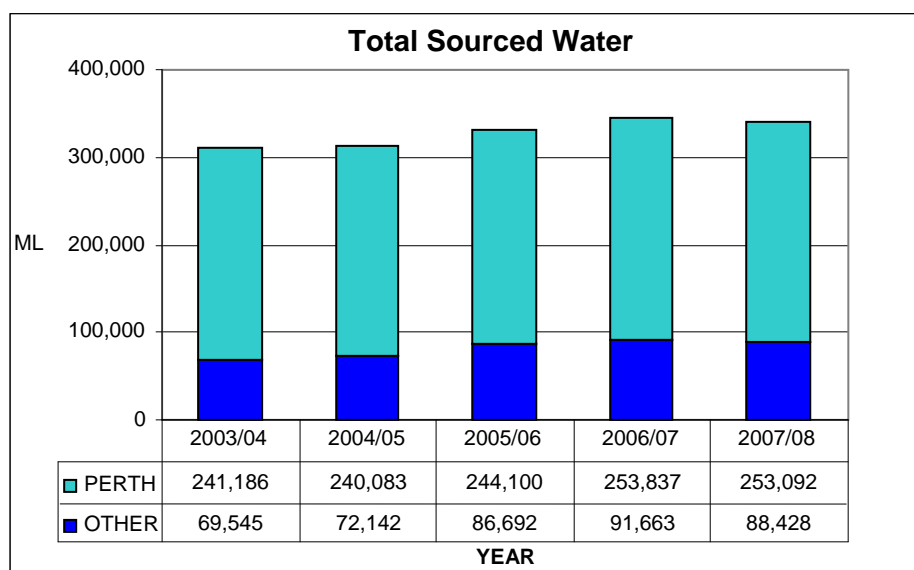


Figure 2 shows that, in 2007/08, water sourced from surface water, desalination, recycling and bulk supplier have increased in volume by 5.6%, 46.7%, 13.9% and 1.7% respectively, compared to 2006/07. Correspondingly, water sourced from groundwater has decreased by 10.2% over the same period. In 2007/08, total sourced water has decreased by 1.2% (to 341,520ML), compared to 2006/07. Over the same period water sourced for Perth decreased by 0.3%, to 253,092ML. The Kwinana desalination plant began supplying water to Perth in November 2006. In 2007/08, desalination accounted for 10.5% of Perth's total sourced water in its first full year of operation.

Figure 2: Sources of water by volume (All Towns)

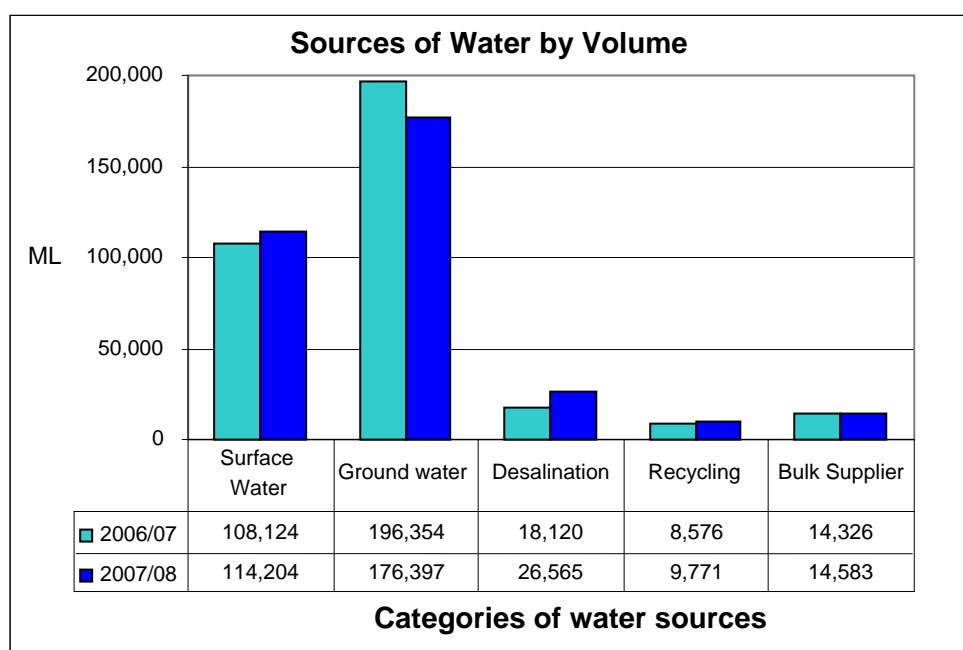


Figure 3 shows that, in 2007/08, surface water (33.4%), desalination sources (7.8%), recycling (2.9%) and bulk supplier (4.3%) provided an increased percentage of the total water sourced compared to 2006/07. Correspondingly, the percentage of water sourced from groundwater has decreased from 56.8% to 51.7%, over the same period.

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

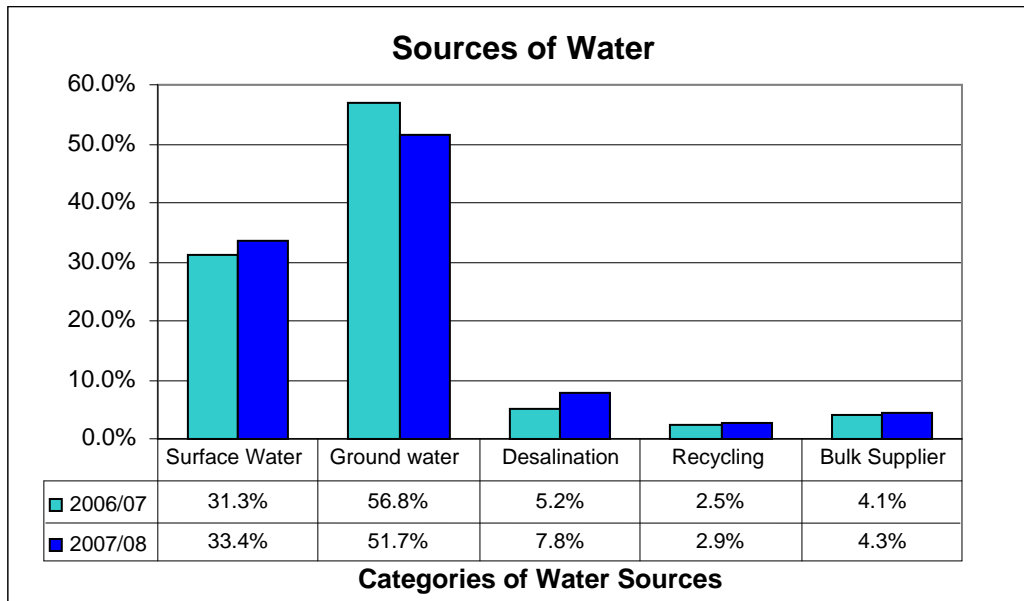


Figure 4 shows that, in 2007/08, water sourced from surface water, desalination and recycling for Perth increased in volume by 8.1%, 46.7% and 19.9% respectively, compared to 2006/07. Correspondingly, water sourced from groundwater has decreased by 11.7% over the same period. In 2007/08, the total volume of sourced water decreased slightly by 0.3%, compared to 2006/07.

Figure 4: Sources of Water by Volume (Perth Only)

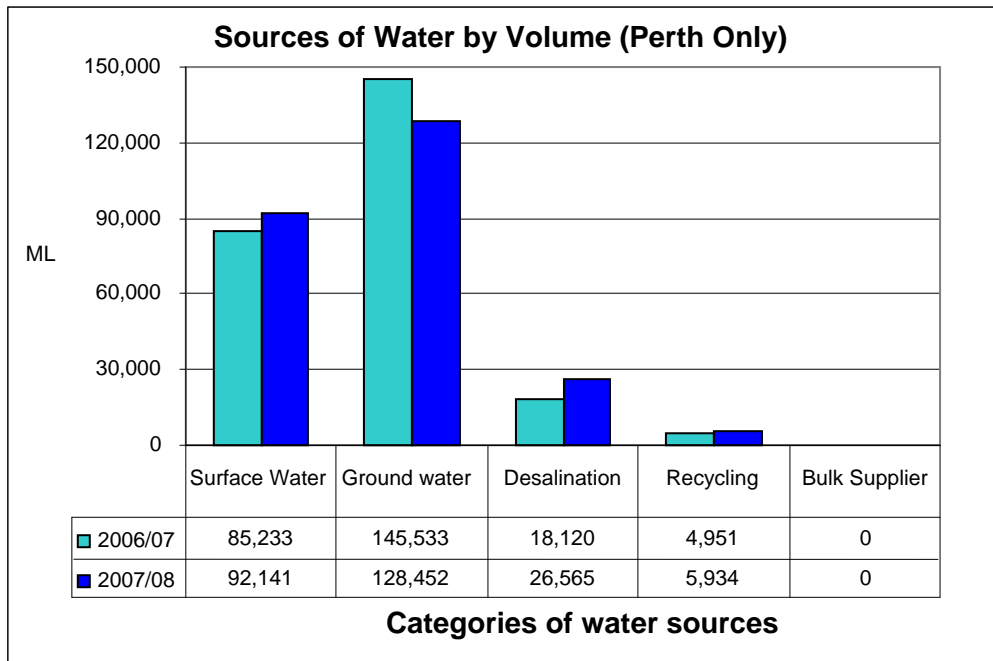
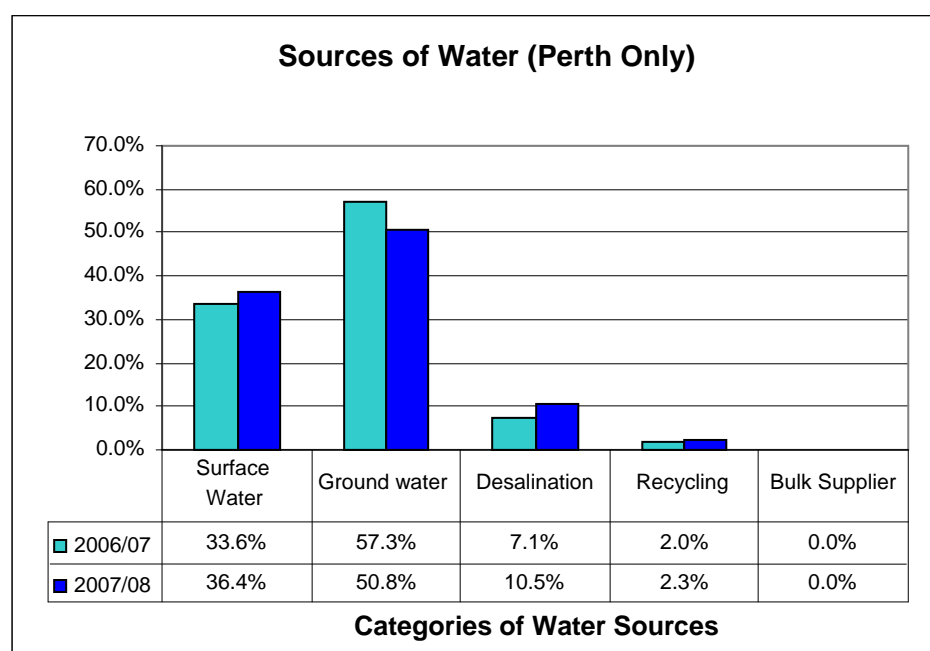


Figure 5 shows that, in 2007/08, groundwater accounted for 50.8% of Perth’s total sourced water, down from the last five years average of 54.8%. In 2007/08, surface water accounted for 36.4% of the total sourced water, up from 33.6% in 2006/07. The Kwinana desalination plant supplied 10.5% of Perth’s total sourced water.

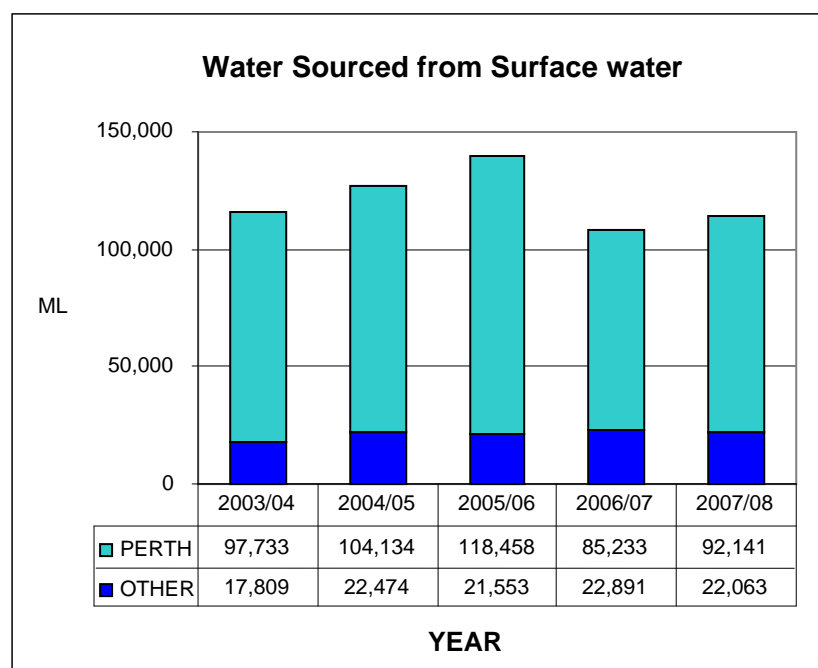
Figure 5: Sources of water by percentage (Perth Only)



4.2.2 Water Sourced from Surface Water

Surface water is water abstracted from dams, rivers or irrigation channels. Figure 6 shows that, in 2007/08, the total volume of water sourced from surface water (114,204ML) increased by 5.6%, compared to 2006/07 (108,124ML). The volume of surface water sourced for consumption in Perth increased by 8.1% in 2007/08, compared to 2006/07, but the volume of surface water sourced for other towns decreased by 3.6% over the same period. In 2007/08, 80.7% of the total water sourced from surface water was used to supply Perth, compared to 78.8% in 2006/07.

Figure 6: Total volume of water sourced from surface water- All Towns

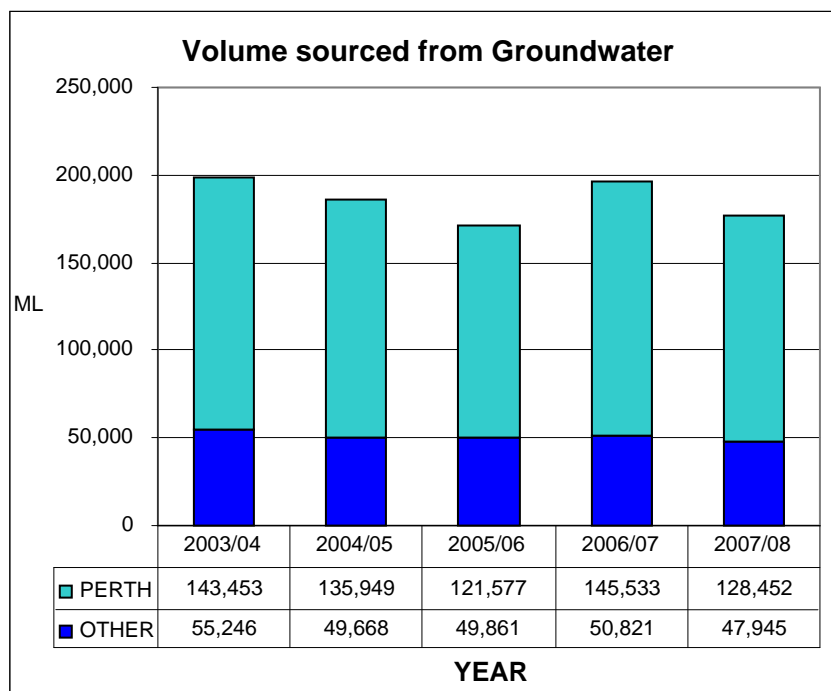


4.2.3 Water Sourced from Groundwater

Groundwater is water abstracted from groundwater 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 sewerage plants.

Figure 7 shows that, in 2007/08, the total volume sourced from groundwater (176,397ML) decreased by 10.2% compared to 2006/07 (196,354ML). The volume of groundwater sourced for consumption in Perth (128,452ML) decreased by 11.7%, compared to 2006/07. In 2007/08, 72.8% of the total water sourced from groundwater was supplied to Perth.

Figure 7: Total volume of water sourced from groundwater



4.2.4 Water Sourced from Desalination

Desalinated water began to contribute to sourced water in 2006/07 and 2007/08 was the first full year that desalinated water contributed to the water supply. Figures 3 and 5 show in 2007/08 that desalination has contributed 7.8% of total water sourced for all towns, and that 100% of the desalinated water was supplied in Perth, accounting for 10.5% of Perth's total sourced water.

4.2.5 Water Sourced from Recycling

The categories of water sourced from recycled water are defined in Appendix 1. Figure 2 shows that, in 2007/08, the total volume of water sourced from recycling increased by 13.9%, compared to 2006/07, and Figure 3 shows that in 2007/08, recycling contributed 2.9% of total sourced water. Figure 4 shows that, in 2007/08, the volume of water sourced from recycling in Perth increased by 19.8%, compared to 2006/07. This partly reflects the 6.3% increase in Perth's total sewage volume collected. Figure 5 shows that,

in 2007/08, recycling contributed 2.3% to Perth's total sourced water, up from 2.0% in 2006/07.

4.2.6 *Water received from Bulk Supplier*

Bulk water is water purchased from another utility or entity outside the consuming utility's geographic area of responsibility (See Appendix 1). Figure 2 shows that, in 2007/08, the total volume of water sourced from bulk suppliers increased by 1.8%, compared to 2006/07. Figure 3 shows that, in 2007/08, the total volume of water received from bulk suppliers contributed 4.3% of the total water sourced, compared to 4.1% in 2006/07. Comparing Figure 3 with Figure 4 shows that all of the water sourced from bulk suppliers was supplied to regional towns in 2007/08.

4.3 **Uses of Water Supplied**

4.3.1 *Total Urban Water Supplied*

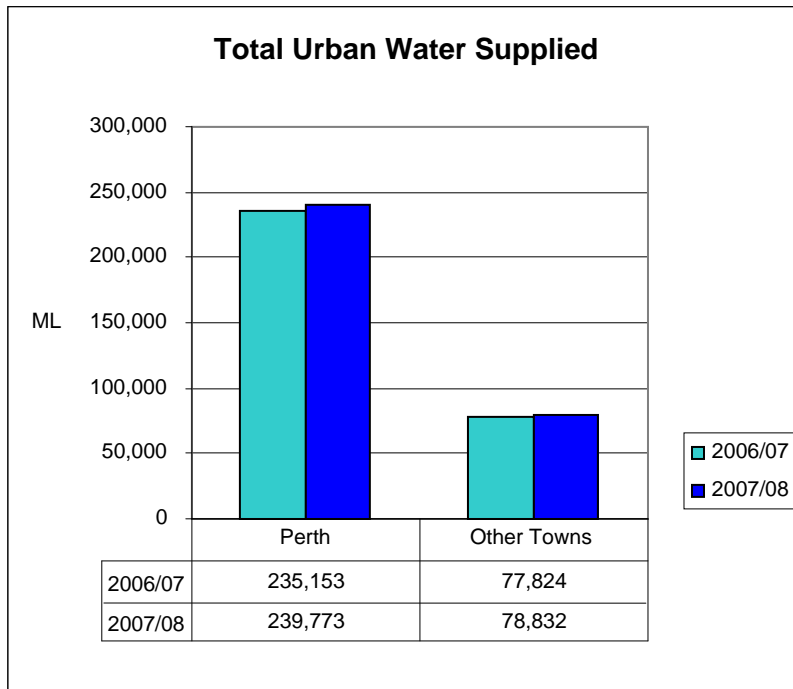
Total urban water supplied is defined as the total metered volume of water (potable or non-potable²²), supplied to customers over the reporting period plus estimated non-metered water supplied. This comprises the sum of residential water supplied, commercial, municipal and industrial water supplied and other estimated water supplied.

Figure 8 shows that, in 2007/08, the total urban water supplied was 318,605ML, of which 239,773ML (75.3%) was supplied to Perth. The volume of water supplied to Perth increased by 2.0%, compared to 2006/07, and the volume supplied to other towns increased by 1.3% over the corresponding period. In 2007/08, Pinjarra had the largest percentage increase in volume supplied (122.7%), while Denmark the largest percentage decrease (13.8%). The decrease for Denmark can be explained by the introduction by the Water Corporation of stage 5²³ water restrictions (from 1 January 2008²⁴) in response to declining rainfall and low dam levels. The Water Corporation has advised that during 2008, low water storages in Denmark's Quickup dam resulted in water being carted to Denmark. Water Corporation also upgraded the existing plant infrastructure, allowing water to be drawn directly from the Denmark River dam. With rain subsequently filling the Quickup dam, the new plant upgrade is still on-site and has not been required.

²² Current and historical data includes recycled water for the first time.

²³ Stage 5 water restrictions limit the use of sprinklers or reticulation to 1 day per week (See Appendix 2 for further details).

²⁴ Stage 5 restrictions were lifted for Denmark on 1 December 2008.

Figure 8: Total urban water supplied

4.3.2 Average Annual Residential Water Supplied

Table 1 shows that, in 2007/08, the average residential property in Perth consumed 23.8% less water than the average WA town (including Perth). Since 2006/07, residential water consumption per property in Perth has decreased at a lower rate (4.6%) than the average town (7.8%).

Permanent water efficiency measures came into effect throughout Western Australia on 1 October 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 Zone is defined as all communities north of Kalbarri and Kalgoorlie with the Southern Zone comprising all other communities. For a detailed map of the zones see Appendix 2.

In the Northern Zone watering is only allowed on nominated alternate days²⁵, in the Southern Zone watering is allowed on two nominated days²⁶. These zones are the new base watering regime throughout Western Australia. For further details on permanent water efficiency measures and a description of water restriction stages see Appendix 2.

As a result of the permanent water efficiency measures, consumers in Perth have been subject to water restrictions²⁷ since 2001 and throughout the reporting period, whereas regional towns have only been subject to water restrictions, from 1 October 2007.

Across the State, Port Hedland had the highest average annual residential water consumption (648 kL/property) and Denmark had the lowest consumption (154 kL/property). This is reflective of very different climatic conditions in these towns and the stage 5 water restrictions in Denmark. While Denmark had the lowest annual residential

²⁵ Stage 2 water restrictions (For a full definition see Appendix 2).

²⁶ Stage 4 water restrictions (For a full definition see Appendix 2).

²⁷ Stage 4 water restrictions (For a full definition see Appendix 2).

water consumption of the 32 towns, average consumption in 2007/08 decreased by 18.9%, compared to 2006/07, reflecting the introduction of restrictions.

Table 1: Average annual residential water supplied per property

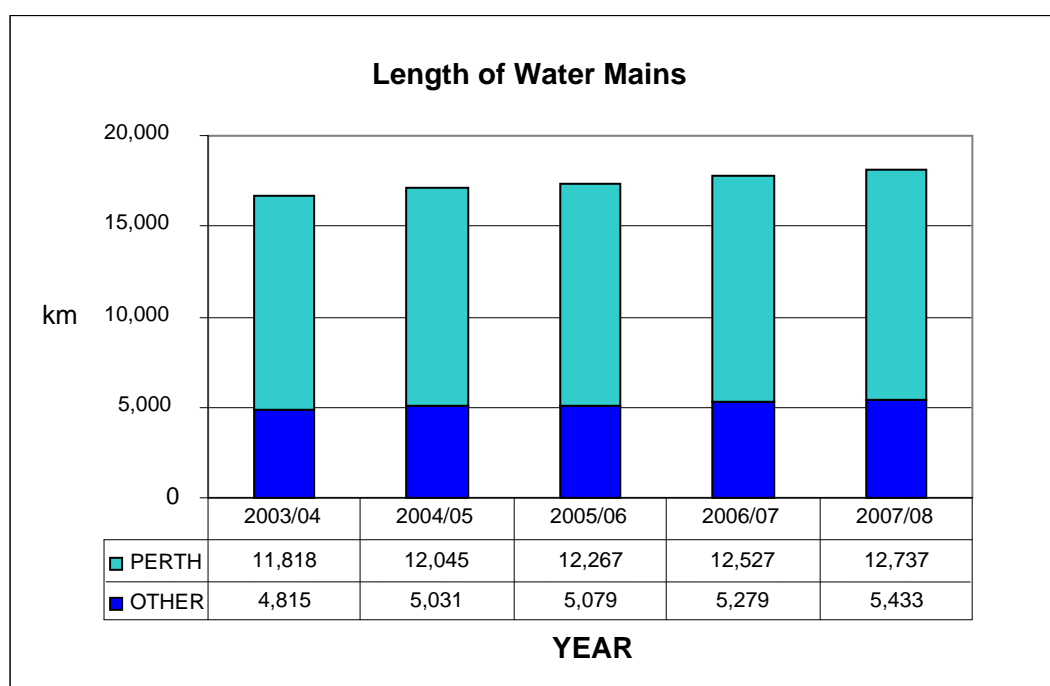
Data	Average Annual residential water supplied per property (kL/property)		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	281	268	-4.6
Highest (Port Hedland)	663	648	-2.3
Lowest (Denmark)	190	154	-18.9
Average of all 32 Towns	382	352	-7.8
Average of all Towns less Perth	389	359	-7.7

4.4 Asset

4.4.1 Water Mains

Figure 9 shows that, in 2007/08, the length of water mains for all towns increased by 2.0% compared to 2006/07, and by 9.2% since 2003/04. Water mains increased by 1.7% in Perth and by 2.9% in all towns (excluding Perth) during 2007/08. Perth accounts for 70% of the total length of water mains in service. During 2007/08, Mandurah experienced the largest percentage growth in mains (7.3%), while there was no change to the length of water mains in Carnarvon, Derby, Dongara/Denison, Katanning, Manjimup, Merredin, Narrogin, Newman, Port Hedland and York.

Figure 9: Length of Water Mains



4.4.2 Properties Connected per Kilometre of Water Main

Table 2 shows that, in 2007/08, Perth had 54 properties served per km of water main and the average town (excluding Perth) had 30 properties served, both unchanged from 2006/07. The average number of properties served in Perth is 80% higher than the average town (excluding Perth), which reflects the greater urban density when compared to the average regional town. The highest number of properties served was in Newman (71) and the lowest was in Merredin and Carnarvon (13). Newman increased the number of properties served per km by 24.6% and reflects the increase in connected properties from mining accommodation²⁸.

Table 2: Properties served per kilometre of Water Main

Data	Properties served per km of water main		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	54	54	0
Highest in 2007/08 (Newman)	57	71	24.6
Lowest in 2007/08 (Merredin and Carnarvon)	13	13	0
Average of all 32 Towns ²⁹	30	31	3.3
Average of all Towns less Perth	30	30	0

4.4.3 Water Main Breaks

Table 3 shows for 2006/07, Perth experienced 20.5% less water main breaks per 100 kilometres of mains than the average town (excluding Perth). The level of water main breaks in Perth (14.0) was 7.7% higher than that in 2006/07. In 2007/08, Carnarvon had the lowest level of water main breaks (4.6). In contrast, Port Hedland had the greatest number of water main breaks (76.5) due to aging pipes. The Water Corporation has advised that capital projects addressing the problem, have been planned. While Jurien recorded the largest percentage increase (284.3%), it is not considered significant, due to the low number of water mains breaks (8), being reported for 2007/08. In contrast, Carnarvon recorded the largest percentage decrease (64.3%), as a result of seasonal variations³⁰. Among other things, 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.

²⁸ As advised by Water Corporation.

²⁹ The Aqwest 06/07 figure was amended due to changes in the number of connected properties calculation by Aqwest.

³⁰ As advised by the Water Corporation.

Table 3: Water Main Breaks (per 100km of Water Main)

Data	Water main breaks per 100 km of water main		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	13.0	14.0	7.7
Highest in 2007/08 (Port Hedland)	70.1	76.5	9.1
Lowest in 2007/08 (Carnarvon)	12.9	4.6	- 64.3
Largest % increase in 2007/08 (Jurien)	5.1	19.6	284.3
Largest % decrease in 2007/08 (Carnarvon)	12.9	4.6	- 64.3
Average of all 32 Towns	19.6	17.5	-10.7
Average of all Towns less Perth	19.8	17.6	-11.1

4.4.4 Water Treatment Plants providing Full Treatment

The definition of a water treatment plant providing full treatment can be found in Appendix 1.

This indicator can provide a partial explanation of 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. Table 4 shows that, in 2007/08, Perth had 8 of the 25 treatment plants providing full treatment across the State. The remaining 31 towns were supplied by 17 full treatment plants, which implies that some towns were supplied by treatment plants with lower order treatment processes. The figures have not changed from the previous year.

Table 4: Water Treatment Plants Providing Full Treatment

Data	No. of Water treatment plants providing full treatment - 2007/08		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	8	8	0
Total of all 32 Towns	25	25	0
Total of all Towns less Perth	17	17	0
Average no. per town	0.8	0.8	0
Average no. per town (Less Perth)	0.5	0.5	0

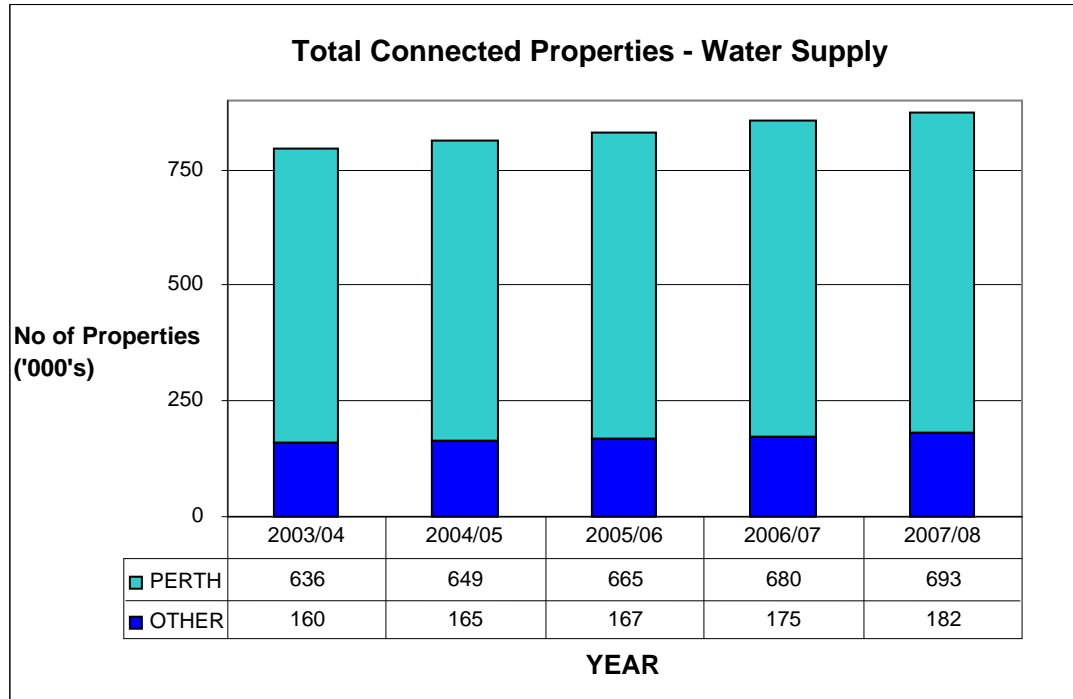
4.5 Customers

4.5.1 Connected Properties

The definition of a connected water property can be found in Appendix 1. Figure 10 shows that, during 2007/08, the total number of connected properties in the state grew by 2.3% to 875,000 properties. The number of connected properties in Perth increased by 1.9% and in towns (other than Perth), by 4.0%. Since 2003/04, total connected properties

have increased by 9.9%, with Perth experiencing growth of 9.0% and towns (other than Perth), experiencing growth of 13.8%³¹. During 2006/07, Newman had the largest percentage increase in connected properties (25.9%), while Manjimup the largest percentage decrease (4.4%). The increase in Newman reflects the growth in population as a result of the recent expansion of resource development in the area.

Figure 10: Total Connected Properties – Water Supply (000's)



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, and suggests that there is a proportionately higher rate of water infrastructure development in regional towns, compared to Perth.

4.5.2 Customer Service

4.5.2.1 Water Quality Complaints

Water quality complaints include any complaint regarding discolouration, taste, odour, stained washing, illness or cloudy water (See Appendix 1). Table 5 shows that, in 2007/08, the average number of complaints for all towns, including Perth, was 4.3 per 1,000 properties. Over the same period, the number of complaints in Perth (6.0) was 11.8% lower than in 2006/07 (6.8), and the all town average number of complaints was 25.9% lower (4.3). In 2007/08, Denmark recorded the largest percentage increase in complaints (303%). The Total Urban Water Supplied section describes the problems with sourcing suitable potable water for Denmark and the large percentage increase, reflects these problems. In contrast, Manjimup and Carnarvon had the largest percentage decrease of 100%. In 2007/08, Australind/Eaton recorded the highest number of water quality complaints (20.3), a decrease of 30% on the previous year.

³¹ Bunbury - Aqwest provided amended data for 2005/06 and 2006/07 and historical total connected properties data has been amended to reflect these amendments.

Table 5: Water Quality Complaints

Data	Water Quality Complaints per 1,000 properties		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	6.8	6.0	-11.8
Average of all Towns ³²	5.8	4.3	-25.9
Average of all Towns less Perth	5.8	4.3	-25.9
Highest no. of Complaints in 2007/08 – Australind / Eaton	29.0	20.3	-30.0
Largest increase in 2007/08 - Denmark	3.7	14.9	303.0
Largest decrease and lowest no. of Complaints in 2007/08 – Carnarvon	2.0	0.0	-100.0
Largest decrease and lowest no. of Complaints in 2007/08 – Manjimup	6.9	0.0	-100.0

4.5.2.2 Water Service Complaints

Water service complaints include all complaints concerning bursts, leaks, service interruptions, adequacy of service, water pressure and water reliability (See Appendix 1). Table 6 shows that, in 2007/08, Perth recorded a similar level of water service complaints compared to the previous year and 26.6% less complaints than the average town. The highest level of recorded complaints was in Pinjarra (361.6), which also recorded the largest percentage increase, while Busselton recorded the lowest level of complaints (1.0). The high level of complaints for Pinjarra were largely due to an incident involving damage to a water mains by a third party contractor that interrupted services to around 500 connections, as well as a major interruption in July 2007³³.

³² In the 2007 Water Wastewater and Irrigation Performance Report, Bunbury Data was excluded from the average calculation for the 2006/07 year. The 2006/07 averages in this report now includes Bunbury data.

³³ As advised by the Water Corporation.

Table 6: Water Service Complaints

Data	Water Service Complaints per 1,000 properties		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	21.7	21.5	-0.1
Average of all Towns ³⁴	24.4	29.3	20.1
Average of all Towns less Perth	24.5	29.5	20.4
Highest no. of Complaints in 2007/08 – Pinjarra	32.8	361.6	1002.4
Largest increase in 2007/08 - Pinjarra	32.8	361.6	1002.4
Largest decrease in 2007/08 – Dongara/Port Denison	107.6	21.9	-79.6
Lowest no. of Complaints in 2007/08 – Busselton	0.7	1.0	42.9

4.5.2.3 Average Duration of an Unplanned Water Supply Interruption

An unplanned water supply interruption is 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 effectiveness of the network being managed. Table 7 shows that, in 2007/08, the average duration of an unplanned water supply interruption for all towns (less Perth) of 98.7 minutes was 25.5% shorter than Perth (132.4 minutes). Pinjarra recorded the longest average unplanned interruption at 360.2 minutes due to the incidents referred to in the previous section dealing with water service complaints. Derby recorded the shortest average unplanned interruption at 26.4 minutes.

Table 7: Average Duration of an Unplanned Water Supply Interruption

Data	Average Duration of an unplanned water supply interruption (minutes) - 2007/08
Perth	132.4
Highest no. in 2006/07 (Pinjarra)	360.2
Lowest no. in 2007/08 (Derby)	26.4
Average of all Towns	99.7
Average of all Towns less Perth	98.7

4.5.2.4 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.

³⁴ Bunbury (Aqwest) data was not provided for the 2006/07 year and has been included in the average calculation for 2006/07 and 2007/08.

Table 8 shows that, in 2007/08, the average customer in Perth experienced 51.0% less unplanned interruptions than the average customer in regional towns. Pinjarra recorded the highest interruption frequency (782.0) due to the incidents referred to in the section dealing with water service complaints. Manjimup recorded the lowest interruption frequency (0.0). Newman recorded the largest percentage increase (2,989%), due to hydrant and valve replacement work³⁵.

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

Data	Average frequency of unplanned interruptions per 1,000 properties		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	63.5	66.0	3.9
Average of all Towns ³⁶	149.2	132.4	-11.3
Average of all Towns less Perth	151.9	134.6	-11.4
Highest no. of interruptions in 2007/08 – Pinjarra	157.2	782.0	397.5
Largest increase in 2007/08 - Newman	7.9	244.0	2,988.6
Largest decrease and lowest no. of interruptions in 2007/08 – Manjimup	32.6	0	-100.0

4.6 Health - Water Quality Compliance

The definition of a water supply zone can be found in Appendix 1. Table 9 and Table 10 show that 31.6% of the total number of zones where compliance with microbiological and chemical health standards were measured are in Perth. All zones across the state achieved 100% compliance with the microbiological and chemical health standards in 2007/08.

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

Data	Number of Zones where microbiological compliance was achieved - 2007/08	Percentage of Population where microbiological compliance was achieved - 2007/08
All Towns	66/66	100%
Perth	24/24	100%
All Towns less Perth	42/42	100%

³⁵ As advised by the Water Corporation.

³⁶ Bunbury (Aqwest) data has been amended for the 2006/07 year and the calculation of the all town average and the all town less Perth average for 2006/07 have been re-calculated.

Table 10: Zones where chemical compliance was achieved

Data	Number of Zones where chemical compliance was achieved - 2007/08
All Towns	66/66
Perth	24/24
All Towns less Perth	42/42

5 Small Water Service Providers Performance

5.1.1 Small Potable Water Providers

Rottnest Island Authority (RIA) and Hamersley Iron are the only two small potable water providers licensed by the Authority.

Hamersley Iron is licensed to supply potable water in 3 towns (Dampier, Paraburdoo and Tom Price). Pilbara Iron, a division of Rio Tinto, is the asset manager for the water supply schemes operated by Hamersley Iron.

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 two desalination trains, whose output is then pumped into storage tanks.

Table 11 shows that, in 2007/08, the total volume of potable water supplied by RIA decreased by 17.8% and the volume supplied by Hamersley Iron increased by 5.9%, compared to 2006/07.

Table 11: Volume of Potable Water Supplied

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

During 2007/08, the number of connected properties, for RIA increased by 1 while Hamersley Iron remained unchanged. Table 12 shows that the total length of the water supply mains operated by Hamersley Iron and has also remained unchanged.

Table 12: Length of Water Supply Mains

Data	Length of Water supply Main (km)	
	2006/07	2007/08
Rottnest Island Authority	20	20
Hamersley Iron	106	106
Total	126	126

Table 13 shows that, in 2007/08, the total number of leaks and bursts recorded by RIA remained unchanged, whereas those recorded by Hamersley Iron decreased by 53% to 24. The decrease recorded by Hamersley Iron is mainly attributable to the ongoing water mains upgrade program, which was initiated to reduce interruptions caused by leaking or burst water mains.

Table 13: Number of Leaks or Bursts

Data	No. of Leaks and Bursts	
	2006/07	2007/08
Rottnest Island Authority	2	2
Hamersley Iron	51	24
Total	53	26

Table 14 shows that, in 2007/08, the number of confirmed interruptions to drinking water services for RIA was unchanged compared to 2006/07, whereas Hamersley Iron recorded a decrease of 56.1% over the same period.

Table 14: Number of Confirmed Interruptions to Drinking Water Services

Data	No. of Confirmed Interruptions to drinking water services	
	2006/07	2007/08
Rottnest Island Authority	2	2
Hamersley Iron	2,406	1,057
Total	2,408	1,059

The number of written customer complaints in 2007/08 was nil for both RIA and Hamersley Iron, again unchanged from 2006/07.

5.1.2 Small Non-Potable Water Providers

The Shire of Denmark and the Shire of Northampton are two small non-potable water providers licensed by the Authority during 2007/08.

The Shire of Denmark has a licence to supply non-potable water to 203 leasehold holiday use lots at Peaceful Bay, primarily for watering the gardens and toilet flushing. The assets consist of a production bore, storage dam, and pumping station.

The Shire of Northampton had a licence to supply non-potable water to 52 properties at Port Gregory for ablutions, garden watering and wash down purposes only. The assets consist of 2 bores located some 6km north east of the town site, an elevated storage tank, a 4.5km pipeline, two storage tanks located above the town site and a reticulation system connecting to the 52 properties.

On 13 November 2007, The Governor of Western Australia granted the Shire of Northampton an exemption from the requirement to hold a licence for a period of 2 years. As a consequence, and at the request of the Shire of Northampton, the Authority has revoked Shire of Northampton's Licence, effective from 13 December 2007. As a result, no statistical information has been collected from the Shire of Northampton for 2007/08.

Table 15 shows that, in 2007/08, the volume of non-potable supplied by the Shire of Denmark has decreased by 11.1%, compared to 2006/07³⁷. During 2007/08, the length of water supply mains increased to from 1.8 km to 4.7km in 2006/07. This was due to the Shire of Denmark including, for the first time, the bore line and the reticulated mains in its calculation of the length of the water supply mains. Table 15 shows that, in 2007/08, the number of leaks and bursts and written customer complaints was unchanged from the previous year. The total number of emergency calls requiring a response was 2 in 2007/08, compared to 0 in 2006/07.

Table 15: Key Statistics - Shire of Denmark (Peaceful Bay)

Data	Key Statistics – Shire of Denmark	
	2006/07	2007/08
Volume of Non Potable water supplied (kL)	45,000	40,000 ³⁸
Length of Water supply Mains (km)	1.8	4.7 (includes both bore line and reticulated mains)
No. of water service connections	203	203
No. of Leaks and Bursts	1	1
Total No. of emergency calls requiring a response	0	2
Written Customer Complaints	0	0

³⁷ Caution has to be exercised in interpreting this result as volume of water supplied is estimated rather than metered.

³⁸ 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.

PART B: WASTEWATER PERFORMANCE INFORMATION

6 Large Sewerage Service Provider Performance

6.1 Covered Wastewater Schemes

Wastewater schemes in the following 22 towns are included in the analysis of wastewater performance:

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

All of wastewater schemes are managed by the Water Corporation, with the exception of Kalgoorlie/Boulder, which is managed by the City of Kalgoorlie/Boulder. The performance data for all the above 22 towns has been reported in a format consistent with the national performance framework for urban³⁹ wastewater providers.

³⁹ Urban includes both metropolitan and non-metropolitan water delivery agencies.

6.2 Sewage Collected per Total Properties

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.

In 2007/08 the total sewerage collected in Perth totalled 123,225ML, or 51.4% of the total urban water supplied (239,773ML), compared to 49.3% for the previous year.

Table 16 shows that, in 2007/08, the all town average sewage collected per property was 194 kL, an increase of 1.6%, compared to 2006/07. Over the same period the sewage collected per property in Perth increased by 3.1% while the volume collected in the average regional town increased by 1.6%. Of the 21 towns⁴⁰ that provided data, 10 reported decreases in volume and 11 reported increases in volume. In 2007/08, Kununurra recorded the largest volume of sewage collected per property (380kL) and Jurien recorded the smallest volume (75kL). Jurien also recorded the largest fall in sewage collected, a reduction of 21%.

Table 16: Sewage Collected per Total Properties

Data	Sewage collected per total properties (kL per property)		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	192	198	3.1
Average of all Towns ⁴¹	191	194	1.6
Average of all Towns ⁴² less Perth	191	194	1.6
Largest volume of sewage collected per property in 2007/08 and largest % increase – Kununurra	321	380	18.4
Smallest volume of sewage collected per property and largest % decrease in 2007/08 – Jurien	95	75	-21.0

6.3 Uses of Recycled Water

6.3.1 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 town water that is not being consumed for non-potable purposes.

⁴⁰ Data from Newman was unavailable because Water Corporation only manages the wastewater collection system and the actual wastewater treatment plant is managed by the Shire of East Pilbara.

⁴¹ The average does not include Newman's data as it was unavailable.

⁴² The average does not include Newman's data as it was unavailable.

Figure 11 shows that commercial, municipal and industrial uses account for the majority (64.8%) of the volume of recycled water supplied, followed by agricultural uses (22.2%) and on-site uses (12%).

Figure 11: Total Recycled Water Supplied

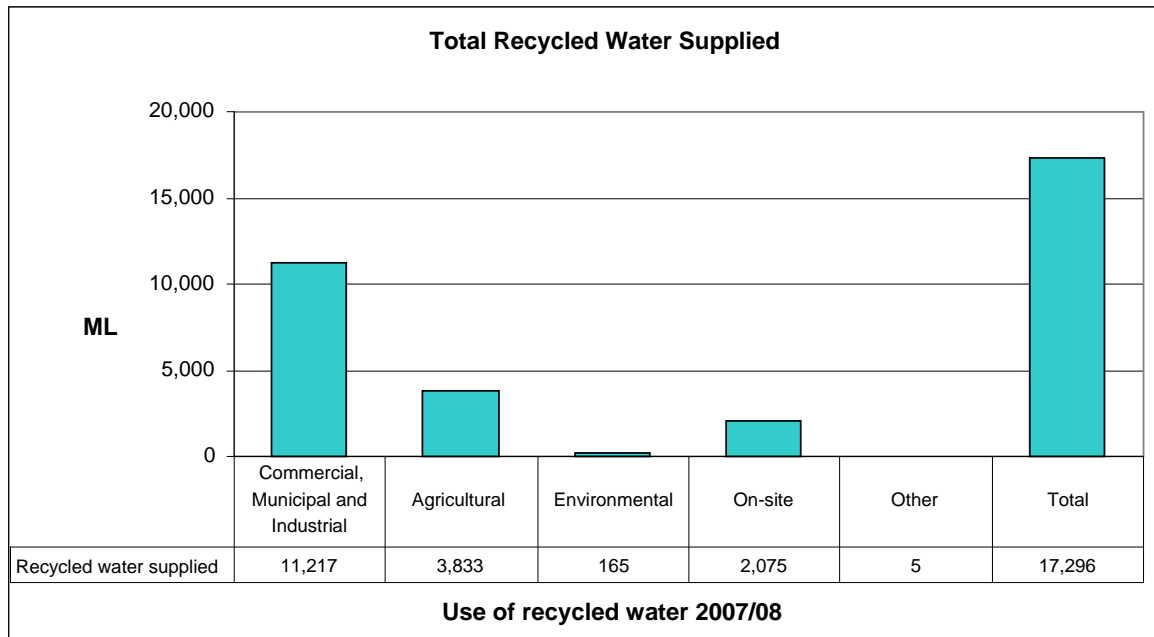


Table 17 shows that, in 2007/08, Perth received 45.9% of the total recycled water supplied, an increase of 14.2%, compared to 2006/07. The average volume of recycled water supplied in regional towns was 302ML per town, although 7 towns reported no recycled water was supplied.

Table 17: Total Recycled Water Supplied

Data	Total Recycled water supplied (ML) - 2007/08
Perth	7,947
Highest volume in 2007/08 (Perth)	7,947
Lowest volume in 2007/08 (Bunbury (W), Collie, Denmark, Dongara-Port Denison, Harvey Wokalup, Jurien, Kununurra) ⁴³	0
Average of all Towns ⁴⁴	540
Average of all Towns less Perth	302
All Town total	17,296

⁴³ In 2007/08, all towns providing water and/or wastewater services have been included in the statistics for total recycled water supplied for the first time. Water service providers report this indicator when recycled water is supplied through a third pipe system for urban reuse. Refer to the definition of Recycled Water Supplied in Appendix 1.

⁴⁴ 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.

6.3.2 Recycled Water (% of Effluent Recycled)

This indicator measures the percentage of treated sewage (effluent) that is used to supply recycled water. Table 18 shows that, in 2007/08, Perth recycled 6% of the effluent treated, compared to 46.4% in the average regional town. In 2007/08, the percentage of effluent recycled in Perth was unchanged, compared to 2006/07. Table 18 shows that 5 towns recycled 100% of their effluent and 3 towns did not recycle any effluent. South Hedland recorded a 92% fall in the volume of recycled water in 2007/08 when compared to 2006/07, due to decreased demand from the Shire of South Hedland, who previously received all the treated effluent.

Table 18: Recycled Water (% of Effluent Recycled)

Data	Recycled Water (% of Effluent Recycled)		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	6.0	6.0 ⁴⁵	0.0
Highest percentage in 2007/08 (Albany, Australind/Eaton, Broome, Manjimup and Karratha)	100.0 (except Karratha 93.4)	100.0	0.0 (except Karratha 7.1)
Lowest percentage in 2007/08 (Collie, Jurien and Kununurra)	0.0	0.0	0.0
Average of all Towns ⁴⁶	49.5	44.5	-10.1
Average of all Towns less Perth	51.7	46.4	-10.3

6.4 Asset

6.4.1 Length of Sewerage Mains and Channels (km)

A sewer main is defined as a reticulation mains including 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.

Figure 12 shows that, in 2007/08, the total length of sewerage mains and channels has increased by 2.8%, compared to 2006/07. During this period, the length of sewerage mains grew by 2.0% in Perth and by 5.5% in regional towns. In 2007/08, Perth accounted for 77.7% of all sewerage mains and channels in the 22 towns. In 2007/08, the largest percentage growth in sewerage mains and channels occurred in Jurien (15.4%), Australind/Eaton (10.8%) and Busselton (10.8%). The length of sewerage mains in Collie, Dunsborough, Katanning, Kununurra, Manjimup, Merredin and Narrogin remained unchanged during 2007/08.

⁴⁵ Rounded to the nearest whole percentage.

⁴⁶ In 2006/07 Bunbury was excluded as no data was provided for 2006/07. For Newman this indicator is not available and the town has been excluded from the average calculation.

Figure 12: Length of Sewerage Mains and Channels

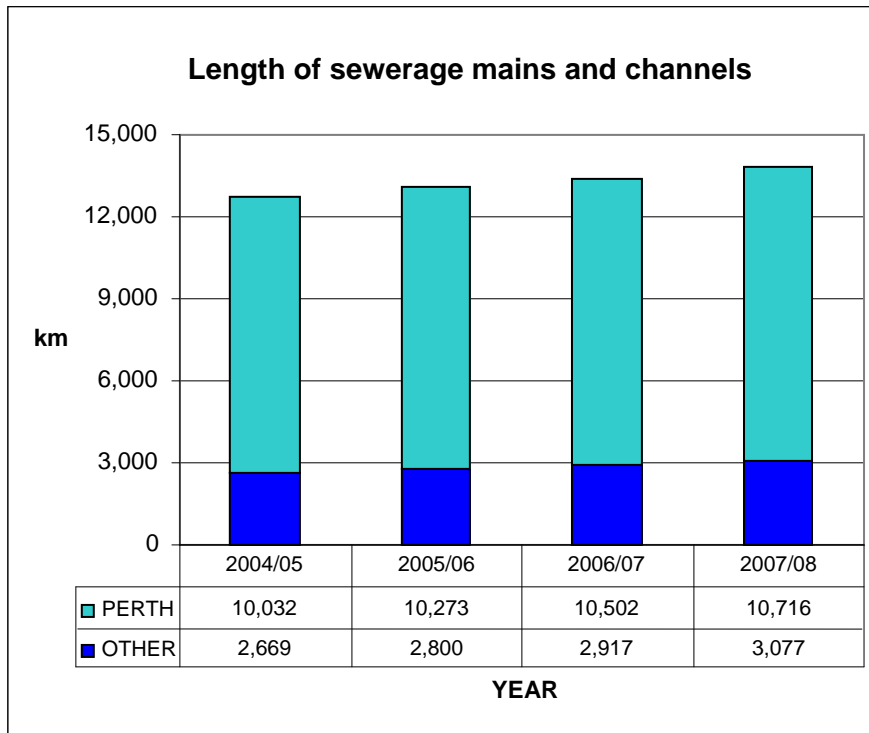
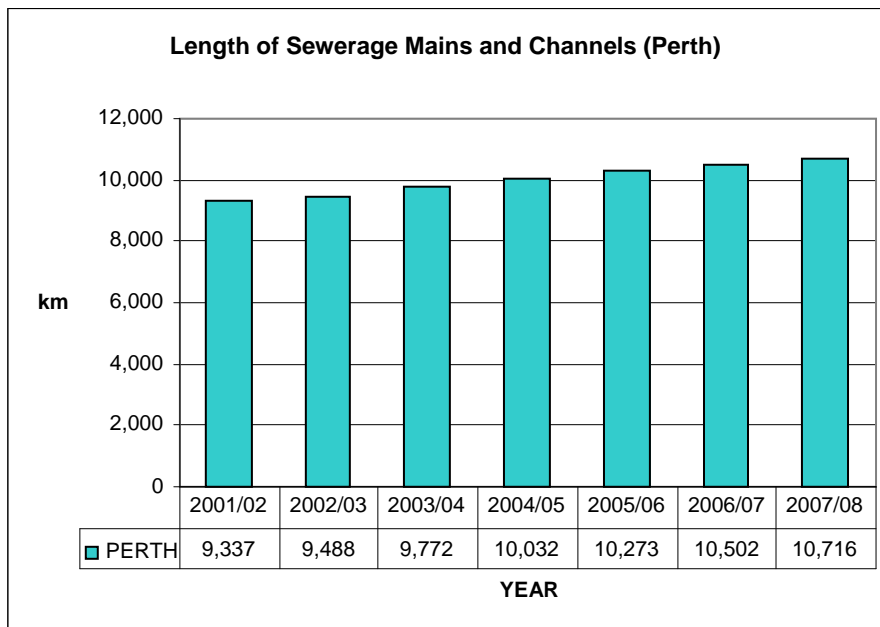


Figure 13 shows that, between 2001/02 and 2007/08, the length of Perth's sewerage mains and channels has grown by 14.8%, equating to a compound growth of 2.31% per annum.

Figure 13: Length of Sewerage Mains and Channels (Perth)



6.4.2 Properties served per km of Sewer Main

The purpose of this indicator is to report on the spatial density of properties served by the sewerage mains. Table 19 shows that, during 2007/08, the all town average has increased by 2.7%, to 43 properties per km. In 2007/08, there were 58 properties per km of sewer main in Perth compared to 42 properties in the average regional town. In 2007/08, Newman reported the highest density of properties served, at 84 per km of mains and also recorded the largest increase (25.4%). Jurien reported the lowest density at 18 properties per km and also recorded the largest fall (-10.0%).

Table 19: Properties served per km of Sewer Main

Data	Properties served per km of Sewer Main (No. Properties per km)		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	57	58	1.8
Average of all Towns	42	43	2.4
Average of all Towns less Perth	41	42	2.4
Highest no. of properties served per km of sewer main and Largest % increase in 2007/08 - Newman	67	84	25.4
Lowest no. of properties served per km of sewer main and Largest % decrease in 2007/08 - Jurien	20	18	-10.0

6.4.3 Sewer Main Breaks and Chokes

The purpose of this indicator is to report 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 to the external environment from the sewer system.

Figure 14 shows that in 2007/08 Perth had 29.4% fewer sewer main breaks and chokes per 100km of sewer mains than the average regional town. While the rate for Perth has decreased by 7.1% in 2007/08, compared to 2006/07, the average regional town has recorded an increase of 15.6% over the same period. The 2007/08 figure for Perth is 6% higher than the average for the previous five years (19.7).

Figure 14: Sewer Main Breaks and Chokes

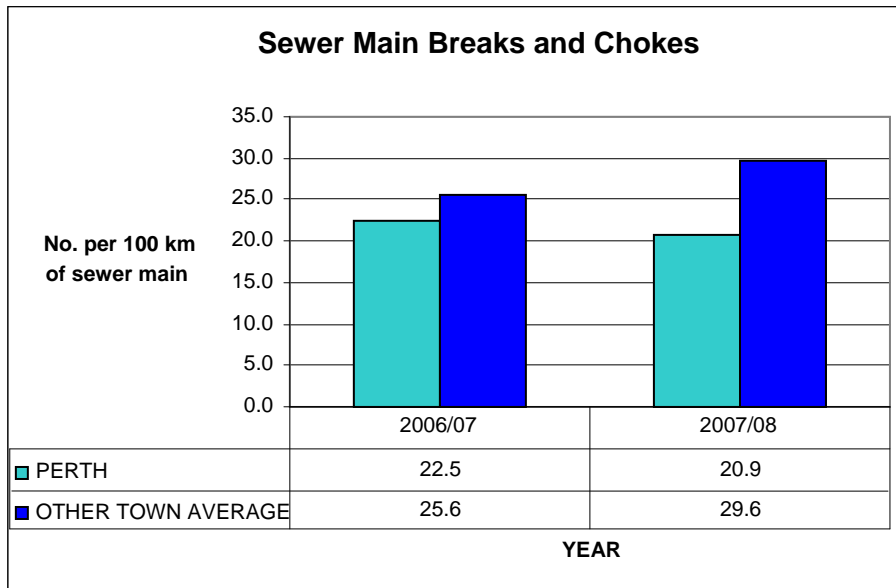


Table 20 shows that, in 2007/08, Jurien had the lowest number of sewer main breaks and chokes (3.4) and Kalgoorlie-Boulder had the highest number (159.6). The City of Kalgoorlie-Boulder has had ongoing issues with sewer main breaks and chokes over a number of years. To overcome this, the City of Kalgoorlie-Boulder are carrying out a programme of ongoing upgrade works to re-line sections of the vitreous clay sewer pipes. However the increase in the level of breaks and chokes, compared to 2006/07 (137.2), suggests that the upgrade works have yet to have an impact on reducing the level of breaks and chokes.

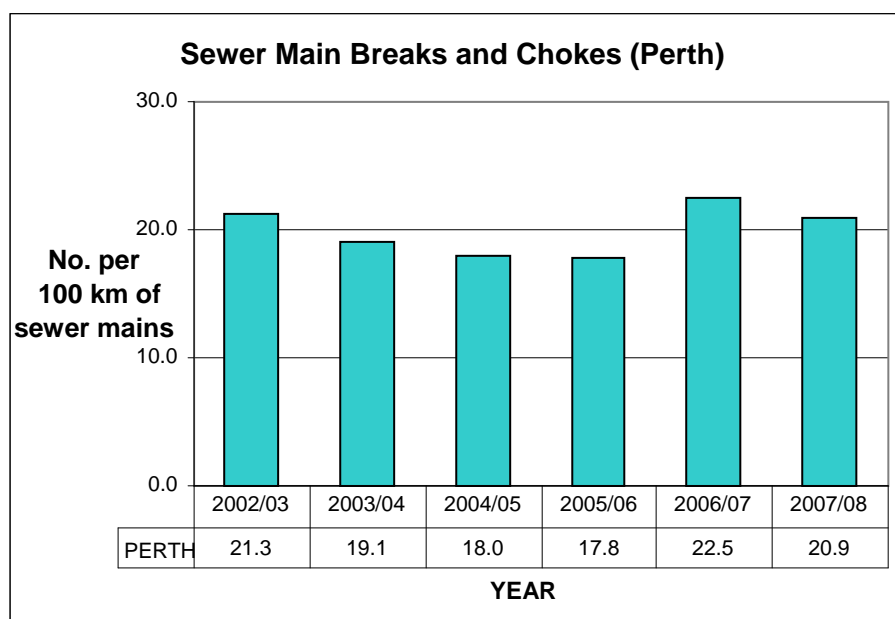
Table 20: Sewer Main Breaks and Chokes per 100km of Sewer Main

Data	Sewer Main Breaks and Chokes (No. per 100 km)		Percentage Change
	YEAR		
	2006/07	2007/08	%
Highest no. of sewer main breaks and chokes per 100 km in 2007/08 – Kalgoorlie/Boulder	137.2 ⁴⁷	159.6	16.3
Lowest no. of sewer main breaks and chokes per 100 km in 2007/08 – Jurien	3.9	3.4	-12.8
Largest % increase in sewer main breaks and chokes per 100 km in 2007/08 - Kununurra	8.9	32.2	261.8
Largest % decrease in sewer main breaks and chokes per 100 km in 2007/08 - Manjimup	17.7	12.7	-28.2

Figure 15 shows that, in 2007/08, Perth recorded 7.1% less sewer main breaks and chokes, compared to 2006/07, and 5.0% more breaks and chokes than the 6 year average of 19.9.

⁴⁷ This figure has been amended since the 2007 Water, Wastewater and Irrigation Report due to a review by City of Kalgoorlie Boulder.

Figure 15: Sewer Mains Breaks and Chokes (Perth)

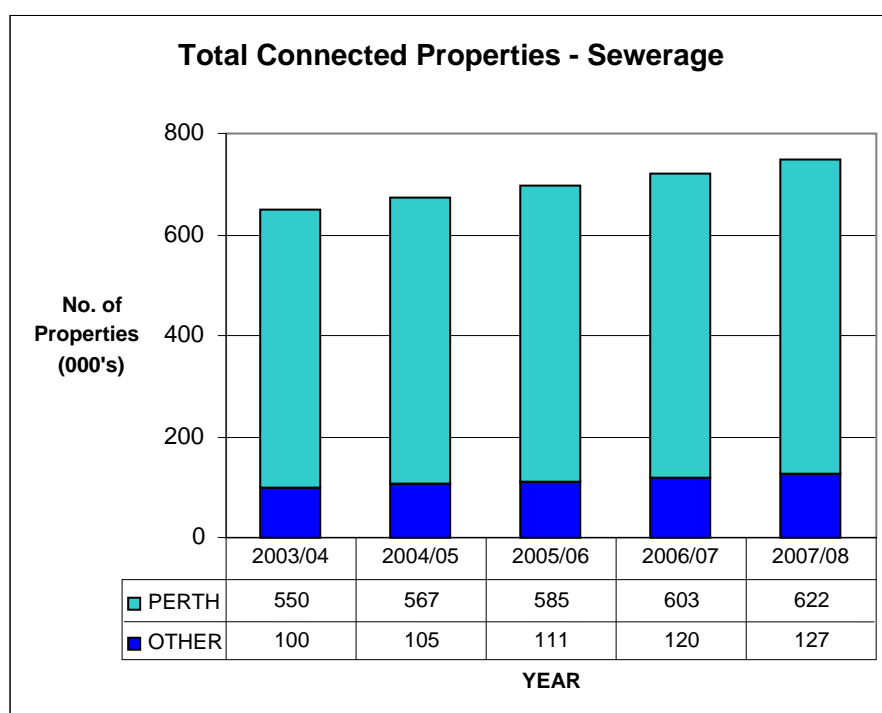


6.5 Customers

6.5.1 Total Connected Properties – Sewerage (000's)

The definition of a connected sewerage property can be found in Appendix 1. Figure 16 shows that, in 2007/08, the total connected properties for all towns was 749,000, an increase of 3.6%, compared with 2006/07, with Perth accounting for 83.0% of the total connected properties. In 2007/08, the number of connections in Perth increased by 3.2%, and in the average regional town by 5.8%, compared to 2006/07.

Figure 16: Total Connected Properties - Sewerage



6.5.2 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 odours⁴⁸ and all other sewerage issues. It does not include complaints relating to government pricing policy, tariff structures or other non applicable areas of the business.

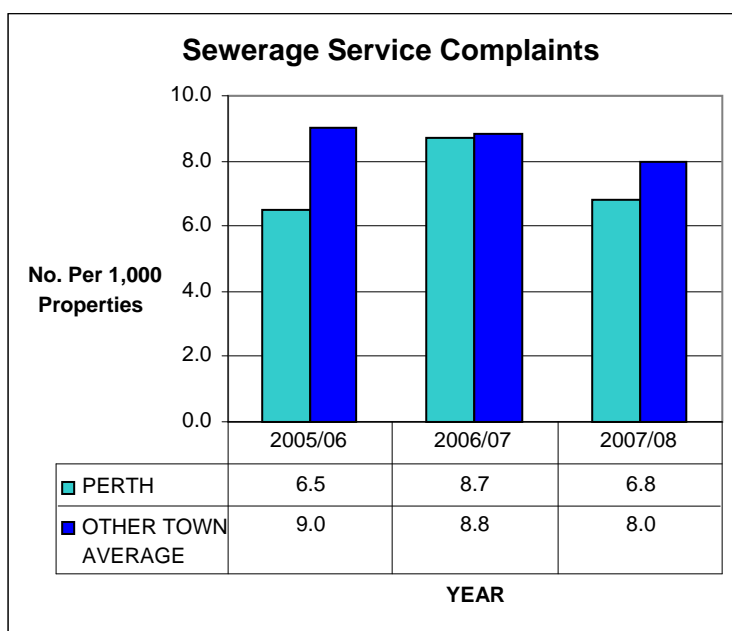
Table 21 shows that the overall level of service complaints recorded in 2007/08 decreased by 10.2%, compared to 2006/07. In 2007/08, Kalgoorlie/Boulder recorded the highest level of service complaints (30.3) and Esperance recorded the lowest number of service complaints (0.9). In 2007/08, Merredin recorded the largest increase in service complaints (87.3%) and Esperance recorded the largest fall (70%) in sewerage service complaints, compared to 2006/07.

Figure 17 shows that in 2007/08, Perth recorded 21.8% less service complaints and the average regional town 9.1% less service complaints, compared to 2006/07. In 2007/08, Perth recorded 15% less service complaints than the average regional town.

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

Data	Number of Sewerage Service Complaints (per 1,000 properties)		Percentage Change
	YEAR		
	2006/07	2007/08	%
Average of all Towns	8.8	7.9	-10.2
Highest no. of sewerage service complaints (per 1,000 properties) in 2007/08 – Kalgoorlie/Boulder	29.9	30.3	1.3
Lowest no. of sewerage service complaints (per 1,000 properties) and largest % decrease in 2007/08 - Esperance	3.0	0.9	-70.0
Largest % increase in 2007/08 – Merredin	7.9	14.8	87.3

⁴⁸ The definition of this indicator has changed to include sewage odour complaints from 2007/08 onwards. Historical data has been amended to include sewage odour complaints.

Figure 17: Sewerage Service Complaints

6.6 Environment

6.6.1 Comparative Sewage Treatment Levels

The purpose of this set of indicators is to report the degree to which sewage is required to be treated. This is an important cost driver for the water utility with respect to both capital costs and operating costs. Definitions of the different levels of sewage treatment can be found in Appendix 1.

Figure 18 shows that, in 2007/08, the average town (including Perth) had approximately 58% of its sewage treated to a secondary level and approximately 42% of its sewerage treated to a tertiary level, which is unchanged from both 2005/06 and 2006/07.

Figure 18: Average Percentage of Sewage Treatment Levels

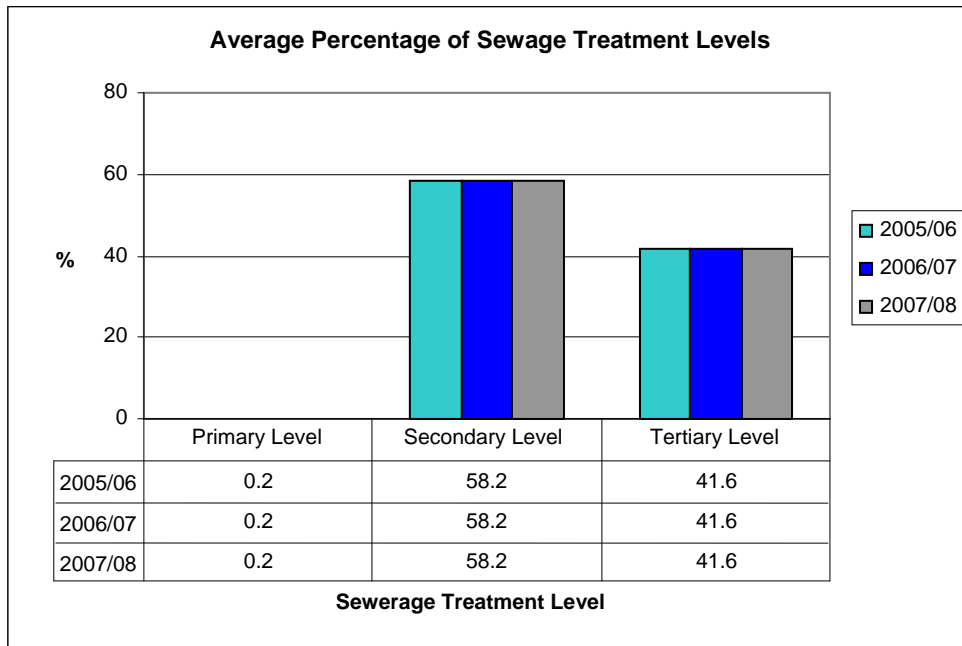
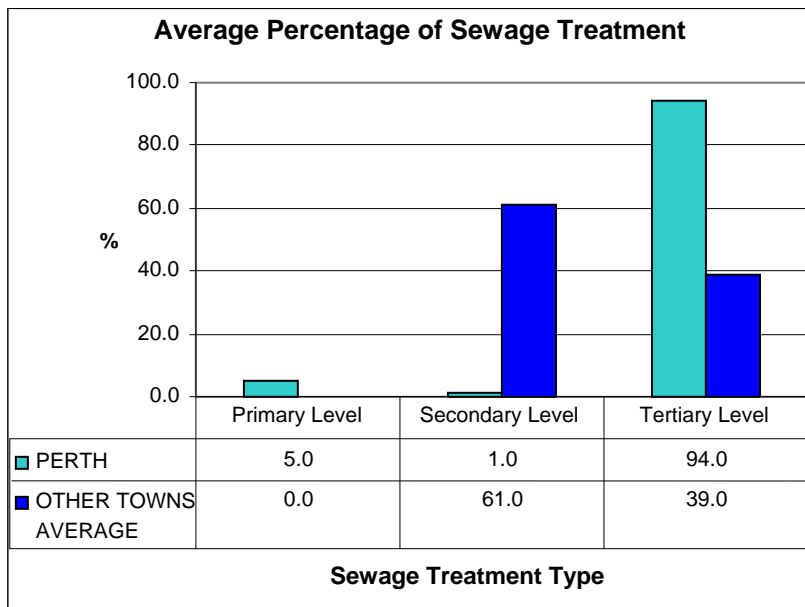


Figure 19 shows that, in 2007/08, 94.0% of Perth’s sewage was treated to a tertiary level, 1.0% to secondary level and 5.0% to Primary level. This contrasts with the average town⁴⁹ (excluding Perth), where 61% of sewage was treated to a secondary level and 39% to a tertiary level.

Figure 19: Average Percentage of Sewage Treatment



⁴⁹ Does not include Newman as data is not available.

6.6.2 Percent of Sewage Treated Volume that was Compliant

The purpose of this indicator is to demonstrate the water utility's ongoing commitment to protection of the environment into which the treatment plant discharges. The sewage treatment plant compliance 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 2007/08, the following 18 towns achieved 100% compliance:

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

Table 22 shows that, in 2007/08, 94.3% of the volume of sewage treated in the average regional town was compliant with environmental standards, a 3.4% increase on 2006/07. In 2007/08, the largest increase in the volume of sewage treated that was compliant was in Australind / Eaton (903.6%). The largest fall in the volume of sewage treated that was compliant was in Kalgoorlie-Boulder (72.7%), due to an upgrade of the sewerage plant.

Table 22: Percent of Sewage Treated Volume that was Compliant

Data	Percent of sewage treated volume that was compliant (%)		Percentage Change
	YEAR		
	2006/07 ⁵⁰	2007/08	%
Perth	100.00	100.00	0.0
Average % of all Towns ⁵¹	91.6	94.5	3.2
Average % of all Towns (excluding Perth)	91.2	94.3	3.4
Highest % in 2007/08 – 18 towns listed above	100.0 (17 towns) 75.0 (Busselton)	100.0	0.0 (17 Towns) 33.3 (Busselton)
Lowest % in 2007/08 – Kalgoorlie-Boulder	45.8	12.5	-72.7
Largest % increase in 2007/08 – Australind / Eaton	8.3	83.3	903.6
Largest % decrease in 2007/08 – Kalgoorlie-Boulder	45.8	12.5	-72.7

⁵⁰ Bunbury data has been amended to be 100% compliant for the 2006/07 year after a review by Water Corporation.

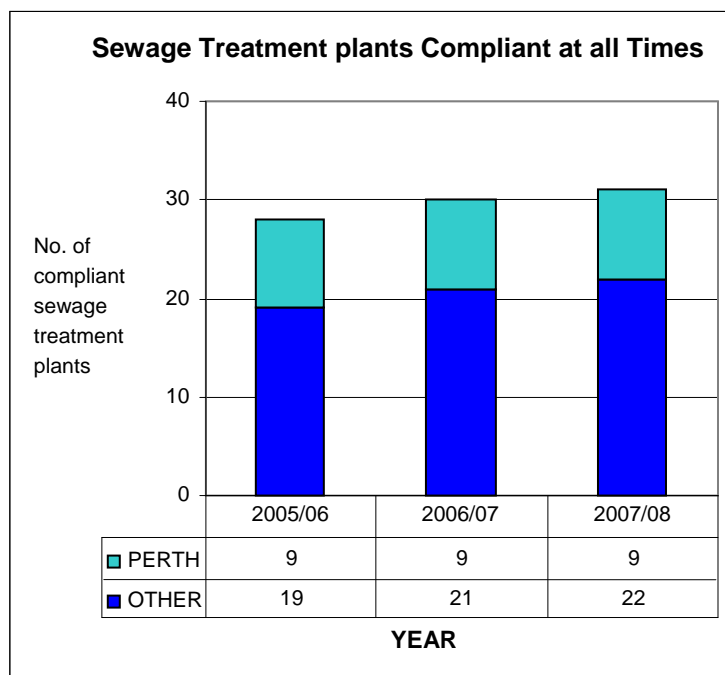
⁵¹ Does not include Newman Data as data was not available as the sewerage treatment plant is operated by the Shire of East Pilbara.

6.6.3 Number of Sewage Treatment Plants Compliant at All Times

The purpose of this indicator is to report on the number of sewage treatment plants which 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 widespread.

Figure 20 shows that, in 2007/08, the number of Perth sewage treatment plants compliant at all times (9) has remained unchanged from 2006/07. In 2007/08, the number of compliant sewage treatment plants in regional towns increased from 21 to 22⁵², with the Busselton treatment plant achieving compliance in 2007/08.

Figure 20: Sewage Treatment Plants Compliant at all Times



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

The purpose of this indicator is to report sewer overflows which 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 1.

Table 23 shows that, in 2007/08, the average number of sewerage overflows in all towns (10.4) increased by 2.0%, compared to 2006/07. In 2007/08, the number of overflows in Perth (10.0) decreased by 12.3% and the number of overflows in the average regional town (10.4) increased by 2.0%, compared to 2006/07. In 2007/08, Narrogin recorded the

⁵² The Bunbury / Dalyellup plant has been determined to have been compliant for the 2005/06 and 2006/07 years after a review by Water Corporation. Historical data has been amended to reflect this change.

highest number of overflows (42.0) and Jurien recorded zero overflows for the second successive year. While Kununurra recorded the largest percentage increase (1,166.7%) in overflows, Water Corporation advise the number is not significant due to the low number of actual overflows recorded in 2007/08 (13). South Hedland recorded the largest percentage decrease (69.6%), compared to 2006/07.

Table 23: Sewer Overflows to the Environment

Data	Sewer Overflows to the Environment (per 100km of main)		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	11.4	10.0	-12.3
Average of all Towns	10.2	10.4	2.0
Average of all Towns less Perth	10.2	10.4	2.0
Highest no. of sewer overflows in 2007/08 – Narrogin	51.5	42.0	-18.4
Lowest no. of sewer overflows in 2007/08 – Jurien	0.0	0.0	0.0
Largest % increase in 2007/08 – Kununurra	3.0	38.0	1,166.7
Largest % decrease in 2007/08 – South Hedland	4.6	1.4	-69.6

7 Small Sewerage Service Provider Performance

7.1.1 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	Shire of Kent
Rottnest Island Authority	Shire of Koorda
Shire of Brookton	Shire of Lake Grace
Shire of Coolgardie	Shire of Moora
Shire of Dalwallinu	Shire of Morawa
Shire of Dowerin	Shire of Ravensthorpe
Shire of Dumbleyung	Shire of Victoria Plains
Shire of East Pilbara	Shire of Wickiepin
Shire of Gnowangerup	Shire of Yilgarn-Southern Cross
Shire of Goomalling	Shire of Yilgarn-Marvel Loch
Shire of Jerramungup	

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.

Table 24 shows that, in 2007/08, the total length of sewer mains deployed by the small sewerage providers was 210.7km, which was unchanged from 2006/07. Hamersley Iron

operates the longest sewer mains of any of the small sewerage suppliers at 85km and Shire of Gnowangerup operates the shortest sewer mains at 2.4km.

Table 24: Summary of data for small sewerage suppliers

Data	All Small Sewerage Suppliers	
	2006/07	2007/08
Total Length of Sewer Mains (km)	210.728	210.728
No. of Residential Sewerage connections	6,242	6,275
No. of Non Residential Sewerage connections	569	572
No. of Written Customer Complaints	0	0
No. of Odour Complaints	2	2
No. of Sewerage Blockages	93	87
No. of Sewerage overflows (attributable to blockage or infrastructure failure)	21	25
No. of Internal Sewerage overflows (attributable to blockage or infrastructure failure)	9	10
No. of Emergency calls	21	60
No. of Emergency calls responded to within 1 hour	21	59

In 2007/08, the number of residential connections and non residential connections has increased slightly (by 0.5%), compared to 2006/07.

No written customer complaints were received in both 2006/07 and 2007/08. The total amount of odour complaints in 2007/08 was 2, unchanged from 2006/07, both of which were recorded by Rottnest Island Authority.

In 2007/08, the total number of recorded sewerage blockages decreased by 6.5%, compared to 2006/07. The blockages recorded by Rottnest Island Authority accounted for nearly 44% of the total recorded blockages. In 2007/08, Hamersley Iron recorded 15 blockages, which was a reduction of 56%, compared to 2006/07. Conversely, Rottnest Island Authority recorded a 15% increase in blockages, from 33 in 2006/07 to 38 in 2007/08.

In 2007/08, the total number of recorded sewerage overflows was 25, an increase of 19% compared to 2006/07. The Shire of Yilgarn – Southern Cross recorded the most overflows in 2007/08 (7), an increase of 133%, compared to 2006/07.

In 2007/08, internal sewerage overflows attributable to blockage or infrastructure failure totalled 10. The Shire of Goomalling accounted for 40% of the total.

The number of emergency calls (60) increased by 185.7% in 2007/08, compared to 2006/07, which can be attributed to a significant increase in the number of emergency calls received by Rottnest Island Authority from 4 in 2006/07 to 38 in 2007/08.

PART C: COMBINED WATER AND WASTEWATER PERFORMANCE INFORMATION

8 Performance Data Format

The performance data for all the towns/schemes in this section has been provided in a format consistent with the urban national performance 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.

8.1 Total Water and Sewerage Complaints

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

The following 29 WA Towns/Schemes are included in the analysis of this indicator⁵³:

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

The purpose of this indicator is to report customer satisfaction with the water and sewerage services and provide an indicator of service quality and reliability.

For a summary of the definition of a complaint see Appendix 1. The total number of water or sewerage services complaints include those complaints concerning:

- bursts;
- leaks;
- service interruptions;
- adequacy of service;
- water pressure;
- water quality or reliability;
- sewerage service complaints;
- sewage odours;
- affordability;
- billings; and
- behaviour of staff or agents.

They do not include complaints regarding government pricing policy or tariff structures.

Table 25 shows that, in 2007/08, customers in Perth made 34.6 complaints, compared to 40.2 complaints in the average regional town. In 2007/08, Carnarvon water scheme received the lowest number of complaints (2.3), while Pinjarra water scheme recorded the highest number of complaints (364.5), an 885.1% increase on the previous year. This reflects the issues previously described in section 4.5.2.2 (Water Service Complaints).

⁵³ For comparative purposes, statistics for this indicator are only provided for towns where the water and sewerage services are provided by the same operator, therefore Kalgoorlie-Boulder, Bunbury and Busselton have been excluded as their water and wastewater services are provided by different operators.

Table 25: Total Water and Sewerage Complaints (per 1,000 properties)

Data	Total water and sewerage complaints (per 1,000 properties)		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	37.3	34.6	-7.2
Average of all Towns/Schemes	36.4	40.1	10.2
Average of all Towns/Schemes less Perth	36.4	40.2	10.4
Highest no. of total complaints in 2007/08 – Pinjarra (w)	37.0	364.5	885.1
Lowest no. of total complaints in 2007/08- Carnarvon (w)	11.0	2.3	-79.1
Largest % increase in 2007/08 – Pinjarra (w)	37.0	364.5	885.1
Largest % decrease in 2007/08 – Carnarvon (w)	11.0	2.3	-79.1

8.2 Billing and Account Complaints - Water and Sewerage

The following 35 WA Towns/Schemes are included in the analysis of this indicator and includes, if applicable, water and wastewater schemes managed by different operators, for the same town.⁵⁴

Albany	Dongara / 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 S = Sewerage

The purpose of this indicator is to report 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 as too high are excluded.

Table 26 shows that, in 2007/08, customers in Perth made 1.0 complaints per 1,000 properties, which is the same figure as the average regional town. In 2007/08, Derby, Kalgoorlie-Boulder (Wastewater), Merredin and South Hedland recorded no complaints

⁵⁴ This indicator allows schemes that only supply sewerage or water, to be compared with providers providing both services in the same town.

and customers in Denmark made the highest number of complaints per 1,000 properties (4.6). The level of complaints for Denmark reflects the issues previously discussed in section 4.3.1.

Table 26: Billing and Account Complaints - Water and Sewerage

Data	Billing and Account Complaints - water and sewerage (per 1,000 properties)		Percentage Change
	YEAR		
	2006/07	2007/08	%
Perth	1.1	1.0	-9.1
Average of all Towns/Schemes ⁵⁵	1.0	1.0	0.0
Average of all Towns/Schemes ⁵⁶ less Perth	1.0	1.0	0.0
Highest no. of total complaints and largest % increase in 2007/08 - Denmark	1.6	4.6	187.5
Lowest no. of total complaints in 2007/08- Derby	0.0	0.0	0.0
Lowest no. of total complaints in 2007/08 - Kalgoorlie- Boulder (s)	0.0	0.0	0.0
Lowest no. of total complaints and largest % decrease in 2007/08 – Merredin	2.6	0.0	-100.0
Lowest no. of total complaints and largest % decrease in 2007/08 – South Hedland	0.8	0.0	-100.0

8.3 Connect Time to a Telephone Operator

The purpose of this new indicator is to report on the proportion of calls that are answered by an operator within 30 seconds, where the customer has selected a relevant operator option.

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

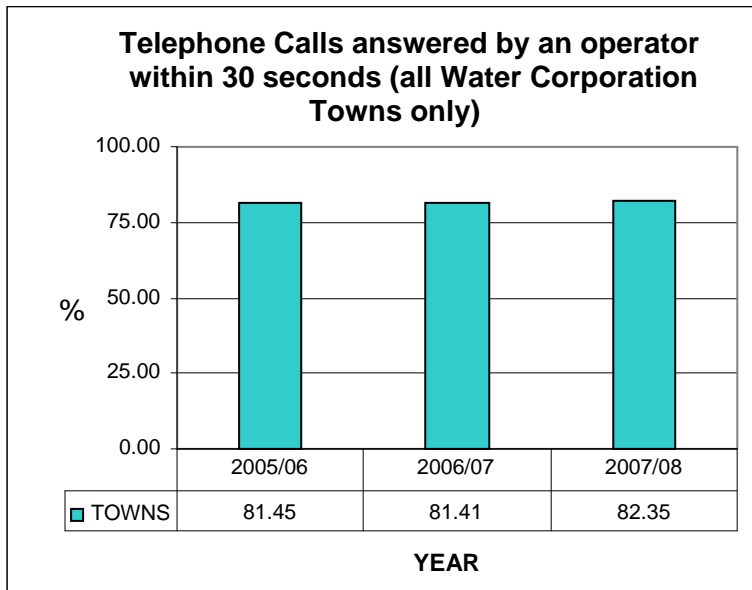
Water Corporation operates a state-wide customer call centre, covering both water and wastewater enquiries. In 2007/08, the City of Kalgoorlie-Boulder reported that all telephone calls regarding its sewerage service were answered by an operator within 30 seconds. Bunbury (Aqwest) and Busselton Water Board operate simple telephone services, which are not capable of recording the connect time of their water enquiries.

Figure 21 shows that in 2007/08, the percentage of telephone calls answered by an operator within 30 seconds by the Water Corporation was 82.35%, an increase of 1.2% on the previous year.

⁵⁵ The 2006/07 average calculation does not include Bunbury (Water) as the data was not provided.

⁵⁶ The 2006/07 average calculation does not include Bunbury (Water) as the data was not provided.

Figure 21: Telephone Calls Answered by an Operator within 30 Seconds



PART D: IRRIGATION PERFORMANCE INFORMATION

9 Irrigator Performance

Part D of this report describes the performance of irrigation service providers in Western Australia. This is the third 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 the small irrigation licensees (Gascoyne Water and Preston Valley) and the data provided for the rural performance framework requirements of the larger irrigation licensees captured by the reporting requirements of the rural performance framework (Ord Irrigation and Harvey water). The rural performance framework captures agencies who supply more than 4GL/annum of water for irrigation purposes⁵⁷.

9.1 Volume of Water Supplied

Table 27 shows that, in 2007/08, the total volume of water supplied for irrigation decreased by 17.7% and the total volume of non-potable water supplied decreased by 47.1%, compared to 2006/07. In 2007/08, Ord Irrigation accounted for 67% of the total irrigation water supplied and Harvey Water accounted for 94% of the total non-potable water supplied.

Table 27: 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	2006/07	2007/08
Gascoyne Water Cooperative	5,299,600	4,605,800	79,800	88,500
Ord Irrigation Cooperative	175,792,000	135,777,000	0	0
Preston Valley Irrigation	991,000	765,000	28,000	31,000
SWIMCO Harvey Water	65,010,000	62,086,000	3,880,000	1,990,200
Total	247,092,600	203,233,800	3,987,800	2,109,700

⁵⁷ The 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. Due to this reason, Gascoyne Water does not need to report.

9.2 Irrigation and Non-Potable Water Connections

Table 28 provides details of the irrigation and non-potable water supply connections in 2007/08. Harvey Water accounted for 71% of the total irrigation connections and 83% of the total non-potable water connections.

Table 28: Number of Irrigation Connections and Non-Potable Water Supply Connections

Data ⁵⁸	Irrigation connections 2007/08	Non-potable water supply connections 2007/08
Gascoyne Water Cooperative	179	82
Ord Irrigation Cooperative	273	0
Preston Valley Irrigation	68	35
SWIMCO Harvey Water	1,252	560
Total	1,772	677

9.3 Other Performance Indicators - Large Irrigators

9.3.1 Carrier Length (Gravity Irrigation)

In 2007/08 unlined channels accounted for 58% of the total carrier⁵⁹ length for Ord Irrigation's gravity irrigation network. In contrast, pipe⁶⁰ accounted for 62% of Harvey Water's overall carrier length⁶¹, following a programme of replacing open channels with a gravity piped network.

Table 29: Carrier Length (Gravity Irrigation)

Data	Carrier Length (Gravity Irrigation) in 2007/08				
	Unlined Channel (km)	Lined Channel (km)	Pipe (km)	Drainage – Unlined Channel (km)	Total Carrier (km)
Ord Irrigation	124	0	0	169.8	293.8
Harvey Water	172	83	410	0	665
Total	296	83	410	169.8	958.8

⁵⁸ For large irrigators the relevant indicator is the total of customer service points.

⁵⁹ For a definition for carrier length see Appendix 3.

⁶⁰ For a definition for pipe see Appendix 3 (under carrier types).

⁶¹ As this is the first reporting year no historical data is available.

9.3.2 Complaints

Table 30 shows that Harvey Water received all the verbal and written complaints⁶² (7) recorded by the large irrigators in 2007/08.

Table 30: Complaints for Large Irrigators

Data	Large Irrigators - Customer complaints in 2007/08		
	No. of customer service delivery complaints	No. of Billing and Account complaints	Total Complaints
Ord Irrigation	0	0	0
Harvey Water	3	0	7 ⁶³
Total	3	0	7

9.3.3 Unaccounted For Irrigation Water

Table 31 shows that overall, 34% of the total supply network intake volume for large suppliers is not accounted for in the volumes supplied to customers. The most important causes of the losses are evaporation during delivery and leakage from channels. The different efficiency rates for Ord Irrigation and Harvey Water can be explained by the vastly different climatic conditions in the areas of the state that they supply.

Table 31: Unaccounted for Irrigation Water

Data	Unaccounted for Irrigation Water for Large Irrigators in 2007/08		
	Total supply network intake volume (ML)	Unaccounted Irrigation Water ⁶⁴ (ML)	Supply Network Delivery Efficiency (%)
Ord Irrigation	213,907	78,130	63
Harvey Water	84,745	22,659	73
Total	298,652	100,789	66

9.4 Other Performance Indicators - Small Irrigators

9.4.1 Written Customer Complaints

Table 32 shows that the only small irrigation agency to receive written customer complaints in 2007/08 was Gascoyne Water (4). The total written number of complaints

⁶² This indicator uses the National Performance Framework definition of complaint which includes both verbal and written complaints and is different to the complaint data collected for the small irrigators through the licensing requirements, which is for written complaints only. For definitions of the types of rural complaints defined by the National Performance Framework see Appendix 3.

⁶³ This includes 4 complaints related to matters other than billing and customer service.

⁶⁴ For National Performance Framework rural definitions for unaccounted for water and supply network delivery efficiency, see Appendix 3.

received increased from 0 in 2006/07 to 4 in 2007/08. All written complaints were resolved by Gascoyne Water within 21 days.

Table 32: Written Customer Complaints - Small Irrigators

Data	No. of Written customer complaints		No. of Written customer complaints resolved within 21 days	
	2006/07	2007/08	2006/07	2007/08
Gascoyne Water Cooperative	0	4	0	4
Preston Valley Irrigation	0	0	0	0
Total	0	4	0	4

9.4.2 Faults

Table 33 shows the number of reported faults for small irrigators increased from 2 in 2006/07 to 3 in 2007/08. In 2007/08, all reported faults were repaired within 2 business days.

Table 33: Number of faults - Small Irrigators

Data	Number of faults		Faults repaired within 2 business days	
	2006/07	2007/08	2006/07	2007/08
Gascoyne Water Cooperative	1	3	1	3
Preston Valley Irrigation	1	0	1	0
Total	2	3	2	3

9.4.3 Quality of Irrigation Water Supplied

It can be seen in Table 34 that the quality of water varies quite markedly between the two different small irrigation operating areas, which reflects the local environmental conditions.

Table 34: Quality of water supplied - Small Irrigators

Data	Quality of water (Mg/L TDS ⁶⁵)	
	2006/07	2007/08
Gascoyne Water Cooperative	<1,000	<1,000
Preston Valley Irrigation	440	410

⁶⁵ Total Dissolved Solids.

APPENDICES

Appendix 1: 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 – 2007-08 urban performance reporting indicators and definitions (2008)*. This document can be sourced at the National Water Commission web site (<http://www.nwc.gov.au>).

Data/Indicator	Definition
Average sewerage break/choke repair time	The average time taken to repair a sewerage main, from the time of arrival on site to restoration of a sewerage service to customers. This may include bypassing of the broken main. Note: This does not include repair times relating to breaks, chokes and leaks in the property connection sewers or site restoration.
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	<p>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).</p> <p>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.</p> <p>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.</p> <p>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.</p>
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. 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. Overflows are those caused by system faults originating in the system under the water utility’s responsibility.

Data/Indicator	Definition
Length of water mains	The total length of potable and non-potable water mains, including all transfer, distribution and reticulation mains.
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	<p>Breaks or Leaks - A break or leak is a failure of the sewer main which results in an interruption to the sewerage service.</p> <p>Choke - A confirmed partial or total blockage that may or may not result in a spill to the external environment from the sewer system.</p>
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 (sewerage) 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	<p>A connected water/sewerage property is:</p> <ol style="list-style-type: none"> 1. connected to the licensee's water/sewerage system 2. the subject of billing for water supply/sewerage collection—fixed and/or consumption, and 3. any property which, at the end of the reporting period, is connected to the water/sewerage system and is separately billed for water/sewerage services—fixed and/or consumption.
Total connected properties – sewerage	<p>A connected water/sewerage property is:</p> <ol style="list-style-type: none"> 1. connected to the licensee's water/sewerage system 2. the subject of billing for water supply/sewerage collection—fixed and/or consumption, and 3. any property which, at the end of the reporting period, is connected to the water/sewerage system and is separately billed for water/sewerage services—fixed and/or consumption.

Data/Indicator	Definition
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 pipe system for urban reuse. Evaporation is excluded. The parameters are the 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 reported above 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 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 sewerage plants (recycling). Other forms of artificial recharge (i.e. storm water) not counted elsewhere are to be included.

Data/Indicator	Definition
Volume of water sourced from desalination	The total volume of water sourced from desalination plants during the reporting period.
Volume of water sourced from recycling	The total volume of water supplied by the water utility sourced from recycled water during the reporting period including recycled water from direct or indirect reuse. This should be the sum of residential, industrial/commercial, municipal irrigation. 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 this utility's geographic area of responsibility. The volume of water will include water which is subsequently exported (sold) to another utility.
Water treatment plant	<p>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.</p> <p>Disinfection only - The water treatment plant solely disinfects the water prior to supply to customers. This does not include booster disinfection plants or stations.</p> <p>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.</p> <p>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.</p>
Zone	<p>A water supply zone will generally be defined by each water business using criteria such as:</p> <ul style="list-style-type: none"> ▪ 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. ▪ ADWG Framework for Management of Drinking Water Quality.

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.

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 their house number.

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.

Business Customers

The water efficiency measures for WA require all business and industry customers who consume above 20,000 kL of scheme water per reading year, to take a closer look at the management of their water use.

By July 2009 these customers are required to have developed and submitted an approved Water Efficiency Management Plan (WEMP), to the Water Corporation.

State Government Agencies

As part of the water efficiency measures, improvements will be made to water efficiency compliance for State Government Agencies. All State Government Agencies listed under Policy 14 of the Department of Housing and Works, Office Accommodation Policies August 2004, will undertake a Water Management Assessment (WMA) with the Water Corporation and develop and submit a Water Efficiency Management Plan (WEMP). Each agency will have an approved WEMP, with strategies and implementation timeframes, in place prior to July 2009.

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

Water Restriction Stages

There are seven water restriction stages⁶⁷ which are as follows:

⁶⁷ Revised policy – from 1/7/98.

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/ lot number;
 - (ii) on any odd number day of the month 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) 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 3: 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 National Performance Framework, mentioned in this report. Further details can be found in the *National Performance Framework – 2007-08 rural performance reporting indicators and definitions (2008)*. This document can be sourced at the National Water Commission web site (<http://www.nwc.gov.au>).

Data Set / Data/Indicator	Definition
Carrier Types	Carrier types in supply and drainage networks are as follows: <ul style="list-style-type: none"> ▪ 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 Set / 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 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: <ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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.

Data Set / Data/Indicator	Definition
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.