Drinking Water Quality

Annual Report 2015-16

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Contents

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FRESH WATER THINKING WATER CORPORATION

About this Report

The Water Corporation's 2015-16 Drinking Water Quality Annual Report is a review of our performance for the financial year ending 30 June 2016.

This report is specifically designed to provide our customers and the Western Australian public with information on the quality of their drinking water.

Publication of this report allows us to meet the requirements of the Australian Drinking Water Guidelines, our Operating Licence requirements with the Economic Regulation Authority, and the requirements of the Memorandum of Understanding with the Department of Health and the reporting requirements of the National Water Commission.

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FRESH WATER THINKING WATER CORPORATION

Acronyms

Acronym	Description
ADWG	Australian Drinking Water Guidelines
AWRP	Advanced Water Recycling Plant
CPI	Customer Performance Index
CCP	Critical Control Point
DOC	Dissolved organic carbon
DoH	Department of Health
DoW	Department of Water
EDR	Electrodialysis Reversal
EPWSS	East Pilbara Water Supply Scheme
FAC	Fluoridation of Public Water Supplies Advisory Committee
GAWS	Goldfields and Agricultural Water Supply
GSTWS	Great Southern Towns Water Supply
GWRS	Groundwater Replenishment Scheme
GWRT	Groundwater Replenishment Trial
IWSS	Perth Integrated Water Supply Scheme
LGSTWS	Lower Great Southern Towns Water Supply
MIEX	Magnetic Ion Exchange
MoU	Memorandum of Understanding
NHMRC	National Health and Medical Research Council

Acronym	Description
NTU	Nephelometric Turbidity Units
OSH	Occupational Safety and Health
PDWSA	Public Drinking Water Source Area
RO	Reverse Osmosis
TCU	True Colour Units
TDS	Total Dissolved Solids
THM	Trihalomethanes
UF	Ultra-filtration
UV	Ultra-violet
WPWSS	West Pilbara Water Supply Scheme
WQMS	Water Quality Management System
WSP	Water Safety Plan
WTP	Water Treatment Plant

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Summary

Ensuring supply of safe drinking water is our highest priority. In 2015-16, we achieved compliance with the health-related requirements and met all our health targets for drinking water quality set by the Department of Health (DoH).

Our health related performance was:

- 100 percent compliance with microbiological guidelines
- 100 percent compliance with health related chemical guidelines

Non-health (aesthetic) related performance

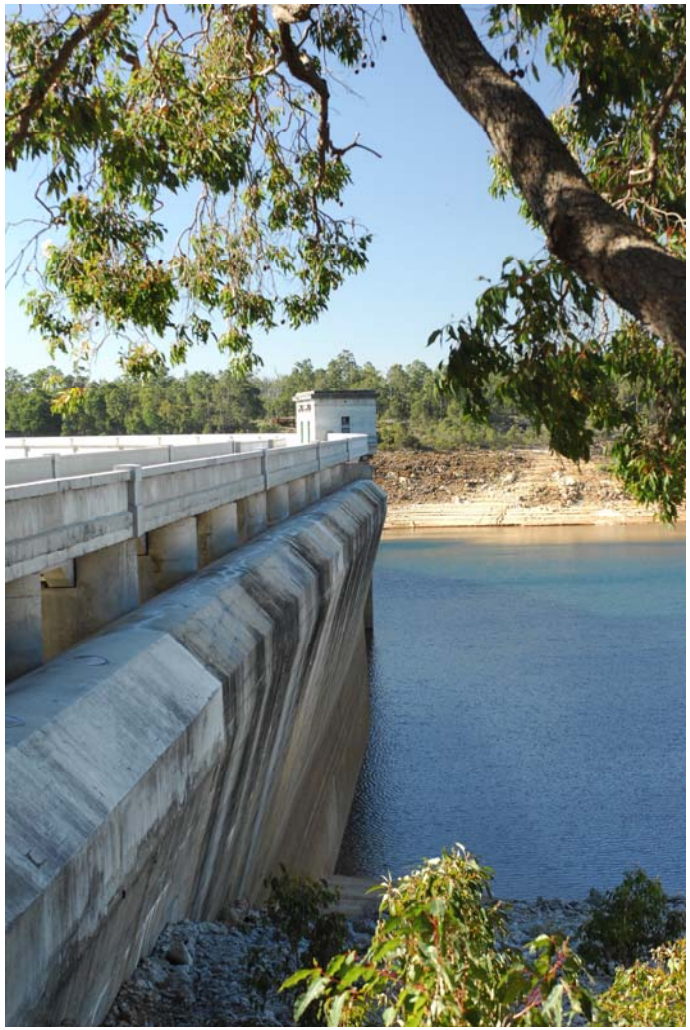
While we strive to meet guidelines for aesthetic characteristics, this can be challenging to achieve across such diverse water sources in a State as vast as Western Australia.

This is especially the case in some of our small country water schemes where there may be few sources of drinking water available, and where installation of treatment can be very costly.

Although we meet all obligations under our Operating Licence, we recognise there are always opportunities for improvement.

This is our 14th Drinking Water Quality Annual Report and we trust it provides our customers with the information they require about their drinking water quality.

We welcome any comments and feedback by phone on 13 13 75 or by email at **report@watercorporation.com.au**.



Canning Dam

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FRESH WATER THINKING WATER CORPORATION

Our commitment to you

We are committed to providing our customers with safe, high-quality drinking water that consistently meets the requirements of the Australian Drinking Water Guidelines (ADWG), our customers and other regulatory provisions.

To achieve this, in partnership with stakeholders and relevant agencies, we will:

- Take a ‘catchment to tap’ approach to managing and protecting water quality.
- Strongly advocate source protection and primacy of drinking water quality over other land uses.
- Use a risk-based approach to identify and manage potential threats to water quality.
- Comply with the health-related criteria of the ADWG and work to progressively improve compliance with aesthetic criteria.
- Use best practice contingency planning and incident response procedures.
- Routinely monitor the quality of drinking water and promote confidence in the water supply and its management.
- Participate in research and development activities to ensure timely management of emerging drinking water quality issues.
- Contribute to industry regulations and guidelines, and other standards relevant to public health and the water cycle.
- Continually improve our practices by assessing performance against corporate commitments to meet the needs and expectations of our customers, stakeholder, regulators and employees.

We will implement and maintain a management system consistent with the ADWG to protect our drinking water quality. All managers and employees involved in the supply of drinking water are responsible for understanding, implementing, maintaining and continuously improving the drinking water quality management system.

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FRESH WATER THINKING WATER CORPORATION

Introduction

We provide drinking water to Perth, Mandurah and more than 220 regional communities throughout Western Australia.

This year we delivered 370 billion litres of drinking water to more than 1.25 million properties through 34,680 kilometres of water mains. This has come from 60 dams and weirs, 94 licensed borefields, two major desalination plants (the Perth Seawater Desalination and Southern Seawater Desalination plants) and six regional desalination plants.

Under our Operating Licence we comply with a Memorandum of Understanding (MoU) with DoH. We act in accordance with the microbiological, health related chemical and radiological parameters as specified by the National Health and Medical Research Council (NHMRC) in the ADWG.

Our performance (chemical, microbiological, and radiological) has again resulted in 100 percent of metropolitan and country localities meeting the high standards set by DoH.

An extensive and sophisticated drinking water quality monitoring program confirms the safety of the water we provide to our customers. Microbiological, chemical and radiological analyses are carried out by independent laboratories, approved by DoH.

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Where does your water come from?

Perth Metropolitan Region

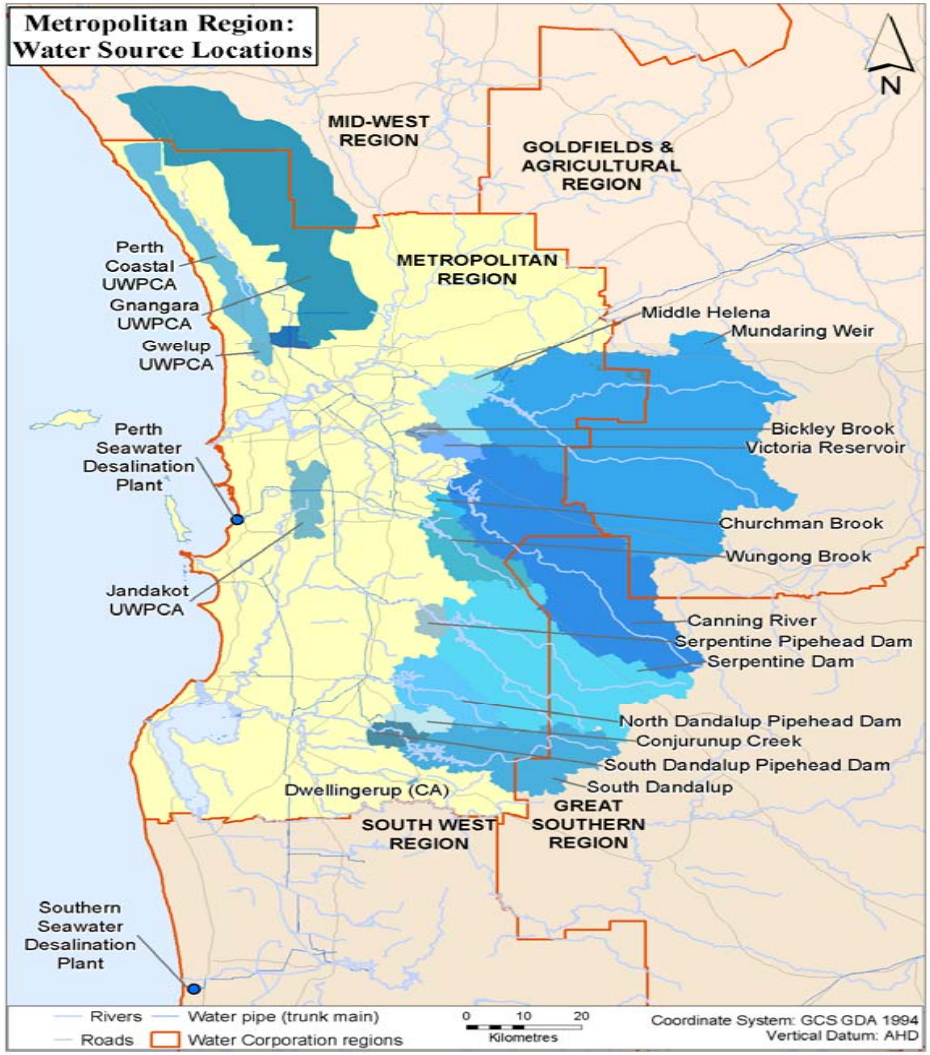
Our largest scheme, the Integrated Water Supply Scheme (IWSS) delivered more than 298 billion litres of water to more than two million customers in Perth, Mandurah, the Goldfields and Agricultural Region, and parts of the South West.

Surface water comes from eight dams in the Darling Range: South and North Dandalup, Serpentine, Wungong, Churchman Brook, Canning, Victoria and Mundaring Weir. Water is also supplied from Stirling and Samson Dams in our South West Region.

Groundwater is drawn from the Yarragadee, Leederville, and Mirrabooka aquifers, and is treated at six groundwater treatment plants. Most of our 180 bores are located in Perth's northern suburbs. There are also 13 independent artesian bores which pump water directly into service reservoirs.

In 2015-16, drinking water production for the IWSS was delivered on target and within overall water allocation and licence parameters. Total groundwater abstracted was 136.9 billion litres, against an allocation of 137.5 billion litres. Water supplied consisted of 7 percent surface water, 46 per cent groundwater and 47 percent from desalination. With the increased use of desalination supplies into the IWSS, we continue to supply safe drinking water quality to the customer in accordance with our MoU.

To optimise the amount of water available for the IWSS, customers may receive a mix of groundwater, surface water and



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Where does your water come from?

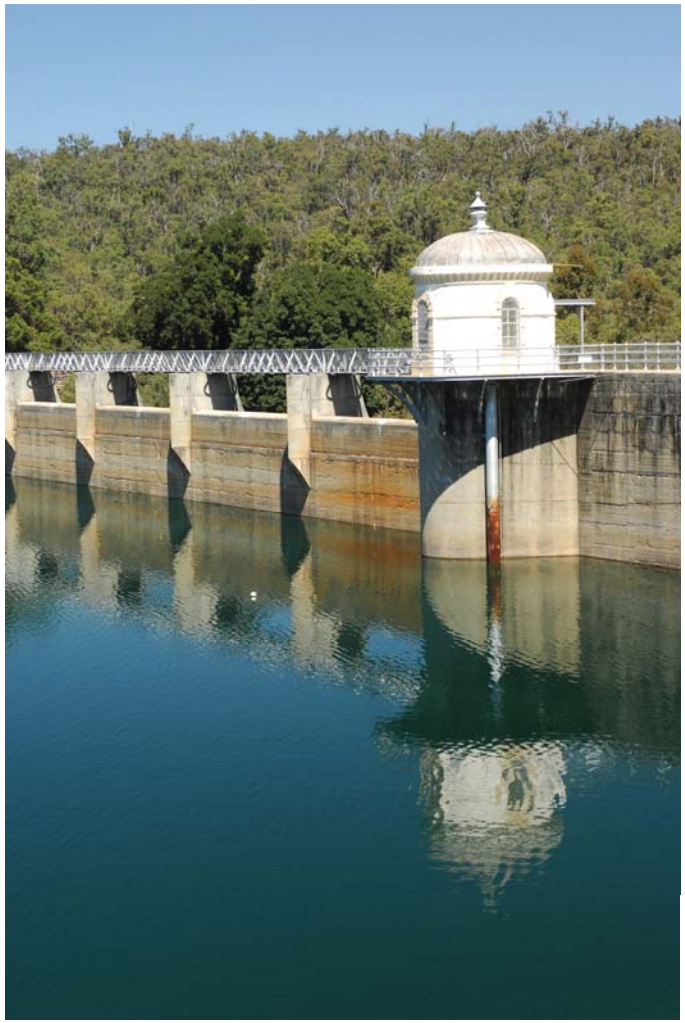
desalinated seawater. The percentage of each depends on seasonal factors.

Yanchep and Two Rocks are special cases in the Perth region, as they have their own independent groundwater supplies. It is anticipated these suburbs will eventually join the IWSS to meet growing supply demands and improve source security.

The Perth Seawater Desalination Plant in Kwinana delivered 45.9 billion litres into the IWSS. The desalinated water enters the IWSS through Thomsons Reservoir where it is blended with Jandakot groundwater and surface water. A portion can be stored in Canning Dam and Wungong Dam during periods of low demand in the winter. The Southern Seawater Desalination Plant near Binningup produced 92.7 billion litres of water for the IWSS in 2015-16. Together, these two climate independent water sources have the capacity to supply 47 percent of Perth's drinking water.

The Groundwater Replenishment Trial (GWRT) plant was decommissioned in September 2014 to allow construction of the full-scale Advance Water Recycling Plant (AWRP) for the Perth Groundwater Replenishment Scheme (GWRS). This will have a production capacity of 14 billion litres of water per year.

In July 2016, the second stage expansion of the Perth GWRS was announced by the Minister for Water. The capacity of the scheme will double to approximately 28 GL/yr.



Mundaring Weir

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Where does your water come from?

South West Region

Towns in the South West Region are supplied with water from a number of surface and groundwater sources that are largely independent.

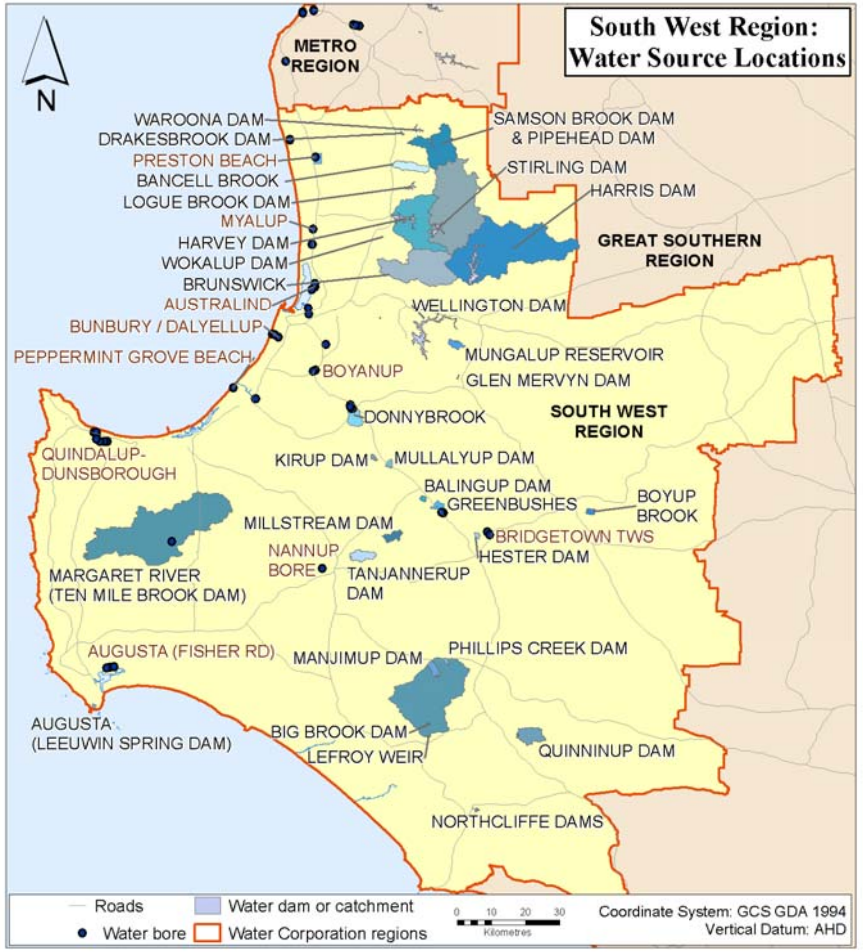
Margaret River is supplied by groundwater and surface water via Ten Mile Brook Dam. Dunsborough, Capel, Peppermint Grove Beach, Preston Beach and Augusta are supplied by groundwater via local treatment plants.

Bridgetown, Nannup, Hester, Boyup Brook, Greenbushes, Balingup and Manjimup are connected to the Warren Blackwood Regional Water Scheme and can be supplied from a Yarragadee Bore near Nannup via the Millstream and Manjimup Dams. Kirup and Mullalyup are supplied from surface water.

Australind, Eaton, Pelican Point, Millbridge, Treendale, Kingston, Brunswick Junction, Roelands and Burekup are supplied with groundwater, via water treatment plants in Australind, Eaton and Picton.

Harris Dam supplies Collie, Allanson and Darkan in the South West Region as well as around 35 towns in the Great Southern Region via the Great Southern Towns Water Supply Scheme.

Harvey, Waroona, Hamel, Binningup, Myalup and Yarloop are supplied from the IWSS.



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Where does your water come from?

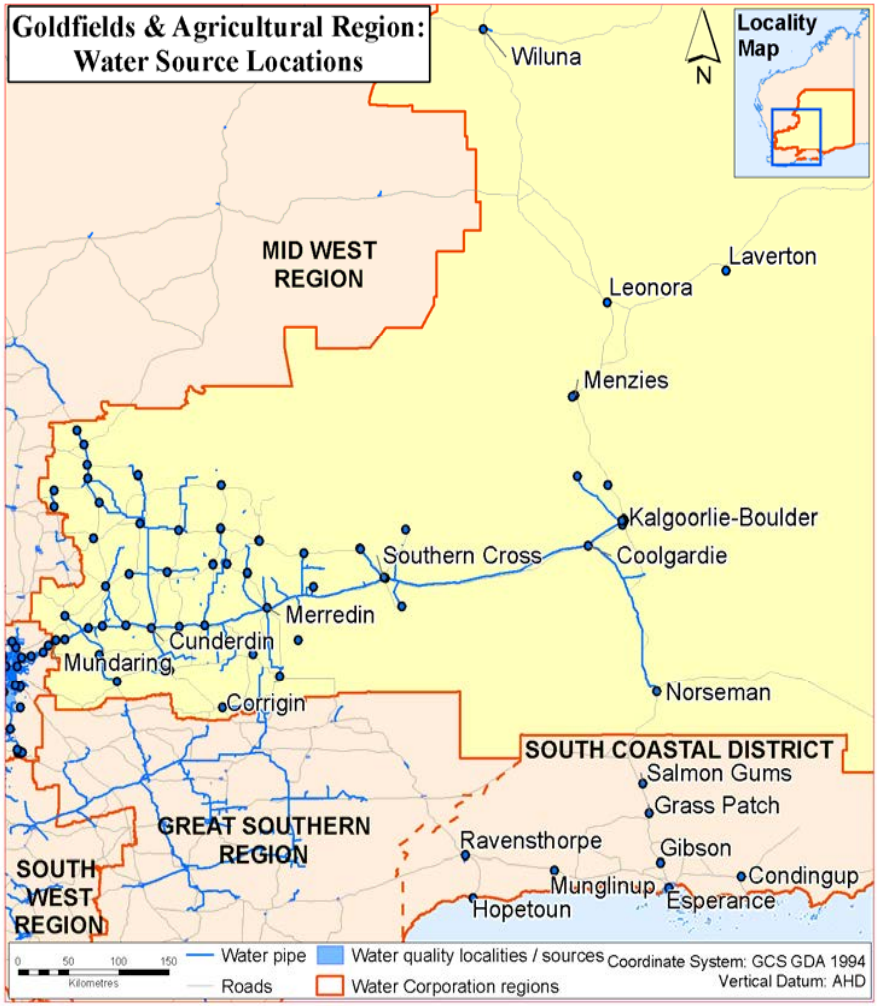
Goldfields and Agricultural Region

The Goldfields and Agricultural Water Supply (GAWS) is our largest scheme consisting of 9,601 kilometres of water mains that service more than 100,000 customers. Water is drawn from Mundaring Weir near Perth and undergoes treatment at Mundaring Water Treatment Plant before supply to the majority of towns in the Goldfields and Agricultural Region. The remaining towns Laverton, Leonora, Menzies and Wiluna are supplied from local groundwater sources

Projects have been scheduled over the next few years for the construction of roofed storage tanks to replace the unroofed reservoirs on the GAWS.

Chloramination is used in the GAWS to maintain a disinfectant residual across the network. (Refer to “How is your water treated?” on page 16). Additional disinfection facilities are also being installed throughout the distribution system. Both of these initiatives will improve disinfection management within the GAWS.

Merredin Pump Station



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Where does your water come from?

Great Southern Region

In the Great Southern Region, we have two main water supply schemes - the Great Southern Towns Water Supply Scheme (GSTWS) and the Lower Great Southern Towns Water Supply Scheme (LGSTWS). Harris Dam, near Collie, is the main source for the GSTWS and the South Coast borefields are the main source for the LGSTWS, although a number of towns have local sources which can contribute to the supply if required.

Hopetoun, Bremer Bay, Esperance, Condingup and Gibson are all supplied from local groundwater sources. Ravensthorpe and Salmon Gums are all supplied from local surface water sources. Grass Patch is supplied by carted water from Esperance.

Denmark experienced its second driest year on record in 2015. In response we installed interconnecting pipework and increased treatment for the Denmark River and Quickup Dams.

The reliability and efficiency of Mount Barker's water supply was improved with the completion of a new 27km section of water main between the town and Chorkerup, and the inclusion of a new pump station at Kokokup.

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Where does your water come from?

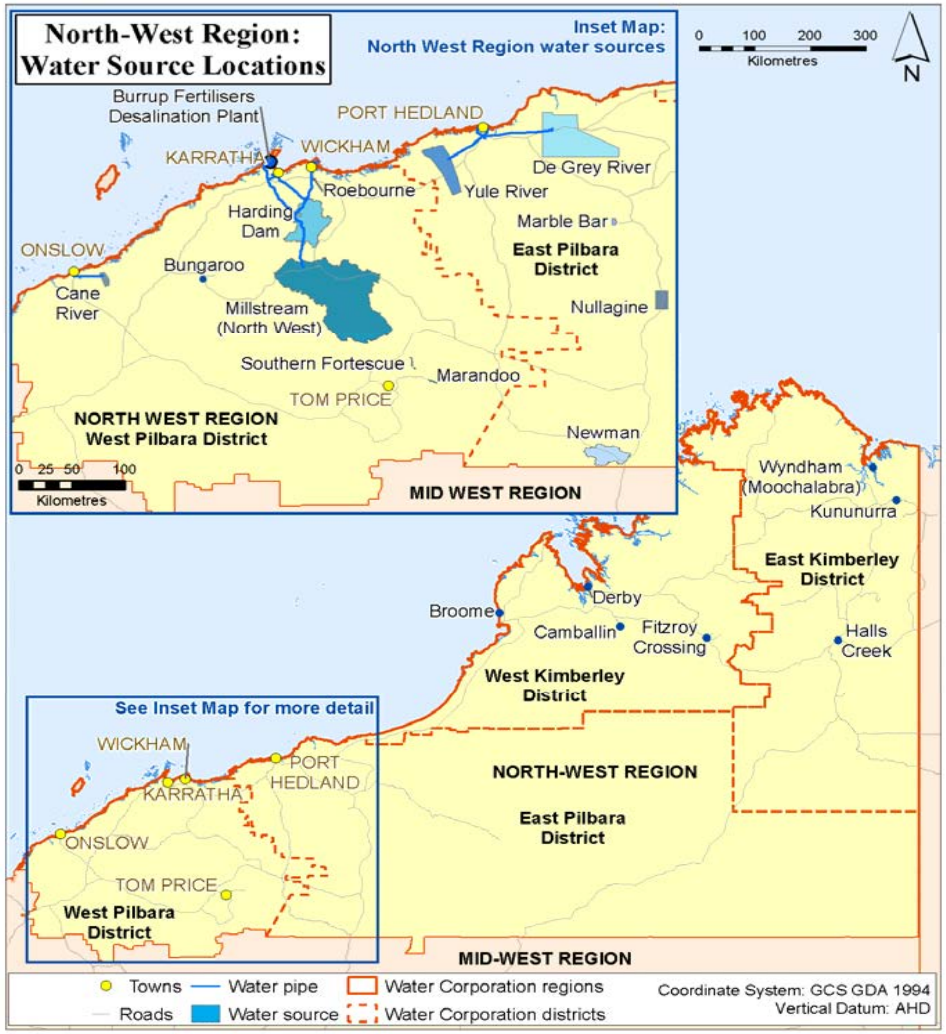
North West Region

The West Pilbara Water Supply Scheme (WPWSS) supplies customers in Karratha, Dampier and the neighbouring towns of Roebourne, Wickham, Point Samson, Cape Lambert and the Burrup Peninsula. The scheme currently has three sources: Harding Dam, Millstream borefield and a groundwater source in the Bungaroo Valley developed by Rio Tinto Iron Ore.

The East Pilbara Water Supply Scheme (EPWSS) supplies customers in Port Hedland, South Hedland, Wedgefield Industrial Area and the local port operations. The scheme is supplied with groundwater from the Yule and De Grey River borefields.

In the Kimberley area, the town of Kununurra is supplied by a local groundwater source. The remaining towns in the North West Region are supplied by local independent groundwater sources, with the exception of Wyndham which is supplied by Moochalabra Dam.

Kununurra Pump station



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Where does your water come from?

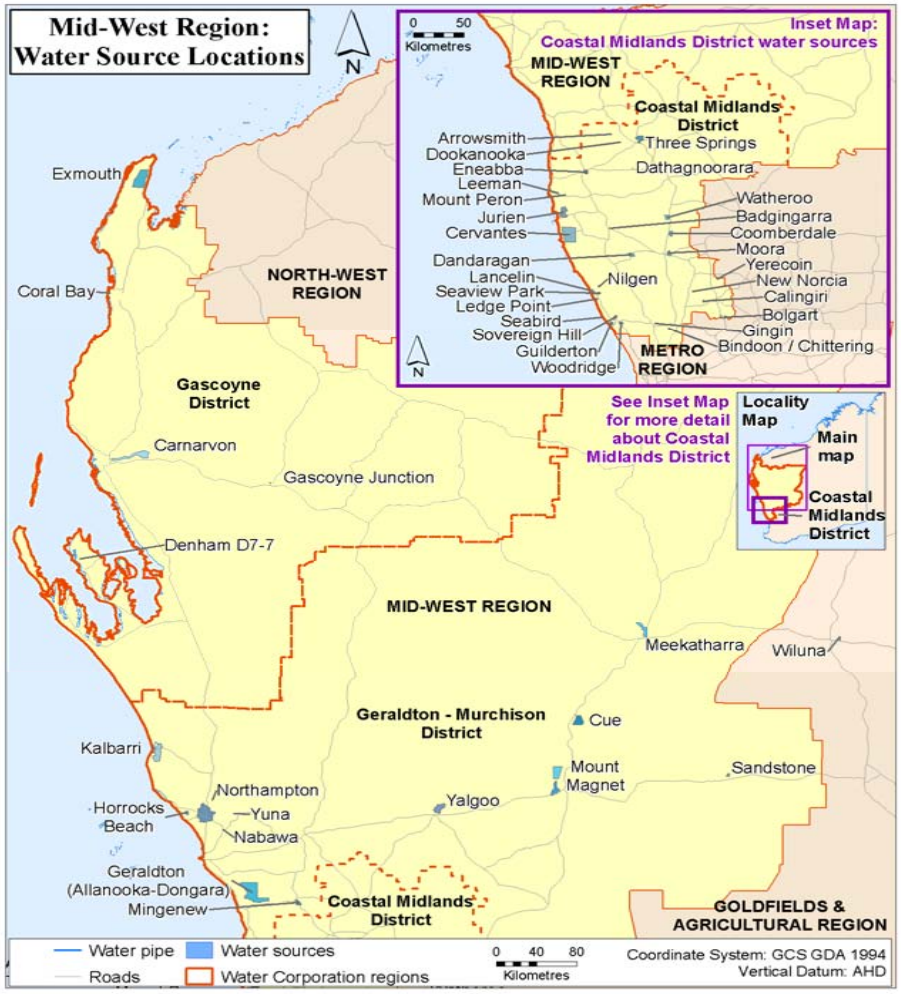
Mid-West Region

In the Mid-West Region water is sourced from 42 independent groundwater borefields and treated prior to supply as drinking water to our customers in 51 localities across the region.

In a region facing challenges from brackish (moderately saline) water supplies, we continually work on water quality treatment to identify long term strategies to improve drinking water quality for our regional customers.

We operate a large number of water treatment plants to manage natural characteristics of the groundwater in this region. Coral Bay, Gascoyne Junction and Denham have membrane water treatment plants while a variety of specialised filters are utilised predominantly in the coastal midlands area.

Work has been undertaken in coastal towns on optimising the water treatment plants to improve aesthetic water quality through the removal of dissolved metals, specifically iron and manganese.



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How is your water treated?

Water treatment

The specific water quality of each source dictates the type of treatment required. Where water comes from fully protected catchment areas, very little treatment is required – often just disinfection. In other cases, more intensive treatment processes may be required to ensure the drinking water delivered to every house is safe and aesthetically pleasing.

Groundwater, which is pumped from underground aquifers, can be treated to remove dissolved gases, iron, manganese, colour and turbidity. In Perth, groundwater treatment plants at Jandakot, Wanneroo, Lexia, Mirrabooka and Gwelup oxidise the water (via aeration and/or chlorination) to increase the amount of dissolved oxygen and remove both carbon dioxide and hydrogen sulphide. A coagulant (alum) is also added which increases the settling of fine particles caused by iron and natural organic matter. Clarified water then passes through sand filters to remove any remaining particles. Similar processes occur in many country water schemes. At Neerabup Water Treatment Plant, we use a treatment technology to soften the water and reduce salinity.

Naturally occurring organic substances present an issue for many water sources because they add colour to the water, which can increase taste and odour and provide precursors for disinfection by-products. Since 2001, we have used a water treatment technology known as MIEX (magnetised ion exchange) to prevent an intermittent “swampy” odour occurring in treated groundwater supplied to Perth’s northern suburbs. Unlike conventional processes, MIEX resin more effectively removes dissolved organic carbon (DOC) from drinking water, the source of the odour and taste concerns.

The MIEX Treatment Plant has provided a considerable reduction in swampy odour contacts from customers supplied from the Wanneroo Groundwater Treatment Plant.

Wanneroo Groundwater Treatment Plant

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How is your water treated?

Desalination

Desalination, using reverse osmosis (a membrane based treatment), has been used in Denham for many years to treat brackish groundwater. Reverse osmosis (RO) was the desalination process chosen for both the Perth Seawater Desalination Plant, which has been operational since November 2006, and the Southern Seawater Desalination Plant, that began supply in September 2011.

Similar technology exists at Leonora, Gascoyne Junction, Coral Bay and Hopetoun to improve the aesthetic water quality (hardness and total dissolved solids). Other methods of desalination available include Electrodialysis Reversal (EDR) which is in use at Wiluna.

Ultra-filtration

Ultra-filtration (UF) treatment is a form of membrane filtration where source water is forced through a very small semi-permeable membrane. It is designed to remove suspended solids, bacteria, viruses and other pathogens to produce water with very high purity.

UF is being used at Wyndham, Harding Dam, Pemberton, Denmark, Hyden, Walpole, Gascoyne Junction, Salmon Gums, Greenbushes and Kirup.

Disinfection

All drinking water supply schemes are disinfected with chlorine or chloramine to protect against pathogenic bacteria and viruses. The chlorine dose is maintained within a narrow range to ensure adequate disinfection is achieved with a minimal effect on the taste of our water.

Chloramination involves the use of chlorine and ammonia to produce a longer lasting disinfectant. Chloramination is used in the Goldfields and Agricultural Water Supply Scheme to maintain a disinfectant residual along the length of the extensive pipe network.

Ultraviolet (UV) light is used as an additional disinfectant in combination with chlorination at some towns where there are additional risks due to activities in the catchment. UV is used at a number of WTPs in the South West and Great Southern Regions, including Kirup Dam, Balingup, Hester, Greenbushes, Salmon Gums and Cranbrook, among others.

Fluoridation

Community water fluoridation is an important, cost-effective public health measure which plays a critical role in reducing dental decay and improving oral health.

Fluoridation of community water supplies is backed by authoritative health research agencies and government bodies in Australia and worldwide, including the World Health Organization,

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How is your water treated?

the Australian Dental Association, the Australian Medical Association, the National Health and Medical Research Council and numerous others.

In Western Australia, fluoridation of community water supplies is regulated by the *Fluoridation of Public Water Supplies Act 1966* (the Act) which is administered by the Department of Health (DoH). The Fluoridation of Public Water Supplies Advisory Committee oversees fluoridation and makes recommendations to the Minister for Health who may issue or rescind directives as appropriate.

Water fluoridation was introduced in Western Australia in 1968. Currently, around 91 per cent of the WA population is provided with fluoridated drinking water, principally in the Perth metropolitan area and most regional centres, as well as a number of smaller communities supplied from the same source or treatment plant as the regional centres. Some regional centres in WA have naturally occurring levels of fluoride in the water supply.

The water fluoridation process involves adding fluoride in a carefully controlled manner to the recommended optimum concentration. Fluoridated water supplies (see Table 1) are sampled at least weekly to confirm acceptable fluoridation performance. Purity and quality control standards for chemicals added to drinking water are also strictly controlled by DoH. Fluoridation performance is reported monthly to the DoH and quarterly to the Advisory Committee for Purity of Water.

Table 1 shows the localities requiring fluoridation under the Act. The fluoride levels for all individual localities are set out in the Appendices.

Testing water

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FRESH WATER THINKING WATER CORPORATION

How is your water treated?

Table 1 Localities requiring fluoridation under Fluoridation of Public Water Supplies Act 1966

Region /Scheme	Locality
Perth Integrated Water Supply Scheme	Armadale/Kelmscott Bold Park Buckland Hill Foothills Greenmount Greenmount/Darlington Hamilton Hill Harvey Hills Direct Lake Thompson Lexia Mandurah Melville Mirrabooka Mt. Eliza Mt. Hawthorn Mt. Yokine Mundaring Neerabup Pinjarra South Perth/Kewdale Tamworth Hill Wanneroo Waroona West Yokine Whitfords
Great Southern Region	Albany Esperance Katanning (GSTWS) Mt Barker Narrogin (GSTWS)
Goldfields & Agricultural Water Supply Scheme	Kalgoorlie Merredin Northam York
North West Region	Broome Derby Karratha
South West Region	Collie (GSTWS) Manjimup
Mid-West Region	Exmouth Geraldton

Notes:

1. Dunsborough is de-fluoridated (as fluoride is naturally occurring). Although the scheme is not covered by the Fluoridation Act, the recommended range and optimum concentration have been specified to provide a duty of care target (0.7-1.0mg/L and 0.9mg/L respectively).
2. The Water Corporation is working towards implementing the fluoridation directives, issued by the Department of Health, at Port Hedland, Moora, Dongara, Port Denison Kununurra, Newman and Yanchep.

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What drinking water guidelines must we meet?

The National Health and Medical Research Council (NHMRC) define the requirements for safe drinking water in Australia through the ADWG. These Guidelines include a framework for best practice management of drinking water supplies designed to integrate all facets of the drinking water quality management and assurance system.

We have a Memorandum of Understanding with the DoH which requires our compliance with the microbiological, chemical health and radiological parameters as specified in the ADWG. This forms part of our Operating Licence as issued by the Economic Regulation Authority. We, along with the DoH, recognise the practices and processes used to establish and maintain high levels of drinking water quality need to be open and transparent to the community.

For aesthetic parameters, the Memorandum of Understanding states that we should comply as far as practical with the ADWG for non-health related characteristics. It is accepted full compliance with non-health related characteristics may take a number of years bearing in mind the significant investment required to achieve this. For more information on our program of water quality improvements please refer to “Improving Your Water Quality” on page 39.

Multiple barrier approach

Preventing contamination and minimising risk is an essential part of providing our customers with safe drinking water. The ADWG emphasise the importance of using multiple barriers to ensure the safety of drinking water. Barriers include:

- Protected catchments and groundwater recharge areas;
- Large reservoirs with long water detention (storage) times;
- Water treatment (refer to “How is your water treated?” on page 15);
- Ensuring tanks and bores are sealed to prevent contamination;
- Disinfection of water; and
- Maintaining chlorine residuals through the distribution system.

We strive to continually improve the robustness and performance of our barriers.

Water Safety Plans

Having a Water Safety Plan (WSP) for each of our schemes is a large part of implementing the ADWG Framework for Management of Drinking Water Quality. WSPs use a systematic risk management approach from catchment to tap assessing the risks to each water supply scheme, ensuring appropriate preventative measures are in place, and identifying the operational controls necessary to consistently ensure the safety of drinking water. All WSPs are reviewed at least every four years, to re-evaluate the

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What drinking water guidelines must we meet?

scheme's risks and update any site or treatment details. This year has seen the review of 34 schemes in the metropolitan and regional areas. In addition, 48 WSPs were updated to show recent capital and other modifications of those schemes.

Source Protection

Water Corporation manages approximately 140 drinking water sources at over 250 localities across the State. Catchment management and protection is the first barrier in providing safe, good quality drinking water to the community. Water Corporation's *Drinking Water Source Protection Policy* guides catchment operations and highlights our commitment to the primacy of drinking water quality over other catchment land uses.

Several strategies are employed by the Corporation to effectively undertake drinking water source protection. Surveillance and by-law enforcement are key elements, carried out under delegated authority from the Department of Water (DoW), to control potentially polluting activities in gazetted Public Drinking Water Source Areas (PDWSAs). In 2015-16, approximately 16,500 surveillance hours were undertaken state-wide with 216 by-law offence prosecutions initiated and over 700 warning letters sent out.

By-law enforcement was historically restricted to application of the *Metropolitan Water Supply, Sewerage and Drainage By-laws 1981* within metropolitan PDWSAs and limited catchments under the *Country Areas Water Supply By-laws 1957*. In January 2013, a change in the delegation enabled by-law application within all gazetted PDWSAs across the State. In April 2014, Water Corporation was also given the power to prosecute for offences under the *Water Services Act 2012* and *Water Services Regulations 2013*.

Elements of this legislation may be used to improve our catchment management performance by applying the provisions relating to the protection of our assets such as drinking water reservoirs and bores. The DoW delegates responsibility to the Corporation to undertake activities including surveillance, signage, raw water sampling and DoW Land Management in PDWSA.

Monitoring

In accordance with the ADWG, we run an extensive drinking water quality monitoring program to confirm the safety of the water we provide to our customers. We take more than 65,000 water samples each year from water sources, treatment plants and pipe networks which supply our customers, and have in excess of 200,000 individual analyses performed by our contracted analytical laboratories.

All our water quality monitoring and reporting is coordinated through our Water Quality Management System (WQMS). This software provides many aspects of water quality management and acts as the central database for all information on drinking water quality including sampling program design, sampling analysis, monitoring and reporting.

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What drinking water guidelines must we meet?

Water Sampling

Our WQMS also automatically issues alerts for results outside guideline and operational limits and prompts remedial action as defined by our Water Safety Plans (WSPs).

Incident response

We are committed to protecting our water sources and supply schemes and have incident management plans and procedures to manage any issues with the minimum possible impact on water quality and our customers. We have measures in place to protect the level of service while ensuring your safety, including reserve storages in our tanks, carting water from other systems or having emergency treatment systems available.

We maintain a fleet of mobile ultra-filtration (UF) plants which allow us to rapidly restore high quality drinking water supplies. In the past, the only practical option was to transport drinking water by road tankers to affected areas. Our UF plants can be mobilised quickly to provide a minimum of 500,000 litres of high quality water per day. Other treatment units, including a reverse osmosis unit, are available for specialised applications.

In addition, we conduct regular incident scenarios with DoH to continually improve our incident management processes.

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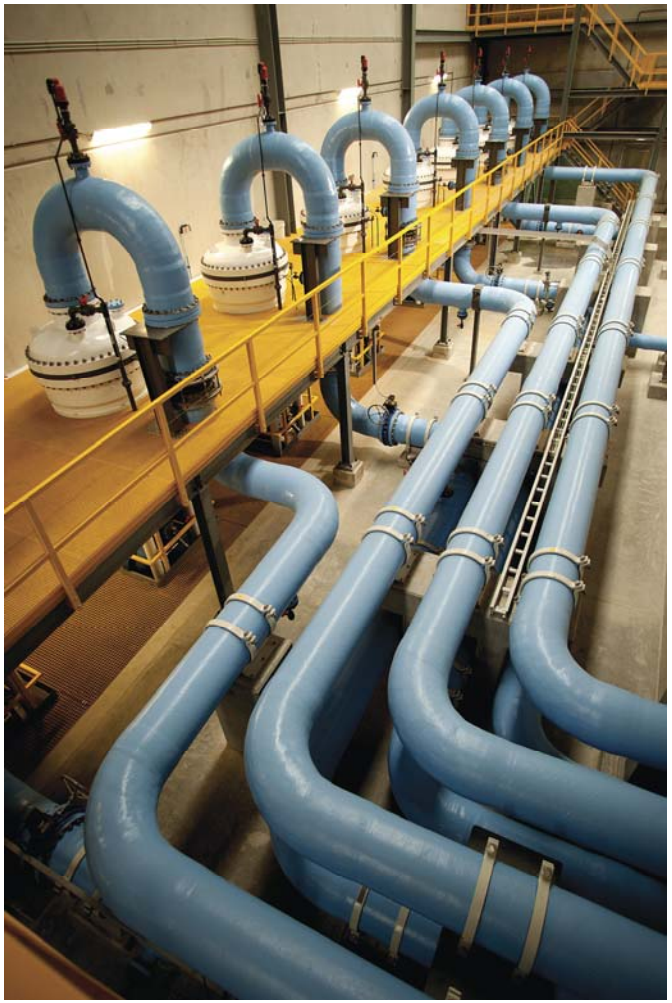
What drinking water guidelines must we meet?

Engagement with Department of Health

DoH regulates drinking water quality in Western Australia. We have a Memorandum of Understanding with DoH for managing drinking water quality, which connects all facets of nationally and internationally recognised drinking water guidelines, standards, and quality management systems to ensure safe continuous supply of water to our customers. It requires us to notify DoH within 24-hours when any sample exceeds a set health value or any event occurs which could pose a risk to public health.

We also provide updates to DoH throughout the year, with DoH regularly reviewing our monitoring results and corrective actions. The Memorandum of Understanding provides for DoH to conduct performance reviews of our systems and databases used to manage drinking water quality. In consultation with the Economic Regulation Authority, DoH commission audits to cover a three year period in line with our Operating Licence audit.

For more information on the last audit, please visit the drinking water quality section of our webpage www.watercorporation.com.au.



Southern Seawater Desalination Plant (expansion)

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Case Study – Groundwater Replenishment

Introduction

The Water Corporation's Groundwater Replenishment Trial (GWRT) demonstrated that groundwater replenishment is a sustainable water source for Perth. The three year trial demonstrated the treatment process consistently and reliably produced recycled water that is compliant with water quality guidelines to protect the relevant environmental values, human health and Department of Environment Regulation (DER) licence conditions.

Based on the success of the GWRT, the Corporation is currently commissioning Stage 1 of the Groundwater Replenishment Scheme (GWRS); a 14 gigalitres (GL) per year (yr) Advanced Water Recycling Plant (AWRP) recharging into the Yarragadee and Leederville aquifers at the Beenyup facility.

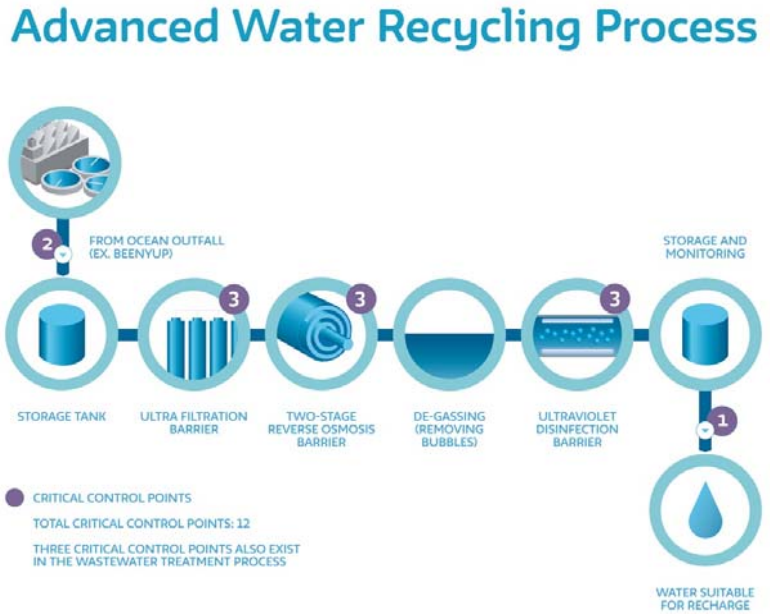
In July 2016, the Minister for Water announced the expansion of the GWRS, which will double the scheme to approximately 28 GL/yr. We are progressing planning for Stage 2 which will consist of a second, independently operated 14 GL/year AWRP co-located next to the Stage 1 AWRP and adjacent to the Beenyup Wastewater Treatment Plant (WWTP) in Craigie.

GWR Scheme Overview

The treatment systems for the GWRS include the Beenyup WWTP, the AWRP, and four recharge bores which recharge up to 45 ML per day of recycled water into the Leederville and Yarragadee aquifers. The scheme also includes a monitoring borefield (4 bores) which is used to monitor the flow and groundwater quality in the Leederville and Yarragadee aquifers, the overlying superficial aquifer around the recharge bores and the Beenyup site.

The GWRS accepts wastewater from the Beenyup Wastewater Catchment in the northern suburbs of Perth, which extends from Quinns Beach through to Scarborough and inland through Dianella and Bayswater to the foothills of East Midland.

The details of each part of the GWRS treatment system are illustrated below.



Groundwater Replenishment Scheme Overview

Note: AWRP CCPs shown in the figure, however the GWRS consists of a total of 15 CCPs.

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Case Study – Groundwater Replenishment

The AWRP treats water from Beenyup WWTP through a process of Ultra-filtration (UF), Reverse Osmosis (RO) and Ultra-violet (UV) disinfection before being recharged to the Leederville and Yarragadee aquifers.

Up to 45 ML per day of recycled water from the AWRP will be recharged through four high pressure recharge bores located on the Beenyup site; three bores into the Leederville aquifer at depths of between 120 to 230 metres, and one bore into the Yarragadee aquifer at depths between 390 to 745 metres below ground.

The GWRS treatment process will be controlled using a 12 element risk management framework, which incorporates 12 Critical Control Points (CCPs) at the AWRP and three CCPs at the Beenyup WWTP, hence a total of 15 CCPs for the scheme. These CCPs are continuously monitored online and assure recycled water is of drinking water quality before being recharged to the Leederville and Yarragadee aquifers.

Groundwater quality and aquifer pressures will be monitored by a monitoring bore located between 50 -100 metres away from each of the four recharge bores, as defined by the groundwater replenishment management zone and monitoring requirements.

Critical Control Points (CCP)

A CCP is defined as an activity, procedure or process where control can be applied that is essential for preventing hazards that represent high risks or to reduce them to acceptable levels. Performance of a CCP is measured by a surrogate that indicates integrity of each treatment barrier (e.g. conductivity monitoring of RO permeate is a surrogate for RO membrane integrity).

A Process Control Point (PCP) is defined as an activity, procedure or process where control can be applied that is essential to making operational decisions, and supports the achievement of CCPs.

All CCPs for the GWRS, with the exception of wastewater treatment capacity, are continuously monitored on-line, and if these parameters fall outside of specification then an automated corrective action is implemented. The operational philosophy of the automated control system ensures that all CCPs will be fail-safe.

The 15 CCPs throughout Beenyup WWTP and AWRP are supported by 81 PCPs (at 11 PCP locations throughout the AWRP). These CCPs are monitored daily and performance is reported to internal and external stakeholders.

Water Quality Monitoring Objectives

The monitoring of the GWRS will consist of testing/measurement of the following:

- Recycled Water Quality Indicators (RWQIs)
- Recycled Water Quality Parameters (RWQPs)
- Membrane integrity testing

A RWQI is an individual chemical or microbiological parameter that represents a class of chemicals or pathogens with similar characteristics, but also considers toxicity and source in the wastewater catchment. The purpose of the RWQI is to demonstrate safety of recycled water with respect to specific

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Case Study – Groundwater Replenishment

chemical and microbiological groups, and hence provide additional confidence that all chemical hazards are mitigated.

Table 2 provides a summary of the RWQI that are to be monitored for the GWRS and the chemical/ microbiological groups that they represent.

Table 2: The Indicators Monitored and the Groups they represent

Indicator	Group Represented
MS2 coliphage	Microorganisms
Gross alpha and gross beta particle activity	Radioactivity
Boron and nitrate	Inorganic compounds
N-Nitrosodimethylamine (NDMA)	Nitrosamines
Chlorate	Inorganic disinfection by-products
Chloroform	Other disinfection by-products
Carbamazepine and diclofenac	Pharmaceuticals and personal care products
Estrone	Hormones
Trifluralin	Pesticides and herbicides
1,4-Dioxane, 1,4-dichlorobenzene, EDTA, fluorene, and octadioxin	Other organic chemicals

For the GWRS, a total of 167 Recycled Water Quality Parameters will be tested as part of the requirements of our MoU with DoH for GWR.

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Case Study – Electro-chlorination Technology

Introduction

The Water Corporation has been investigating alternate technology to assist in addressing the operational and maintenance concerns associated with provision of drinking water to small communities in isolated regional areas.

Regional application

Water treatment systems in small regional towns have traditionally been chlorination (gas) and sodium hypochlorite (liquid). These systems can be challenging to operate and maintain when required to treat small and seasonally variable volumes in addition to the isolation of the systems. In addition, chemicals used to treat the water require dangerous goods transport and storage licences.

In the small town of Horrocks in the Mid-West, Electro-chlorination has been successfully proven as an alternative to traditional water treatment. The technology reduces and/or eliminates chemical related risks to staff and public, improves reliability of disinfection of drinking water and recycled water, and contributes to the reduction of costs associated with operation and maintenance of the traditional water treatment systems.

Innovation

The adoption of Electro-chlorination presents two key areas of innovation. In the Horrocks application this innovation extends to lowering the total dissolved solids (TDS) of the water (less salty for customers) and reduces the need for caustic soda (a dangerous chemical). The technology relies on the chlorides already in the water rather than having to input a chemical into the water. The support of trialling Electro-chlorination technology at Horrocks was essential to the success of this technology being adopted in other small isolated regional towns across the state.

The Electro-chlorination water treatment system at Horrocks has two Electro-chlorination units, housed in a prefabricated building with all the control equipment. The first Electro-chlorination unit is used for pre-treatment and oxidizes the Iron and Manganese while also increasing raw water pH. The second Electro-chlorination unit is used for primary disinfection prior to distribution to the customers.

Electro-chlorination water treatment system at Horrocks

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Case Study – Electro-chlorination Technology

Benefits

The key benefits of Electro-chlorination technology are:

- Reduced OSH risk. This is due to the elimination of chlorine gas, or the significant reduction of hypochlorite inventory and exposure. Chemical buffers are also similarly eliminated or reduced and potentially other dangerous chemicals can be eliminated.
- Reduced cost. The salt and/or energy cost of running these systems is significantly lower than the cost of gas or hypochlorite.
- Reduced maintenance. The performance of salt based systems are on par with conventional chlorination systems, and have less mechanical and electrical components that require maintenance or replacement.

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Case Study – Risk Based Observational Monitoring in Drinking Water Systems

Introduction

Some activities in catchment areas can have negative impacts on drinking water quality. Source protection is the first barrier in ensuring the supply of safe drinking water. Through a proactive source protection program, risk is reduced by controlling incompatible activities and land uses in catchment areas.

Actively preventing contamination reduces the reliance on water treatment, thus reducing the overall cost of supply. As the Western Australia population grows, so does the pressure from illegal access to PDWSA. With this growing level of illegal access comes increased risk to drinking water quality which, if not managed effectively, can result in the need for more complex and expensive water treatment infrastructure, or the need to find new water sources.

Key to effective source protection is regular inspections and surveillance to understand the risks from human activity and land uses in catchment areas. Data collected this way is termed observational data. Observational data is collected by a range of our staff including Rangers, Operators and regional water teams.

All drinking water catchments managed by the Water Corporation receive some form of regular inspection. The frequency and duration of inspections and surveillance is dependent on the characteristics and level of risk to the catchment.

All observational data collected is regularly reviewed in order to understand the level of risk to drinking water quality. Then, where appropriate, action is taken to control risks observed through enforcement of by-laws, installing physical barriers, engagement with various stakeholders and consultation with applicable government agencies. This current surveillance process was introduced in 2004 and has changed little since.

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Case Study – Risk Based Observational Monitoring in Drinking Water Systems

Observational Monitoring Framework

The publication of the 2011 Australian Drinking Water Guidelines (ADWG) introduced the framework for observational monitoring. The introduction of observational monitoring sees a move away from compliance monitoring, shifting the focus towards greater use of observational monitoring data in short-term and long-term risk evaluation of water supplies. Part of this transition in practice is developing clear targets for levels of acceptable activity.

As part of the Water Corporation's ongoing commitment to implementing the ADWG, an extensive review of current practices against the new framework was completed in early 2015. As an outcome of the review a number of potential improvements were identified in to how catchment risk is assessed, surveillance activities are planned and data collected is then reported and acted on. Through improved knowledge of catchment activity it is possible to focus surveillance on the locations and times that achieve the optimal outcome for managing risk in our drinking water sources.

The proposed new surveillance and inspections methods will also better integrate other data sources such as spatial data, electronic monitoring equipment and information from other government agencies with conventional surveillance data.

Beginning in July 2015 a series of observational monitoring trials were undertaken around the State in diverse locations. The aim of the trials was to assess the effectiveness of the new process and refine it further prior to implementation across all operational areas.

Outcomes to date from the trials show that the new approach to observational monitoring provides valuable data for managing risk to our public drinking water sources. Further work is planned and includes additional refining of the field operations and developing supporting data management systems to support implementation state wide.

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FRESH WATER THINKING WATER CORPORATION

Understanding water quality test results

The following summaries are intended to assist you with interpreting the results presented in this report. Additional information can be obtained by referring to the Fact Sheets contained in the ADWG published by the NHMRC and our website www.watercorporation.com.au.

For the purposes of this report, all data are assessed in relation to the ADWG.

Escherichia coli (E. coli)

Most human pathogenic microorganisms are found in the gut and faeces of humans and other warm blooded animals along with other non-pathogenic microorganisms. The bacteria *E. coli* is found in abundance in the intestine of warm blooded animals and, although most species are not pathogenic to humans, they indicate possible contamination by human or animal waste. As it is impractical to test for the presence of all pathogenic microorganisms in water, the ADWG recommends testing for the microbial indicator bacterium *E. coli* to indicate the presence of contamination. If there is *E. coli* there may also be pathogenic organisms. We employ the multiple barrier approach (refer to page 19) to prevent microbial contamination, however if there is an *E. coli* detection it is immediately addressed to ensure the water supplied to customers is safe.

Thermophilic *Naegleria*

Thermophilic *Naegleria* refers to a group of amoebae that thrive in water between 20°C and 42°C, which includes *Naegleria fowleri*. This organism is safe to drink but can cause the disease primary amoebic meningoencephalitis if it enters the body through the nose. It is found in the environment, is not associated with human waste and, under certain conditions, may proliferate in pipework and tanks. Adequate levels of chlorine or chloramine can control *Naegleria*. Any detection of thermophilic *Naegleria* is responded to immediately to ensure the potential risk to public health is managed.

Fluoride

Fluorine is one of the most abundant elements in the Earth's crust, and is typically found as the fluoride ion or as organic or inorganic fluorides. It is found naturally in groundwater supplies, and is present in most food and beverage products and toothpaste. Additional fluoride is added to a number of water supplies in Western Australia as directed by the Minister for Health (refer to "Fluoridation" on page 16). The fluoride concentration after dosing is set by the Fluoridation of Public Water Supplies Advisory Committee, and does not exceed 1 mg/L. Notwithstanding this, the ADWG health guideline for fluoride is 1.5 mg/L, applicable to both fluoridated and non-fluoridated localities.

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Understanding water quality test results

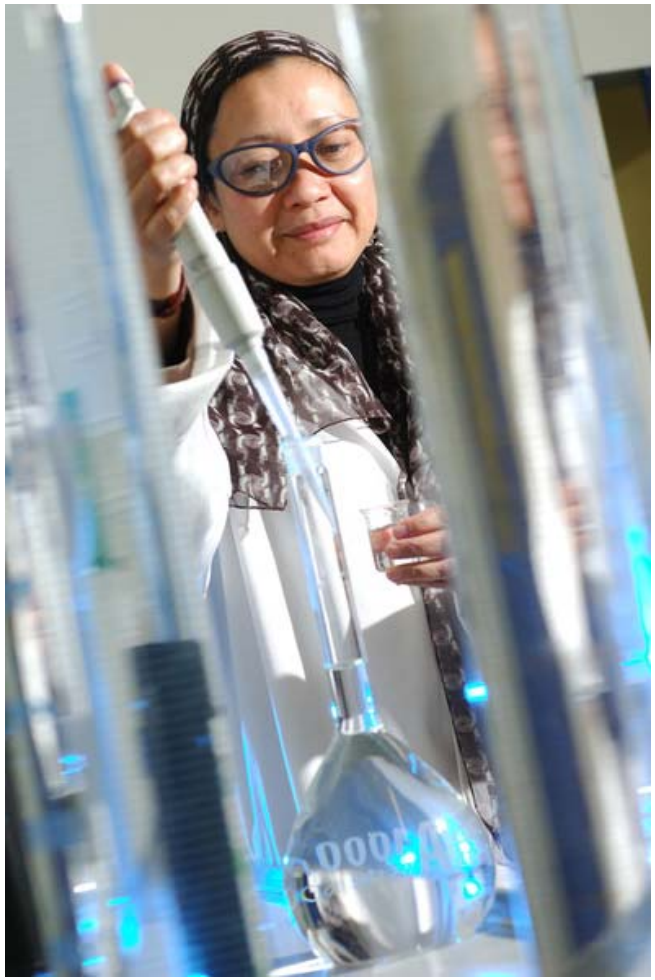
Nitrate

In Western Australia, elevated nitrate concentrations are usually due to the natural process of plant decay underground that has occurred over geological time. The ADWG specify a health guideline of 11.3 mg/L (measured as nitrogen) for infants less than three months old and a guideline of 22.6 mg/L (measured as nitrogen) for adults and children over three months old. Nitrate poisoning is very rare and to date no case, due to nitrate in drinking water, has been recorded in Western Australia. Where the nitrate concentration is between 11.3 and 22.6 mg/L, and there is no alternative supply, water providers may apply to DoH for an exemption from the guideline.

The following localities have been granted exemption from compliance with the nitrate guidelines by the DoH:

- Mid-West Region - Cue, Meekatharra, Mt Magnet, Nabawa, New Norcia, Sandstone, and Yalgoo.
- Goldfields and Agricultural Region - Laverton, Leonora, Menzies, and Wiluna.

In these towns, the Community Health Nurse provides advice to mothers regarding the use of alternative water for the preparation of bottle feeds. We provide bottled water free of charge via the Community Health Nurse as required.



Water testing

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Understanding water quality test results

Trihalomethanes

Trihalomethanes (THMs) are present in drinking water as a by-product of disinfection using chlorination (and chloramination to a lesser extent). We are required to comply with the ADWG health guideline of 0.25mg/L expressed as an average long term exposure. For the purposes of this report, THM compliance is assessed comparing the guideline with the mean annual THM concentration.

Alkalinity (as calcium carbonate)

Alkalinity is a measure of the parameters in water that have acid-neutralising ability, typically expressed in mg/L of equivalent calcium carbonate. Alkalinity can be affected by naturally occurring minerals or water treatment chemicals. There are no aesthetic or health considerations for alkalinity, and therefore the ADWG 2011 do not provide a guideline value.

Aluminium (acid-soluble)

Acid-soluble aluminium in water primarily originates from the addition of coagulants such as aluminium sulphate or poly-aluminium chloride in the water treatment process. These coagulants are added to aid the removal of colour and turbidity. Aluminium can accumulate in pipe sediments, and be re-suspended during periods of rapid changes to flow patterns. The ADWG specify an aesthetic guideline of 0.2 mg/L. No health guideline is set.

Chloride

Chloride is present in natural waters from the dissolution of salt deposits. In surface water, the concentration of chloride is typically less than 100 mg/L while groundwater can have higher concentrations, particularly if there is salt water intrusion. In Australian drinking water supplies chloride levels range up to 350 mg/L depending on local source characteristics.

Chloride is essential for humans and animals. It contributes to the osmotic activity of body fluids. Based on aesthetic considerations, the chloride concentration in drinking water should not exceed 250 mg/L (ADWG 2011).

Hardness (as calcium carbonate)

Hard water requires more soap to obtain lather. It can also cause scale to form on hot water pipes and fittings. Hardness is caused by the presence of dissolved calcium and magnesium. Water with hardness:

- Less than 60 mg/L is soft and possibly corrosive (depends on pH, alkalinity and dissolved oxygen concentration);
- Between 60 and 200 mg/L is deemed good quality for all domestic uses;
- Between 200 and 500 mg/L will increase scale formation; and
- Greater than 500 mg/L will cause a high level scaling.

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Understanding water quality test results

Hardness can be an important issue when purchasing appliances such as dishwashers. Hardness can be expressed in a number of units of measure. To convert the hardness values presented in this report (expressed in mg/L) to dH (German degree) units, divide by 17.8. To convert hardness to millimol (mmol) units, divide by 100 and to convert to milliequivalent (mEq) divide by 50. The ADWG specify an aesthetic hardness guideline of 200 mg/L.

Iron

Iron occurs naturally in water as a result of contact with soil or rock in the catchment. It can accumulate in pipe sediments, and be re-suspended during periods of rapid changes to flow patterns. Elevated concentrations cause discoloured water and can stain laundry. The ADWG specify an aesthetic guideline of 0.3 mg/L.

Manganese

Manganese in water can come from contact with soil or rock in the catchment. It can accumulate in pipe sediments, and be re-suspended during periods of rapid changes to flow patterns.

Elevated manganese can make water look black and stain laundry. The ADWG specify an aesthetic guideline of 0.1 mg/L.

pH

pH is a measure of water acidity (pH 7 is neutral). The ADWG specify a lower and upper aesthetic value of 6.5 and 8.5 respectively. The guidelines allow for a pH of up to 9.2 for new concrete tanks and cement-lined pipes, which can significantly increase the pH for a short period of time. Elevated pH is often caused by calcium carbonate leaching from the protective cement lining of the pipes after long transit times. This characteristic is found at a number of localities in our large water supply schemes. Where low pH is experienced, this is typically a consequence of the source characteristic rather than the influence of treatment. Buffering is a treatment process that stabilises the pH of the water.

Silica

In Australia, dissolved silica can range between 0.6 mg/L in some surface waters to 110 mg/L in ground waters. Dissolved silica can precipitate on some surfaces forming a white residue. In cases where customer complaints occur due to scale build-up, water hardness and silica concentrations are often identified as the primary cause. There is no adverse health considerations associated with silica in drinking water, but to minimise scale build up on surfaces silica should not exceed 80 mg/L (ADWG 2011).

Sodium

Sodium is widespread in water due to the high solubility of sodium salts and the abundance of mineral deposits. In major Australian reticulated supplies, sodium concentrations range from 3 mg/L to 300 mg/L. While sodium is essential to human life, there is no agreed minimum daily intake level. Based on aesthetic consideration the concentration of sodium in drinking water should not exceed 180 mg/L (ADWG 2011).

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Understanding water quality test results

Total Dissolved Solids

Total Dissolved Solids (TDS) consist of inorganic (natural) salts and small amounts of organic matter dissolved in water. TDSs comprise sodium, potassium, calcium, magnesium, chloride, sulphate, bicarbonate, carbonate, silica, organic matter, fluoride, iron, manganese, nitrate and phosphate.

Water with low TDS can taste flat, while water with high TDS tastes salty and causes scaling in pipes, fittings and household appliances. The ADWG provide guidance in the palatability of drinking water according to TDS concentration:

TDS (mg/L)	Palatability
0 – 600	Good quality
600 – 900	Fair quality
900 – 1200	Poor quality
> 1200	Unpalatable

The ADWG guideline of 600 mg/L is based on taste.

True colour

Colour in water originates mainly from natural drainage through soil and vegetation in a catchment. Corroding metal pipes can also discolour the water, with iron producing a brownish colour and copper a faint blue colour. The ADWG specify an aesthetic guideline of 15 True Colour Units (TCU). As a guide, 15 TCU is just noticeable in a glass.

Turbidity

Turbidity is the cloudy appearance of water caused by the presence of suspended matter. The ADWG specify an aesthetic guideline of 5 Nephelometric Turbidity Units (NTU) which is just noticeable in a glass of water.

Sampling parameters

Appendix A contains a list of regularly sampled parameters within functional groups and their respective guideline values.

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FRESH WATER THINKING WATER CORPORATION

Our Performance

Health related performance

We have again achieved excellent microbiological performance in 2015-16 (graph 1) with 100 per cent of schemes complying with the *Escherichia coli* requirement which is the most important indicator of faecal contamination (refer to 'Understanding water quality test results on page 30).

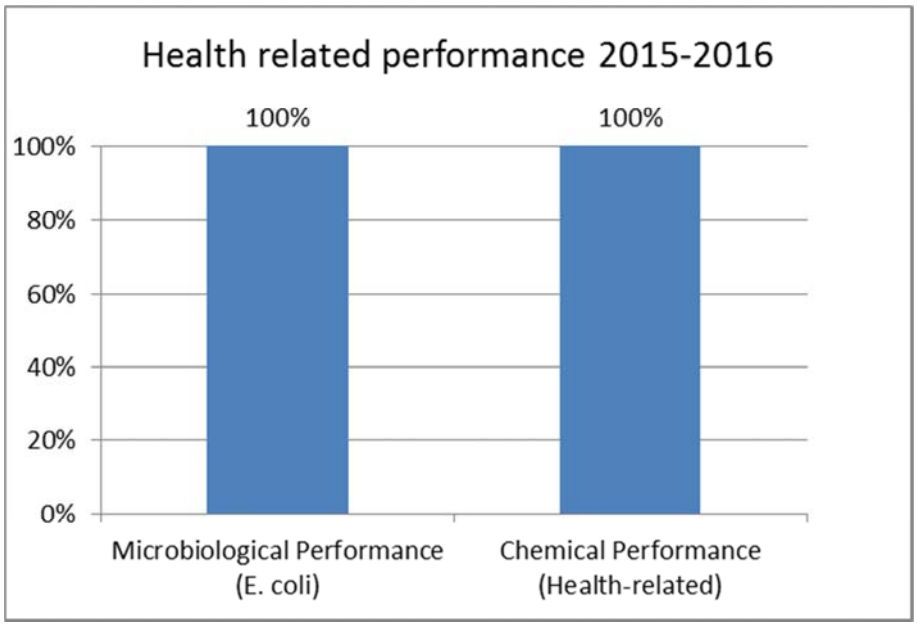
Compliance with health-related chemical guidelines is also at 100 per cent of all schemes meeting the guidelines. For this report, the target is achieved if the yearly average concentration for each chemical is less than the guideline value.

Non-health (aesthetic) related performance

While we strive to meet the ADWG for aesthetic characteristics, this is very difficult to achieve in a state as vast as Western Australia with such diverse water sources. We are committed to improving all aspects of drinking water quality, however, improvements in aesthetic water quality can be very costly and are often hard to achieve.

Detailed performance review for 2015-16

Appendix B provides a detailed summary of test results for each scheme throughout the State. In 2015-16 there were 161 out of 251 schemes where the mean concentration for the year was less than the aesthetic guidelines. Our performance for all aesthetic analyses (alkalinity, aluminium, true colour, hardness, iron, manganese, pH, TDS, turbidity, sodium, chloride and silica) across our 251 schemes was 94 per cent, with 8,768 out of 9,330 analyses complying with the aesthetic guidelines.



Graph 1: Microbiological and Chemical Health Performance

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Our Performance

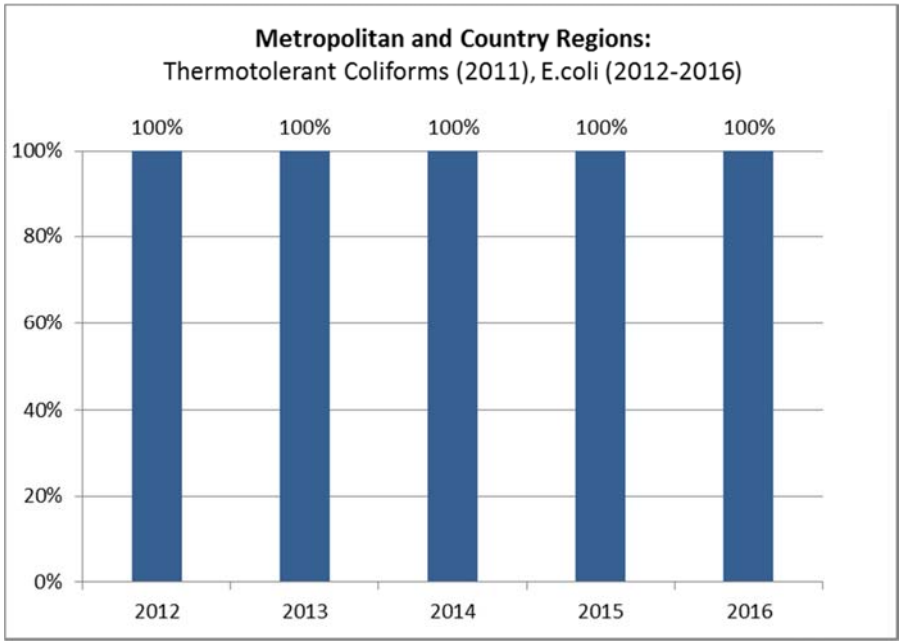
The results in Appendix B show a small number of excursions above the guidelines in aesthetic quality. These excursions are caused by the unique quality of local sources, lack of alternative sources, impact of the drying climate on groundwater production and abstraction from groundwater in proximity to the coast.

For many schemes, these excursions have no or only minimal influence on the taste of the drinking water.

Health performance review 2012 to 2016

For the past five years, the microbiological performance has been excellent with 100 per cent of the metropolitan and country localities complying with the *Escherichia coli* (or thermotolerant coliform) and thermophilic *Naegleria* requirements.

There has been a similar high performance for chemical-health over this same period.



Graph 2: Five year microbiological performance

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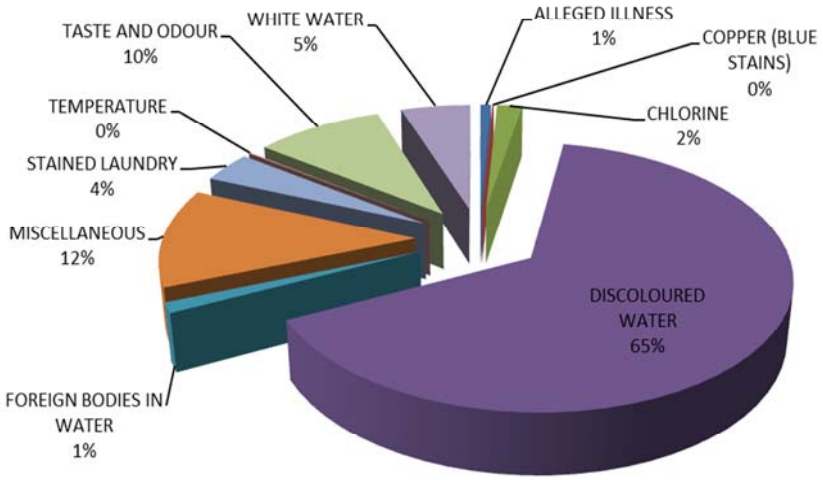
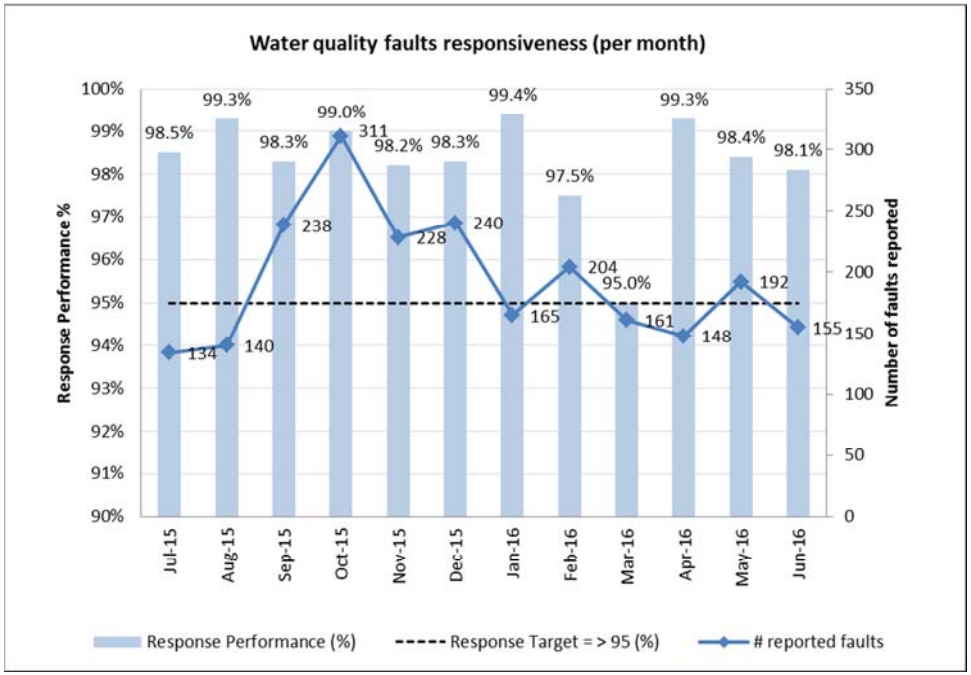
Customer Expectations

Customer contacts

Water quality related customer contacts (enquiries and complaints) are recorded and monitored continuously to identify any trends and areas for improvement. In 2015-16 our Operations Centre received 6,844 water quality related customer contacts (compared with 8,847 in 2014-15). The graph below shows the type and proportion of the water quality contacts.



Water Quality Contacts Profile 2015-16



For contacts related to water quality faults our Customer Charter states we will respond within two hours or at an agreed time. We have an agreed customer and business target to achieve this at least 95 percent of the time. In 2015-16, once a fault was recorded we responded to 98.3 percent within the target of two hours (see graph above for monthly, State-wide statistics).

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Customer Expectations

Customer research

We measure community perceptions of the quality of their drinking water through our quarterly Customer Performance Index (CPI) survey. In this survey, customers are asked to indicate the degree to which they either agree or disagree with two statements in relation to water quality (where 1 is 'poor' and 10 is 'excellent'). The rating for these questions, for each quarter of the year, is shown below.

Survey Questions	September 2015	December 2015	March 2016	June 2016	End of year average
How would you rate the Water Corporation on providing an acceptable standard of water quality?	7.15	7.12	7.18	7.38	7.21
How would you rate the Water Corporation on providing a consistent level of water quality?	7.28	7.25	7.23	7.51	7.31

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Improving your water quality

Monitoring and reporting improvements

We continue to strengthen our operational monitoring to ensure continual barrier risk assessments. This process allows the review of risk associated with critical processes during water treatment stages, and this assists with understanding the need for and prioritisation of our capital project.

Water quality capital improvements

We continue an extensive program of water quality capital improvements. These projects ensure robust multiple barriers are in place from “catchment to tap” for all our schemes. Examples of work undertaken are described throughout this report.

Monitoring and control systems

Installation of instrumentation that allows continuous monitoring of key water quality parameters at each water supply ensures unsatisfactory performance is detected quickly and remedial actions initiated.

Chlorination

We continue the chlorination program upgrading all chlorinators to the latest standards. Improvements will ensure enhanced alarming, automation and reporting capability.

Water treatment

New treatment plants, and upgrades to existing plants, continue to be installed to provide an additional barrier to microbiological contamination.

Installation of a UV treatment facility has been completed at the Albany Two Peoples Bay Water Treatment Plant; this upgrade will further reduce water quality risks associated with the Two Peoples Bay catchment and improve continuity of supply for the Lower Great Southern Towns Water Supply (LGSTWS).

Three new chlorinators will be installed the 2016-17 financial year within the Goldfields and Agricultural Water Supply (GAWS); the 58 Mile Tank, North Dalwallinu Tank and Koonkoobing Tank locations. An additional three chlorinators at other sites on the GAWS are in construction. The new chlorinators will improve disinfection capability by maintaining residuals and reducing the occurrence of nitrification, therefore reducing exposure to drinking water quality risks.

Ultrafiltration treatment at Salmon Gums will be in place early 2017. The additional treatment will significantly improve the water quality and will enable continuity of supply to the town of Salmon Gums. Previously the source was unable to be used during sustained periods of high turbidity.

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Improving your water quality

Tank roofs

Construction, repair or replacement of roofs on all reservoirs and tanks ensures stored water cannot be contaminated with rainwater or pests and vermin.

Pipes and pipelines

Construction of new pipelines and modification to the flow of water through tanks and reservoirs prevents stagnation of water in storage.

Several new tanks are in final stages of construction within the GAWS, including projects in Cunderdin (75ML), Waddouring (6ML) and Barbalin (5ML). All three projects will replace and remove existing open reservoirs from the GAWS supply. These projects reduce water quality risks. The result will improve disinfection capability within the GAWS through adequate mixing and tank detention times and eliminate potential contamination typical of unroofed reservoir sites.

Disinfection in long pipes

A major project is continuing to improve the persistence of chloramine through the long pipelines of the GAWS, the only chloraminated water supply system in Western Australia. One component includes monitoring the areas of nitrification, which is when natural aquatic bacteria within the pipelines convert ammonia to nitrite, one of the main causes of reductions in the extent of effective disinfection. We have been working internally, and with external research organisations, to develop methods to overcome this issue. Measures that have and continue to be taken to expand the maintenance of chloramine residuals throughout the distribution system include the installation of additional chlorine and ammonia dosing plants at strategic points significantly improving the quality of GAWS water.

Harvey pipeline construction

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Appendix A – List of sampling parameters

Pesticide

Pesticide	Health Guideline Value (µg/L)
2,4,5-T (2,4,5-trichlorophenoxyacetic acid)	100
2,4-D ([2,4-dichlorophenoxy]acetic acid)	30
Aldrin + Dieldrin	0.3
Atrazine	20
Azinphos-methyl	30
Bromophos-ethyl	10
Chlordane	2
Chlorothalonil	50
Chlorpyrifos	10
Clopyralid	2000
DDT (total isomers)	9
Diazinon	4
Dicamba	100
Diclofop-methyl	5
Dieldrin	see Aldrin
Dimethoate	7
Diuron	20
Endosulfan	20
Ethion	4
Fenitrothion	7
Fluazifop [1]	10
Fluometuron	70
Glyphosate	1000
Heptachlor & heptachlor epoxide (total)	0.3
Hexachlorobenzene	Value not set
Hexazinone	400

Pesticide	Health Guideline Value (µg/L)
Lindane	10
Maldison	70
Methoxychlor	300
Metolachlor	300
Metsulfuron-methyl	40
Molinate	4
Parathion-ethyl	20
Parathion-methyl	0.7
Picloram	300
Propazine	50
Propiconazole	100
Simazine	20
Terbutryn	400
Triclopyr	20
Trifluralin	90

[1] Guideline specific to WA and set by Department of Health (WA)

Other pesticides may be assessed as indicated

µg/L = micrograms per litre

1000 µg/L = 1 milligram per litre (mg/L)

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FRESH WATER THINKING WATER CORPORATION

Appendix A – List of sampling parameters

Organic Compounds

Compound	Health Guideline Value (µg/L)	Aesthetic Guideline Value (µg/L)
Acrylamide	0.2	Not set
Benzene [1]	1	Not set
Carbon tetrachloride	3	Not set
Chloroacetic acids		
Chloroacetic acid	150	Not set
Dichloroacetic acid	100	Not set
Trichloroacetic acid	100	Not set
Chlorobenzene [1]	300	10
Chlorophenols		
2-chlorophenol	300	0.1
2,4-dichlorophenol	200	0.3
2,4,6-trichlorophenol	20	2
Dichlorobenzenes [1]		
1,2-dichlorobenzene (1,2-DCB)	1500	1
1,3-dichlorobenzene (1,3-DCB)	Not set	20
1,4-dichlorobenzene (1,4-DCB)	40	0.3
Dichloroethanes [1]		
1,1-dichloroethane	Not set	Not set
1,2-dichloroethane	3	Not set
Dichloroethenes [1]		
1,1-dichloroethene (1,1-DCE)	30	Not set
1,2-dichloroethene (1,2-DCE)	60	Not set
Dichloromethane [1]	4	Not set
Epichlorohydrin	0.5	Not set
Ethylbenzene [1]	300	3

Compound	Health Guideline Value (µg/L)	Aesthetic Guideline Value (µg/L)
Ethylenediamine tetraacetic (EDTA) [1]	250	Not set
Hexachlorobutadiene [1]	0.7	Not set
Nitrilotriacetic acid (NTA) [1]	200	Not set
Organotins [1]		
Dialkyltins	Not set	Not set
Tributyltin oxide	1	Not set
Plasticisers [1]		
Di(2-ethylhexyl) adipate	Not set	
Di(2-ethylhexyl) phthalate (DEHP)	10	Not set
Polycyclic aromatic hydrocarbons [1]		
Benzo-(a) pyrene	0.01	Not set
Styrene (vinylbenzene) [1]	30	4
Tetrachloroethene [1]	50	Not set
Toluene [1]	800	25
Total Trihalomethanes	250	Not set
Trichloroacetaldehyde (chloral hydrate)	20	Not set
Trichlorobenzenes (total) [1]	30	5
Trichloroethylene (TCE) [1]	Not set	Not set
Vinyl chloride [1]	0.3	Not set
Xylene [1]	600	20
1,1,1- Trichloroethane [1]	Not set	Not set

µg/L = micrograms per litre; 1000 µg = 1 milligram (mg)

[1] These are part of the hydrocarbons suite in the sampling results tables

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FRESH WATER THINKING WATER CORPORATION

Appendix A – List of sampling parameters

Radiological

Parameter	Health Guideline Value
Radium 226 & 228	1.0 mSv (millisieverts).
Radon 222	100 Bq/L (millibecquerels per litre)

Inorganic Chemicals

Chemical	Health Guideline Value (mg/L)	Aesthetic Guideline Value (mg/L)
Chloride	Not set	250
Cyanide [1]	0.08	Not set
Fluoride	1.5	Not set
Iodide [1]	0.5	Not set
Nitrate + Nitrite [2]	50 mg/L as NO_3	Not set
Silica	Not set	80
Sodium	Not set	180
Sulphate	500	250

[1] Other health related chemicals in the summary of test results tables includes cyanide and iodide.

[2] Nitrate+Nitrite health guideline is for infants < 3 months of age (50 mg/L as NO_3 also reported as 11.3 mg/L as nitrogen).

Physical Characteristics

Characteristics	Health Guideline Value	Aesthetic Guideline Value
Hardness as $CaCO_3$	Not set	200 mg/L
pH	Not set	6.5 – 8.5
Total filterable solids (by summation)	Not set	600 mg/L
True colour	Not set	15 HU
Turbidity	Not set	5 NTU

HU = Hazen Units

NTU = Nephelometric turbidity units

Microbiological

Organism
Escherichia coli
Naegleria tolerant to ≤ 42°C

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FRESH WATER THINKING WATER CORPORATION

Appendix A – List of sampling parameters

Metals

Metal	Health Guideline Value (mg/L)	Aesthetic Guideline Value (mg/L)
Aluminium (acid soluble aluminium)	Not set	0.2
Antimony [3]	0.003	Not set
Arsenic [3]	0.01	Not set
Barium [3]	2	Not set
Beryllium [3]	0.06	Not set
Boron [3]	4	Not set
Cadmium [3]	0.002	Not set
Chromium (as Cr[VI]) [3]	0.05	Not set
Copper [3]	2	1
Iron	Not set	0.3
Lead [3]	0.01	Not set
Manganese	0.5	0.1
Mercury [3]	0.001	Not set
Molybdenum [3]	0.05	Not set
Nickel [3]	0.02	Not set
Selenium [3]	0.01	Not set
Silver [3]	0.1	Not set
Uranium [3]	0.017	Not set
Zinc [3]	Not set	3

[3] These are part of the metals suite in the sampling results tables

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Appendix B – Summary of test results

Perth Metropolitan Region

- Health-related Tables 1 and 2
- Aesthetic Tables 3, 4 and 5

Mid West Region

- Health-related Tables 6 and 7
- Aesthetic Tables 8, 9 and 10

Goldfields and Agricultural Regions

- Health-related Tables 11 and 12
- Aesthetic Tables 13, 14 and 15

South West Region

- Health-related Tables 16 and 17
- Aesthetic Tables 18, 19 and 20

Great Southern Region

- Health-related Tables 21 and 22
- Aesthetic Tables 23, 24 and 25

North West Region

- Health-related Tables 26 and 27
- Aesthetic Tables 28, 29 and 30

ISBN 2202-879X

FRESH WATER THINKING WATER CORPORATION

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 1 Health related variables

Perth Region	E. coli				Thermophilic Naegleria			Fluoride				Hydrocarbons		Metals	
									Concentration (mg/L)						
Locality	Samples Taken	Samples with >0 cfu/100mL	Max cfu/100mL	Requirement Met	Samples Taken	Samples with Thermophilic Naegleria	Requirement Met	Samples Taken	Min	Max	Mean	Samples Taken	Guideline Met	Samples Taken	Guideline Met
Armadale/Kelmscott	279	0	0	✓	279	0	✓	53	0.70	1.00	0.85	1	✓	2	✓
Bold Park	314	0	0	✓	131	0	✓	52	0.70	0.90	0.81	0	(1)	2	✓
Buckland Hill	106	0	0	✓	80	0	✓	53	0.70	0.90	0.79	0	(1)	2	✓
Dwellingup	13	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Foothills	144	0	0	✓	144	0	✓	53	0.70	1.00	0.84	0	(1)	2	✓
Greenmount	171	0	0	✓	107	0	✓	53	0.70	0.90	0.81	0	(1)	2	✓
Greenmount/Darlington	118	0	0	✓	91	0	✓	53	0.75	0.90	0.82	0	(1)	2	✓
Hamilton Hill	235	0	0	✓	92	0	✓	52	0.75	0.90	0.83	0	(1)	2	✓
Hills Direct	697	0	0	✓	314	0	✓	52	0.70	0.95	0.84	0	(1)	4	✓
Lexia	146	0	0	✓	55	0	✓	51	0.70	0.95	0.78	0	(1)	2	✓
Mandurah	403	0	0	✓	325	0	✓	52	0.80	0.95	0.86	4	✓	6	✓
Melville	171	0	0	✓	92	0	✓	52	0.70	0.90	0.80	1	✓	2	✓
Mirrabooka	340	0	0	✓	118	0	✓	53	0.70	0.90	0.80	0	(1)	2	✓
Mt. Eliza	421	0	0	✓	130	0	✓	53	0.70	0.90	0.78	0	(1)	2	✓
Mt. Hawthorn	156	0	0	✓	78	0	✓	52	0.75	0.90	0.81	0	(1)	2	✓
Mt. Yokine	499	0	0	✓	188	0	✓	53	0.75	0.90	0.81	0	(1)	2	✓
Mundaring	119	0	0	✓	119	0	✓	53	0.70	1.00	0.83	0	(1)	2	✓
Neerabup	237	0	0	✓	117	0	✓	52	0.70	0.95	0.83	1	✓	5	✓
North Dandalup	13	0	0	✓	7	0	✓	5	0.15	0.85	0.46	0	(1)	2	✓
Pinjarra	64	0	0	✓	52	0	✓	51	0.80	0.95	0.87	0	(1)	2	✓
South Perth/Kewdale	496	0	0	✓	224	0	✓	53	0.70	0.90	0.81	0	(1)	2	✓
Tamworth Hill	367	0	0	✓	146	0	✓	52	0.80	0.95	0.87	0	(1)	2	✓
Thomsons Lake	277	0	0	✓	78	0	✓	50	0.70	0.95	0.78	0	(1)	2	✓
Two Rocks	104	0	0	✓	39	0	✓	2	0.15	0.15	0.15	0	(1)	2	✓
Wanneroo	433	0	0	✓	160	0	✓	54	0.70	0.85	0.76	0	(1)	6	✓
West Yokine	236	0	0	✓	131	0	✓	53	0.70	0.90	0.81	0	(1)	2	✓
Whitfords	143	0	0	✓	65	0	✓	52	0.70	0.85	0.75	0	(1)	2	✓
Yanchep	104	0	0	✓	53	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓

(1) No samples required in this 12 month period

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 2 Health related variables

Perth Region	Nitrate (measured as Nitrogen)					Pesticides		Radiological		Trihalomethanes					Other Health Related	
		Concentration (mg/L)									Concentration (mg/L)					
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Requirement Met
Armadale/Kelmscott	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	13	0.032	0.100	0.069	✓	0	(1)
Bold Park	4	0.1	0.1	0.1	✓	1	✓	0	(1)	13	0.022	0.110	0.075	✓	0	(1)
Buckland Hill	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	13	0.015	0.100	0.069	✓	0	(1)
Dwellingup	5	<0.05	<0.05	<0.05	✓	3	✓	0	(1)	3	0.043	0.049	0.046	✓	0	(1)
Foothills	4	<0.05	0.2	0.1	✓	1	✓	1	✓	14	0.002	0.110	0.067	✓	0	(1)
Greenmount	4	0.1	0.3	0.2	✓	1	✓	0	(1)	13	0.099	0.200	0.145	✓	0	(1)
Greenmount/Darlington	4	<0.05	0.4	0.1	✓	1	✓	0	(1)	13	0.059	0.120	0.088	✓	0	(1)
Hamilton Hill	5	<0.05	<0.05	<0.05	✓	1	✓	1	✓	13	0.009	0.078	0.047	✓	0	(1)
Hills Direct	9	<0.05	<0.05	<0.05	✓	2	✓	1	✓	26	<0.001	0.044	0.016	✓	1	✓
Lexia	5	<0.05	1.7	0.7	✓	1	✓	1	✓	14	0.062	0.160	0.106	✓	0	(1)
Mandurah	12	<0.05	<0.05	<0.05	✓	3	✓	0	(1)	39	<0.001	0.034	0.006	✓	4	✓
Melville	5	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	13	0.009	0.087	0.053	✓	0	(1)
Mirrabooka	5	0.1	0.4	0.3	✓	1	✓	0	(1)	14	0.088	0.150	0.118	✓	0	(1)
Mt. Eliza	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	14	0.020	0.089	0.062	✓	0	(1)
Mt. Hawthorn	5	0.3	0.6	0.4	✓	1	✓	0	(1)	13	0.084	0.140	0.114	✓	0	(1)
Mt. Yokine	5	0.1	0.5	0.3	✓	1	✓	0	(1)	13	0.091	0.130	0.114	✓	0	(1)
Mundaring	5	0.1	0.1	0.1	✓	1	✓	0	(1)	13	0.002	0.010	0.007	✓	0	(1)
Neerabup	5	2.1	2.5	2.3	✓	1	✓	0	(1)	13	0.031	0.077	0.052	✓	0	(1)
North Dandalup	5	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.053	0.098	0.079	✓	0	(1)
Pinjarra	5	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	<0.001	0.006	0.003	✓	0	(1)
South Perth/Kewdale	4	<0.05	0.4	0.2	✓	1	✓	0	(1)	14	0.012	0.140	0.075	✓	0	(1)
Tamworth Hill	5	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	13	<0.001	0.031	0.006	✓	0	(1)
Thomsons Lake	5	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	14	<0.001	0.097	0.071	✓	0	(1)
Two Rocks	4	1	1.2	1.1	✓	1	✓	0	(1)	13	0.004	0.011	0.007	✓	0	(1)
Wanneroo	4	<0.05	0.6	0.3	✓	1	✓	1	✓	13	0.062	0.140	0.097	✓	0	(1)
West Yokine	4	0.3	0.5	0.4	✓	1	✓	0	(1)	13	0.097	0.180	0.134	✓	0	(1)
Whitfords	4	0.4	1.5	0.8	✓	1	✓	0	(1)	13	0.068	0.140	0.099	✓	0	(1)
Yanchep	4	1.1	1.1	1.1	✓	1	✓	0	(1)	12	<0.001	0.007	0.002	✓	0	(1)

(1) No samples required in this 12 month period

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 3 Aesthetic (Non-health related) Variables

Perth Region	Alkalinity (as CaCO3)					Aluminium					Chloride					Hardness				
	Samples	Concentration (mg/L)			Guideline	Samples	Concentration (mg/L)			Guideline	Samples	Concentration (mg/L)			Guideline	Samples	Concentration (mg/L)			Guideline
Locality	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met
Armadale/Kelmscott	4	57	81	70	(1)	4	0.018	0.030	0.023	✓	4	125	165	143	✓	4	62	82	71	✓
Bold Park	4	74	97	87	(1)	4	0.020	0.035	0.028	✓	4	100	115	110	✓	4	55	70	62	✓
Buckland Hill	4	61	106	86	(1)	4	0.020	0.030	0.025	✓	4	55	210	159	✓	4	55	69	64	✓
Dwellingup	5	12	20	16	(1)	5	0.012	0.020	0.014	✓	5	70	80	75	✓	5	32	40	36	✓
Foothills	4	58	95	84	(1)	4	0.020	0.025	0.023	✓	4	95	170	138	✓	4	56	92	77	✓
Greenmount	4	97	172	134	(1)	4	0.014	0.025	0.018	✓	4	145	195	175	✓	4	87	100	94	✓
Greenmount/Darlington	4	88	130	99	(1)	4	0.018	0.025	0.022	✓	4	135	170	149	✓	4	72	83	79	✓
Hamilton Hill	5	50	78	69	(1)	5	0.020	0.030	0.028	✓	5	22	145	92	✓	5	48	75	63	✓
Hills Direct	9	47	75	60	(1)	9	0.025	0.050	0.034	✓	9	31	90	55	✓	9	51	63	56	✓
Lexia	5	94	176	123	(1)	5	0.020	0.030	0.026	✓	5	70	100	84	✓	5	94	160	128	✓
Mandurah	12	46	77	69	(1)	12	0.035	0.045	0.040	✓	12	31	50	39	✓	12	45	62	58	✓
Melville	5	47	96	73	(1)	5	0.018	0.040	0.030	✓	5	44	210	115	✓	5	46	59	55	✓
Mirrabooka	5	44	88	71	(1)	5	0.030	0.055	0.038	✓	5	170	210	186	✓	5	120	130	128	✓
Mt. Eliza	2	76	99	88	(1)	2	0.025	0.030	0.028	✓	2	155	195	175	✓	2	62	68	65	✓
Mt. Hawthorn	5	127	169	144	(1)	5	0.014	0.018	0.016	✓	5	135	195	170	✓	5	83	110	94	✓
Mt. Yokine	5	134	150	140	(1)	5	0.010	0.020	0.016	✓	5	140	195	167	✓	5	79	100	90	✓
Mundaring	5	78	83	80	(1)	5	0.060	0.120	0.085	✓	5	125	150	137	✓	5	77	84	81	✓
Neerabup	5	166	219	197	(1)	5	0.014	0.020	0.017	✓	5	105	125	118	✓	5	170	190	176	✓
North Dandalup	5	20	67	38	(1)	5	0.018	0.035	0.025	✓	5	44	75	61	✓	5	40	58	46	✓
Pinjarra	5	42	75	61	(1)	5	0.018	0.060	0.040	✓	5	32	46	42	✓	5	40	61	53	✓
South Perth/Kewdale	4	62	136	91	(1)	4	0.018	0.035	0.025	✓	4	85	190	135	✓	4	59	100	77	✓
Tamworth Hill	5	42	74	62	(1)	5	0.014	0.045	0.033	✓	5	34	45	43	✓	5	42	59	54	✓
Thomsons Lake	5	46	112	82	(1)	4	0.018	0.020	0.020	✓	5	21	215	133	✓	5	50	99	76	✓
Two Rocks	4	227	241	235	(1)	4	0.012	0.014	0.013	✓	4	105	105	105	✓	4	220	230	223	(2)
Wanneroo	4	78	114	101	(1)	4	0.018	0.020	0.019	✓	4	90	165	115	✓	4	65	110	94	✓
West Yokine	4	134	161	149	(1)	4	0.016	0.025	0.020	✓	4	175	190	181	✓	4	88	110	95	✓
Whitfords	4	93	146	118	(1)	4	0.018	0.025	0.023	✓	4	95	175	118	✓	4	99	120	107	✓
Yanchep	4	230	241	236	(1)	4	<0.008	0.014	0.009	✓	4	105	110	106	✓	4	220	230	225	(2)

(1) No guideline value available as per ADWG 2011. (2) Elevated hardness is characteristic of the source supplying this locality

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 4 Aesthetic (Non-health related) Variables

Perth Region	Iron					Manganese					pH					Silica				
	Samples	Concentration (mg/L)			Guideline	Samples	Concentration (mg/L)			Guideline	Samples	Value (pH units)			Guideline	Samples	Concentration (mg/L)			Guideline
Locality	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met
Armadale/Kelmscott	4	0.020	0.045	0.033	✓	4	0.002	0.008	0.004	✓	4	7.60	7.86	7.75	✓	4	2.6	4.2	3.5	✓
Bold Park	4	0.050	0.100	0.065	✓	4	0.003	0.010	0.005	✓	4	7.89	7.97	7.92	✓	4	5.4	7.1	6.5	✓
Buckland Hill	4	0.050	0.090	0.070	✓	4	0.003	0.014	0.007	✓	4	7.83	8.24	8.04	✓	4	1.3	7.3	5.2	✓
Dwellingup	5	0.045	0.080	0.061	✓	5	<0.002	0.009	0.004	✓	5	6.93	7.21	7.09	✓	5	1.8	2.2	2.0	✓
Foothills	4	0.025	0.080	0.043	✓	4	0.004	0.007	0.005	✓	4	7.87	8.14	7.97	✓	4	3.3	10	6.4	✓
Greenmount	4	0.008	0.035	0.020	✓	4	<0.002	<0.002	<0.002	✓	4	8.16	8.62	8.35	✓	4	11	18	15.3	✓
Greenmount/Darlington	4	0.010	0.035	0.028	✓	4	0.003	0.005	0.004	✓	4	8.10	8.25	8.17	✓	4	5.5	12	7.6	✓
Hamilton Hill	5	0.010	0.035	0.020	✓	5	<0.002	0.004	0.003	✓	5	7.77	8.21	8.00	✓	5	0.9	3.8	2.6	✓
Hills Direct	9	0.004	0.070	0.021	✓	9	<0.002	0.018	0.004	✓	9	7.67	8.22	7.97	✓	9	0.8	2.7	1.8	✓
Lexia	5	0.008	0.015	0.011	✓	5	<0.002	0.010	0.004	✓	5	6.95	8.42	7.70	✓	5	13	20	16.8	✓
Mandurah	12	0.004	0.020	0.008	✓	12	<0.002	0.004	<0.002	✓	12	7.83	8.51	8.22	✓	12	0.8	2.7	1.2	✓
Melville	5	0.015	0.040	0.028	✓	5	<0.002	0.008	0.004	✓	5	7.50	8.28	7.97	✓	5	1	6.8	3.7	✓
Mirrabooka	5	0.015	0.050	0.034	✓	5	<0.002	0.003	<0.002	✓	5	6.97	7.59	7.29	✓	5	14	17	15.0	✓
Mt. Eliza	2	0.070	0.080	0.075	✓	2	0.009	0.014	0.012	✓	2	7.92	7.95	7.94	✓	2	4.2	6	5.1	✓
Mt. Hawthorn	5	0.030	0.140	0.055	✓	5	0.003	0.009	0.004	✓	5	7.77	8.18	7.94	✓	5	17	19	18.2	✓
Mt. Yokine	5	0.015	0.060	0.034	✓	5	<0.002	0.006	0.003	✓	5	7.75	8.01	7.89	✓	5	14	19	16.8	✓
Mundaring	5	<0.003	0.004	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	8.12	8.35	8.26	✓	5	3.7	4.9	4.2	✓
Neerabup	5	0.008	0.025	0.015	✓	5	<0.002	<0.002	<0.002	✓	5	7.90	8.04	7.96	✓	5	19	21	20.4	✓
North Dandalup	5	0.030	0.060	0.043	✓	5	<0.002	0.005	0.003	✓	5	7.60	8.53	8.10	✓	5	1.3	3	2.0	✓
Pinjarra	5	0.008	0.025	0.014	✓	5	<0.002	0.005	<0.002	✓	5	7.71	8.28	8.08	✓	5	1	3.2	1.9	✓
South Perth/Kewdale	4	0.020	0.090	0.055	✓	4	0.003	0.014	0.007	✓	4	7.66	8.04	7.80	✓	4	3.5	17	9.3	✓
Tamworth Hill	5	0.006	0.025	0.014	✓	5	<0.002	0.004	<0.002	✓	5	7.60	8.24	7.96	✓	5	0.8	3.3	1.8	✓
Thomsons Lake	5	<0.003	0.025	0.009	✓	5	<0.002	0.007	0.004	✓	5	7.79	8.22	8.02	✓	5	1.6	6	4.2	✓
Two Rocks	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	7.47	7.63	7.54	✓	4	12	13	12.3	✓
Wanneroo	4	0.004	0.008	0.007	✓	4	<0.002	0.006	0.003	✓	4	7.51	7.59	7.54	✓	4	18	19	18.3	✓
West Yokine	4	0.025	0.140	0.081	✓	4	0.002	0.009	0.005	✓	4	7.87	8.14	7.96	✓	4	17	19	18.0	✓
Whitfords	4	0.004	0.015	0.009	✓	4	<0.002	0.005	<0.002	✓	4	7.68	8.18	7.91	✓	4	17	19	18.0	✓
Yanchep	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	7.51	7.67	7.59	✓	4	15	16	15.5	✓

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 5 Aesthetic (Non-health related) Variables

Perth Region	Sodium					TDS					True Colour					Turbidity				
	Samples	Concentration (mg/L)			Guideline	Samples	Concentration (mg/L)			Guideline	Samples	Value (TCU)			Guideline	Samples	Value (NTU)			Guideline
Locality	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met
Armadale/Kelmscott	4	72	100	84	✓	4	304	407	348	✓	4	<1	<1	<1	✓	4	0.3	0.5	0.4	✓
Bold Park	4	65	73	70	✓	4	279	329	311	✓	4	<1	<1	<1	✓	4	0.1	0.4	0.2	✓
Buckland Hill	4	32	135	99	✓	4	175	509	390	✓	4	<1	<1	<1	✓	4	<0.1	0.3	0.2	✓
Dwellingup	5	38	44	41	✓	5	152	181	168	✓	5	<1	3	<1	✓	5	0.3	0.9	0.5	✓
Foothills	4	54	110	87	✓	4	244	443	367	✓	4	<1	<1	<1	✓	4	<0.1	0.4	0.2	✓
Greenmount	4	96	145	122	✓	4	453	592	516	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Greenmount/Darlington	4	80	105	97	✓	4	354	443	406	✓	4	<1	<1	<1	✓	4	0.1	0.3	0.2	✓
Hamilton Hill	5	12	88	55	✓	5	123	364	257	✓	5	<1	<1	<1	✓	5	<0.1	0.3	0.2	✓
Hills Direct	9	18	49	31	✓	9	147	221	177	✓	9	<1	<1	<1	✓	9	<0.1	0.4	0.2	✓
Lexia	5	33	68	51	✓	5	343	438	366	✓	5	<1	2	<1	✓	5	<0.1	0.4	0.2	✓
Mandurah	12	17	30	24	✓	12	143	177	160	✓	12	<1	<1	<1	✓	12	<0.1	0.2	<0.1	✓
Melville	5	25	145	76	✓	5	142	492	301	✓	5	<1	<1	<1	✓	5	0.1	0.3	0.2	✓
Mirrabooka	5	92	120	103	✓	5	463	524	485	✓	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
Mt. Eliza	2	96	120	108	✓	2	370	465	418	✓	2	<1	<1	<1	✓	2	0.3	0.6	0.5	✓
Mt. Hawthorn	5	100	140	121	✓	5	453	567	526	✓	5	<1	<1	<1	✓	5	0.1	0.2	0.1	✓
Mt. Yokine	5	95	135	116	✓	5	456	564	506	✓	5	<1	<1	<1	✓	5	0.1	0.2	0.2	✓
Mundaring	5	69	94	82	✓	5	332	388	362	✓	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
Neerabup	5	62	71	68	✓	5	468	538	496	✓	5	<1	<1	<1	✓	5	0.2	0.5	0.3	✓
North Dandalup	5	24	40	34	✓	5	147	178	164	✓	5	<1	2	<1	✓	5	0.3	0.7	0.4	✓
Pinjarra	5	19	28	25	✓	5	139	171	156	✓	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
South Perth/Kewdale	4	52	125	84	✓	4	241	540	374	✓	4	<1	<1	<1	✓	4	0.2	0.4	0.3	✓
Tamworth Hill	5	19	28	25	✓	5	138	168	158	✓	5	<1	<1	<1	✓	5	0.1	0.4	0.2	✓
Thomsons Lake	5	13	135	83	✓	5	120	529	351	✓	5	<1	<1	<1	✓	5	0.1	0.3	0.1	✓
Two Rocks	4	57	59	58	✓	4	509	522	518	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Wanneroo	4	57	99	70	✓	4	293	461	370	✓	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓
West Yokine	4	115	135	125	✓	4	523	564	546	✓	4	<1	<1	<1	✓	4	0.1	0.5	0.3	✓
Whitfords	4	59	110	74	✓	4	346	490	399	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Yanchep	4	51	53	52	✓	4	511	516	514	✓	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 6 Health related variables

Mid West	E. coli				Thermophilic Naegleria			Fluoride				Hydrocarbons		Metals	
									Concentration (mg/L)						
Locality	Samples Taken	Samples with >0 cfu/100mL	Max cfu/100mL	Requirement Met	Samples Taken	Samples with Thermophilic Naegleria	Requirement Met	Samples Taken	Min	Max	Mean	Samples Taken	Guideline Met	Samples Taken	Guideline Met
Badgingarra	13	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Bindoon /Chittering	51	0	0	✓	27	0	✓	2	0.35	0.40	0.38	0	(1)	2	✓
Bolgart	13	0	0	✓	9	0	✓	2	0.20	0.30	0.25	0	(1)	2	✓
Calingiri	13	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Carnamah	12	0	0	✓	12	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Carnarvon	66	0	0	✓	40	0	✓	2	0.45	0.80	0.63	0	(1)	2	✓
Cervantes	52	0	0	✓	9	0	✓	2	0.15	0.15	0.15	0	(1)	2	✓
Coomberdale	11	0	0	✓	8	0	✓	2	0.10	0.10	0.10	0	(1)	2	✓
Coorow	12	0	0	✓	12	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Coral Bay	13	0	0	✓	13	0	✓	1	<0.1	<0.1	<0.1	0	(1)	2	✓
Cue	13	0	0	✓	13	0	✓	2	0.30	0.35	0.33	0	(1)	2	✓
Dandaragan	14	0	0	✓	9	0	✓	2	0.25	0.25	0.25	0	(1)	3	✓
Denham	50	0	0	✓	26	0	✓	3	<0.1	<0.1	<0.1	0	(1)	2	✓
Dongara/Denison	52	0	0	✓	27	0	✓	2	0.35	0.40	0.38	0	(1)	2	✓
Eneabba	13	0	0	✓	13	0	✓	2	0.15	0.15	0.15	0	(1)	6	✓
Exmouth	67	0	0	✓	39	0	✓	55	0.45	0.80	0.73	0	(1)	2	✓
Gascoyne Junction	25	0	0	✓	25	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Geraldton	168	0	0	✓	168	0	✓	55	0.25	0.85	0.69	0	(1)	4	✓
Gingin	51	0	0	✓	18	0	✓	2	<0.1	<0.1	<0.1	1	✓	3	✓
Greenhead	52	0	0	✓	12	0	✓	2	<0.1	<0.1	<0.1	0	(1)	5	✓
Guilderton	53	0	0	✓	16	0	✓	2	0.20	0.25	0.23	0	(1)	2	✓
Horrocks	12	0	0	✓	12	0	✓	2	0.40	0.40	0.40	0	(1)	2	✓
Jurien Bay	52	0	0	✓	9	0	✓	2	0.30	0.35	0.33	0	(1)	2	✓
Kalbarri	50	0	0	✓	26	0	✓	2	<0.1	0.10	<0.1	0	(1)	2	✓
Lancelin	53	0	0	✓	18	0	✓	2	0.20	0.20	0.20	0	(1)	2	✓
Latham	41	1	1	✓	14	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Ledge Point	53	0	0	✓	9	0	✓	2	0.10	0.15	0.13	0	(1)	2	✓
Leeman	52	0	0	✓	12	0	✓	2	<0.1	<0.1	<0.1	2	✓	4	✓
Meekatharra	52	0	0	✓	13	0	✓	2	0.60	0.60	0.60	0	(1)	15	✓
Mingenew	13	0	0	✓	13	0	✓	2	0.15	0.15	0.15	0	(1)	2	✓
Moora	52	0	0	✓	16	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Morawa	51	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Mt Magnet	51	0	0	✓	13	0	✓	2	0.30	0.30	0.30	0	(1)	2	✓
Mullewa	13	0	0	✓	12	0	✓	2	0.60	0.80	0.70	0	(1)	2	✓
Nabawa	21	0	0	✓	14	0	✓	2	0.75	0.80	0.78	0	(1)	2	✓
New Norcia	13	0	0	✓	9	0	✓	2	0.15	0.20	0.18	0	(1)	2	✓
Nilgern (Ocean Farms)	13	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Northampton	52	0	0	✓	13	0	✓	2	0.65	0.80	0.75	0	(1)	2	✓
Perenjori	13	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Piawaning	26	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	1	✓	2	✓
Port Kalbarri	13	0	0	✓	13	0	✓	2	0.15	0.15	0.15	0	(1)	2	✓
Sandstone	13	0	0	✓	13	0	✓	2	0.45	0.50	0.48	0	(1)	6	✓
Seabird	27	0	0	✓	12	0	✓	2	0.30	0.30	0.30	0	(1)	2	✓
Seaview Park	13	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Sovereign Hills	26	0	0	✓	16	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Three Springs	13	0	0	✓	13	0	✓	1	<0.1	<0.1	<0.1	0	(1)	2	✓
Watheroo	12	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Woodridge	13	0	0	✓	9	0	✓	2	0.25	0.30	0.28	0	(1)	2	✓
Yalgoo	12	0	0	✓	12	0	✓	2	0.25	0.25	0.25	0	(1)	2	✓
Yerecoin	13	0	0	✓	9	0	✓	2	<0.1	0.10	<0.1	1	✓	2	✓
Yuna	13	0	0	✓	13	0	✓	2	0.50	0.80	0.65	0	(1)	2	✓

(1) No samples required in this 12 month period.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 7 Health related variables

Mid West	Nitrate (measured as Nitrogen)					Pesticides		Radiological		Trihalomethanes					Other Health Related	
		Concentration (mg/L)									Concentration (mg/L)					
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Requirement Met
Badgingarra	2	0.2	0.2	0.2	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	0	(1)
Bindoon /Chittering	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.006	0.011	0.009	✓	0	(1)
Bolgart	2	3.3	7.7	5.5	✓	1	✓	1	✓	2	0.002	0.010	0.006	✓	1	✓
Calingiri	5	4.4	4.8	4.6	✓	1	✓	0	(1)	2	0.014	0.016	0.015	✓	1	✓
Carnamah	2	0.2	0.2	0.2	✓	1	✓	0	(1)	2	0.008	0.011	0.010	✓	1	✓
Carnarvon	2	0.7	0.8	0.7	✓	1	✓	1	✓	2	0.003	0.004	0.004	✓	0	(1)
Cervantes	4	3.3	3.6	3.4	✓	1	✓	0	(1)	2	0.011	0.012	0.012	✓	0	(1)
Coomberdale	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.140	0.160	0.150	✓	0	(1)
Coorow	2	0.2	0.2	0.2	✓	1	✓	0	(1)	2	0.005	0.019	0.012	✓	0	(1)
Coral Bay	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	<0.001	0.001	<0.001	✓	0	(1)
Cue	6	11	12	11.5	(2)	1	✓	0	(1)	2	0.002	0.006	0.004	✓	0	(1)
Dandaragan	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.007	0.008	0.008	✓	0	(1)
Denham	2	0.1	0.1	0.1	✓	1	✓	0	(1)	3	0.005	0.140	0.082	✓	1	✓
Dongara/Denison	5	1.9	2.7	2.2	✓	1	✓	1	✓	2	0.005	0.007	0.006	✓	1	✓
Eneabba	5	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.006	0.008	0.007	✓	0	(1)
Exmouth	2	1.8	1.8	1.8	✓	1	✓	0	(1)	2	<0.001	0.001	<0.001	✓	0	(1)
Gascoyne Junction	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.011	0.019	0.015	✓	0	(1)
Geraldton	4	0.5	0.7	0.6	✓	2	✓	1	✓	4	0.006	0.012	0.009	✓	1	✓
Gingin	3	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	<0.001	0.001	<0.001	✓	0	(1)
Greenhead	2	0.8	0.8	0.8	✓	1	✓	0	(1)	2	0.002	0.002	0.002	✓	0	(1)
Guilderton	18	7.2	8.8	7.8	✓	1	✓	0	(1)	2	0.017	0.030	0.024	✓	0	(1)
Horrocks	5	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.014	0.014	0.014	✓	0	(1)
Jurien Bay	4	2.8	3.2	3.1	✓	1	✓	0	(1)	2	0.007	0.010	0.009	✓	0	(1)
Kalbarri	2	0.6	0.7	0.7	✓	1	✓	0	(1)	2	<0.001	0.003	0.002	✓	1	✓
Lancelin	3	0.8	1.2	1	✓	1	✓	0	(1)	2	0.009	0.012	0.011	✓	0	(1)
Latham	2	0.2	0.2	0.2	✓	1	✓	1	✓	2	0.030	0.046	0.038	✓	0	(1)
Ledge Point	5	4.2	4.6	4.4	✓	1	✓	0	(1)	2	0.010	0.018	0.014	✓	0	(1)
Leeman	2	0.9	1	0.9	✓	1	✓	0	(1)	2	0.002	0.003	0.003	✓	0	(1)
Meekatharra	4	12.8	15.6	13.9	(2)	1	✓	1	✓	2	<0.001	0.005	0.003	✓	0	(1)
Mingenew	2	1.2	1.3	1.3	✓	1	✓	0	(1)	2	0.001	0.002	0.002	✓	0	(1)
Moora	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.017	0.019	0.018	✓	0	(1)
Morawa	2	0.1	0.2	0.1	✓	1	✓	1	✓	2	0.002	0.004	0.003	✓	0	(1)
Mt Magnet	7	14.9	17.3	16.1	(2)	1	✓	1	✓	2	0.003	0.006	0.005	✓	0	(1)
Mullewa	2	0.6	0.7	0.6	✓	1	✓	0	(1)	2	0.021	0.031	0.026	✓	1	✓
Nabawa	2	0.7	0.7	0.7	✓	1	✓	0	(1)	2	0.011	0.011	0.011	✓	1	✓
New Norcia	10	10.7	11.9	11.4	(2)	1	✓	1	✓	2	0.006	0.011	0.009	✓	1	✓
Nilgern (Ocean Farms)	2	5.3	5.6	5.5	✓	1	✓	0	(1)	2	0.001	0.002	0.002	✓	0	(1)
Northampton	2	0.6	0.7	0.6	✓	1	✓	0	(1)	2	0.026	0.037	0.032	✓	0	(1)
Perenjori	2	0.2	0.2	0.2	✓	1	✓	0	(1)	2	0.002	0.017	0.010	✓	0	(1)
Piawaning	2	3.2	3.4	3.3	✓	1	✓	0	(1)	2	0.068	0.070	0.069	✓	0	(1)
Port Kalbarri	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.003	0.006	0.005	✓	2	✓
Sandstone	6	12	13.6	12.9	(2)	1	✓	0	(1)	2	0.002	0.002	0.002	✓	0	(1)
Seabird	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.030	0.045	0.038	✓	0	(1)
Seaview Park	5	5	5.3	5.1	✓	1	✓	0	(1)	2	0.002	0.005	0.004	✓	0	(1)
Sovereign Hills	5	1.5	3	2.3	✓	1	✓	0	(1)	2	0.023	0.034	0.029	✓	1	✓
Three Springs	2	0.2	0.2	0.2	✓	1	✓	0	(1)	2	0.002	0.003	0.003	✓	0	(1)
Watheroo	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.100	0.150	0.120	✓	0	(1)
Woodridge	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.086	0.087	0.087	✓	1	✓
Yalgoo	2	15	19	17	(2)	1	✓	0	(1)	2	0.010	0.011	0.011	✓	0	(1)
Yerecoin	6	1.9	2.9	2.3	✓	6	✓	1	✓	2	0.039	0.110	0.075	✓	0	(1)
Yuna	2	0.6	0.7	0.6	✓	1	✓	0	(1)	2	0.019	0.020	0.020	✓	0	(1)

(1) No samples required in this 12 month period. (2) Cue, Meekatharra, Mount Magnet, New Norcia, Sandstone and Yalgoo have been granted an exemption from compliance with the nitrate guideline by the Department of Health. The water supplied is safe for adults and children over the age of 3 months. Carers of infants younger than 3 months should seek advice from the Community Health Nurse regarding the use of alternative water sources for the preparation of bottle feeds. The Water Corporation provides bottled water free of charge for this purpose.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 8 Aesthetic (Non-health related) Variables

Mid West	Alkalinity (as CaCO3)					Aluminium					Chloride					Hardness				
		Concentration (mg/L)					Concentration (mg/L)					Concentration (mg/L)					Concentration (mg/L)			
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met
Badgingarra	2	75	103	89	(1)	2	<0.008	0.01	<0.008	✓	2	220	230	225	✓	2	43	44	44	✓
Bindoon /Chittering	2	62	116	89	(1)	2	<0.008	0.01	<0.008	✓	2	155	160	158	✓	2	50	50	50	✓
Bolgart	2	42	60	51	(1)	2	0.01	0.012	0.011	✓	2	260	400	330	(2)	2	130	180	155	✓
Calingiri	5	26	34	30	(1)	5	<0.008	<0.008	<0.008	✓	5	385	435	411	(2)	5	150	160	154	✓
Carnamah	2	11	13	12	(1)	2	<0.008	<0.008	<0.008	✓	2	415	430	423	(2)	2	140	140	140	✓
Carnarvon	2	121	125	123	(1)	2	<0.008	<0.008	<0.008	✓	2	180	190	185	✓	2	200	200	200	✓
Cervantes	4	274	289	282	(1)	4	<0.008	0.012	<0.008	✓	4	265	285	276	(2)	4	300	320	308	(3)
Coomberdale	2	216	219	218	(1)	2	0.02	0.025	0.023	✓	2	185	185	185	✓	2	240	260	250	(3)
Coorow	2	12	25	18	(1)	2	<0.008	<0.008	<0.008	✓	2	425	445	435	(2)	2	130	150	140	✓
Coral Bay	3	80	99	89	(1)	2	<0.008	<0.008	<0.008	✓	3	42	45	43	✓	2	70	83	75	✓
Cue	2	74	88	81	(1)	2	<0.008	0.01	<0.008	✓	2	285	285	285	(2)	2	180	190	185	✓
Dandaragan	2	108	121	115	(1)	2	<0.008	0.01	<0.008	✓	2	245	245	245	✓	2	89	94	92	✓
Denham	2	20	21	20	(1)	2	0.01	0.03	0.02	✓	2	175	180	178	✓	2	67	68	68	✓
Dongara/Denison	5	109	122	117	(1)	4	<0.008	<0.008	<0.008	✓	6	340	355	346	(2)	5	100	110	108	✓
Eneabba	5	17	22	20	(1)	5	<0.008	<0.008	<0.008	✓	5	325	330	328	(2)	5	93	100	97	✓
Exmouth	2	287	307	297	(1)	2	<0.008	<0.008	<0.008	✓	2	250	280	265	(2)	2	330	340	335	(3)
Gascoyne Junction	2	22	27	25	(1)	2	<0.008	<0.008	<0.008	✓	2	145	180	163	✓	2	86	88	87	✓
Geraldton	4	71	80	76	(1)	4	<0.008	0.01	<0.008	✓	4	370	400	386	(2)	4	110	130	118	✓
Gingin	3	46	55	50	(1)	3	<0.008	0.008	<0.008	✓	3	100	105	102	✓	3	27	32	30	✓
Greenhead	2	25	27	26	(1)	2	<0.008	<0.008	<0.008	✓	2	280	285	283	(2)	2	100	100	100	✓
Guilderton	5	227	247	234	(1)	5	0.008	0.014	0.011	✓	5	300	390	347	(2)	5	290	330	306	(3)
Horrocks	5	109	135	118	(1)	5	<0.008	<0.008	<0.008	✓	5	580	605	594	(2)	5	130	140	134	✓
Jurien Bay	4	283	299	292	(1)	4	<0.008	0.012	<0.008	✓	4	215	495	300	(2)	4	290	400	325	(3)
Kalbarri	2	9	9	9	(1)	2	<0.008	0.01	<0.008	✓	2	200	200	200	✓	2	67	67	67	✓
Lancelin	3	244	251	247	(1)	3	<0.008	0.014	0.009	✓	3	200	210	205	✓	3	270	280	273	(3)
Latham	2	49	50	50	(1)	2	0.01	0.012	0.011	✓	2	305	315	310	(2)	2	83	110	97	✓
Ledge Point	5	241	253	248	(1)	5	0.01	0.014	0.012	✓	5	170	180	175	✓	5	260	260	260	(3)
Leeman	2	27	29	28	(1)	2	<0.008	<0.008	<0.008	✓	2	285	295	290	(2)	2	100	100	100	✓
Meekatharra	4	189	202	195	(1)	4	<0.008	0.012	<0.008	✓	4	295	310	301	(2)	4	280	290	283	(3)
Mingenew	2	20	25	22	(1)	2	<0.008	<0.008	<0.008	✓	2	340	345	343	(2)	2	82	84	83	✓
Moora	2	26	36	31	(1)	2	<0.008	<0.008	<0.008	✓	2	240	240	240	✓	2	60	64	62	✓
Morawa	2	25	37	31	(1)	2	<0.008	<0.008	<0.008	✓	2	290	305	298	(2)	2	70	82	76	✓
Mt Magnet	3	222	242	232	(1)	2	<0.008	0.01	<0.008	✓	3	195	280	243	✓	3	240	280	260	(3)
Mullewa	2	85	88	87	(1)	2	0.014	0.016	0.015	✓	2	355	390	373	(2)	2	120	130	125	✓
Nabawa	2	74	79	77	(1)	2	0.016	0.025	0.021	✓	2	380	385	383	(2)	2	110	120	115	✓
New Norcia	6	34	38	36	(1)	2	<0.008	<0.008	<0.008	✓	6	540	630	570	(2)	6	210	250	228	(3)
Nilgern (Ocean Farms)	2	275	284	280	(1)	2	0.008	0.012	0.01	✓	2	140	145	143	✓	2	250	260	255	(3)
Northampton	2	84	86	85	(1)	2	0.014	0.014	0.014	✓	2	380	385	383	(2)	2	120	120	120	✓
Perenjori	2	30	33	32	(1)	2	<0.008	<0.008	<0.008	✓	2	285	300	293	(2)	2	73	80	77	✓
Piawaning	2	47	52	50	(1)	2	<0.008	0.01	<0.008	✓	2	135	310	223	✓	2	100	130	115	✓
Port Kalbarri	2	78	83	81	(1)	2	<0.008	<0.008	<0.008	✓	2	340	345	343	(2)	2	110	110	110	✓
Sandstone	2	111	113	112	(1)	2	<0.008	0.01	<0.008	✓	2	325	330	328	(2)	2	300	310	305	(3)
Seabird	2	96	104	100	(1)	2	0.008	0.01	0.009	✓	2	205	210	208	✓	2	93	93	93	✓
Seaview Park	5	208	225	214	(1)	5	<0.008	0.014	0.009	✓	5	90	95	93	✓	5	180	200	190	✓
Sovereign Hills	5	171	242	209	(1)	5	<0.008	0.012	<0.008	✓	5	180	250	209	✓	5	230	260	246	(3)
Three Springs	2	21	21	21	(1)	2	<0.008	<0.008	<0.008	✓	2	365	370	368	(2)	2	80	89	85	✓
Watheroo	4	215	229	221	(1)	4	<0.008	0.014	0.01	✓	4	180	185	181	✓	4	230	240	238	(3)
Woodridge	2	69	70	70	(1)	2	0.045	0.055	0.05	✓	2	180	185	183	✓	2	48	51	50	✓
Yalgoo	2	209	217	213	(1)	2	<0.008	0.012	<0.008	✓	2	275	300	288	(2)	2	300	320	310	(3)
Yerecoin	2	41	47	44	(1)	2	0.012	0.012	0.012	✓	2	170	185	178	✓	2	120	120	120	✓
Yuna	2	75	78	77	(1)	2	0.02	0.03	0.025	✓	2	380	385	383	(2)	2	110	110	110	✓

(1) No guideline value available as per ADWG 2011. (2) Elevated chloride is characteristic of the source supplying this locality. (3) Elevated hardness is characteristic of the source supplying this locality.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 9 Aesthetic (Non-health related) Variables

Mid West	Iron					Manganese					pH					Silica				
		Concentration (mg/L)					Concentration (mg/L)					Value (pH units)					Concentration (mg/L)			
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met
Badgingarra	2	0.004	0.010	0.007	✓	2	0.003	0.003	0.003	✓	2	6.63	6.77	6.70	✓	2	43	46	45	✓
Bindoon /Chittering	2	0.020	0.035	0.028	✓	2	<0.002	<0.002	<0.002	✓	2	7.30	7.30	7.30	✓	2	36	38	37	✓
Bolgart	2	0.015	0.040	0.028	✓	2	<0.002	<0.002	<0.002	✓	2	6.89	7.15	7.02	✓	2	43	49	46	✓
Calingiri	5	0.020	0.045	0.034	✓	5	<0.002	<0.002	<0.002	✓	5	6.53	6.98	6.73	✓	5	18	19	19	✓
Carnamah	2	0.025	0.120	0.073	✓	2	<0.002	0.005	0.003	✓	2	6.78	6.79	6.79	✓	2	24	25	25	✓
Carnarvon	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.74	7.86	7.80	✓	2	44	45	45	✓
Cervantes	4	<0.003	0.006	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	7.63	7.78	7.72	✓	4	13	14	13	✓
Coomberdale	2	0.015	0.080	0.048	✓	2	<0.002	0.006	0.003	✓	2	8.53	8.63	8.58	(1)	2	11	17	14	✓
Coorow	2	0.035	0.040	0.038	✓	2	<0.002	<0.002	<0.002	✓	2	6.92	7.25	7.09	✓	2	23	26	25	✓
Coral Bay	2	0.008	0.010	0.009	✓	2	<0.002	0.003	<0.002	✓	2	7.30	7.56	7.47	✓	3	0.3	0.4	0.3	✓
Cue	2	<0.003	0.008	0.004	✓	2	<0.002	<0.002	<0.002	✓	2	7.76	8.17	7.97	✓	2	80	85	83	(2)
Dandaragan	2	0.025	0.060	0.043	✓	2	<0.002	<0.002	<0.002	✓	2	6.90	7.20	7.05	✓	2	42	46	44	✓
Denham	2	0.060	0.100	0.080	✓	2	<0.002	<0.002	<0.002	✓	2	7.54	7.64	7.59	✓	2	2	2.3	2	✓
Dongara/Denison	5	0.006	0.015	0.009	✓	5	<0.002	<0.002	<0.002	✓	5	6.93	7.14	7.04	✓	5	30	33	31	✓
Eneabba	5	0.010	0.030	0.019	✓	5	<0.002	<0.002	<0.002	✓	5	7.02	7.43	7.18	✓	5	45	47	46	✓
Exmouth	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.71	7.71	7.71	✓	2	15	16	16	✓
Gascoyne Junction	2	<0.003	<0.003	<0.003	✓	2	<0.002	0.003	<0.002	✓	2	6.76	7.07	6.92	✓	2	3.5	3.7	4	✓
Geraldton	4	0.008	0.045	0.022	✓	4	<0.002	<0.002	<0.002	✓	4	6.76	7.25	7.07	✓	4	23	25	24	✓
Gingin	3	0.045	0.050	0.047	✓	3	<0.002	<0.002	<0.002	✓	3	7.25	7.52	7.40	✓	3	29	30	29	✓
Greenhead	2	0.015	0.020	0.018	✓	2	<0.002	<0.002	<0.002	✓	2	7.13	7.35	7.24	✓	2	24	26	25	✓
Guilderton	5	<0.003	<0.003	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.70	7.90	7.83	✓	5	9	9.5	9	✓
Horrocks	5	0.015	0.260	0.083	✓	5	0.002	0.025	0.012	✓	5	7.02	7.48	7.21	✓	5	14	17	16	✓
Jurien Bay	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	7.31	7.66	7.50	✓	4	14	15	15	✓
Kalbarri	2	0.004	0.008	0.006	✓	2	<0.002	<0.002	<0.002	✓	2	6.47	6.76	6.62	✓	2	45	45	45	✓
Lancelin	3	<0.003	<0.003	<0.003	✓	3	<0.002	<0.002	<0.002	✓	3	7.67	7.88	7.80	✓	3	15	16	16	✓
Latham	2	0.045	0.060	0.053	✓	2	<0.002	<0.002	<0.002	✓	2	9.04	9.17	9.11	(1)	2	42	47	45	✓
Ledge Point	5	<0.003	0.006	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.56	8.01	7.74	✓	5	14	16	15	✓
Leeman	2	0.015	0.025	0.020	✓	2	<0.002	<0.002	<0.002	✓	2	7.38	7.57	7.48	✓	2	22	27	25	✓
Meekatharra	4	<0.003	0.004	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	8.07	8.22	8.16	✓	4	75	80	79	✓
Mingenew	2	0.025	0.025	0.025	✓	2	<0.002	<0.002	<0.002	✓	2	7.04	7.21	7.13	✓	2	60	60	60	✓
Moora	2	0.030	0.060	0.045	✓	2	<0.002	<0.002	<0.002	✓	2	6.86	7.08	6.97	✓	2	24	25	25	✓
Morawa	2	0.030	0.060	0.045	✓	2	<0.002	0.010	0.005	✓	2	6.68	7.70	7.19	✓	2	46	48	47	✓
Mt Magnet	3	<0.003	<0.003	<0.003	✓	3	<0.002	<0.002	<0.002	✓	3	8.02	8.21	8.11	✓	3	75	80	77	✓
Mullewa	2	0.030	0.040	0.035	✓	2	<0.002	<0.002	<0.002	✓	2	7.98	8.05	8.02	✓	2	20	24	22	✓
Nabawa	2	0.020	0.030	0.025	✓	2	<0.002	<0.002	<0.002	✓	2	7.71	8.02	7.87	✓	2	23	23	23	✓
New Norcia	6	<0.003	0.030	0.015	✓	6	<0.002	<0.002	<0.002	✓	6	6.28	6.69	6.44	(1)	6	44	46	45	✓
Nilgern (Ocean Farms)	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.42	7.52	7.47	✓	2	21	21	21	✓
Northampton	2	0.015	0.020	0.018	✓	2	<0.002	<0.002	<0.002	✓	2	8.33	8.47	8.40	✓	2	22	24	23	✓
Perenjori	2	0.015	0.120	0.068	✓	2	<0.002	<0.002	<0.002	✓	2	7.07	7.37	7.22	✓	2	45	47	46	✓
Piawaning	2	0.010	0.240	0.125	✓	2	<0.002	<0.002	<0.002	✓	2	7.15	7.32	7.24	✓	2	18	18	18	✓
Port Kalbarri	2	0.008	0.015	0.012	✓	2	<0.002	0.003	<0.002	✓	6	6.95	7.48	7.30	✓	2	45	46	46	✓
Sandstone	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.18	7.35	7.27	✓	2	37	38	38	✓
Seabird	2	0.010	0.040	0.025	✓	2	<0.002	<0.002	<0.002	✓	2	7.73	7.90	7.82	✓	2	18	18	18	✓
Seaview Park	5	<0.003	<0.003	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.81	7.94	7.88	✓	5	17	18	17	✓
Sovereign Hills	5	<0.003	0.004	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.86	8.01	7.94	✓	5	19	20	20	✓
Three Springs	2	0.045	0.100	0.073	✓	2	0.004	0.008	0.006	✓	2	7.21	7.34	7.28	✓	2	55	55	55	✓
Watheroo	4	0.006	0.010	0.008	✓	4	<0.002	<0.002	<0.002	✓	4	7.35	7.52	7.42	✓	4	13	14	14	✓
Woodridge	2	0.010	0.020	0.015	✓	2	0.008	0.010	0.009	✓	2	7.51	7.70	7.61	✓	2	25	31	28	✓
Yalgoo	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.75	7.95	7.85	✓	2	80	85	83	(2)
Yerecoin	6	0.015	0.200	0.085	✓	2	<0.002	0.003	<0.002	✓	2	6.86	6.94	6.90	✓	2	17	19	18	✓
Yuna	2	0.060	0.120	0.090	✓	2	0.002	0.007	0.005	✓	2	7.69	7.90	7.80	✓	2	22	24	23	✓

(1) High pH is characteristic of the source supplying this locality. (2) Elevated silica is characteristic of the souce supplying this locality.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 10 Aesthetic (Non-health related) Variables

Mid West	Sodium					TDS					True Colour					Turbidity				
	Samples	Concentration (mg/L)			Guideline	Samples	Concentration (mg/L)			Guideline	Samples	Value (TCU)			Guideline	Samples	Value (NTU)			Guideline
Locality	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met
Badgingarra	2	155	165	160	✓	2	537	589	563	✓	2	<1	<1	<1	✓	2	0.3	0.3	0.3	✓
Bindoon /Chittering	2	98	120	109	✓	2	398	471	435	✓	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Bolgart	2	145	210	178	✓	2	591	822	707	(2)	2	<1	<1	<1	✓	2	0.4	0.7	0.6	✓
Calingiri	5	215	245	229	(1)	5	760	827	793	(2)	5	<1	<1	<1	✓	5	<0.1	0.3	0.2	✓
Carnamah	2	240	250	245	(1)	2	789	822	806	(2)	2	<1	<1	<1	✓	2	<0.1	0.4	0.2	✓
Carnarvon	2	85	93	89	✓	2	579	592	586	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Cervantes	4	140	155	149	✓	4	867	914	886	(2)	4	<1	<1	<1	✓	4	<0.1	0.4	<0.1	✓
Coomberdale	2	83	86	85	✓	2	611	611	611	(2)	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Coorow	2	240	245	243	(1)	2	797	840	819	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Coral Bay	3	26	30	28	✓	2	184	215	197	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Cue	2	175	175	175	✓	2	814	835	825	(2)	2	<1	<1	<1	✓	2	0.1	0.1	0.1	✓
Dandaragan	2	155	155	155	✓	2	616	627	622	(2)	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Denham	2	99	100	100	✓	2	365	373	369	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Dongara/Denison	6	230	250	236	(1)	5	825	850	833	(2)	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
Eneabba	5	165	190	178	✓	5	621	653	635	(2)	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
Exmouth	2	130	140	135	✓	2	836	898	867	(2)	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Gascoyne Junction	2	71	100	86	✓	2	328	388	358	✓	2	<1	<1	<1	✓	2	<0.1	0.3	0.2	✓
Geraldton	4	225	250	241	(1)	4	778	850	827	(2)	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Gingin	3	65	68	66	✓	3	272	283	279	✓	3	<1	<1	<1	✓	3	0.1	0.4	0.2	✓
Greenhead	2	155	160	158	✓	2	559	571	565	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Guilderton	5	185	220	197	(1)	5	904	1074	981	(2)	5	<1	<1	<1	✓	5	<0.1	<0.1	<0.1	✓
Horrocks	5	380	410	396	(1)	5	1223	1286	1268	(2)	5	<1	<1	<1	✓	5	<0.1	0.8	0.4	✓
Jurien Bay	4	115	260	159	✓	4	780	1272	932	(2)	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Kalbarri	2	100	100	100	✓	2	403	406	405	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Lancelin	3	97	105	100	✓	3	684	710	697	(2)	3	<1	<1	<1	✓	3	<0.1	<0.1	<0.1	✓
Latham	2	175	190	183	(1)	2	656	691	674	(2)	2	<1	1	<1	✓	2	0.2	0.2	0.2	✓
Ledge Point	5	105	105	105	✓	5	691	711	701	(2)	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
Leeman	2	155	155	155	✓	2	566	580	573	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Meekatharra	4	200	205	204	(1)	4	1062	1071	1066	(2)	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓
Mingenew	2	205	205	205	(1)	2	696	699	698	(2)	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Moora	2	130	135	133	✓	2	488	490	489	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Morawa	2	180	180	180	✓	2	617	649	633	(2)	2	<1	<1	<1	✓	2	0.1	0.4	0.3	✓
Mt Magnet	3	145	180	163	✓	3	871	994	941	(2)	3	<1	<1	<1	✓	3	<0.1	<0.1	<0.1	✓
Mullewa	2	220	245	233	(1)	2	783	847	815	(2)	2	<1	<1	<1	✓	2	0.1	0.3	0.2	✓
Nabawa	2	245	255	250	(1)	2	824	840	832	(2)	2	<1	<1	<1	✓	2	0.2	0.4	0.3	✓
New Norcia	6	285	355	317	(1)	6	1067	1239	1134	(2)	6	<1	<1	<1	✓	6	0.2	0.7	0.4	✓
Nilgern (Ocean Farms)	2	91	93	92	✓	2	668	689	679	(2)	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Northampton	2	245	250	248	(1)	2	839	844	842	(2)	2	<1	<1	<1	✓	2	0.1	0.1	0.1	✓
Perenjori	2	180	180	180	✓	2	617	643	630	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Piawaning	2	75	170	123	✓	2	369	650	510	✓	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Port Kalbarri	2	205	210	208	(1)	2	766	766	766	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Sandstone	2	180	185	183	(1)	2	941	948	945	(2)	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Seabird	2	125	130	128	✓	2	529	532	531	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Seaview Park	5	61	68	63	✓	5	489	511	499	✓	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
Sovereign Hills	5	99	125	110	✓	5	662	694	678	(2)	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
Three Springs	2	210	215	213	(1)	2	725	737	731	(2)	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Watheroo	4	86	88	87	✓	4	594	613	603	(2)	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Woodridge	2	125	130	128	✓	2	464	480	472	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Yalgoo	2	160	170	165	✓	2	947	1018	983	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Yerecoin	2	88	90	89	✓	2	425	432	429	✓	2	<1	<1	<1	✓	2	0.1	0.6	0.4	✓
Yuna	2	240	245	243	(1)	2	815	824	820	(2)	2	<1	<1	<1	✓	2	0.5	0.7	0.6	✓

(1) Elevated Sodium is characteristic of the source supplying this locality (2) Elevated TDS is characteristic of the source supplying this locality.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 11 Health related variables

Goldfields and Agricultural	E. coli				Thermophilic Naegleria			Fluoride				Hydrocarbons		Metals	
									Concentration (mg/L)						
Locality	Samples Taken	Samples with >0 cfu/100mL	Max cfu/100mL	Requirement Met	Samples Taken	Samples with Thermophilic Naegleria	Requirement Met	Samples Taken	Min	Max	Mean	Samples Taken	Guideline Met	Samples Taken	Guideline Met
Ardath	12	0	0	✓	12	0	✓	2	0.75	0.80	0.78	0	(1)	2	✓
Avon Hills	48	0	0	✓	48	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Ballidu	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	0	(1)	2	✓
Beacon	12	0	0	✓	12	0	✓	2	0.65	0.75	0.70	0	(1)	2	✓
Bencubbin	12	0	0	✓	12	0	✓	2	0.80	0.85	0.83	1	✓	2	✓
Beverley	52	0	0	✓	26	0	✓	2	0.70	0.95	0.83	1	✓	2	✓
Bind Bindi	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Broad Arrow	12	0	0	✓	12	0	✓	2	0.90	0.95	0.93	0	(1)	2	✓
Bruce Rock	52	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Bullfinch	12	0	0	✓	12	0	✓	2	0.70	0.90	0.80	1	✓	2	✓
Buntine	12	0	0	✓	12	0	✓	2	0.80	0.85	0.83	1	✓	2	✓
Cadoux	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Coolgardie	52	0	0	✓	26	0	✓	2	0.80	0.95	0.88	0	(1)	2	✓
Corrigin	52	0	0	✓	24	0	✓	2	0.75	0.85	0.80	1	✓	2	✓
Cunderdin	52	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Dalwallinu	52	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Dowerin	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Goomalling	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Greater Bodallin	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	0	(1)	2	✓
Greater Burracoppin	35	0	0	✓	35	0	✓	2	0.75	0.80	0.78	0	(1)	2	✓
Greater Doolakine	36	0	0	✓	36	0	✓	2	0.75	0.80	0.78	0	(1)	2	✓
Greenhills	12	0	0	✓	12	0	✓	2	0.70	0.90	0.80	2	✓	2	✓
Jennacubbine	12	0	0	✓	12	0	✓	2	0.75	0.85	0.80	1	✓	2	✓
Kalannie	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Kalgoorlie	149	0	0	✓	128	0	✓	54	0.75	1.00	0.88	0	(1)	4	✓
Kambalda	53	0	0	✓	53	0	✓	2	0.90	0.90	0.90	0	(1)	2	✓
Kellerberrin	52	0	0	✓	28	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Koolyanobbing	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Koorda	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Kununoppin	12	0	0	✓	12	0	✓	2	0.75	0.95	0.85	1	✓	2	✓
Laverton	12	0	0	✓	8	0	✓	2	1.10	1.20	1.15	0	(1)	6	✓
Leonora	51	0	0	✓	16	0	✓	2	0.50	0.55	0.53	0	(1)	2	✓
Marvel Loch	11	0	0	✓	11	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Meckering	39	0	0	✓	39	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Menzies	12	0	0	✓	8	0	✓	2	0.85	0.90	0.88	0	(1)	5	✓
Merredin	52	0	0	✓	52	0	✓	52	0.70	0.95	0.84	0	(1)	2	✓
Miling	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Mukinbudin	12	0	0	✓	12	0	✓	2	0.65	0.80	0.73	1	✓	2	✓
Muntadgin	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Narembeen	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	1	✓	2	✓
Norseman	50	0	0	✓	24	0	✓	2	0.90	0.95	0.93	1	✓	2	✓
Northam	65	0	0	✓	65	0	✓	52	0.70	1.00	0.84	2	✓	2	✓
Nungarin	12	0	0	✓	12	0	✓	2	0.75	0.95	0.85	1	✓	2	✓
Ora Banda	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Pithara	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Quairading	52	0	0	✓	26	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Seabrook	12	0	0	✓	12	0	✓	2	0.75	0.75	0.75	2	✓	2	✓
Shackleton	12	0	0	✓	12	0	✓	2	0.75	0.85	0.80	0	(1)	2	✓
Southern Cross	51	0	0	✓	39	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Spencers Brook	12	0	0	✓	12	0	✓	2	0.75	0.85	0.80	2	✓	2	✓
Tammin	24	0	0	✓	24	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Toodyay	52	0	0	✓	26	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Trayning	12	0	0	✓	12	0	✓	2	0.75	0.95	0.85	1	✓	2	✓
Warralakin	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Westonia	12	0	0	✓	12	0	✓	2	0.80	0.90	0.85	1	✓	2	✓
Wiluna	13	0	0	✓	13	0	✓	2	0.25	0.25	0.25	1	✓	2	✓
Wongan Hills	52	0	0	✓	26	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
Wubin	12	0	0	✓	12	0	✓	2	0.80	0.85	0.83	1	✓	2	✓
Wyalkatchem	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	1	✓	2	✓
York	73	0	0	✓	73	0	✓	52	0.70	1.00	0.84	1	✓	2	✓

(1) No samples required in this 12 month period.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 12 Health related variables

Goldfields and Agricultural	Nitrate (measured as Nitrogen)					Pesticides		Radiological		Trihalomethanes					Other Health Related	
Locality	Samples Taken	Concentration (mg/L) Min	Max	Mean	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Concentration (mg/L) Min	Max	Mean	Guideline Met	Samples Taken	Requirement Met
Ardath	2	0.1	0.5	0.3	✓	1	✓	0	(1)	2	0.005	0.007	0.006	✓	0	(1)
Avon Hills	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.009	0.013	0.011	✓	0	(1)
Ballidu	2	0.3	0.4	0.3	✓	1	✓	0	(1)	2	0.010	0.037	0.024	✓	0	(1)
Beacon	2	1	1.1	1.1	✓	1	✓	0	(1)	2	0.024	0.041	0.033	✓	0	(1)
Bencubbin	2	0.1	0.2	0.1	✓	5	✓	0	(1)	2	0.006	0.007	0.007	✓	0	(1)
Beverley	2	0.3	0.3	0.3	✓	1	✓	0	(1)	2	0.007	0.008	0.008	✓	0	(1)
Bind Bindi	2	0.8	1.5	1.2	✓	1	✓	0	(1)	2	0.005	0.008	0.007	✓	0	(1)
Broad Arrow	2	0.5	0.9	0.7	✓	1	✓	0	(1)	2	0.056	0.070	0.063	✓	0	(1)
Bruce Rock	2	0.9	1.1	1	✓	1	✓	0	(1)	2	0.024	0.031	0.028	✓	0	(1)
Bullfinch	2	0.3	1.1	0.7	✓	1	✓	0	(1)	2	0.001	0.006	0.004	✓	0	(1)
Buntine	2	0.9	1.6	1.2	✓	1	✓	0	(1)	2	0.067	0.068	0.068	✓	0	(1)
Cadoux	2	0.3	0.5	0.4	✓	1	✓	0	(1)	2	0.006	0.007	0.007	✓	0	(1)
Coolgardie	2	0.2	0.9	0.6	✓	1	✓	0	(1)	2	0.012	0.018	0.015	✓	0	(1)
Corrigin	2	0.1	0.3	0.2	✓	1	✓	0	(1)	2	0.001	0.005	0.003	✓	0	(1)
Cunderdin	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.002	0.005	0.004	✓	0	(1)
Dalwallinu	2	0.5	0.8	0.7	✓	1	✓	0	(1)	2	0.003	0.005	0.004	✓	0	(1)
Dowerin	2	0.2	0.7	0.5	✓	1	✓	0	(1)	2	0.004	0.007	0.006	✓	0	(1)
Goomalling	2	0.1	0.2	0.2	✓	1	✓	0	(1)	2	0.005	0.005	0.005	✓	0	(1)
Greater Bodallin	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.003	0.004	0.004	✓	0	(1)
Greater Burracoppin	2	0.1	0.3	0.2	✓	1	✓	0	(1)	2	0.001	0.002	0.002	✓	0	(1)
Greater Doolakine	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.006	0.008	0.007	✓	0	(1)
Greenhills	2	0.3	0.6	0.4	✓	1	✓	0	(1)	2	0.007	0.011	0.009	✓	0	(1)
Jennacubbine	2	0.3	0.8	0.5	✓	1	✓	1	✓	2	0.004	0.006	0.005	✓	0	(1)
Kalannie	2	0.8	0.8	0.8	✓	1	✓	0	(1)	2	0.020	0.035	0.028	✓	0	(1)
Kalgoorlie	4	0.2	1	0.6	✓	2	✓	0	(1)	4	0.042	0.049	0.045	✓	0	(1)
Kambalda	2	0.2	0.8	0.5	✓	1	✓	1	✓	2	0.040	0.051	0.046	✓	1	✓
Kellerberrin	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.007	0.009	0.008	✓	0	(1)
Koolyanobbing	2	0.2	0.9	0.5	✓	1	✓	0	(1)	2	0.003	0.021	0.012	✓	0	(1)
Koorda	2	0.4	0.8	0.6	✓	1	✓	0	(1)	2	0.003	0.005	0.004	✓	0	(1)
Kununoppin	2	0.3	0.5	0.4	✓	1	✓	0	(1)	2	0.005	0.008	0.007	✓	0	(1)
Laverton	10	6.2	8.3	7.5	✓	1	✓	0	(1)	2	0.037	0.058	0.048	✓	0	(1)
Leonora	10	6.4	7.4	6.9	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	0	(1)
Marvel Loch	2	0.2	0.9	0.6	✓	1	✓	0	(1)	2	0.013	0.020	0.017	✓	0	(1)
Meckering	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.006	0.009	0.008	✓	0	(1)
Menzies	5	6.5	11.3	8.9	(2)	1	✓	0	(1)	2	0.005	0.035	0.020	✓	0	(1)
Merredin	2	0.2	0.4	0.3	✓	1	✓	0	(1)	2	0.001	0.003	0.002	✓	0	(1)
Miling	2	0.8	1.8	1.3	✓	1	✓	0	(1)	2	0.003	0.009	0.006	✓	0	(1)
Mukinbudin	2	0.2	0.6	0.4	✓	1	✓	0	(1)	2	0.002	0.005	0.004	✓	0	(1)
Muntadgin	2	0.2	1.2	0.7	✓	1	✓	0	(1)	2	0.003	0.004	0.004	✓	0	(1)
Narembeen	2	0.1	0.2	0.1	✓	1	✓	0	(1)	2	0.002	0.007	0.005	✓	0	(1)
Norseman	2	0.4	0.6	0.5	✓	1	✓	0	(1)	2	0.045	0.059	0.052	✓	1	✓
Northam	2	0.4	0.6	0.5	✓	1	✓	1	✓	2	0.001	0.007	0.004	✓	1	✓
Nungarin	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.002	0.007	0.005	✓	0	(1)
Ora Banda	2	0.3	1	0.6	✓	1	✓	0	(1)	2	0.029	0.082	0.056	✓	0	(1)
Pithara	2	0.2	0.5	0.4	✓	1	✓	0	(1)	2	0.003	0.008	0.006	✓	0	(1)
Quairading	2	0.8	0.9	0.8	✓	1	✓	0	(1)	2	0.005	0.024	0.015	✓	0	(1)
Seabrook	2	0.1	0.4	0.2	✓	1	✓	1	✓	2	0.008	0.010	0.009	✓	0	(1)
Shackleton	2	0.1	0.7	0.4	✓	1	✓	0	(1)	2	0.006	0.010	0.008	✓	0	(1)
Southern Cross	2	0.1	0.8	0.5	✓	1	✓	0	(1)	2	0.002	0.002	0.002	✓	0	(1)
Spencers Brook	2	0.1	0.1	0.1	✓	1	✓	1	✓	2	0.008	0.010	0.009	✓	0	(1)
Tammin	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.005	0.006	0.006	✓	0	(1)
Toodyay	2	0.3	0.4	0.3	✓	1	✓	0	(1)	2	0.006	0.009	0.008	✓	0	(1)
Trayning	2	0.2	0.4	0.3	✓	1	✓	0	(1)	2	0.004	0.007	0.006	✓	0	(1)
Warralakin	2	0.8	0.9	0.8	✓	1	✓	0	(1)	2	0.003	0.006	0.005	✓	0	(1)
Westonia	2	0.6	1	0.8	✓	1	✓	0	(1)	2	0.002	0.004	0.003	✓	0	(1)
Wiluna	6	7.8	15.4	10.4	(2)	1	✓	0	(1)	2	0.001	0.003	0.002	✓	0	(1)
Wongan Hills	2	0.1	0.8	0.4	✓	1	✓	0	(1)	2	0.001	0.032	0.017	✓	0	(1)
Wubin	2	0.7	1.4	1.1	✓	1	✓	0	(1)	2	0.049	0.050	0.050	✓	0	(1)
Wyalkatchem	2	<0.05	0.3	0.1	✓	1	✓	0	(1)	2	0.003	0.006	0.005	✓	0	(1)
York	2	0.1	0.2	0.1	✓	1	✓	0	(1)	2	0.006	0.011	0.009	✓	0	(1)

(1) No samples required in this 12 month period. (2) Menzies and Wiluna have been granted an exemption from compliance with the nitrate guideline by the Department of Health. The water supplied is safe for adults and children over the age of 3 months. Carers of infants younger than 3 months should seek advice from the Community Health Nurse regarding the use of alternative water sources for the preparation of bottle feeds. The Water Corporation provides bottled water free of charge for this purpose.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 13 Aesthetic (Non-health related) Variables

Goldfields and Agricultural	Alkalinity (as CaCO3)					Aluminium					Chloride					Hardness				
		Concentration (mg/L)					Concentration (mg/L)					Concentration (mg/L)					Concentration (mg/L)			
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met
Ardath	2	74	76	75.0	(1)	2	0.030	0.080	0.055	✓	2	145	150	147.5	✓	2	82	88	85	✓
Avon Hills	2	75	78	76.5	(1)	2	0.065	0.085	0.075	✓	2	125	150	137.5	✓	2	79	83	81	✓
Ballidu	2	81	83	82.0	(1)	2	0.030	0.075	0.053	✓	2	145	150	147.5	✓	2	82	92	87	✓
Beacon	2	74	78	76.0	(1)	2	0.020	0.040	0.030	✓	2	120	150	135.0	✓	2	76	87	82	✓
Bencubbin	2	80	90	85.0	(1)	2	0.014	0.020	0.017	✓	2	150	150	150.0	✓	2	87	97	92	✓
Beverley	2	79	81	80.0	(1)	2	0.035	0.075	0.055	✓	2	135	145	140.0	✓	2	86	87	87	✓
Bind Bindi	2	72	73	72.5	(1)	2	0.025	0.040	0.033	✓	2	145	150	147.5	✓	2	86	91	89	✓
Broad Arrow	2	65	72	68.5	(1)	2	0.040	0.060	0.050	✓	2	145	155	150.0	✓	2	91	93	92	✓
Bruce Rock	2	67	71	69.0	(1)	2	0.055	0.060	0.058	✓	2	130	155	142.5	✓	2	80	88	84	✓
Bullfinch	2	69	73	71.0	(1)	1	0.040	0.040	0.040	✓	2	130	160	145.0	✓	2	75	85	80	✓
Buntine	2	79	84	81.5	(1)	2	0.030	0.055	0.043	✓	2	140	155	147.5	✓	2	93	96	95	✓
Cadoux	2	80	80	80.0	(1)	2	0.035	0.100	0.068	✓	2	135	140	137.5	✓	2	81	87	84	✓
Coolgardie	2	69	74	71.5	(1)	2	0.040	0.055	0.048	✓	2	140	160	150.0	✓	2	86	90	88	✓
Corrigin	2	79	79	79.0	(1)	2	0.025	0.065	0.045	✓	2	145	150	147.5	✓	2	83	90	87	✓
Cunderdin	2	78	79	78.5	(1)	2	0.050	0.110	0.080	✓	2	140	145	142.5	✓	2	80	84	82	✓
Dalwallinu	2	78	79	78.5	(1)	2	0.035	0.050	0.043	✓	2	125	155	140.0	✓	2	87	93	90	✓
Dowerin	2	76	78	77.0	(1)	2	0.055	0.060	0.058	✓	2	130	150	140.0	✓	2	79	91	85	✓
Goomalling	2	76	79	77.5	(1)	2	0.080	0.090	0.085	✓	2	130	150	140.0	✓	2	79	85	82	✓
Greater Bodallin	2	78	82	80.0	(1)	2	0.045	0.095	0.070	✓	2	140	140	140.0	✓	2	81	84	83	✓
Greater Burracoppin	2	80	81	80.5	(1)	2	0.045	0.100	0.073	✓	2	135	145	140.0	✓	2	81	84	83	✓
Greater Doolakine	2	80	82	81.0	(1)	2	0.060	0.100	0.080	✓	2	135	140	137.5	✓	2	82	82	82	✓
Greenhills	2	79	81	80.0	(1)	2	0.050	0.110	0.080	✓	2	135	145	140.0	✓	2	83	86	85	✓
Jennacubbine	2	73	77	75.0	(1)	2	0.055	0.130	0.093	✓	2	130	155	142.5	✓	2	85	87	86	✓
Kalannie	2	75	79	77.0	(1)	2	0.040	0.070	0.055	✓	2	135	145	140.0	✓	2	88	91	90	✓
Kalgoorlie	2	80	82	81.0	(1)	4	0.040	0.065	0.053	✓	2	135	140	137.5	✓	4	84	97	90	✓
Kambalda	2	81	84	82.5	(1)	2	0.035	0.050	0.043	✓	2	130	150	140.0	✓	2	89	94	92	✓
Kellerberrin	4	69	72	70.3	(1)	2	0.090	0.095	0.093	✓	4	140	160	150.0	✓	2	82	91	87	✓
Koolyanobbing	2	71	72	71.5	(1)	2	0.035	0.075	0.055	✓	2	145	155	150.0	✓	2	80	90	85	✓
Koorda	2	78	84	81.0	(1)	2	0.030	0.075	0.053	✓	2	135	145	140.0	✓	2	83	91	87	✓
Kununoppin	2	78	84	81.0	(1)	2	0.045	0.055	0.050	✓	2	125	165	145.0	✓	2	82	89	86	✓
Laverton	2	72	75	73.5	(1)	2	0.012	0.012	0.012	✓	2	140	150	145.0	✓	6	100	120	112	✓
Leonora	2	74	79	76.5	(1)	2	<0.008	0.010	<0.008	✓	2	130	150	140.0	✓	6	140	180	148	✓
Marvel Loch	6	107	135	126.2	(1)	2	0.055	0.060	0.058	✓	6	120	145	136.7	✓	2	82	86	84	✓
Meckering	6	124	167	136.7	(1)	2	0.050	0.120	0.085	✓	6	160	205	174.2	✓	2	81	83	82	✓
Menzies	2	75	81	78.0	(1)	2	0.012	0.025	0.019	✓	2	145	145	145.0	✓	8	210	320	254	(2)
Merredin	5	165	242	200.8	(1)	2	0.040	0.100	0.070	✓	5	165	180	171.0	✓	2	82	82	82	✓
Miling	2	79	80	79.5	(1)	2	0.025	0.055	0.040	✓	2	140	145	142.5	✓	2	89	94	92	✓
Mukinbudin	2	72	75	73.5	(1)	2	0.025	0.040	0.033	✓	2	130	155	142.5	✓	2	70	86	78	✓
Muntadgin	2	67	71	69.0	(1)	2	0.045	0.110	0.078	✓	2	115	155	135.0	✓	2	83	83	83	✓
Narembeen	2	71	78	74.5	(1)	2	0.025	0.075	0.050	✓	2	140	140	140.0	✓	2	83	83	83	✓
Norseman	2	77	80	78.5	(1)	2	0.040	0.065	0.053	✓	2	140	145	142.5	✓	2	94	100	97	✓
Northam	2	64	76	70.0	(1)	2	0.065	0.100	0.083	✓	2	160	165	162.5	✓	2	80	86	83	✓
Nungarin	2	74	82	78.0	(1)	2	0.050	0.070	0.060	✓	2	135	140	137.5	✓	2	85	87	86	✓
Ora Banda	2	77	81	79.0	(1)	2	0.030	0.030	0.030	✓	2	135	150	142.5	✓	2	100	110	105	✓
Pithara	2	76	87	81.5	(1)	2	0.025	0.080	0.053	✓	2	150	160	155.0	✓	2	84	86	85	✓
Quairading	2	77	78	77.5	(1)	2	0.050	0.065	0.058	✓	2	135	145	140.0	✓	2	83	92	88	✓
Seabrook	2	78	80	79.0	(1)	2	0.065	0.100	0.083	✓	2	135	145	140.0	✓	2	81	87	84	✓
Shackleton	2	79	82	80.5	(1)	2	0.030	0.060	0.045	✓	2	135	145	140.0	✓	2	80	81	81	✓
Southern Cross	2	68	70	69.0	(1)	2	0.065	0.075	0.070	✓	2	140	145	142.5	✓	2	84	87	86	✓
Spencers Brook	2	81	82	81.5	(1)	2	0.060	0.120	0.090	✓	2	135	145	140.0	✓	2	81	82	82	✓
Tammin	2	73	81	77.0	(1)	2	0.070	0.075	0.073	✓	2	130	145	137.5	✓	2	80	83	82	✓
Toodyay	2	78	78	78.0	(1)	2	0.055	0.140	0.098	✓	2	135	140	137.5	✓	2	81	81	81	✓
Trayning	2	77	79	78.0	(1)	2	0.045	0.050	0.048	✓	2	130	150	140.0	✓	2	82	87	85	✓
Warralakin	2	73	78	75.5	(1)	2	0.055	0.070	0.063	✓	2	130	155	142.5	✓	2	86	88	87	✓
Westonia	2	72	79	75.5	(1)	2	0.050	0.070	0.060	✓	2	130	155	142.5	✓	2	80	88	84	✓
Wiluna	2	103	109	106.0	(1)	2	<0.008	<0.008	<0.008	✓	2	80	85	82.5	✓	2	100	120	110	✓
Wongan Hills	2	74	83	78.5	(1)	2	0.035	0.075	0.055	✓	2	140	140	140.0	✓	2	85	87	86	✓
Wubin	2	78	82	80.0	(1)	2	0.025	0.065	0.045	✓	2	150	155	152.5	✓	2	94	94	94	✓
Wyalkatchem	2	78	79	78.5	(1)	2	0.035	0.085	0.060	✓	2	140	145	142.5	✓	2	79	86	83	✓
York	2	79	80	79.5	(1)	2	0.050	0.100	0.075	✓	2	135	145	140.0	✓	2	81	83	82	✓

(1) No guideline value available as per ADWG 2011. (2) Elevated hardness is characteristic of the source supplying this locality.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 14 Aesthetic (Non-health related) Variables

Goldfields and Agricultural	Iron					Manganese					pH					Silica				
		Concentration (mg/L)					Concentration (mg/L)					Value (pH units)					Concentration (mg/L)			
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met
Ardath	2	0.010	0.020	0.015	✓	2	<0.002	<0.002	<0.002	✓	2	8.38	8.53	8.46	✓	2	4	4.3	4.2	✓
Avon Hills	2	0.004	0.010	0.007	✓	2	<0.002	<0.002	<0.002	✓	2	8.28	8.37	8.33	✓	2	3.6	4.3	3.95	✓
Ballidu	2	0.004	0.015	0.010	✓	2	<0.002	<0.002	<0.002	✓	2	7.43	7.57	7.50	✓	2	4.1	4.1	4.1	✓
Beacon	2	0.020	0.050	0.035	✓	2	<0.002	<0.002	<0.002	✓	2	7.83	8.50	8.17	✓	2	3.4	4	3.7	✓
Bencubbin	2	0.035	0.080	0.058	✓	2	0.014	0.025	0.020	✓	2	7.98	8.43	8.21	✓	2	5	7.2	6.1	✓
Beverley	2	0.008	0.070	0.039	✓	2	<0.002	0.006	0.003	✓	2	8.35	8.66	8.51	(1)	2	3.8	3.9	3.85	✓
Bind Bindi	2	0.004	0.025	0.015	✓	2	<0.002	<0.002	<0.002	✓	2	7.30	7.51	7.41	✓	2	4.1	4.6	4.4	✓
Broad Arrow	2	0.035	0.100	0.068	✓	2	<0.002	0.002	<0.002	✓	2	7.87	8.03	7.95	✓	2	4.2	4.2	4.2	✓
Bruce Rock	2	0.010	0.015	0.013	✓	2	<0.002	<0.002	<0.002	✓	2	7.48	7.83	7.66	✓	2	4	4.2	4.1	✓
Bullfinch	2	0.004	0.015	0.010	✓	2	<0.002	<0.002	<0.002	✓	2	8.66	8.75	8.71	(1)	2	3.8	4.8	4.3	✓
Buntine	2	0.010	0.010	0.010	✓	2	<0.002	<0.002	<0.002	✓	2	8.50	8.53	8.52	(1)	2	4.3	4.4	4.35	✓
Cadoux	2	0.004	0.008	0.006	✓	2	<0.002	<0.002	<0.002	✓	2	8.49	8.55	8.52	(1)	2	4.1	4.2	4.2	✓
Coolgardie	2	0.006	0.010	0.008	✓	2	<0.002	<0.002	<0.002	✓	2	7.42	7.59	7.51	✓	2	4.1	4.1	4.1	✓
Corrigin	2	0.004	0.006	0.005	✓	2	<0.002	<0.002	<0.002	✓	2	8.38	8.58	8.48	✓	2	4.1	4.2	4.15	✓
Cunderdin	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.05	8.08	8.07	✓	2	4	4.3	4.15	✓
Dalwallinu	2	0.008	0.025	0.017	✓	2	<0.002	<0.002	<0.002	✓	2	8.53	8.82	8.68	(1)	2	4	4.3	4.2	✓
Dowerin	2	0.004	0.015	0.010	✓	2	<0.002	<0.002	<0.002	✓	2	8.52	8.54	8.53	(1)	2	3.9	4.5	4.2	✓
Goomalling	2	0.004	0.010	0.007	✓	2	<0.002	<0.002	<0.002	✓	2	8.39	8.47	8.43	✓	2	3.6	4.4	4	✓
Greater Bodallin	2	<0.003	0.006	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.26	8.32	8.29	✓	2	3.9	4.2	4.05	✓
Greater Burracoppin	2	0.006	0.006	0.006	✓	2	<0.002	<0.002	<0.002	✓	2	8.28	8.49	8.39	✓	2	3.9	4.7	4.3	✓
Greater Doolakine	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.29	8.43	8.36	✓	2	4.1	4.3	4.2	✓
Greenhills	2	0.015	0.020	0.018	✓	2	<0.002	<0.002	<0.002	✓	2	8.05	8.27	8.16	✓	2	3.9	4.3	4.1	✓
Jennacubbine	2	<0.003	0.045	0.023	✓	2	<0.002	0.006	0.003	✓	2	8.27	8.75	8.51	(1)	2	3.9	4.1	4.0	✓
Kalannie	2	0.010	0.015	0.013	✓	2	<0.002	<0.002	<0.002	✓	2	8.21	8.27	8.24	✓	2	4	4.6	4.3	✓
Kalgoorlie	4	0.006	0.015	0.011	✓	4	<0.002	<0.002	<0.002	✓	4	7.78	7.84	7.81	✓	2	4	4.4	4.2	✓
Kambalda	2	0.030	0.030	0.030	✓	2	0.002	0.004	0.003	✓	2	8.10	8.22	8.16	✓	2	4.1	4.4	4.3	✓
Kellerberrin	2	<0.003	0.140	0.070	✓	2	<0.002	0.020	0.010	✓	2	8.13	8.37	8.25	✓	4	4.1	4.4	4.3	✓
Koolyanobbing	2	0.008	0.015	0.012	✓	2	<0.002	<0.002	<0.002	✓	2	8.28	8.68	8.48	✓	2	4.2	4.6	4.4	✓
Koorda	2	<0.003	0.008	0.004	✓	2	<0.002	<0.002	<0.002	✓	2	7.79	7.84	7.82	✓	2	3.7	4.6	4.15	✓
Kununoppin	2	<0.003	0.006	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.72	8.84	8.78	(1)	2	4	4.3	4.2	✓
Laverton	6	0.008	0.035	0.019	✓	6	<0.002	<0.002	<0.002	✓	6	7.82	8.10	7.99	✓	2	3.9	4.2	4.1	✓
Leonora	6	<0.003	<0.003	<0.003	✓	6	<0.002	<0.002	<0.002	✓	6	7.50	7.74	7.65	✓	2	4.1	4.4	4.25	✓
Marvel Loch	2	0.006	0.080	0.043	✓	2	<0.002	0.010	0.005	✓	2	7.92	7.97	7.95	✓	6	36	43	40.3	✓
Meckering	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.30	8.38	8.34	✓	6	20	35	26.5	✓
Menzies	5	<0.003	0.010	0.005	✓	5	<0.002	<0.002	<0.002	✓	5	7.50	7.77	7.64	✓	2	3.8	5	4.4	✓
Merredin	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.21	8.31	8.26	✓	5	37	65	49.2	✓
Miling	2	0.006	0.025	0.016	✓	2	<0.002	<0.002	<0.002	✓	2	7.80	8.68	8.24	✓	2	4.2	4.2	4.2	✓
Mukinbudin	2	0.030	0.060	0.045	✓	2	0.004	0.005	0.005	✓	2	7.94	8.80	8.37	✓	2	4.1	4.6	4.4	✓
Muntadgin	2	0.006	0.006	0.006	✓	2	<0.002	<0.002	<0.002	✓	2	7.85	8.42	8.14	✓	2	3.2	4.2	3.7	✓
Narembeen	2	0.015	0.040	0.028	✓	2	<0.002	<0.002	<0.002	✓	2	8.10	8.35	8.23	✓	2	4	4	4	✓
Norseman	2	0.006	0.015	0.011	✓	2	<0.002	<0.002	<0.002	✓	2	7.89	8.04	7.97	✓	2	3.9	3.9	3.9	✓
Northam	2	0.008	0.015	0.012	✓	2	<0.002	<0.002	<0.002	✓	2	7.89	7.95	7.92	✓	2	3.4	4.4	3.9	✓
Nungarin	2	<0.003	0.006	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.60	8.89	8.75	(1)	2	4	4.7	4.4	✓
Ora Banda	2	0.004	0.008	0.006	✓	2	<0.002	<0.002	<0.002	✓	2	8.52	8.58	8.55	(1)	2	4	4.4	4.2	✓
Pithara	2	0.010	0.025	0.018	✓	2	<0.002	<0.002	<0.002	✓	2	8.33	8.78	8.56	(1)	2	4.7	5.5	5.1	✓
Quairading	2	0.010	0.020	0.015	✓	2	<0.002	<0.002	<0.002	✓	2	8.04	8.08	8.06	✓	2	3.9	4.2	4.1	✓
Seabrook	2	<0.003	0.010	0.005	✓	2	<0.002	<0.002	<0.002	✓	2	8.32	8.38	8.35	✓	2	3.6	4.5	4.1	✓
Shackleton	2	0.006	0.010	0.008	✓	2	<0.002	<0.002	<0.002	✓	2	8.30	8.33	8.32	✓	2	4.3	4.4	4.35	✓
Southern Cross	2	0.004	0.006	0.005	✓	2	<0.002	<0.002	<0.002	✓	2	8.08	8.49	8.29	✓	2	3.9	4.2	4.05	✓
Spencers Brook	2	<0.003	0.010	0.005	✓	2	<0.002	<0.002	<0.002	✓	2	8.24	8.29	8.27	✓	2	4.3	4.3	4.3	✓
Tammin	2	0.010	0.015	0.013	✓	2	<0.002	<0.002	<0.002	✓	2	8.18	8.33	8.26	✓	2	3.6	4.3	4.0	✓
Toodyay	2	0.006	0.080	0.043	✓	2	<0.002	0.010	0.005	✓	2	8.08	8.37	8.23	✓	2	4	4.9	4.5	✓
Trayning	2	<0.003	0.006	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.60	8.85	8.73	(1)	2	4.1	4.2	4.2	✓
Warralakin	2	0.004	0.006	0.005	✓	2	<0.002	<0.002	<0.002	✓	2	7.78	7.96	7.87	✓	2	4	4.3	4.2	✓
Westonia	2	0.006	0.015	0.011	✓	2	<0.002	0.005	0.003	✓	2	7.76	8.18	7.97	✓	2	3.9	4.4	4.2	✓
Wiluna	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.83	8.14	7.99	✓	2	85	90	87.5	(2)
Wongan Hills	2	0.008	0.010	0.009	✓	2	<0.002	<0.002	<0.002	✓	2	8.19	8.67	8.43	✓	2	3.9	4.2	4.1	✓
Wubin	2	0.008	0.020	0.014	✓	2	<0.002	<0.002	<0.002	✓	2	8.21	8.68	8.45	✓	2	4.2	4.4	4.3	✓
Wyalkatchem	2	<0.003	0.015	0.008	✓	2	<0.002	<0.002	<0.002	✓	2	8.34	8.53	8.44	✓	2	4	4.1	4.1	✓
York	2	<0.003	0.010	0.005	✓	2	<0.002	<0.002	<0.002	✓	2	8.32	8.46	8.39	✓	2	4.1	4.2	4.2	✓

(1) Elevated pH is a result of the pH adjustment as part of Chloramination process. Experience shows that pH at this level is not objectionable to our customers. (2) Elevated Silica is a natural characteristic of the source supplying this locality.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 15 Aesthetic (Non-health related) Variables

Goldfields and Agricultural	Sodium					TDS					True Colour					Turbidity				
		Concentration (mg/L)					Concentration (mg/L)					Value (TCU)					Value (NTU)			
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met
Ardath	2	88	90	89	✓	2	369	382	376	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Avon Hills	2	76	93	84.5	✓	2	334	385	360	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Ballidu	2	88	91	89.5	✓	2	379	394	387	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Beacon	2	65	89	77	✓	2	323	391	357	✓	2	<1	<1	<1	✓	2	0.5	0.6	0.6	✓
Bencubbin	2	87	89	88	✓	2	384	400	392	✓	2	1	2	2	✓	2	0.5	0.9	0.7	✓
Beverley	2	80	86	83	✓	2	362	379	371	✓	2	<1	<1	<1	✓	2	0.1	0.4	0.3	✓
Bind Bindi	2	84	86	85	✓	2	375	377	376	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Broad Arrow	2	87	94	90.5	✓	2	365	397	381	✓	2	<1	<1	<1	✓	2	0.3	0.5	0.4	✓
Bruce Rock	2	77	94	85.5	✓	2	338	396	367	✓	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Bullfinch	2	74	98	86	✓	2	335	404	370	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Buntine	2	83	88	85.5	✓	2	379	396	388	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Cadoux	2	82	83	82.5	✓	2	365	370	368	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Coolgardie	2	82	91	86.5	✓	2	361	389	375	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Corrigin	2	89	94	91.5	✓	2	383	385	384	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Cunderdin	2	84	84	84	✓	2	363	371	367	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Dalwallinu	2	69	94	81.5	✓	2	338	400	369	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Dowerin	2	72	95	83.5	✓	2	337	396	367	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Goomalling	2	74	94	84	✓	2	339	389	364	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Greater Bodallin	2	84	88	86	✓	2	367	375	371	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Greater Burracoppin	2	80	87	83.5	✓	2	359	378	369	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Greater Doolakine	2	78	87	82.5	✓	2	357	376	367	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Greenhills	2	82	84	83	✓	2	359	376	368	✓	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Jennacubbine	2	79	97	88	✓	2	357	379	368	✓	2	<1	<1	<1	✓	2	0.1	0.3	0.2	✓
Kalannie	2	80	86	83	✓	2	366	396	381	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Kalgoorlie	2	79	86	82.5	✓	4	345	404	374	✓	4	<1	<1	<1	✓	4	0.1	0.2	0.1	✓
Kambalda	2	82	93	87.5	✓	2	367	397	382	✓	2	<1	<1	<1	✓	2	0.4	0.8	0.6	✓
Kellerberrin	4	75	98	85.8	✓	2	361	400	381	✓	2	<1	<1	<1	✓	2	<0.1	2.1	1.1	✓
Koolyanobbing	2	84	93	88.5	✓	2	338	425	382	✓	2	<1	<1	<1	✓	2	<0.1	0.5	0.3	✓
Koorda	2	85	105	95	✓	2	367	375	371	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Kununoppin	2	74	100	87	✓	2	336	392	364	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Laverton	2	83	86	84.5	✓	6	472	590	558	✓	6	<1	<1	<1	✓	6	<0.1	0.2	<0.1	✓
Leonora	2	71	93	82	✓	6	584	736	628	(1)	6	<1	<1	<1	✓	6	<0.1	<0.1	<0.1	✓
Marvel Loch	6	91	125	115.17	✓	2	375	379	377	✓	2	<1	<1	<1	✓	2	<0.1	0.7	0.4	✓
Meckering	6	125	150	129.2	✓	2	364	370	367	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Menzies	2	86	87	86.5	✓	5	670	868	761	(1)	5	<1	<1	<1	✓	5	<0.1	<0.1	<0.1	✓
Merredin	5	115	115	115.0	✓	2	363	376	370	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Miling	2	81	86	83.5	✓	2	342	395	369	✓	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Mukinbudin	2	70	92	81.0	✓	2	307	391	349	✓	2	2	3	3	✓	2	0.9	1	1	✓
Muntadgin	2	67	93	80	✓	2	362	370	366	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Narembeen	2	83	89	86	✓	2	362	377	370	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Norseman	2	81	88	84.5	✓	2	387	416	402	✓	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Northam	2	89	97	93	✓	2	355	383	369	✓	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Nungarin	2	83	91	87	✓	2	362	380	371	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Ora Banda	2	81	87	84	✓	2	394	404	399	✓	2	<1	<1	<1	✓	2	0.1	0.1	0.1	✓
Pithara	2	82	91	86.5	✓	2	363	375	369	✓	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Quairading	2	82	83	82.5	✓	2	353	388	371	✓	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Seabrook	2	76	90	83	✓	2	354	384	369	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Shackleton	2	79	87	83	✓	2	352	368	360	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Southern Cross	2	81	86	83.5	✓	2	343	398	371	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Spencers Brook	2	79	87	83	✓	2	357	381	369	✓	2	<1	<1	<1	✓	2	0.1	0.1	0.1	✓
Tammin	2	76	90	83	✓	2	338	381	360	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Toodyay	2	78	85	81.5	✓	2	351	369	360	✓	2	<1	<1	<1	✓	2	0.1	0.1	0.1	✓
Trayning	2	72	92	82	✓	2	341	391	366	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Warralakin	2	80	95	87.5	✓	2	350	400	375	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Westonia	2	76	94	85	✓	2	338	399	369	✓	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Wiluna	2	57	70	63.5	✓	2	427	472	450	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Wongan Hills	2	82	86	84	✓	2	364	372	368	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Wubin	2	87	89	88	✓	2	390	395	393	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Wyalkatchem	2	83	87	85	✓	2	363	377	370	✓	2	<1	<1	<1	✓	2	0.1	0.4	0.3	✓
York	2	77	87	82	✓	2	356	375	366	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓

(1) Elevated TDS is a natural characteristic of the source supplying this locality.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 16 Health related variables

South West	E. coli				Thermophilic Naegleria			Fluoride				Hydrocarbons		Metals	
									Concentration (mg/L)						
Locality	Samples Taken	Samples with >0 cfu/100mL	Max cfu/100mL	Requirement Met	Samples Taken	Samples with Thermophilic Naegleria	Requirement Met	Samples Taken	Min	Max	Mean	Samples Taken	Guideline Met	Samples Taken	Guideline Met
Allanson	13	0	0	✓	7	1	✓	4	0.70	0.90	0.81	0	(1)	2	✓
Augusta	65	0	0	✓	32	0	✓	3	0.20	0.25	0.23	0	(1)	4	✓
Australind	117	0	0	✓	117	0	✓	4	0.20	0.25	0.23	0	(1)	4	✓
Balingup	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Binningup	52	0	0	✓	26	0	✓	4	0.55	0.90	0.79	0	(1)	2	✓
Boyanup	52	0	0	✓	13	0	✓	2	0.20	0.20	0.20	2	✓	2	✓
Boyup Brook	52	0	0	✓	0	0	(2)	2	<0.1	<0.1	<0.1	2	✓	2	✓
Bridgetown	65	0	0	✓	33	0	✓	2	0.10	0.15	0.13	0	(1)	2	✓
Brunswick Junction	52	0	0	✓	12	0	✓	2	0.20	0.25	0.23	0	(1)	2	✓
Capel	52	0	0	✓	13	0	✓	2	0.20	0.20	0.20	0	(1)	2	✓
Collie	75	0	0	✓	30	0	✓	53	0.25	1.00	0.79	0	(1)	4	✓
Cowaramup	52	0	0	✓	6	0	✓	2	0.25	0.30	0.28	0	(1)	2	✓
Dalyellup	65	0	0	✓	39	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Dardanup	13	0	0	✓	7	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Darkan	13	0	0	✓	6	0	✓	4	0.70	0.95	0.81	0	(1)	2	✓
Donnybrook	52	0	0	✓	26	0	✓	2	<0.1	<0.1	<0.1	0	(1)	6	✓
Dunsborough	78	0	0	✓	78	0	✓	56	0.75	0.90	0.83	1	✓	2	✓
Eaton	78	0	0	✓	78	0	✓	2	0.15	0.15	0.15	0	(1)	2	✓
Greenbushes	49	0	0	✓	13	0	✓	2	0.10	0.15	0.13	0	(1)	2	✓
Harvey	53	0	0	✓	53	0	✓	52	0.65	1.00	0.85	0	(1)	2	✓
Hester TWS	13	0	0	✓	6	0	✓	2	0.10	0.10	0.10	0	(1)	2	✓
Kirup	13	0	0	✓	7	0	✓	2	<0.1	0.15	<0.1	0	(1)	2	✓
Logue Brook	13	0	0	✓	7	0	✓	2	0.30	0.45	0.38	0	(1)	2	✓
Manjimup	65	0	0	✓	32	0	✓	52	0.60	0.90	0.77	0	(1)	2	✓
Margaret River	78	0	0	✓	8	0	✓	2	0.25	0.30	0.28	0	(1)	2	✓
Mullalyup	13	0	0	✓	7	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Myalup	13	0	0	✓	13	0	✓	2	0.90	0.90	0.90	0	(1)	2	✓
Nannup	26	0	0	✓	13	0	✓	4	<0.1	<0.1	<0.1	0	(1)	4	✓
Northcliffe	20	0	0	✓	10	0	✓	2	<0.1	0.25	0.13	0	(1)	2	✓
Pemberton	52	0	0	✓	14	0	✓	2	<0.1	<0.1	<0.1	1	✓	2	✓
Peppermint Grove	52	0	0	✓	7	0	✓	2	0.25	0.30	0.28	2	✓	2	✓
Preston Beach	46	0	0	✓	12	0	✓	2	0.15	0.25	0.20	0	(1)	2	✓
Quinninup	18	0	0	✓	6	0	✓	2	0.30	0.45	0.38	0	(1)	2	✓
Waroona	53	0	0	✓	53	0	✓	54	0.75	0.95	0.85	0	(1)	2	✓
Yarloop	13	0	0	✓	7	0	✓	2	0.85	0.85	0.85	0	(1)	2	✓

(1) No samples required in this 12 month period. (2) Data are for 14 samples from previous 2 years

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 17 Health related variables

South West	Nitrate (measured as Nitrogen)					Pesticides		Radiological		Trihalomethanes					Other Health Related	
		Concentration (mg/L)									Concentration (mg/L)					
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Requirement Met
Allanson	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.091	0.130	0.111	✓	0	(1)
Augusta	7	<0.05	0.6	0.2	✓	2	✓	0	(1)	3	0.015	0.026	0.020	✓	0	(1)
Australind	8	<0.05	<0.05	<0.05	✓	2	✓	0	(1)	4	0.005	0.078	0.033	✓	0	(1)
Balingup	4	<0.05	0.1	<0.05	✓	1	✓	1	✓	4	0.048	0.100	0.079	✓	0	(1)
Binningup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.049	0.077	0.063	✓	0	(1)
Boyanup	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	<0.001	<0.001	<0.001	✓	2	✓
Boyup Brook	4	<0.05	0.1	<0.05	✓	1	✓	0	(1)	4	0.097	0.130	0.112	✓	2	✓
Bridgetown	3	<0.05	0.1	<0.05	✓	1	✓	1	✓	2	0.039	0.050	0.045	✓	0	(1)
Brunswick Junction	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.013	0.013	0.013	✓	2	✓
Capel	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	0	(1)
Collie	4	<0.05	<0.05	<0.05	✓	2	✓	0	(1)	4	0.035	0.093	0.071	✓	0	(1)
Cowaramup	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.058	0.100	0.081	✓	0	(1)
Dalyellup	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.032	0.070	0.051	✓	0	(1)
Dardanup	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	<0.001	<0.001	<0.001	✓	0	(1)
Darkan	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.140	0.190	0.158	✓	0	(1)
Donnybrook	4	1.6	4.1	2.9	✓	1	✓	1	✓	2	0.002	0.005	0.004	✓	1	✓
Dunsborough	3	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.023	0.025	0.024	✓	1	✓
Eaton	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	<0.001	0.004	0.002	✓	0	(1)
Greenbushes	4	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.054	0.130	0.092	✓	2	✓
Harvey	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	0	(1)
Hester TWS	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.045	0.099	0.072	✓	0	(1)
Kirup	4	0.9	2.8	1.9	✓	1	✓	1	✓	2	0.009	0.038	0.024	✓	0	(1)
Logue Brook	2	0.2	1.3	0.8	✓	1	✓	0	(1)	2	0.004	0.010	0.007	✓	1	✓
Manjimup	2	<0.05	<0.05	<0.05	✓	4	✓	1	✓	2	0.074	0.100	0.087	✓	0	(1)
Margaret River	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.084	0.092	0.088	✓	0	(1)
Mullalyup	4	0.3	3.3	1.9	✓	1	✓	0	(1)	2	0.008	0.047	0.028	✓	0	(1)
Myalup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.047	0.081	0.064	✓	0	(1)
Nannup	8	<0.05	0.1	<0.05	✓	2	✓	2	✓	4	0.035	0.054	0.045	✓	0	(1)
Northcliffe	4	0.1	0.4	0.2	✓	1	✓	0	(1)	2	0.069	0.070	0.070	✓	0	(1)
Pemberton	3	0.2	0.3	0.3	✓	4	✓	0	(1)	3	0.085	0.130	0.108	✓	2	✓
Peppermint Grove	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	2	✓
Preston Beach	4	<0.05	1.2	0.9	✓	1	✓	0	(1)	4	0.071	0.200	0.150	✓	2	✓
Quinninup	4	0.1	0.3	0.2	✓	1	✓	0	(1)	4	0.100	0.150	0.130	✓	0	(1)
Waroona	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	<0.001	0.009	0.004	✓	0	(1)
Yarloop	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	<0.001	0.001	<0.001	✓	0	(1)

(1) No samples required in this 12 month period.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 18 Aesthetic (Non-health related) Variables

South West	Alkalinity (as CaCO3)					Aluminium					Chloride					Hardness				
	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met
Locality		Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean	
Allanson	2	21	27	24	(1)	2	0.014	0.02	0.017	✓	2	85	95	90	✓	2	40	49	45	✓
Augusta	7	64	277	153	(1)	7	<0.008	0.018	<0.008	✓	7	135	210	169	✓	7	88	290	169	✓
Australind	8	133	189	152	(1)	8	<0.008	0.012	<0.008	✓	8	150	170	159	✓	8	77	110	93	✓
Balingup	4	39	62	50	(1)	4	0.012	0.03	0.021	✓	4	120	190	153	✓	4	55	85	70	✓
Binningup	2	16.9	18.3	18	(1)	2	0.014	0.025	0.02	✓	2	65	65	65	✓	2	32	33	33	✓
Boyanup	2	136	142	139	(1)	2	<0.008	<0.008	<0.008	✓	2	100	100	100	✓	2	100	100	100	✓
Boyup Brook	4	45	135	100	(1)	4	0.025	0.04	0.03	✓	4	55	105	89	✓	4	52	130	103	✓
Bridgetown	3	112	121	116	(1)	3	0.025	0.075	0.058	✓	3	90	95	93	✓	3	110	120	113	✓
Brunswick Junction	4	123	143	135	(1)	4	<0.008	0.01	<0.008	✓	4	165	170	169	✓	4	80	86	83	✓
Capel	4	92	98	96	(1)	4	<0.008	<0.008	<0.008	✓	4	60	60	60	✓	4	49	50	50	✓
Collie	4	15.6	25	19	(1)	4	0.012	0.014	0.013	✓	4	44	85	75	✓	4	21	42	35	✓
Cowaramup	4	45	61	53	(1)	4	0.01	0.03	0.018	✓	4	85	95	90	✓	4	41	46	44	✓
Dalyellup	4	151	196	171	(1)	4	<0.008	<0.008	<0.008	✓	4	90	180	135	✓	4	72	91	81	✓
Dardanup	2	41	89	65	(1)	2	<0.008	<0.008	<0.008	✓	2	80	90	85	✓	2	27	28	28	✓
Darkan	2	26	28	27	(1)	2	0.02	0.025	0.023	✓	2	85	90	88	✓	2	46	50	48	✓
Donnybrook	4	60	88	75	(1)	4	0.055	0.2	0.128	✓	4	195	200	198	✓	4	76	80	78	✓
Dunsborough	3	157	181	169	(1)	3	0.014	0.02	0.016	✓	3	130	160	145	✓	3	62	65	64	✓
Eaton	2	118	124	121	(1)	2	0.008	0.01	0.009	✓	2	120	125	123	✓	2	110	110	110	✓
Greenbushes	4	64	130	100	(1)	4	0.014	0.045	0.029	✓	4	95	135	110	✓	4	78	120	102	✓
Harvey	2	63	65	64	(1)	2	0.03	0.03	0.03	✓	2	32	43	38	✓	2	52	53	53	✓
Hester	2	92	109	101	(1)	2	0.025	0.04	0.033	✓	2	95	110	103	✓	2	94	120	107	✓
Kirup	4	53	96	76	(1)	4	0.11	0.14	0.12	✓	4	140	200	163	✓	4	57	80	68	✓
Logue Brook	2	82	94	88	(1)	2	0.03	0.15	0.09	✓	2	75	150	113	✓	2	71	83	77	✓
Manjimup	2	33	58	46	(1)	2	0.04	0.05	0.045	✓	2	85	90	88	✓	2	47	89	68	✓
Margaret River	4	44	62	53	(1)	4	0.01	0.035	0.02	✓	4	85	90	89	✓	4	40	46	43	✓
Mullalyup	4	44	94	69	(1)	4	0.035	0.23	0.106	✓	4	120	200	161	✓	4	39	86	64	✓
Myalup	2	49	76	63	(1)	2	0.04	0.1	0.07	✓	2	33	42	38	✓	2	42	63	53	✓
Nannup	8	25	56	39	(1)	8	0.02	0.075	0.046	✓	8	65	80	74	✓	8	81	100	89	✓
Northcliffe	4	12.9	57	30	(1)	4	0.025	0.05	0.033	✓	4	75	100	90	✓	4	48	70	57	✓
Pemberton	3	11.7	26	20	(1)	3	0.02	0.025	0.022	✓	3	70	95	87	✓	3	47	59	54	✓
Peppermint Grove	4	101	108	104	(1)	4	<0.008	0.01	<0.008	✓	4	60	60	60	✓	4	55	56	56	✓
Preston Beach	4	197	335	294	(1)	4	<0.008	0.01	<0.008	✓	4	195	430	255	(3)	4	200	330	293	(2)
Quinninup	4	29	60	42	(1)	4	0.04	0.05	0.044	✓	4	80	100	93	✓	4	64	79	70	✓
Waroona	2	63	71	67	(1)	2	0.05	0.065	0.058	✓	2	30	43	37	✓	2	55	60	58	✓
Yarloop	2	44	70	57	(1)	2	0.02	0.055	0.038	✓	2	32	55	43.5	✓	2	45	54	50	✓

(1) No guideline value available as per ADWG 2011. (2) Elevated hardness is characteristic of the source supplying this locality. (3) Elevated chloride is characteristic of the source supplying this locality

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 19 Aesthetic (Non-health related) Variables

South West	Iron					Manganese					pH					Silica				
Locality	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Value (pH units)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met
		Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean	
Allanson	2	0.045	0.060	0.053	✓	2	0.006	0.012	0.009	✓	2	7.23	7.37	7.30	✓	2	1.3	1.5	1.4	✓
Augusta	7	0.020	0.160	0.069	✓	7	<0.002	<0.002	<0.002	✓	7	7.04	7.72	7.42	✓	7	9.1	17	12	✓
Australind	8	0.050	0.160	0.079	✓	8	<0.002	0.005	<0.002	✓	8	7.31	8.24	7.78	✓	8	23	55	40	✓
Balingup	4	0.004	0.006	0.005	✓	4	<0.002	<0.002	<0.002	✓	4	7.41	7.96	7.63	✓	4	5	6.5	5.6	✓
Binningup	2	0.035	0.060	0.048	✓	2	0.007	0.014	0.011	✓	2	7.14	7.35	7.25	✓	2	4.8	5.7	5.3	✓
Boyanup	2	0.025	0.025	0.025	✓	2	<0.002	<0.002	<0.002	✓	2	7.87	8.10	7.99	✓	2	19	20	19.5	✓
Boyup Brook	4	0.010	0.160	0.053	✓	4	<0.002	0.006	0.003	✓	4	7.83	8.57	8.26	✓	4	0.5	4.9	2.6	✓
Bridgetown	3	0.015	0.060	0.033	✓	3	<0.002	0.004	<0.002	✓	3	7.82	8.03	7.94	✓	3	2.5	4.3	3.4	✓
Brunswick Junction	4	0.060	0.120	0.090	✓	4	0.003	0.006	0.004	✓	4	7.60	8.01	7.84	✓	4	50	55	53	✓
Capel	4	0.045	0.070	0.056	✓	4	<0.002	<0.002	<0.002	✓	4	6.53	6.88	6.75	✓	4	15	15	15.0	✓
Collie	4	0.030	0.060	0.048	✓	4	<0.002	0.020	0.011	✓	4	7.01	7.28	7.14	✓	4	0.6	1.6	1.1	✓
Cowaramup	4	0.070	0.120	0.095	✓	4	0.003	0.014	0.007	✓	4	7.64	7.81	7.74	✓	4	5.3	10	7.5	✓
Dalyellup	4	0.015	0.120	0.064	✓	4	<0.002	0.016	0.008	✓	4	7.90	8.12	7.98	✓	4	16	17	16	✓
Dardanup	2	0.020	0.025	0.023	✓	2	<0.002	<0.002	<0.002	✓	2	7.01	7.40	7.21	✓	2	20	22	21.0	✓
Darkan	2	0.045	0.060	0.053	✓	2	0.004	0.008	0.006	✓	2	7.41	8.45	7.93	✓	2	2	2	2.0	✓
Donnybrook	4	0.010	0.050	0.039	✓	4	<0.002	0.003	<0.002	✓	4	7.11	7.46	7.24	✓	4	9.8	18	13.5	✓
Dunsborough	3	0.006	0.015	0.010	✓	3	<0.002	<0.002	<0.002	✓	3	8.14	8.33	8.22	✓	3	17	18	17.7	✓
Eaton	2	0.060	0.140	0.100	✓	2	<0.002	0.003	<0.002	✓	2	7.14	7.35	7.25	✓	2	26	27	27	✓
Greenbushes	4	0.015	0.020	0.018	✓	4	<0.002	0.003	<0.002	✓	4	8.26	8.79	8.47	✓	4	2	4.9	3.6	✓
Harvey	2	0.004	0.004	0.004	✓	2	<0.002	<0.002	<0.002	✓	2	7.86	8.08	7.97	✓	2	1.3	1.6	1.5	✓
Hester	2	0.015	0.015	0.015	✓	2	0.003	0.004	0.004	✓	2	8.18	8.77	8.48	✓	2	1.6	4.8	3.2	✓
Kirup	4	0.010	0.015	0.014	✓	4	<0.002	0.004	<0.002	✓	4	7.57	7.65	7.61	✓	4	6.3	18	10.9	✓
Logue Brook	2	0.030	0.035	0.033	✓	2	<0.002	0.003	<0.002	✓	2	7.32	7.89	7.61	✓	2	11	12	11.5	✓
Manjimup	2	0.015	0.120	0.068	✓	2	<0.002	0.018	0.009	✓	2	7.42	7.81	7.62	✓	2	1.9	6.3	4.1	✓
Margaret River	4	0.060	0.120	0.085	✓	4	0.002	0.016	0.007	✓	4	7.40	7.80	7.57	✓	4	5.3	10	7.5	✓
Mullalyup	4	0.010	0.025	0.018	✓	4	<0.002	0.005	<0.002	✓	4	7.66	8.07	7.91	✓	4	5	15	8.8	✓
Myalup	2	0.004	0.006	0.005	✓	2	<0.002	<0.002	<0.002	✓	2	8.58	9.02	8.80	(1)	2	1.4	1.8	1.6	✓
Nannup	8	<0.003	0.030	0.014	✓	8	<0.002	<0.002	<0.002	✓	8	7.22	7.60	7.39	✓	8	5.9	8	7.0	✓
Northcliffe	4	0.010	0.025	0.019	✓	4	0.005	0.020	0.011	✓	4	7.33	8.01	7.73	✓	4	5.3	6.9	5.8	✓
Pemberton	3	0.008	0.025	0.019	✓	3	<0.002	0.005	0.003	✓	3	7.22	7.46	7.35	✓	3	5.4	6.6	6.2	✓
Peppermint Grove	4	0.025	0.050	0.038	✓	4	<0.002	<0.002	<0.002	✓	4	6.73	7.26	7.01	✓	4	15	16	15.8	✓
Preston Beach	4	0.004	0.020	0.012	✓	4	<0.002	<0.002	<0.002	✓	4	8.21	8.34	8.28	✓	4	16	19	17	✓
Quinninup	4	0.040	0.070	0.053	✓	4	0.003	0.018	0.010	✓	4	7.92	8.47	8.13	✓	4	4.9	6.6	5.9	✓
Waroona	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.84	7.95	7.90	✓	2	1.6	2.2	1.9	✓
Yarloop	2	0.006	0.025	0.016	✓	2	<0.002	0.004	<0.002	✓	2	7.77	7.93	7.85	✓	2	1.2	2.7	2.0	✓

(1) Elevated pH is caused by leaching of calcium carbonate from the protective cement lining of the pipes after long water transit times. This characteristic is found in a number of our localities on our large water supply schemes.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 20 Aesthetic (Non-health related) Variables

South West	Sodium					TDS					True Colour					Turbidity				
	Samples	Concentration (mg/L)			Guideline	Samples	Concentration (mg/L)			Guideline	Samples	Value (TCU)			Guideline	Samples	Value (NTU)			Guideline
Locality	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met	Taken	Min	Max	Mean	Met
Allanson	2	42	51	47	✓	2	180	210	195	✓	2	<1	1	<1	✓	2	0.3	0.8	0.6	✓
Augusta	7	66	115	87	✓	7	347	736	506	✓	7	<1	<1	<1	✓	7	0.2	0.8	0.4	✓
Australind	8	95	115	105	✓	8	512	532	518	✓	8	<1	<1	<1	✓	8	0.2	0.4	0.3	✓
Balingup	4	68	98	86	✓	4	276	411	342	✓	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓
Binningup	2	33	34	34	✓	2	142	144	143	✓	2	<1	<1	<1	✓	2	0.3	0.4	0.4	✓
Boyanup	2	61	62	62	✓	2	380	385	383	✓	2	<1	<1	<1	✓	2	0.2	0.4	0.3	✓
Boyup Brook	4	31	53	45	✓	4	178	365	302	✓	4	<1	4	<1	✓	4	0.2	0.5	0.3	✓
Bridgetown	3	48	52	50	✓	3	326	340	333	✓	3	<1	<1	<1	✓	3	0.2	0.6	0.4	✓
Brunswick Junction	4	100	125	114	✓	4	502	537	522	✓	4	<1	<1	<1	✓	4	0.2	0.5	0.3	✓
Capel	4	45	47	47	✓	4	264	269	267	✓	4	<1	<1	<1	✓	4	0.1	0.3	0.2	✓
Collie	4	29	49	43	✓	4	111	196	167	✓	4	<1	2	<1	✓	4	0.3	0.4	0.4	✓
Cowaramup	4	46	49	48	✓	4	234	264	247	✓	4	<1	2	<1	✓	4	0.6	0.8	0.7	✓
Dalyellup	4	76	140	108	✓	4	397	594	493	✓	4	<1	<1	<1	✓	4	0.2	0.6	0.4	✓
Dardanup	2	53	72	63	✓	2	216	295	256	✓	2	<1	<1	<1	✓	2	<0.1	0.3	0.2	✓
Darkan	2	43	46	45	✓	2	197	199	198	✓	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Donnybrook	4	115	135	125	✓	4	441	488	463	✓	4	<1	<1	<1	✓	4	0.2	0.4	0.3	✓
Dunsborough	3	125	155	140	✓	3	531	603	561	✓	3	<1	<1	<1	✓	3	<0.1	0.3	0.2	✓
Eaton	2	60	61	61	✓	2	394	404	399	✓	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Greenbushes	4	51	72	58	✓	4	300	371	338	✓	4	<1	<1	<1	✓	4	0.2	0.3	0.2	✓
Harvey	2	19	27	23	✓	2	140	158	149	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Hester	2	50	55	53	✓	2	304	348	326	✓	2	<1	<1	<1	✓	2	0.3	0.4	0.4	✓
Kirup	4	87	125	103	✓	4	337	483	401	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Logue Brook	2	48	98	73	✓	2	274	392	333	✓	2	<1	<1	<1	✓	2	0.3	0.3	0.3	✓
Manjimup	2	44	46	45	✓	2	197	277	237	✓	2	<1	3	2	✓	2	0.1	0.6	0.4	✓
Margaret River	4	46	51	49	✓	4	232	266	246	✓	4	1	2	2	✓	4	0.6	1.2	0.9	✓
Mullalyup	4	71	125	101	✓	4	275	483	387	✓	4	<1	<1	<1	✓	4	0.1	0.2	0.2	✓
Myalup	2	19	27	23	✓	2	138	158	148	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Nannup	8	52	60	55	✓	8	278	310	297	✓	8	<1	<1	<1	✓	8	<0.1	0.2	<0.1	✓
Northcliffe	4	52	64	57	✓	4	224	275	248	✓	4	<1	<1	<1	✓	4	0.2	0.6	0.3	✓
Pemberton	3	51	66	58	✓	3	219	265	242	✓	3	<1	<1	<1	✓	3	0.1	0.2	0.1	✓
Peppermint Grove	4	45	47	46	✓	4	276	283	280	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Preston Beach	4	93	270	142	✓	4	791	1030	853	(1)	4	<1	1	<1	✓	4	<0.1	0.3	<0.1	✓
Quinninup	4	49	60	55	✓	4	246	288	267	✓	4	<1	2	<1	✓	4	<0.1	0.5	0.3	✓
Waroona	2	19	27	23	✓	2	149	158	154	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Yarloop	2	19	31	25	✓	2	145	155	150	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓

(1) Elevated TDS is characteristic of the source supplying this locality.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 21 Health related variables

Great Southern	E. coli				Thermophilic Naegleria			Fluoride				Hydrocarbons		Metals	
									Concentration (mg/L)						
Locality	Samples Taken	Samples with >0 cfu/100mL	Max cfu/100mL	Requirement Met	Samples Taken	Samples with Thermophilic Naegleria	Requirement Met	Samples Taken	Min	Max	Mean	Samples Taken	Guideline Met	Samples Taken	Guideline Met
Albany	158	0	0	✓	78	0	✓	53	0.60	0.85	0.76	2	✓	8	✓
Boddington	46	0	0	✓	46	0	✓	4	0.65	0.85	0.75	2	✓	2	✓
Borden	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	3	✓
Bremer Bay	51	0	0	✓	25	0	✓	4	0.55	0.60	0.58	2	✓	2	✓
Brookton	48	0	0	✓	48	0	✓	4	0.70	0.95	0.81	2	✓	2	✓
Broomehill	12	0	0	✓	12	0	✓	4	0.75	0.95	0.84	0	(1)	2	✓
Bullaring	12	0	0	✓	12	0	✓	4	0.70	0.85	0.78	2	✓	2	✓
Condingup	12	0	0	✓	8	0	✓	2	0.30	0.30	0.30	0	(1)	2	✓
Cranbrook	12	0	0	✓	6	0	✓	2	<0.1	0.75	0.38	0	(1)	2	✓
Cuballing	12	0	0	✓	12	0	✓	4	0.70	0.90	0.78	2	✓	2	✓
Denmark	65	0	0	✓	32	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Dudinin	12	0	0	✓	12	0	✓	4	0.70	0.90	0.79	1	✓	2	✓
Dumbleyung	12	0	0	✓	12	0	✓	4	0.70	0.90	0.80	2	✓	2	✓
Esperance	78	0	0	✓	53	0	✓	52	0.60	0.85	0.76	0	(1)	4	✓
Frankland	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Gibson	12	0	0	✓	8	0	✓	2	0.35	0.40	0.38	2	✓	2	✓
Gnowangerup	52	0	0	✓	52	0	✓	4	0.75	0.90	0.83	0	(1)	3	✓
Grass Patch	12	0	0	✓	8	0	✓	4	0.65	0.80	0.73	0	(1)	3	✓
Harrismith	12	0	0	✓	12	0	✓	4	0.70	0.90	0.79	2	✓	2	✓
Highbury	12	0	0	✓	12	0	✓	4	0.70	0.95	0.80	2	✓	2	✓
Hopetoun	52	0	0	✓	26	0	✓	2	<0.1	<0.1	<0.1	1	✓	2	✓
Hyden	12	0	0	✓	12	0	✓	4	0.40	0.95	0.69	1	✓	2	✓
Jerramungup	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Karlgarin	12	0	0	✓	12	0	✓	4	0.80	0.95	0.89	2	✓	2	✓
Katanning	65	0	0	✓	65	0	✓	52	0.75	0.95	0.82	0	(1)	3	✓
Kendenup	12	0	0	✓	6	0	✓	4	0.70	0.80	0.76	0	(1)	2	✓
Kojonup	52	0	0	✓	52	0	✓	4	0.75	0.90	0.84	2	✓	2	✓
Kondinin	12	0	0	✓	12	0	✓	4	0.75	0.90	0.81	1	✓	3	✓
Kukerin	12	0	0	✓	12	0	✓	4	0.70	0.90	0.81	2	✓	2	✓
Kulin	12	0	0	✓	12	0	✓	4	0.70	0.95	0.83	2	✓	3	✓
Lake Grace	52	0	0	✓	52	0	✓	4	0.75	0.95	0.83	0	(1)	2	✓
Lake King	12	0	0	✓	6	0	✓	4	0.65	0.95	0.80	0	(1)	2	✓
Mt Barker	53	0	0	✓	26	0	✓	53	0.70	0.80	0.77	0	(1)	2	✓
Munglinup	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	3	✓
Muradup	12	0	0	✓	12	0	✓	4	0.75	0.90	0.81	2	✓	3	✓
Narrikup	12	0	0	✓	6	0	✓	4	0.75	0.80	0.76	0	(1)	2	✓
Narrogin	65	0	0	✓	65	0	✓	52	0.65	1.00	0.80	2	✓	2	✓
Newdegate	12	0	0	✓	12	0	✓	4	0.65	0.90	0.79	0	(1)	2	✓
Nyabing	12	0	0	✓	12	0	✓	4	0.75	0.90	0.83	0	(1)	2	✓
Ongerup	12	0	0	✓	6	0	✓	2	<0.1	0.10	<0.1	0	(1)	2	✓
Pingaring	12	0	0	✓	12	0	✓	4	0.70	0.90	0.79	2	✓	2	✓
Pingelly	48	0	0	✓	48	0	✓	4	0.70	0.90	0.80	2	✓	2	✓
Pingrup	12	0	0	✓	12	0	✓	4	0.75	0.90	0.84	0	(1)	2	✓
Popanyinning	12	0	0	✓	12	0	✓	4	0.70	0.90	0.79	2	✓	2	✓
Ravensthorpe	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Rocky Gully	12	0	0	✓	6	0	✓	4	0.70	0.80	0.75	0	(1)	2	✓
Salmon Gums	12	0	0	✓	8	0	✓	4	0.35	0.40	0.39	1	✓	2	✓
Tambellup	12	0	0	✓	12	0	✓	4	0.75	0.90	0.84	0	(1)	2	✓
Tincurrin	12	0	0	✓	12	0	✓	4	0.70	0.95	0.80	2	✓	2	✓
Varley	12	0	0	✓	6	0	✓	4	0.70	0.95	0.83	0	(1)	2	✓
Wagin	53	0	0	✓	53	0	✓	5	0.70	1.00	0.83	2	✓	2	✓
Walpole	52	0	0	✓	26	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Wandering	12	0	0	✓	12	0	✓	4	0.60	0.95	0.75	0	(1)	2	✓
Wellstead	12	1	2	✓	6	0	✓	2	0.20	0.25	0.23	2	✓	2	✓
Wickepin	12	0	0	✓	12	0	✓	4	0.65	0.90	0.79	2	✓	2	✓
Williams	12	0	0	✓	12	0	✓	4	0.70	0.85	0.79	2	✓	2	✓
Woodanilling	12	0	0	✓	12	0	✓	4	0.70	1.00	0.81	0	(1)	2	✓
Yealering	12	0	0	✓	12	0	✓	4	0.65	0.90	0.78	2	✓	2	✓

(1) No samples required in this 12 month period.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 22 Health related variables

Great Southern	Nitrate (measured as Nitrogen)					Pesticides		Radiological		Trihalomethanes					Other Health Related	
		Concentration (mg/L)									Concentration (mg/L)					
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Requirement Met
Albany	20	0.1	0.2	0.2	✓	4	✓	4	✓	8	0.10	0.13	0.118	✓	2	✓
Boddington	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	4	0.07	0.1	0.088	✓	2	✓
Borden	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.04	0.038	0.037	✓	1	✓
Bremer Bay	4	5.2	6.1	5.7	✓	1	✓	1	✓	2	0.07	0.13	0.101	✓	1	✓
Brookton	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.09	0.11	0.095	✓	2	✓
Broomehill	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.04	0.12	0.096	✓	0	(1)
Bullaring	4	0.1	0.1	0.1	✓	1	✓	0	(1)	4	0.05	0.1	0.077	✓	2	✓
Condingup	4	0.3	0.3	0.3	✓	1	✓	1	✓	2	0.01	0.016	0.014	✓	0	(1)
Cranbrook	2	<0.05	0.1	0.1	✓	1	✓	1	✓	4	0.06	0.16	0.119	✓	1	✓
Cuballing	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.07	0.11	0.089	✓	2	✓
Denmark	4	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.04	0.046	0.041	✓	0	(1)
Dudinin	4	<0.05	0.1	<0.05	✓	1	✓	0	(1)	3	0.07	0.088	0.078	✓	2	✓
Dumbleyung	2	<0.05	0.1	0.1	✓	1	✓	0	(1)	4	0.09	0.11	0.102	✓	2	✓
Esperance	8	2.5	6.6	3.7	✓	2	✓	0	(1)	4	<0.001	0.023	0.011	✓	2	✓
Frankland	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.08	0.091	0.086	✓	0	(1)
Gibson	4	2	3.7	2.6	✓	1	✓	1	✓	2	0.04	0.05	0.043	✓	2	✓
Gnowangerup	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.12	0.14	0.13	✓	0	(1)
Grass Patch	4	3.2	6.1	4.2	✓	2	✓	2	✓	2	0.06	0.084	0.073	✓	1	✓
Harrismith	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.14	0.18	0.158	✓	0	(1)
Highbury	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.07	0.08	0.075	✓	1	✓
Hopetoun	4	<0.05	0.9	0.5	✓	1	✓	0	(1)	2	0.01	0.01	0.009	✓	0	(1)
Hyden	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.05	0.12	0.076	✓	2	✓
Jerramungup	4	<0.05	0.1	<0.05	✓	1	✓	1	✓	2	0.04	0.054	0.045	✓	2	✓
Karlgarin	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.05	0.087	0.073	✓	2	✓
Katanning	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.05	0.087	0.064	✓	1	✓
Kendenup	4	0.2	0.2	0.2	✓	1	✓	0	(1)	4	0.13	0.16	0.148	✓	0	(1)
Kojonup	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.10	0.12	0.11	✓	2	✓
Kondinin	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.07	0.2	0.118	✓	2	✓
Kukerin	2	0.1	0.1	0.1	✓	1	✓	0	(1)	4	0.10	0.14	0.128	✓	2	✓
Kulin	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.12	0.17	0.148	✓	2	✓
Lake Grace	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.11	0.15	0.13	✓	0	(1)
Lake King	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.08	0.1	0.093	✓	1	✓
Mt Barker	4	<0.05	0.2	0.1	✓	1	✓	0	(1)	4	0.13	0.15	0.14	✓	1	✓
Munglinup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.03	0.039	0.036	✓	0	(1)
Muradup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.09	0.13	0.106	✓	2	✓
Narrikup	4	0.2	0.3	0.2	✓	1	✓	0	(1)	4	0.10	0.19	0.148	✓	0	(1)
Narrogin	5	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.07	0.1	0.085	✓	2	✓
Newdegate	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.11	0.14	0.13	✓	0	(1)
Nyabing	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.08	0.086	0.083	✓	0	(1)
Ongerup	2	<0.05	0.3	0.1	✓	1	✓	0	(1)	2	0.05	0.054	0.051	✓	0	(1)
Pingaring	4	<0.05	0.1	<0.05	✓	1	✓	0	(1)	4	0.17	0.2	0.183	✓	2	✓
Pingelly	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.07	0.16	0.099	✓	2	✓
Pingrup	2	0.1	0.1	0.1	✓	1	✓	0	(1)	4	0.03	0.053	0.041	✓	0	(1)
Popanyinning	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.11	0.14	0.123	✓	2	✓
Ravensthorpe	4	<0.05	<0.05	<0.05	✓	4	✓	1	✓	4	0.07	0.11	0.08	✓	0	(1)
Rocky Gully	4	0.2	0.2	0.2	✓	1	✓	0	(1)	2	0.09	0.1	0.095	✓	1	✓
Salmon Gums	4	0.2	0.2	0.2	✓	1	✓	1	✓	2	0.10	0.12	0.11	✓	1	✓
Tambellup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.06	0.09	0.078	✓	0	(1)
Tincurrin	4	<0.05	0.1	<0.05	✓	1	✓	0	(1)	4	0.10	0.11	0.105	✓	2	✓
Varley	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.06	0.081	0.07	✓	0	(1)
Wagin	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	5	0.08	0.13	0.112	✓	2	✓
Walpole	4	0.1	0.5	0.3	✓	1	✓	0	(1)	6	0.08	0.14	0.114	✓	0	(1)
Wandering	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	4	0.10	0.13	0.106	✓	0	(1)
Wellstead	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.03	0.036	0.034	✓	1	✓
Wickepin	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.09	0.11	0.098	✓	1	✓
Williams	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.09	0.1	0.094	✓	2	✓
Woodanilling	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.11	0.16	0.125	✓	0	(1)
Yealering	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.10	0.12	0.112	✓	2	✓

(1) No samples required in this 12 month period.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 23 Aesthetic (Non-health related) Variables

Great Southern	Alkalinity (as CaCO3)					Aluminium					Chloride					Hardness				
		Concentration (mg/L)					Concentration (mg/L)					Concentration (mg/L)					Concentration (mg/L)			
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met
Albany	20	204	276	238	(1)	20	<0.008	0.018	0.012	✓	20	120	140	127	✓	20	210	270	244	(3)
Boddington	2	18	26	22	(1)	2	0.018	0.025	0.022	✓	2	80	95	88	✓	2	39	50	45	✓
Borden	2	22	35	29	(1)	2	0.05	0.07	0.06	✓	2	15	17	16	✓	2	22	23	23	✓
Bremer Bay	4	325	343	332	(1)	4	<0.008	0.014	0.010	✓	4	180	195	189	✓	4	160	180	170	✓
Brookton	2	19	29	24	(1)	2	0.06	0.07	0.065	✓	2	95	105	100	✓	2	51	61	56	✓
Broomehill	2	18	25	22	(1)	2	0.025	0.03	0.028	✓	2	100	105	103	✓	2	47	54	51	✓
Bullaring	4	34	39	36	(1)	4	0.016	0.04	0.027	✓	4	90	105	99	✓	4	56	64	61	✓
Condingup	4	165	171	168	(1)	4	<0.008	<0.008	<0.008	✓	4	390	395	393	(2)	4	73	78	75	✓
Cranbrook	2	10	227	118	(1)	2	0.02	0.03	0.025	✓	2	19	130	75	✓	2	14	240	127	✓
Cuballing	2	15	17	16	(1)	2	0.025	0.035	0.03	✓	2	90	100	95	✓	2	40	45	43	✓
Denmark	4	11	25	18	(1)	4	0.01	0.018	0.014	✓	4	285	315	301.25	(2)	4	100	110	108	✓
Dudinin	4	29	35	31	(1)	4	0.018	0.03	0.023	✓	4	95	105	100	✓	4	55	73	62	✓
Dumbleyung	2	32	34	33	(1)	2	0.018	0.02	0.019	✓	2	95	100	98	✓	2	54	62	58	✓
Esperance	8	312	338	322	(1)	8	<0.008	0.01	0.009	✓	8	190	240	212	✓	8	310	350	338	(3)
Frankland	4	1	4	3	(1)	4	0.016	0.025	0.019	✓	4	12	15	14	✓	4	9	16	11	✓
Gibson	4	79	90	85	(1)	4	<0.008	0.01	<0.008	✓	4	215	225	221	✓	4	36	42	39	✓
Gnowangerup	4	19	27	24	(1)	4	0.04	0.05	0.048	✓	4	100	110	105	✓	4	50	62	56	✓
Grass Patch	4	322	345	329	(1)	4	0.016	0.075	0.032	✓	4	195	230	216	✓	4	340	350	348	(3)
Harrismith	4	27	30	28	(1)	4	0.016	0.02	0.019	✓	4	90	100	95	✓	4	51	58	54	✓
Highbury	4	14	20	16	(1)	4	0.012	0.025	0.017	✓	4	90	100	95	✓	4	40	52	44	✓
Hopetoun	4	35	204	114	(1)	4	<0.008	0.014	<0.008	✓	4	130	260	204	✓	4	54	190	110	✓
Hyden	4	17	31	24	(1)	4	0.02	0.03	0.026	✓	4	37	100	69	✓	4	31	60	45	✓
Jerramungup	4	7	10	9	(1)	4	0.095	0.15	0.123	✓	4	38	55	46	✓	4	15	22	19	✓
Karlgarin	4	30	34	32	(1)	4	0.016	0.03	0.024	✓	4	95	115	106	✓	4	58	68	63	✓
Katanning	2	17	21	19	(1)	2	0.018	0.025	0.022	✓	2	90	105	98	✓	2	44	50	47	✓
Kendenup	4	224	272	251	(1)	4	0.012	0.016	0.015	✓	4	125	130	126	✓	4	240	270	255	(3)
Kojonup	4	21	29	26	(1)	4	0.025	0.035	0.03	✓	4	95	110	101	✓	4	51	59	54	✓
Kondinin	4	31	35	33	(1)	4	0.03	0.06	0.039	✓	4	95	110	101	✓	4	59	69	63	✓
Kukerin	2	32	33	33	(1)	2	0.02	0.025	0.023	✓	2	90	100	95	✓	2	56	61	59	✓
Kulin	4	28	34	32	(1)	4	0.02	0.03	0.025	✓	4	90	100	95	✓	4	52	60	56	✓
Lake Grace	2	36	37	37	(1)	2	0.02	0.025	0.023	✓	2	90	105	98	✓	2	60	68	64	✓
Lake King	2	34	35	35	(1)	2	0.02	0.03	0.025	✓	2	95	105	100	✓	2	57	65	61	✓
Mt Barker	4	227	266	247	(1)	4	0.010	0.014	0.012	✓	4	120	130	125	✓	4	240	270	258	(3)
Munglinup	2	5	6	6	(1)	2	0.008	0.035	0.022	✓	2	26	27	27	✓	2	13	13	13	✓
Muradup	2	30	31	31	(1)	2	0.02	0.035	0.028	✓	2	100	115	108	✓	2	52	57	55	✓
Narrikup	4	224	254	240	(1)	4	0.010	0.012	0.011	✓	4	125	130	129	✓	4	240	260	248	(3)
Narrogin	5	15	20	17	(1)	5	0.012	0.02	0.016	✓	5	90	100	94	✓	5	40	48	43	✓
Newdegate	2	35	37	36	(1)	2	0.025	0.03	0.028	✓	2	95	105	100	✓	2	58	66	62	✓
Nyabing	4	17	20	18	(1)	4	0.012	0.02	0.018	✓	4	90	110	101	✓	4	47	55	50	✓
Ongerup	2	16	31	23	(1)	2	0.01	0.02	0.015	✓	2	20	23	22	✓	2	16	19	18	✓
Pingaring	4	34	40	36	(1)	4	0.018	0.03	0.023	✓	4	90	105	99	✓	4	61	72	67	✓
Pingelly	2	19	21	20	(1)	2	0.035	0.035	0.035	✓	2	90	100	95	✓	2	46	50	48	✓
Pingrup	2	18	25	21	(1)	2	<0.008	0.012	<0.008	✓	2	95	110	103	✓	2	43	52	48	✓
Popanyinning	2	18	21	19	(1)	2	0.03	0.03	0.03	✓	2	95	100	98	✓	2	44	52	48	✓
Ravensthorpe	4	28	36	32	(1)	4	0.05	0.12	0.074	✓	4	30	33	31	✓	4	26	29	28	✓
Rocky Gully	4	229	269	245	(1)	4	0.014	0.018	0.016	✓	4	125	130	126	✓	4	240	260	250	(3)
Salmon Gums	4	207	232	218	(1)	4	0.03	0.035	0.033	✓	4	40	42	41	✓	4	97	110	102	✓
Tambellup	2	26	29	28	(1)	2	0.035	0.04	0.038	✓	2	95	110	103	✓	2	55	60	58	✓
Tincurrin	4	26	32	29	(1)	4	0.025	0.05	0.038	✓	4	95	105	99	✓	4	53	61	57	✓
Varley	2	36	37	37	(1)	2	0.035	0.04	0.038	✓	2	95	105	100	✓	2	61	69	65	✓
Wagin	2	14	26	20	(1)	2	0.016	0.018	0.017	✓	2	90	105	98	✓	2	43	51	47	✓
Walpole	4	29	33	31	(1)	4	0.012	0.025	0.017	✓	4	115	170	141	✓	4	42	61	53	✓
Wandering	2	20	29	25	(1)	2	0.02	0.025	0.023	✓	2	90	100	95	✓	2	40	51	46	✓
Wellstead	2	2	4	3	(1)	2	0.02	0.025	0.023	✓	2	32	33	33	✓	2	11	12	12	✓
Wickepin	4	17	20	19	(1)	4	0.016	0.02	0.019	✓	4	90	100	94	✓	4	39	49	44	✓
Williams	2	16	26	21	(1)	2	0.014	0.016	0.015	✓	2	85	95	90	✓	2	38	43	41	✓
Woodanilling	2	17	19	18	(1)	2	0.025	0.065	0.045	✓	2	90	100	95	✓	2	43	46	45	✓
Yealering	4	27	33	31	(1)	4	0.02	0.025	0.023	✓	4	90	100	95	✓	4	46	57	54	✓

(1) No guideline value available as per ADWG 2011. (2) Elevated chloride is characteristic of the source supplying this locality. (3) Elevated hardness is characteristic of the source supplying this locality.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 24 Aesthetic (Non-health related) Variables

Great Southern	Iron					Manganese					pH					Silica				
		Concentration (mg/L)					Concentration (mg/L)					Value (pH units)					Concentration (mg/L)			
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met
Albany	20	0.030	0.180	0.079	✓	20	<0.002	<0.002	<0.002	✓	20	7.48	7.89	7.65	✓	20	13.0	25.0	18.1	✓
Boddington	2	0.045	0.060	0.053	✓	2	0.007	0.012	0.01	✓	2	7.29	7.47	7.38	✓	2	1.3	1.5	1.4	✓
Borden	2	0.004	0.008	0.006	✓	2	<0.002	<0.002	<0.002	✓	2	7.34	7.6	7.47	✓	2	1.0	1.2	1.1	✓
Bremer Bay	4	<0.003	0.004	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	8.21	8.3	8.24	✓	4	50	55	54	✓
Brookton	2	0.200	0.200	0.200	✓	2	0.012	0.03	0.021	✓	2	8.22	8.76	8.49	✓	2	1.2	1.7	1.5	✓
Broomehill	2	0.090	0.100	0.095	✓	2	0.002	0.003	0.003	✓	2	7.51	7.92	7.72	✓	2	1.1	1.1	1.1	✓
Bullaring	4	0.045	0.220	0.106	✓	4	<0.002	0.018	0.006	✓	4	7.49	7.97	7.8	✓	4	1.0	1.5	1.2	✓
Condingup	4	0.025	0.045	0.034	✓	4	<0.002	<0.002	<0.002	✓	4	6.73	6.96	6.86	✓	4	60	65	64	✓
Cranbrook	2	0.035	0.045	0.040	✓	2	<0.002	<0.002	<0.002	✓	2	6.74	7.79	7.27	✓	2	2.8	13	7.9	✓
Cuballing	2	0.180	0.420	0.300	✓	2	0.025	0.055	0.04	✓	2	7.15	7.32	7.24	✓	2	0.6	0.9	0.8	✓
Denmark	4	0.008	0.020	0.013	✓	4	<0.002	<0.002	<0.002	✓	4	7.21	7.67	7.45	✓	4	3.3	7.9	6.3	✓
Dudinin	4	0.120	0.220	0.165	✓	4	0.003	0.004	0.004	✓	4	8.95	9.6	9.2	(2)	4	0.9	1.2	1.0	✓
Dumbleyung	2	0.070	0.120	0.095	✓	2	0.002	0.005	0.004	✓	2	8.18	8.6	8.39	✓	2	1.1	1.2	1.2	✓
Esperance	8	<0.003	0.030	0.009	✓	8	<0.002	<0.002	<0.002	✓	8	7.47	7.68	7.57	✓	8	10	11	10.9	✓
Frankland	4	0.045	0.260	0.156	✓	4	<0.002	0.006	0.003	✓	4	5.76	6.56	6.17	(4)	4	1.1	3.2	1.9	✓
Gibson	4	0.030	0.080	0.050	✓	4	<0.002	<0.002	<0.002	✓	4	6.53	6.94	6.8	✓	4	45	48	47	✓
Gnowangerup	4	0.080	0.140	0.115	✓	4	0.002	0.005	0.004	✓	4	7.79	8.41	8.02	✓	4	1.2	1.7	1.5	✓
Grass Patch	4	<0.003	0.100	0.025	✓	4	<0.002	0.006	<0.002	✓	4	8.16	8.22	8.2	✓	4	10	11	10.5	✓
Harrismith	4	0.140	0.220	0.165	✓	4	0.008	0.01	0.009	✓	4	8.1	9.24	8.76	(3)	4	0.8	1.1	1.0	✓
Highbury	4	0.120	0.240	0.180	✓	4	0.006	0.016	0.01	✓	4	7.02	7.4	7.23	✓	4	0.6	0.8	0.7	✓
Hopetoun	4	<0.003	0.015	0.009	✓	4	<0.002	<0.002	<0.002	✓	4	6.41	7.54	7.1	✓	4	17	30	24	✓
Hyden	4	0.015	0.070	0.041	✓	4	<0.002	<0.002	<0.002	✓	4	7.5	7.72	7.6	✓	4	1.0	2.1	1.4	✓
Jerramungup	4	0.035	0.090	0.053	✓	4	<0.002	<0.002	<0.002	✓	4	6.88	7.52	7.19	✓	4	2.7	3.1	2.9	✓
Karlgarin	4	0.035	0.090	0.061	✓	4	<0.002	<0.002	<0.002	✓	4	7.66	7.92	7.8	✓	4	1.2	2.0	1.5	✓
Katanning	2	0.140	0.520	0.330	(1)	2	0.004	0.005	0.005	✓	2	7.16	7.48	7.32	✓	2	0.7	0.8	0.8	✓
Kendenup	4	0.020	0.045	0.033	✓	4	<0.002	<0.002	<0.002	✓	4	7.91	8.07	8.03	✓	4	16	19	17	✓
Kojonup	4	0.090	0.140	0.118	✓	4	<0.002	0.004	<0.002	✓	4	7.57	8.39	7.88	✓	4	1.0	1.5	1.2	✓
Kondinin	4	0.050	0.140	0.085	✓	4	<0.002	0.003	<0.002	✓	4	7.94	8.35	8.17	✓	4	1.4	1.8	1.6	✓
Kukerin	2	0.045	0.080	0.063	✓	2	<0.002	0.002	<0.002	✓	2	8.42	8.64	8.53	(3)	2	1.0	1.3	1.2	✓
Kulin	4	0.100	0.160	0.135	✓	4	0.004	0.016	0.008	✓	4	8.08	8.68	8.27	✓	4	0.9	1.2	1.0	✓
Lake Grace	2	0.070	0.090	0.080	✓	2	0.002	0.003	0.003	✓	2	8.89	8.97	8.93	(2)	2	1.0	1.4	1.2	✓
Lake King	2	0.080	0.120	0.100	✓	2	0.002	0.006	0.004	✓	2	7.85	7.96	7.91	✓	2	1.0	1.4	1.2	✓
Mt Barker	4	0.025	0.050	0.041	✓	4	<0.002	<0.002	<0.002	✓	4	7.61	7.85	7.77	✓	4	14	17	15.5	✓
Munglinup	2	0.050	0.160	0.105	✓	2	<0.002	0.01	0.005	✓	2	6.43	6.84	6.64	✓	2	0.3	0.6	0.5	✓
Muradup	2	0.080	0.160	0.120	✓	2	<0.002	0.003	<0.002	✓	2	7.55	7.69	7.62	✓	2	1.2	1.4	1.3	✓
Narrikup	4	0.025	0.070	0.043	✓	4	<0.002	<0.002	<0.002	✓	4	7.68	7.84	7.75	✓	4	16	19	17.5	✓
Narrogin	5	0.090	0.180	0.134	✓	5	0.005	0.012	0.008	✓	5	7.04	7.43	7.32	✓	5	0.5	0.8	0.6	✓
Newdegate	2	0.080	0.120	0.100	✓	2	<0.002	0.004	<0.002	✓	2	7.87	7.92	7.9	✓	2	1.1	1.5	1.3	✓
Nyabing	4	0.100	0.120	0.110	✓	4	<0.002	0.004	<0.002	✓	4	7.08	7.6	7.36	✓	4	0.4	0.9	0.7	✓
Ongerup	2	0.006	0.008	0.007	✓	2	<0.002	<0.002	<0.002	✓	2	7.4	7.45	7.43	✓	2	3.2	3.5	3.4	✓
Pingaring	4	0.050	0.120	0.080	✓	4	<0.002	0.003	<0.002	✓	4	9.26	9.42	9.34	(2)	4	1.1	1.5	1.3	✓
Pingelly	2	0.140	0.300	0.220	✓	2	0.008	0.045	0.027	✓	2	7.46	8.24	7.85	✓	2	1.1	1.5	1.3	✓
Pingrup	2	0.090	0.090	0.090	✓	2	0.004	0.014	0.009	✓	2	7.28	7.32	7.3	✓	2	0.6	0.7	0.7	✓
Popanyinning	2	0.100	0.240	0.170	✓	2	0.008	0.016	0.012	✓	2	7.74	7.95	7.85	✓	2	1.1	1.3	1.2	✓
Ravensthorpe	4	0.030	0.060	0.040	✓	4	<0.002	0.012	0.005	✓	4	7.6	7.88	7.69	✓	4	0.8	1	1.0	✓
Rocky Gully	4	0.020	0.070	0.038	✓	4	<0.002	<0.002	<0.002	✓	4	8.32	8.39	8.35	✓	4	16	17	16.5	✓
Salmon Gums	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	8.32	8.71	8.57	(3)	4	6	7	6.5	✓
Tambellup	2	0.140	0.280	0.210	✓	2	0.005	0.01	0.008	✓	2	8.52	8.75	8.64	(3)	2	1.4	1.5	1.5	✓
Tincurrin	4	0.100	0.540	0.330	(1)	4	0.003	0.03	0.014	✓	4	7.17	7.84	7.5	✓	4	1.1	1.7	1.3	✓
Varley	2	0.080	0.120	0.100	✓	2	0.004	0.009	0.007	✓	2	7.91	7.98	7.95	✓	2	1.1	1.4	1.3	✓
Wagin	2	0.140	0.240	0.190	✓	2	0.006	0.016	0.011	✓	2	7.23	7.55	7.39	✓	2	0.9	1.3	1.1	✓
Walpole	4	0.006	0.010	0.007	✓	4	<0.002	<0.002	<0.002	✓	4	7.43	7.8	7.64	✓	4	7.9	10	9.0	✓
Wandering	2	0.090	0.100	0.095	✓	2	0.005	0.012	0.009	✓	2	7.66	7.87	7.77	✓	2	1.2	1.5	1.4	✓
Wellstead	2	0.100	0.120	0.110	✓	2	<0.002	0.004	<0.002	✓	2	6.17	6.42	6.3	(4)	2	0.4	0.5	0.5	✓
Wickepin	4	0.050	0.180	0.113	✓	4	0.004	0.014	0.009	✓	4	7.2	7.75	7.55	✓	4	0.7	1.0	0.9	✓
Williams	2	0.040	0.045	0.043	✓	2	0.01	0.016	0.013	✓	2	7.09	7.1	7.1	✓	2	0.9	1.1	1.0	✓
Woodanilling	2	0.120	0.720	0.420	(1)	2	0.016	0.02	0.018	✓	2	7.31	7.61	7.46	✓	2	0.7	1.1	0.9	✓
Yealering	4	0.090	0.120	0.103	✓	4	0.002	0.004	0.003	✓	4	8.89	9.67	9.15	(2)	4	0.8	1.1	1.0	✓

(1) Caused by mobilisation of sediment within the distribution system. (2) Elevated pH is caused by leaching of calcium carbonate from the protective cement lining of the pipes after long water transit times. This characteristic is found in a number of our localities on our large water supply schemes. Experience shows that pH at this level is not objectionable to our customers. (3) Elevated pH is characteristic of the source supplying this locality. (4) Low pH is characteristic of the source supplying this locality.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 25 Aesthetic (Non-health related) Variables

Great Southern	Sodium					TDS					True Colour					Turbidity				
		Concentration (mg/L)					Concentration (mg/L)					Value (TCU)					Value (NTU)			
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met
Albany	20	61	77	67	✓	20	552	614	578	✓	20	<1	<1	<1	✓	20	0.2	0.9	0.5	✓
Boddington	2	38	48	43	✓	2	172	213	193	✓	2	<1	1	<1	✓	2	0.4	0.7	0.6	✓
Borden	2	8	13	11	✓	2	62	85	74	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Bremer Bay	4	175	195	186	(1)	4	871	895	880	(2)	4	<1	<1	<1	✓	4	<0.1	0.1	<0.1	✓
Brookton	2	45	49	47	✓	2	200	226	213	✓	2	<1	3	2	✓	2	0.5	1.2	0.9	✓
Broomehill	2	43	50	47	✓	2	197	223	210	✓	2	2	2	2	✓	2	0.4	0.8	0.6	✓
Bullaring	4	46	50	49	✓	4	210	235	224	✓	4	<1	<1	<1	✓	4	0.2	1.4	0.6	✓
Condingup	4	295	305	299	(1)	4	1016	1029	1022	(2)	4	<1	<1	<1	✓	4	0.1	0.3	0.2	✓
Cranbrook	2	10	66	38	✓	2	60	562	311	✓	2	<1	2	<1	✓	2	0.3	1.5	0.9	✓
Cuballing	2	45	50	48	✓	2	183	203	193	✓	2	2	2	2	✓	2	1.2	2.9	2.1	✓
Denmark	4	150	170	160	✓	4	533	593	559	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Dudinin	4	45	52	47	✓	4	207	236	219	✓	4	1	4	2	✓	4	0.4	0.8	0.5	✓
Dumbleyung	2	47	47	47	✓	2	210	225	218	✓	2	2	2	2	✓	2	0.5	0.6	0.6	✓
Esperance	8	100	120	111	✓	8	788	888	831	(2)	8	<1	<1	<1	✓	8	<0.1	0.3	<0.1	✓
Frankland	4	4.4	4.8	5	✓	4	35	44	38	✓	4	2	6	4	✓	4	0.4	1.1	0.8	✓
Gibson	4	175	180	179	✓	4	621	651	634	(2)	4	<1	<1	<1	✓	4	0.1	0.4	0.3	✓
Gnowangerup	4	45	52	49	✓	4	211	230	219	✓	4	<1	3	2	✓	4	0.3	0.8	0.5	✓
Grass Patch	4	105	120	114	✓	4	842	885	854	(2)	4	<1	<1	<1	✓	4	<0.1	2.3	0.6	✓
Harrismith	4	40	48	45	✓	4	197	220	208	✓	4	1	4	2	✓	4	0.4	0.8	0.6	✓
Highbury	4	46	54	49	✓	4	184	213	196	✓	4	2	2	2	✓	4	0.4	1.5	0.9	✓
Hopetoun	4	83	165	130	✓	4	461	624	546	✓	4	<1	<1	<1	✓	4	<0.1	0.3	<0.1	✓
Hyden	4	18	48	33	✓	4	97	225	161	✓	4	<1	1	<1	✓	4	<0.1	0.6	0.4	✓
Jerramungup	4	19	30	25	✓	4	81	118	99	✓	4	<1	<1	<1	✓	4	0.1	0.7	0.3	✓
Karlgarin	4	46	53	50	✓	4	217	248	233	✓	4	<1	2	<1	✓	4	0.2	0.5	0.4	✓
Katanning	2	45	52	49	✓	2	187	215	201	✓	2	2	2	2	✓	2	0.9	1.0	1.0	✓
Kendenup	4	66	71	68	✓	4	571	618	596	✓	4	<1	<1	<1	✓	4	<0.1	0.4	0.2	✓
Kojonup	4	44	51	48	✓	4	201	230	214	✓	4	1	3	2	✓	4	0.4	0.7	0.6	✓
Kondinin	4	45	51	48	✓	4	216	245	228	✓	4	<1	2	2	✓	4	0.2	0.6	0.5	✓
Kukerin	2	45	48	47	✓	2	204	224	214	✓	2	<1	1.0	<1	✓	2	0.2	0.2	0.2	✓
Kulin	4	44	49	46	✓	4	200	228	214	✓	4	2.0	4.0	3	✓	4	0.3	1.1	0.5	✓
Lake Grace	2	45	50	48	✓	2	212	236	224	✓	2	1.0	2.0	2	✓	2	0.3	0.3	0.3	✓
Lake King	2	45	49	47	✓	2	214	232	223	✓	2	<1	<1	<1	✓	2	0.2	0.5	0.4	✓
Mt Barker	4	63	66	64	✓	4	561	604	583	✓	4	<1	<1	<1	✓	4	0.2	0.5	0.4	✓
Munglinup	2	14	14	14	✓	2	70	73	72	✓	2	<1	2.0	<1	✓	2	1.0	3.3	2.2	✓
Muradup	2	48	55	52	✓	2	217	240	229	✓	2	2.0	2.0	2	✓	2	0.4	1.3	0.9	✓
Narrikup	4	66	68	67	✓	4	564	605	585	✓	4	<1	<1	<1	✓	4	0.1	0.4	0.3	✓
Narrogin	5	44	51	48	✓	5	182	208	193	✓	5	1.0	3.0	2	✓	5	0.3	0.8	0.5	✓
Newdegate	2	44	49	47	✓	2	214	235	225	✓	2	1.0	2.0	2	✓	2	0.3	0.3	0.3	✓
Nyabing	4	46	53	50	✓	4	191	220	207	✓	4	1.0	2.0	2	✓	4	0.4	0.9	0.6	✓
Ongerup	2	13	17	15	✓	2	66	92	79	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Pingaring	4	42	49	46	✓	4	212	240	225	✓	4	<1	3.0	<1	✓	4	0.1	0.4	0.2	✓
Pingelly	2	45	48	47	✓	2	196	209	203	✓	2	2.0	2.0	2	✓	2	1.3	1.4	1.4	✓
Pingrup	2	45	57	51	✓	2	189	225	207	✓	2	<1	3.0	2	✓	2	0.5	0.6	0.6	✓
Popanyinning	2	43	49	46	✓	2	189	213	201	✓	2	2.0	3.0	3	✓	2	0.8	0.9	0.9	✓
Ravensthorpe	4	19	21	20	✓	4	104	115	110	✓	4	<1	2.0	<1	✓	4	0.4	1.1	0.7	✓
Rocky Gully	4	61	66	65	✓	4	573	602	585	✓	4	<1	<1	<1	✓	4	0.2	0.4	0.3	✓
Salmon Gums	4	61	65	63	✓	4	372	393	381	✓	4	<1	<1	<1	✓	4	0.1	0.1	0.1	✓
Tambellup	2	45	51	48	✓	2	211	231	221	✓	2	2.0	2.0	2	✓	2	0.9	1.9	1.4	✓
Tincurrin	4	46	53	49	✓	4	205	230	217	✓	4	1.0	5.0	3	✓	4	0.6	2.4	1.1	✓
Varley	2	44	48	46	✓	2	218	236	227	✓	2	1.0	1.0	1	✓	2	0.3	0.6	0.5	✓
Wagin	2	46	51	49	✓	2	187	220	204	✓	2	1.0	3.0	2	✓	2	0.5	0.7	0.6	✓
Walpole	4	77	96	86	✓	4	288	362	324	✓	4	<1	<1	<1	✓	4	<0.1	0.3	<0.1	✓
Wandering	2	45	53	49	✓	2	189	221	205	✓	2	1.0	2.0	2	✓	2	0.5	0.7	0.6	✓
Wellstead	2	16	17	17	✓	2	69	71	70	✓	2	1.0	2.0	2	✓	2	1.4	1.7	1.6	✓
Wickepin	4	44	50	47	✓	4	181	208	195	✓	4	1.0	3.0	2	✓	4	0.3	1.0	0.6	✓
Williams	2	46	49	48	✓	2	180	205	193	✓	2	<1	<1	<1	✓	2	0.4	1.0	0.7	✓
Woodanilling	2	44	50	47	✓	2	187	203	195	✓	2	2	2	2	✓	2	1.1	4.9	3.0	✓
Yealering	4	43	49	47	✓	4	193	224	210	✓	4	1	3	2	✓	4	0.3	1.7	0.8	✓

(1) Elevated sodium is characteristic of the source supplying this locality. (2) Elevated TDS is characteristic of the source supplying this locality.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 26 Health related variables

North West	E. coli				Thermophilic Naegleria			Fluoride				Hydrocarbons		Metals	
									Concentration (mg/L)						
Locality	Samples Taken	Samples with >0 cfu/100mL	Max cfu/100mL	Requirement Met	Samples Taken	Samples with Thermophilic Naegleria	Requirement Met	Samples Taken	Min	Max	Mean	Samples Taken	Guideline Met	Samples Taken	Guideline Met
Broome	91	0	0	✓	78	0	✓	52	0.70	0.80	0.74	2	✓	2	✓
Burrup LNG	13	0	0	✓	13	0	✓	2	0.70	0.75	0.73	0	(1)	2	✓
Burrup Supply	13	0	0	✓	13	0	✓	2	0.70	0.70	0.70	0	(1)	2	✓
Camballin	13	0	0	✓	13	0	✓	2	0.25	0.25	0.25	0	(1)	2	✓
Cape Lambert TWS	12	0	0	✓	12	0	✓	2	0.60	0.65	0.63	0	(1)	2	✓
Derby	52	0	0	✓	52	0	✓	52	0.50	0.70	0.62	0	(1)	2	✓
Fitzroy Crossing	12	0	0	✓	12	0	✓	2	0.25	0.30	0.28	0	(1)	2	✓
Halls Creek	51	0	0	✓	51	0	✓	2	0.65	0.70	0.68	0	(1)	2	✓
Hedland	84	0	0	✓	72	0	✓	4	0.40	0.45	0.43	0	(1)	4	✓
Karratha	90	0	0	✓	77	0	✓	52	0.40	0.80	0.64	0	(1)	2	✓
Kununurra	65	0	0	✓	52	0	✓	2	0.30	0.40	0.35	2	✓	2	✓
Marble Bar	12	0	0	✓	12	0	✓	2	0.65	0.75	0.70	1	✓	2	✓
Newman	66	0	0	✓	52	0	✓	2	0.20	0.35	0.28	0	(1)	2	✓
Nullagine	12	0	0	✓	12	0	✓	2	0.40	0.45	0.43	0	(1)	2	✓
Onslow TWS	52	0	0	✓	26	0	✓	2	0.90	0.95	0.93	0	(1)	2	✓
Point Samson	12	0	0	✓	12	0	✓	2	0.55	0.70	0.63	0	(1)	2	✓
Roebourne	51	0	0	✓	39	0	✓	2	0.35	0.70	0.53	0	(1)	2	✓
Wickham	51	0	0	✓	38	0	✓	2	0.70	0.75	0.73	1	✓	2	✓
Wyndham	52	0	0	✓	52	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓

(1) No samples required in this 12 month period.

Table 27 Health related variables

North West	Nitrate (measured as Nitrogen)					Pesticides		Radiological		Trihalomethanes					Other Health Related	
		Concentration (mg/L)									Concentration (mg/L)					
Locality	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken	Requirement Met
Broome	2	4.8	4.8	4.8	✓	1	✓	0	(1)	2	0.002	0.002	0.002	✓	0	(1)
Burrup LNG	2	1.5	1.5	1.5	✓	1	✓	1	✓	2	<0.001	0.001	<0.001	✓	0	(1)
Burrup Supply	2	1.5	1.5	1.5	✓	1	✓	1	✓	2	<0.001	0.002	<0.001	✓	0	(1)
Camballin	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	<0.001	<0.001	<0.001	✓	0	(1)
Cape Lambert TWS	2	1.3	1.7	1.5	✓	1	✓	0	(1)	2	<0.001	0.005	0.003	✓	0	(1)
Derby	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.003	0.005	0.004	✓	1	✓
Fitzroy Crossing	2	0.8	0.9	0.8	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	1	✓
Halls Creek	2	0.9	1	1	✓	1	✓	0	(1)	2	<0.001	0.002	<0.001	✓	0	(1)
Hedland	4	0.8	0.9	0.8	✓	2	✓	2	✓	4	0.002	0.006	0.004	✓	1	✓
Karratha	2	1.5	1.6	1.6	✓	1	✓	0	(1)	2	<0.001	0.001	<0.001	✓	0	(1)
Kununurra	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.010	0.033	0.022	✓	0	(1)
Marble Bar	2	1.2	1.4	1.3	✓	1	✓	0	(1)	2	0.007	0.007	0.007	✓	2	✓
Newman	2	0.2	0.3	0.3	✓	1	✓	1	✓	2	0.002	0.004	0.003	✓	1	✓
Nullagine	2	1	1	1	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	0	(1)
Onslow TWS	2	0.4	0.4	0.4	✓	1	✓	0	(1)	2	<0.001	0.002	<0.001	✓	1	✓
Point Samson	2	1.4	1.7	1.6	✓	1	✓	1	✓	2	0.001	0.005	0.003	✓	0	(1)
Roebourne	2	1.5	1.5	1.5	✓	1	✓	0	(1)	2	<0.001	0.002	<0.001	✓	0	(1)
Wickham	2	1.4	1.4	1.4	✓	1	✓	1	✓	2	<0.001	<0.001	<0.001	✓	0	(1)
Wyndham	2	0.1	0.3	0.2	✓	1	✓	0	(1)	4	0.079	0.140	0.111	✓	0	(1)

(1) No samples required in this 12 month period.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 28 Aesthetic (Non-health related) Variables

North West	Alkalinity (as CaCO3)					Aluminium					Chloride					Hardness				
	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met
Locality		Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean	
Broome	2	94	97	96	(1)	2	<0.008	<0.008	<0.008	✓	2	120	155	138	✓	2	60	77	69	✓
Burrup LNG	2	245	262	254	(1)	2	0.008	0.008	0.008	✓	2	85	95	90	✓	2	250	260	255	(3)
Burrup Supply	2	239	262	251	(1)	2	0.010	0.010	0.010	✓	2	85	90	88	✓	2	250	250	250	(3)
Camballin	2	67	67	67	(1)	2	<0.008	<0.008	<0.008	✓	2	40	41	41	✓	2	43	43	43	✓
Cape Lambert	2	165	231	198	(1)	2	0.010	0.010	0.010	✓	2	50	80	65	✓	2	160	230	195	✓
Derby	2	195	229	212	(1)	2	0.012	0.012	0.012	✓	2	90	95	93	✓	2	11	13	12	✓
Fitzroy Crossing	2	207	216	212	(1)	2	0.012	0.014	0.013	✓	2	41	42	42	✓	2	150	160	155	✓
Halls Creek	2	415	436	426	(1)	2	<0.008	<0.008	<0.008	✓	2	135	135	135	✓	2	290	300	295	(2)
Hedland	4	211	220	215	(1)	4	<0.008	0.010	<0.008	✓	4	155	165	160	✓	4	210	220	213	(3)
Karratha	2	231	258	245	(1)	2	0.010	0.010	0.010	✓	2	85	95	90	✓	2	240	270	255	(3)
Kununurra	4	248	269	256	(1)	4	<0.008	0.010	<0.008	✓	4	18	21	19	✓	4	160	170	163	✓
Marble Bar	2	433	475	454	(1)	2	<0.008	<0.008	<0.008	✓	2	220	235	228	✓	2	300	320	310	(2)
Newman	2	189	210	200	(1)	2	<0.008	<0.008	<0.008	✓	2	60	85	73	✓	2	170	180	175	✓
Nullagine	2	168	192	180	(1)	2	<0.008	<0.008	<0.008	✓	2	80	90	85	✓	2	180	190	185	✓
Onslow	2	203	224	214	(1)	2	<0.008	<0.008	<0.008	✓	2	105	115	110	✓	2	180	190	185	✓
Point Samson	2	217	235	226	(1)	2	<0.008	0.010	<0.008	✓	2	75	85	80	✓	2	220	240	230	(3)
Roebourne	2	217	276	247	(1)	2	<0.008	0.012	<0.008	✓	2	85	95	90	✓	2	220	270	245	(3)
Wickham	2	199	272	236	(1)	2	<0.008	0.012	<0.008	✓	2	75	95	85	✓	2	200	260	230	(3)
Wyndham	2	55	59	57	(1)	2	0.025	0.050	0.038	✓	2	25	35	30	✓	2	32	44	38	✓

(1) No guideline value available as per ADWG 2011. (2) Elevated hardness is characteristic of the souce supplying this locality. (3) Elevated hardness is a characteristic of the source supplying this locality for part of the year (Millstream).

Table 29 Aesthetic (Non-health related) Variables

North West	Iron					Manganese					pH					Silica				
	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Value (pH units)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met
Locality		Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean	
Broome	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.89	8.43	8.16	✓	2	90	95	93	(1)
Burrup LNG	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.96	8.28	8.12	✓	2	55	55	55	✓
Burrup Supply	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.98	8.33	8.16	✓	2	55	55	55	✓
Camballin	2	0.020	0.020	0.020	✓	2	<0.002	<0.002	<0.002	✓	2	7.25	7.39	7.32	✓	2	24	24	24	✓
Cape Lambert	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.09	8.10	8.10	✓	2	55	55	55	✓
Derby	2	0.008	0.008	0.008	✓	2	<0.002	<0.002	<0.002	✓	2	7.97	8.04	8.01	✓	2	17	17	17	✓
Fitzroy Crossing	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.45	7.64	7.55	✓	2	22	24	23	✓
Halls Creek	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.69	7.78	7.74	✓	2	49	50	50	✓
Hedland	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	7.94	8.18	8.06	✓	4	49	55	52	✓
Karratha	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.07	8.20	8.14	✓	2	55	55	55	✓
Kununurra	4	<0.003	<0.003	<0.003	✓	4	0.006	0.014	0.009	✓	4	7.25	7.72	7.53	✓	4	55	55	55	✓
Marble Bar	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.48	7.62	7.55	✓	2	43	44	44	✓
Newman	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.23	7.26	7.25	✓	2	18	28	23	✓
Nullagine	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.24	7.44	7.34	✓	2	33	35	34	✓
Onslow	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.16	8.26	8.21	✓	2	75	75	75	✓
Point Samson	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.96	8.13	8.05	✓	2	55	55	55	✓
Roebourne	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.02	8.03	8.03	✓	2	55	55	55	✓
Wickham	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.87	7.97	7.92	✓	2	55	55	55	✓
Wyndham	2	<0.003	0.008	0.004	✓	2	<0.002	<0.002	<0.002	✓	2	8.22	8.33	8.28	✓	2	4.5	7.2	5.9	✓

(1) Elevated silica is characteristic of the souce supplying this locality.

Drinking Water Quality Annual Report Data 01/07/2015 to 30/06/2016

Table 30 Aesthetic (Non-health related) Variables

North West	Sodium					TDS					True Colour					Turbidity				
	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Value (TCU)			Guideline Met	Samples Taken	Value (NTU)			Guideline Met
Locality		Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean	
Broome	2	90	105	98	✓	2	450	504	477	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Burrup LNG	2	50	54	52	✓	2	590	597	594	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Burrup Supply	2	50	51	51	✓	2	573	588	581	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Camballin	2	36	37	37	✓	2	230	232	231	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Cape Lambert	2	32	46	39	✓	2	387	543	465	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Derby	2	125	135	130	✓	2	448	492	470	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Fitzroy Crossing	2	36	37	37	✓	2	380	385	383	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Halls Creek	2	130	130	130	✓	2	877	906	892	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Hedland	4	88	93	90	✓	4	612	639	622	(2)	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓
Karratha	2	46	53	50	✓	2	552	612	582	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Kununurra	4	32	34	33	✓	4	420	443	427	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Marble Bar	2	200	200	200	(1)	2	1065	1136	1101	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Newman	2	43	56	50	✓	2	403	488	446	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Nullagine	2	55	57	56	✓	2	452	494	473	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Onslow	2	51	51	51	✓	2	528	554	541	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Point Samson	2	44	48	46	✓	2	512	556	534	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Roebourne	2	46	51	49	✓	2	524	628	576	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Wickham	2	42	51	47	✓	2	481	615	548	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Wyndham	2	21	22	22	✓	2	128	142	135	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓

(1) Elevated sodium is characteristic of the souce supplying this locality. (2) Elevated TDS is a characteristic of the source supplying this locality.