



# Drinking Water Quality

Annual Report 2014/15

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# About this Report

The Water Corporation's 2014/15 Drinking Water Quality Annual Report is a review of our performance for the financial year ending 30 June 2015.

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, the requirements of the [Memorandum of Understanding](#) with the Department of Health and the reporting requirements of the National Water Commission.

# Acronyms

<b>ADWG</b>	Australian Drinking Water Guidelines	<b>PDWSA</b>	Public Drinking Water Source Area
<b>AWRP</b>	Advanced Water Recycling Plant	<b>RO</b>	Reverse Osmosis
<b>CPI</b>	Customer Performance Index	<b>TCU</b>	True Colour Units
<b>CCP</b>	Critical Control Point	<b>TDS</b>	Total Dissolved Solids
<b>DOC</b>	Dissolved organic carbon	<b>THM</b>	Trihalomethanes
<b>DoH</b>	Department of Health	<b>UF</b>	Ultra filtration
<b>EDR</b>	Electrodialysis Reversal	<b>UV</b>	Ultra-violet
<b>FAC</b>	Fluoridation of Public Water Supplies Advisory Committee	<b>WSP</b>	Water Safety Plan
<b>GAWS</b>	Goldfields and Agricultural Water Supply	<b>WTP</b>	Water Treatment Plant
<b>GSTWS</b>	Great Southern Towns Water Supply		
<b>GWRT</b>	Groundwater Replenishment Trial		
<b>IWSS</b>	Perth Integrated Water Supply Scheme		
<b>LGSTWS</b>	Lower Great Southern Towns Water Supply		
<b>MIEX</b>	Magnetic Ion Exchange		
<b>NHMRC</b>	National Health and Medical Research Council		
<b>NTU</b>	Nephelometric Turbidity Units		

# Summary

Supplying safe drinking water is our highest priority. In 2014/15, we achieved outstanding compliance results for health-related characteristics and met all our health targets for drinking water quality set by the Department of Health.

Our health related performance was:

- 100 per cent compliance with microbiological guidelines
- 100 per cent 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 in a State as vast as Western Australia with such diverse water sources. 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 13<sup>th</sup> 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 contacting us on 13 13 75 or [report@watercorporation.com.au](mailto:report@watercorporation.com.au).



Wungong Dam

# Our Commitment to you

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

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

- Take a 'catchment to tap' approach to managing and protecting water quality from the source through to our customers.
- 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.
- Consider the needs and expectations of our customers, stakeholders, regulators and employees.
- Routinely monitor the quality of drinking water and use effective reporting mechanisms to provide relevant and timely information, and promote confidence in the water supply and its management.
- Participate in research and development activities to ensure continued understanding of drinking water quality issues and performance.
- Contribute to setting industry regulations and guidelines, and other standards relevant to public health and the water cycle.

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- Continually improve our practices by assessing performance against corporate commitments and stakeholder expectations.

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

# Introduction

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

This year we delivered 366 billion litres of drinking water 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, to more than a million properties through 34,424 kilometres of water mains.

Under our [Operating Licence](#) we comply with a [Memorandum of Understanding](#) with the Department of Health. We act in accordance with the microbiological, health 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 this year again resulted in 100 per cent of metropolitan and country localities meeting the high standards set by the Department of Health.

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



**Churchman Brook Dam**

# Where does your water come from?

## Perth Metropolitan Region

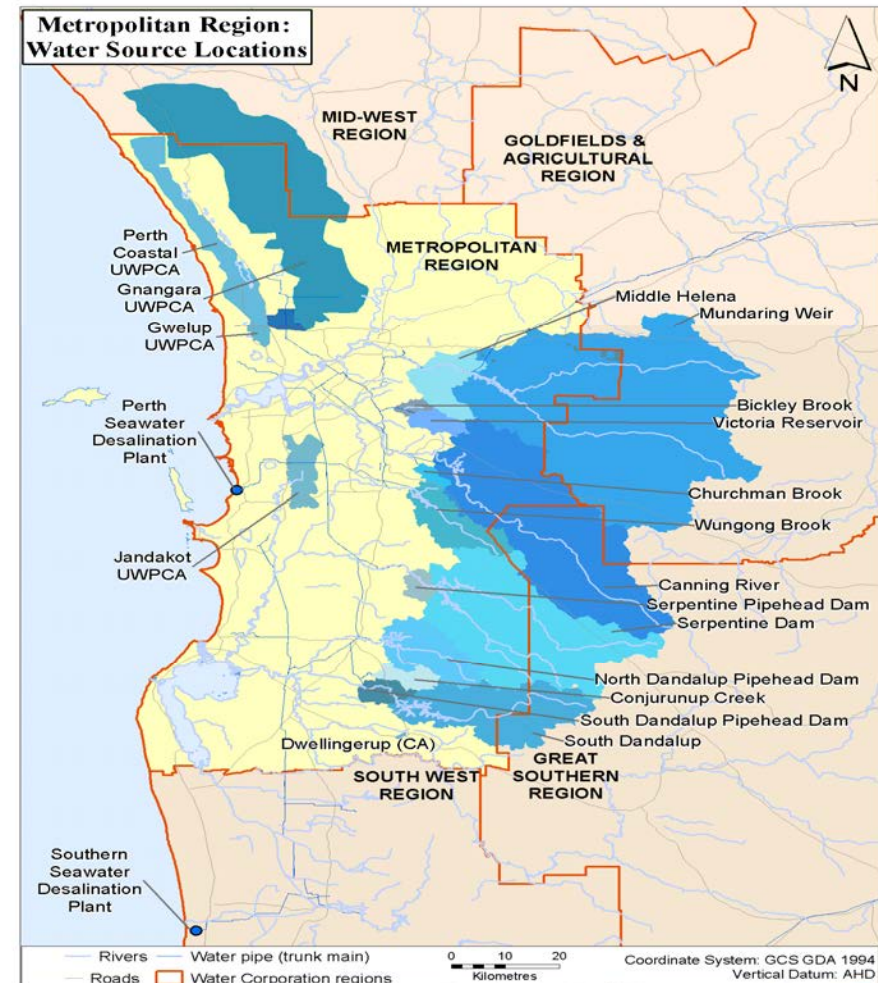
Our largest scheme, the Integrated Water Supply Scheme (IWSS) delivered more than 291 billion litres of water to more than two million customers in Perth, Mandurah the Goldfields and Agricultural Region, and parts of the South West.

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. Most of our 180 bores are located in Perth's northern suburbs. Groundwater is treated at six groundwater treatment plants. There are also 13 independent artesian bores which pump water directly into service reservoirs.

In 2014/15, drinking water production for the IWSS was delivered on target and within overall water allocation and licence parameters. Total groundwater abstracted was 122.1 billion litres, against an allocation of 123.8 billion litres. Water supplied consisted of 17 per cent surface water, 42 per cent groundwater and 41 per cent from desalination.

To optimise the amount of water available for the IWSS, customers may receive a mix of groundwater, surface water and desalinated seawater. The percentage of each depends on seasonal factors. Yanchep and Two Rocks are special cases in the





# Where does your water come from?

Perth region, as they have their own independent groundwater supplies. It is anticipated these suburbs will eventually join the IWSS.

The Perth Seawater Desalination Plant in Kwinana exceeded its rated annual production capacity of 45 billion litres by delivering 46.4 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 73 billion litres of water for the IWSS in 2014-15.

Together, these two climate independent water sources have the capacity to supply more than 40 percent of Perth's drinking water.

The Groundwater Replenishment Trial (GWRT) was formally completed on 31 December 2012 and the trial water recycling plant has continued to add 1.3 billion litres of recharge water per year into the aquifer. The 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 to commence in late 2016 and will have the capacity to treat up to 14 billion litres of water per year and can be expanded to 28 billion litres as demand increases.



**Serpentine Dam**

# Where does your water come from?

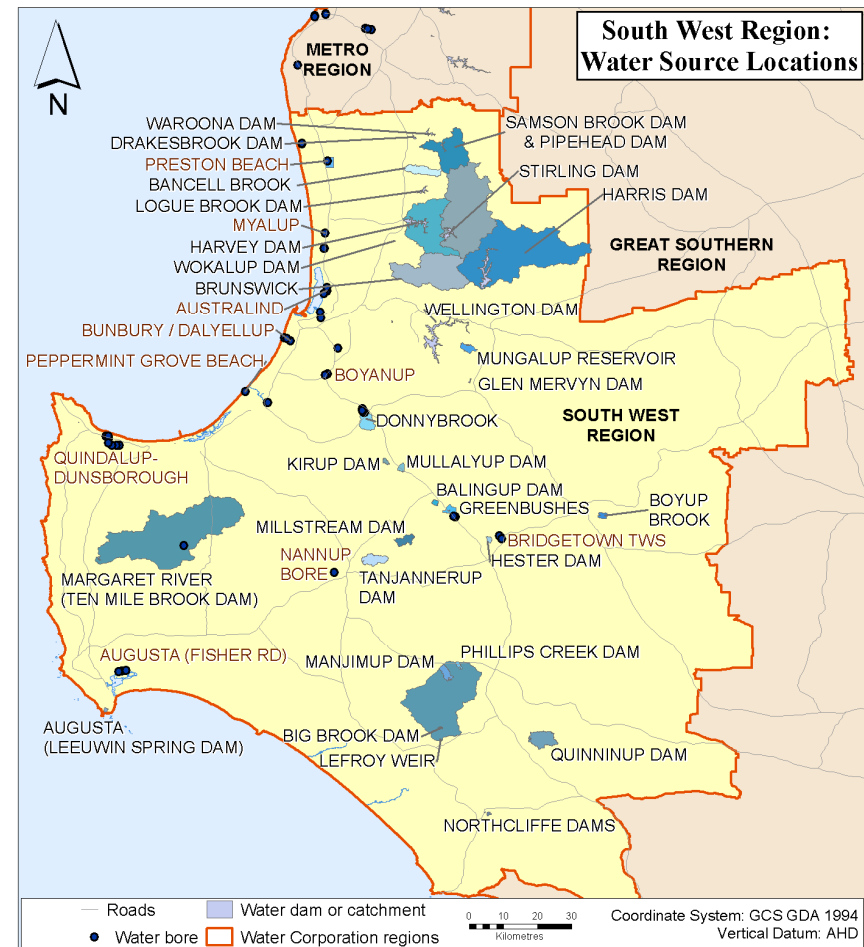
## South West Region

Towns in the South West Region are supplied with water from a number of surface and groundwater sources that are largely independent. Harvey, Waroona, Hamel, Binningup, Myalup and Yarloop are supplied from the IWSS.

Margaret River is supplied by groundwater and surface water via Ten Mile Brook Dam. Quindalup, Dunsborough and Augusta are supplied by groundwater with the addition of some surface water for Augusta.

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

Australind, Eaton, Pelican Point, Millbridge, Treendale, Kingston, Brunswick Junction, Roelands and Burekup are supplied with water sources from Leederville and Yarragadee bores, via water treatment plants in Australind, Eaton and Picton. Harris Dam supplies Collie, Allanson and Darkan as well around 35 towns in the Great Southern Region via the Great Southern Towns Water Supply Scheme.



# Where does your water come from?

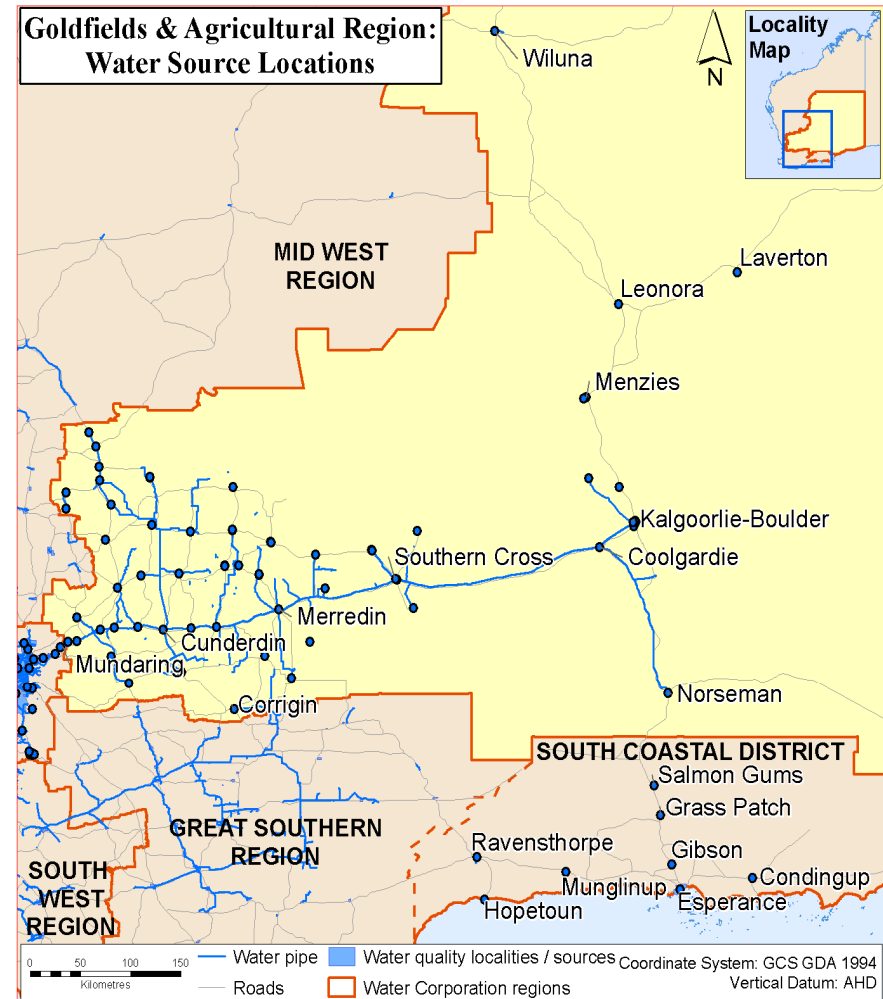
## Goldfields and Agricultural Region

The Goldfields and Agricultural Water Supply (GAWS) draw its water from Mundaring Weir near Perth and supply 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. Additional disinfection facilities are also being installed throughout the distribution system. Both of these initiatives will improve disinfection management within the GAWS.



**Mundaring Weir**



# 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.

Works are completed in Gnowangerup where two new tanks and an upgrade to the supply main provide for an improved scheme.

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.



# Where does your water come from?

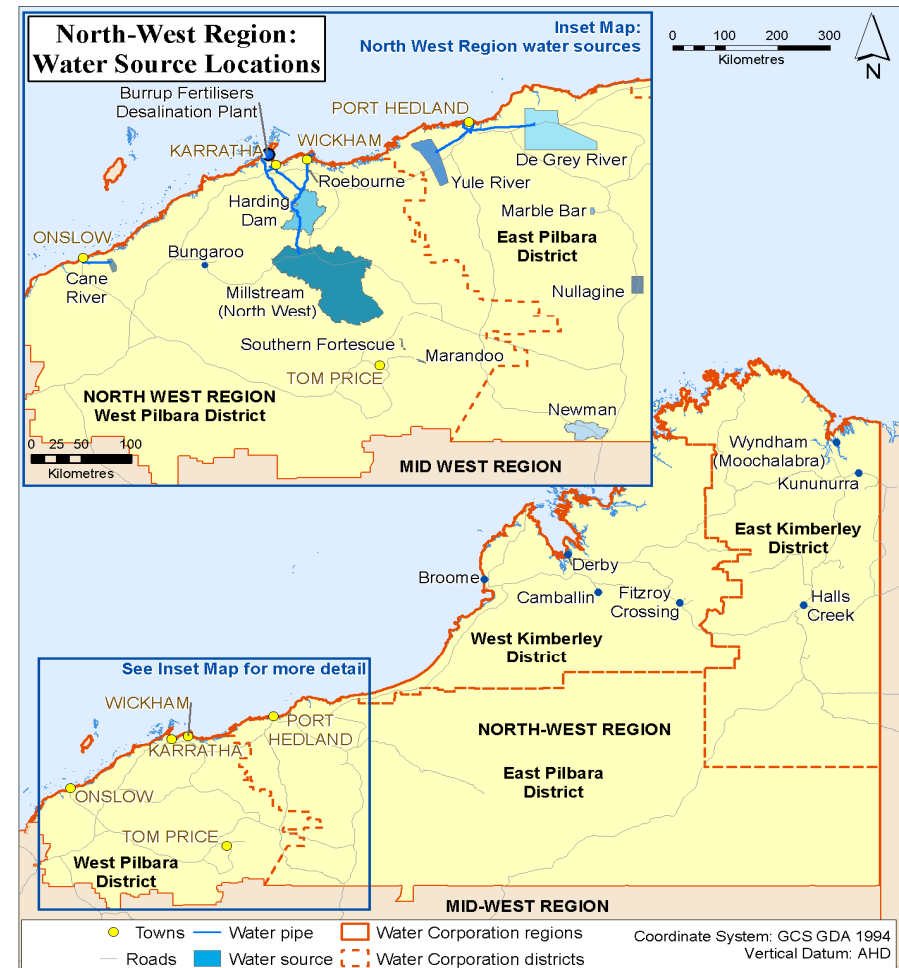
## North West Region

The West Pilbara Water Supply Scheme 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 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.

The Yule and De Grey River borefield expansion to supply the Hedland scheme was complete at the end of 2014.



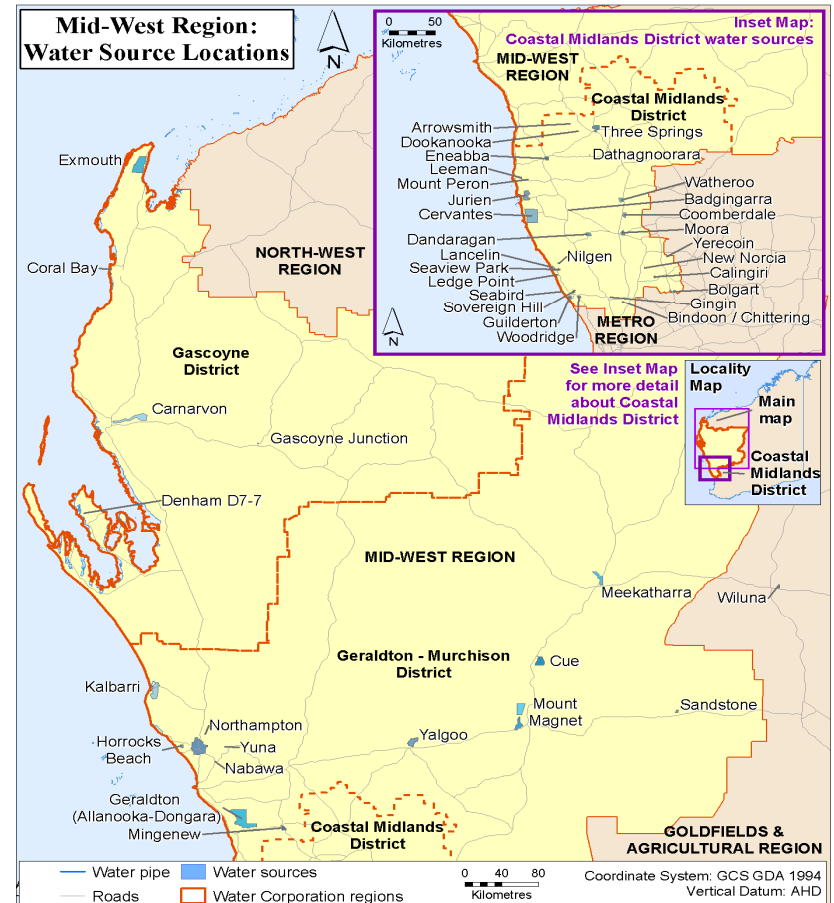
# Where does your water come from?

## Mid West Region

The Mid West Region, which supplies drinking water to 51 localities, uses independent groundwater sources. In a region facing challenges from scarce and brackish (moderately saline) water supplies, we are working to ensure reliable access to a quality drinking water supply for our 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 the coastal towns of Yerecoin, Seabird, Moora, Woodridge and Bindoon on optimising the water treatment plants to improve aesthetic water quality through the removal of dissolved metals, specifically iron and manganese.



# 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.



**Perth Seawater Desalination Plant**

# 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, which 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.

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



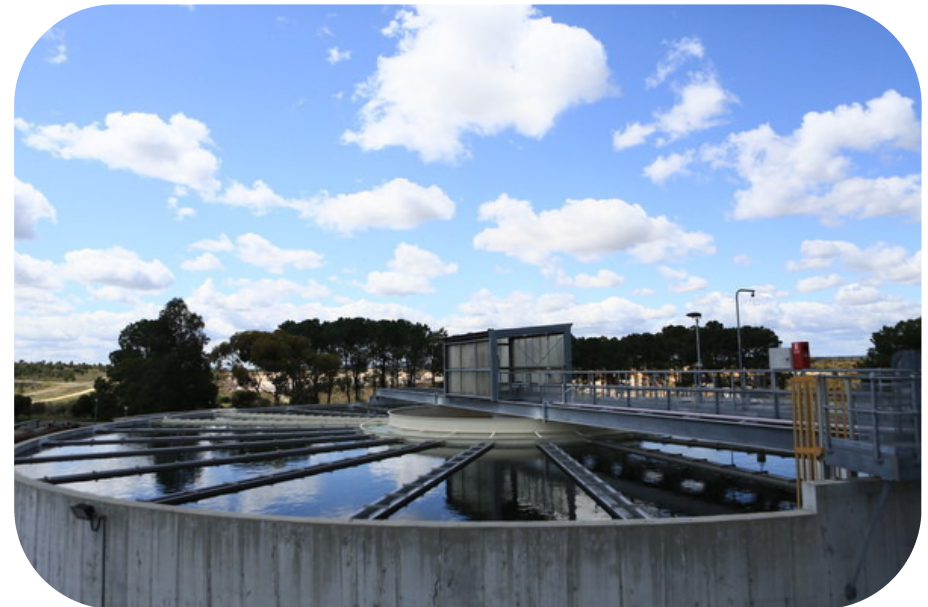
# How is your water treated?

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. 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 the Department of Health. Fluoridation performance is reported monthly to the Department of Health 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.



**Wanneroo Groundwater Treatment Plant**

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

Region / Scheme	Locality
<b>Perth Integrated Water Supply Scheme</b>	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	

Region / Scheme	Locality
<b>Great Southern Region</b>	Albany
	Esperance
	Katanning (GSTWS)
	Mt Barker
	Narrogin (GSTWS)
<b>Goldfields &amp; Agricultural Water Supply Scheme</b>	Kalgoorlie
	Merredin
	Northam
	York
<b>North West Region</b>	Broome
	Derby
	Karratha
<b>South West Region</b>	Collie (GSTWS)
	Manjimup
<b>Mid West Region</b>	Exmouth
	Geraldton

Note: 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)“

# 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 Australian Drinking Water Guidelines (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, along with the DoH, contribute to the rolling revision of the ADWG.

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.

Operational monitoring requirements were enhanced in the 2011 ADWG. This meant moving away from just meeting drinking water quality guideline values towards a total system management, understanding risks and continuous improvement.

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 32.

## 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

# What drinking water guidelines must we meet?

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 scheme's risks and update any site or treatment details. This year has seen the review of 64 schemes in the country and metropolitan region.

## Source Protection

Water Corporation manages approximately 140 drinking water catchments 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, to control potentially polluting activities in gazetted Public Drinking Water Source Areas (PDWSAs). In 2014/15, nearly 13,118 surveillance hours were undertaken state-wide with 204 by-law offence prosecutions initiated.

By-law enforcement has traditionally been limited to application of the *Metropolitan Water Supply, Sewerage and Drainage By-laws 1981* within metropolitan PDWSAs. In January 2013 a change in the delegation enabled application of several *Country Areas Water Supply By-laws 1957* within country PDWSAs. In April 2014 Water Corporation was given the power to prosecute for offences under the recently enacted *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 drinking water reservoirs and bores.

## 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 66,000 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.

# What drinking water guidelines must we meet?



**Water Corporation staff sampling water at Limestone Creek**

All our water quality monitoring and reporting is coordinated through our Water Quality Management System. 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. The Water Quality Management System also automatically issues alerts for results outside guideline and operational limits and prompts remedial action.

## **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 have five mobile 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 the DoH to continually improve our incident management processes.

# What drinking water guidelines must we meet?

## Engagement with Department of Health

DoH is the regulator of drinking water quality in Western Australia. We have a [Memorandum of Understanding](#) with them for managing drinking water quality which connects all facets of nationally and internationally recognised drinking water guidelines, standards, and quality management systems. It requires us to notify the DoH within 24-hours when any sample exceeds a set health value or where any other event could pose a risk to public health. The DoH regularly reviews our monitoring results and corrective actions. The current Memorandum of Understanding provides for the DoH to conduct a performance review of our systems and databases used to manage and report drinking water quality. In consultation with the Economic Regulation Authority, the 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](http://www.watercorporation.com.au).



**Department of Health and Water Corporation at AWRP construction site**

# Case Studies

## Case Study 1: Discoloured Water Events – Iron and Manganese

High concentration of iron and manganese in water supplies can cause aesthetic problems in distribution systems such as unpleasant taste, discoloured water and staining of laundry and household fixtures. Both metals are naturally occurring elements. Higher concentration of iron and manganese are most common in groundwater sources. Water infiltrating through soil and rock dissolves iron and manganese, and these minerals subsequently enter groundwater supplies.

The ADWG have set aesthetic guideline levels of 0.3 mg/L for iron and 0.1 mg/L for manganese. Notwithstanding this, the Water Corporation has set internal targets of less than 0.1 mg/L for iron and less than 0.02 mg/L for manganese on the outlet of our WTPs. These are much tighter than the National guidelines but our experience has shown that at these levels problems in distribution systems are minimised.

Our experience has also shown that at the ADWG guideline levels large quantities of iron and manganese are still sent into the distribution system. A WTP averaging 10 ML/day and producing water with an iron concentration of 0.3 mg/L, will result in more than 1000 kg of iron being sent into the distribution system each year. Over time the iron and manganese precipitates will build up in the pipework, service reservoirs, tanks and low lying areas. Discoloured water events typically occur during peak demand,

change in hydraulic conditions such as a reverse flow due to a system change, pipe bursts or hydrant flushing.

Removing iron and manganese at the WTP by operating with the Water Corporation targets rather than the higher ADWG aesthetic guideline levels is more cost effective than the increased frequency of tank cleaning and mains scouring required to manage the build-up of iron and manganese.



**Bore Inspection**

# Case Studies

## Case Study 2: Critical Control Point Monitoring – Chlorine Disinfection

The ADWG define a critical control point (CCP) as an activity, procedure or process at which control can be applied and which is essential to prevent a hazard or reduce it to an acceptable level. Every Water Corporation drinking water scheme has at least one CCP, typically associated with the disinfection barrier. The Water Corporation disinfects all water supplied to customers to provide protection against most waterborne pathogens, and a chlorine residual in the reticulation to protect against reinfection and, in many cases, Naegleria.

In accordance with the ADWG, the Water Corporation ensures that all CCPs are continuously monitored. All adverse CCP trends are reviewed to ensure that water supplied to customers is safe.

The control systems for CCPs in many treatment plants are configured to “fail safe”. This means that if a critical limit is breached (or likely to be breached) the supply will be shutdown. While the water may not have been supplied to customers, this will still be investigated as it indicates a serious process failure of the CCP. If unsafe water has potentially been or could be supplied to customers (for example if the “fail safe” has not worked) this will be reported to the DoH and treated as a major incident.



**Operation centre monitoring alarms**



# Understanding water quality test results

The following summaries are intended to assist you to interpret the results presented in this report. Additional information can be obtained by referring to the Fact Sheets contained in the [ADWG](#) published by the National Health and Medical Research Council and our website [www.watercorporation.com.au](http://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, we test for *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 20) 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 18). 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.

## **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

# Understanding water quality test results

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 the Department of Health for an exemption from the guideline.

The following localities have been granted exemption from compliance with the nitrate guidelines by the Department of Health:

- 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.

## 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,

# Understanding water quality test results

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.

Hardness can be an important issue when purchasing appliances such as dishwashers. To convert the hardness values presented in this report 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

# Understanding water quality test results

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).

## 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:

- 0 to 600 mg/L is good quality;
- 600 to 900 mg/L is fair quality;
- 900 to 1200 mg/L is poor quality; and
- Greater than 1200 mg/L, TDS is 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.

# Our Performance

## Health related performance

Again we have achieved excellent microbiological performance in 2014/15 (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 25).

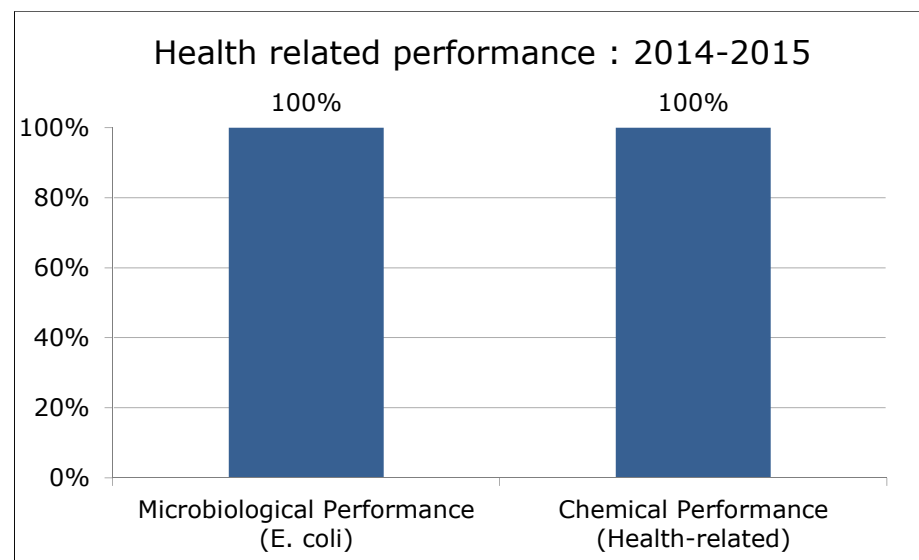
Health related chemical performance requirements of our MoU with DoH were all met for the past five years. We have also achieved 100 per cent in both microbiological and chemical health performance. For this report, the target is achieved if the yearly average concentration for each chemical is less 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 2014/15

Appendix B provides a detailed summary of test results for each scheme throughout the state. In 2014/15 there were 167 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,



**Graph 1: Microbiological and Chemical Health Performance**

manganese, pH, TDS, turbidity, sodium, chloride and silica) across our 251 schemes was 94 per cent, with 8,557 out of 9,089 analyses complying with the aesthetic guidelines.

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.

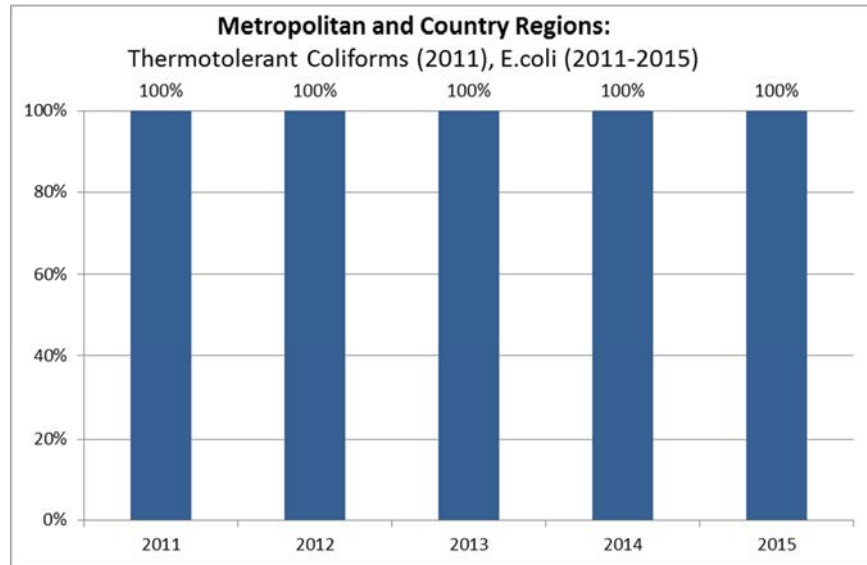
For many schemes, these excursions have no or only minimal influence on the taste of the drinking water

# Our Performance

## Health performance review 2011 to 2015

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.

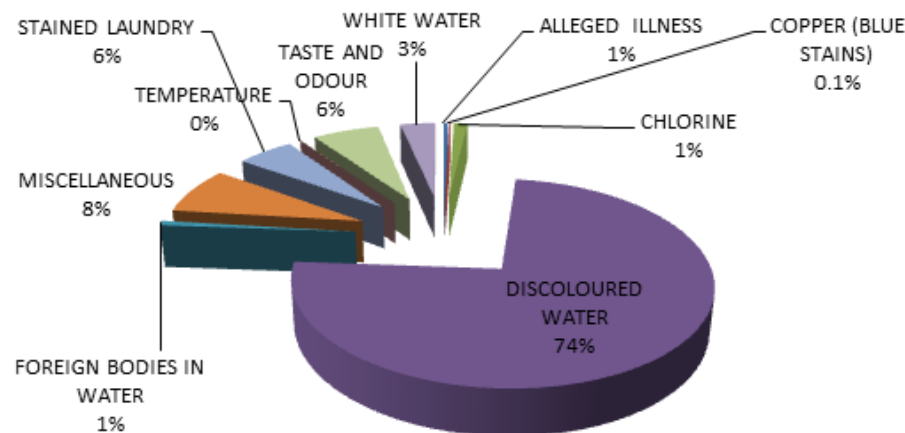


**Graph 2: Five year microbiological performance**

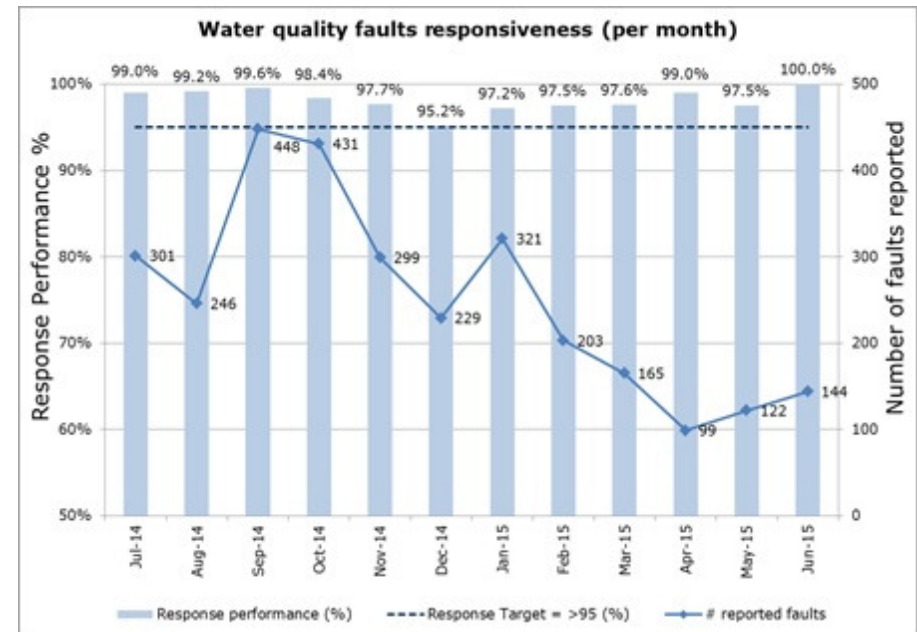
# Customer Expectations

## Customer contacts

Water quality related customer contacts (enquiries and complaints) are recorded and monitored continuously to identify any trends and areas for improvement. In 2014/15 our Operations Centre received 8,847 water quality related customer contacts (compared with 7,529 in 2013/14). The graph below shows the type and proportion of the water quality contacts.



**Water Quality Contacts Profile 2014-15**



For water quality customer contacts (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 per cent of the time. In 2014/15 once a fault was recorded we responded to 98.2 per cent within the target of two hours (see graph above for monthly, state-wide statistics).

# 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 2014	December 2014	March 2015	June 2015	End of year average
How would you rate the Water Corporation on providing an acceptable standard of water quality?	7.02	7.09	7.22	7.45	7.20
How would you rate the Water Corporation on providing a consistent level of water quality?	7.15	7.21	7.31	7.21	7.22



# Improving your water quality

## Monitoring and reporting improvements

We continue to strengthen our operational monitoring to ensure continual barrier risk assessments. Extensive work has been undertaken on our Locality Barrier Tool project which allows continuous visibility of the critical processes during water treatment stages. Work is still in progress but has already assisted in identifying areas of progression for our capital project programs.

## 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 meet the lower chemical concentrations recommended by the ADWG and to provide an additional barrier to microbiological contamination.

Towards the end of the financial year we completed upgrade of Jandakot Groundwater Treatment Plant including a new chlorination system and a new bore into the Yaragadee Aquifer. The upgrade increased the plant’s treatment capacity from 40 million litres per day to 60 million litres per day.

Upgrade to Denham Water Treatment Plant increased the operation capacity of the plant by 33 per cent and ensured improved efficiency and reliability of the Denham Water Supply Scheme.

In October 2014 we completed upgrade to Margaret River’s Water Supply Scheme. The upgrade has secured Margaret River’s water supply during dry years providing greater capacity to service the increased demand during peak tourist periods.

## 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.

# Improving your water quality

## Pipes and pipelines

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

We completed the new 27km section of water main between the town of Mount Barker and Chorkerup to improve the reliability and efficiency of Mount Barker's water supply.

In May 2015, we finished replacing the section of the Mundaring to Kalgoorlie Pipeline that crosses under Great Eastern Highway at Clackline.

## 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.



# 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 <sup>[1]</sup>	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)

# 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
Ethylenediamine tetraacetic (EDTA) [1]	250	Not set

Compound	Health Guideline Value (µg/L)	Aesthetic Guideline Value (µg/L)
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

# 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 <sub>3</sub>	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<sub>3</sub> also reported as 11.3 mg/L as nitrogen).

## Physical Characteristics

Characteristics	Health Guideline Value	Aesthetic Guideline Value
Hardness as CaCO <sub>3</sub>	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
<i>Escherichia coli</i>
<i>Naegleria</i> tolerant to ≤ 42°C

# 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

# 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

## Appendix C – Supporting information for water source location maps

The information contained in the maps of this report is the exclusive property of the Water Corporation and the respective copyright owners. It is subject to ongoing review and should be viewed in conjunction with the associated materials. No part of this production should be copied, modified, reproduced or published in any form other than that intended by the author. The respective data owners, other than the Water Corporation, are acknowledged below:

- Public Drinking Water Source Areas (Department of Water)
- Hydrography Linear Hierarchy (Department of Water)
- Road Centrelines (Landgate)
- Townsites (Landgate)
- Australian Coastline (Geoscience Australia)

The following metadata applies to all 6 maps (see 'Where does your water come from?'):

Author: Drinking Water Quality Branch, Water Corporation of WA

Date created: 20 October 2013

Coordinate System: Geographic Coordinate System, GDA 1994



Drinking Water Quality Annual Report Data 01/07/2014 to 30/06/2015

Table 1 Health related variables

Perth Region	E. coli			Thermophilic Naegleria			Fluoride			Hydrocarbons		Metals			
Locality	Samples Taken	Samples with >0 cfu/100mL	Max cfu/100mL	Requirement Met	Samples Taken	Samples with Thermophilic Naegleria	Requirement Met	Concentration (mg/L)			Samples Taken	Guideline Met	Samples Taken	Guideline Met	
								Min	Max	Mean					
Armadale/Kelmscott	273	0	0	✓	273	0	✓	52	0.70	1.00	0.84	0	(1)	2	✓
Bold Park	242	0	0	✓	134	0	✓	53	0.75	0.85	0.81	1	✓	2	✓
Buckland Hill	104	0	0	✓	79	0	✓	52	0.70	0.85	0.77	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	✓	52	0.70	0.90	0.83	2	✓	2	✓
Greenmount	147	0	0	✓	104	0	✓	52	0.75	0.90	0.79	2	✓	2	✓
Greenmount/Darlington	118	0	0	✓	92	0	✓	52	0.70	0.90	0.81	1	✓	2	✓
Hamilton Hill	211	0	0	✓	94	0	✓	53	0.75	0.90	0.81	1	✓	2	✓
Hills Direct	684	0	0	✓	318	0	✓	52	0.75	0.95	0.84	3	✓	5	✓
Lexia	117	0	0	✓	52	0	✓	52	0.65	0.90	0.78	2	✓	2	✓
Mandurah	412	0	0	✓	330	0	✓	53	0.60	0.95	0.84	0	(1)	6	✓
Melville	170	0	0	✓	92	0	✓	52	0.70	0.90	0.79	1	✓	2	✓
Mirrabooka	268	0	0	✓	120	0	✓	52	0.70	0.85	0.78	1	✓	2	✓
Mt. Eliza	417	0	0	✓	135	0	✓	52	0.70	0.90	0.77	0	(1)	2	✓
Mt. Hawthorn	156	0	0	✓	81	0	✓	52	0.70	0.90	0.79	2	✓	2	✓
Mt. Yokine	470	0	0	✓	182	0	✓	51	0.70	0.85	0.79	1	✓	2	✓
Mundaring	111	0	0	✓	111	0	✓	52	0.70	0.95	0.85	2	✓	2	✓
Neerabup	228	0	0	✓	120	0	✓	53	0.30	0.90	0.82	1	✓	6	✓
North Dandalup	13	0	0	✓	7	0	✓	4	0.80	0.90	0.85	1	✓	2	✓
Pinjarra	67	0	0	✓	53	0	✓	51	0.50	0.95	0.84	1	✓	2	✓
South Perth/Kewdale	416	0	0	✓	221	0	✓	52	0.60	0.90	0.82	1	✓	2	✓
Tamworth Hill	347	0	0	✓	146	0	✓	53	0.50	0.95	0.84	1	✓	2	✓
Thomsons Lake	230	0	0	✓	81	0	✓	51	0.70	0.85	0.78	0	(1)	2	✓
Two Rocks	106	0	0	✓	40	0	✓	2	0.15	0.15	0.15	0	(1)	2	✓
Wanneroo	408	0	0	✓	157	0	✓	54	0.50	0.90	0.75	2	✓	6	✓
West Yokine	235	0	0	✓	131	0	✓	52	0.70	0.85	0.79	2	✓	2	✓
Whitfords	145	0	0	✓	67	0	✓	53	0.55	0.85	0.75	1	✓	2	✓
Yanchep	106	0	0	✓	53	0	✓	2	<0.1	<0.1	<0.1	1	✓	3	✓

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

Table 2 Health related variables

Perth Region	Nitrate				Pesticides		Radiological		Trihalomethanes				Other Health Related			
Locality	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Guideline Met	Samples Taken	Guideline Met	Concentration (mg/L)			Guideline Met	Samples Taken	Requirement Met	
		Min	Max	Mean						Min	Max	Mean				
Armadale/Kelmscott	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	13	0.041	0.120	0.075	✓	1	✓
Bold Park	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	14	0.027	0.130	0.063	✓	1	✓
Buckland Hill	5	<0.05	<0.05	<0.05	✓	1	✓	1	✓	13	0.045	0.130	0.084	✓	0	(1)
Dwellingup	4	<0.05	0.1	<0.05	✓	5	✓	0	(1)	5	0.037	0.053	0.045	✓	0	(1)
Foothills	5	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	13	0.034	0.140	0.077	✓	2	✓
Greenmount	5	0.3	0.5	0.4	✓	1	✓	1	✓	13	0.060	0.180	0.140	✓	1	✓
Greenmount/Darlington	4	<0.05	0.2	0.1	✓	1	✓	1	✓	13	0.041	0.110	0.076	✓	1	✓
Hamilton Hill	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	13	0.009	0.110	0.051	✓	1	✓
Hills Direct	9	<0.05	<0.05	<0.05	✓	2	✓	1	✓	26	0.014	0.069	0.032	✓	2	✓
Lexia	4	<0.05	0.6	0.4	✓	1	✓	0	(1)	13	0.069	0.160	0.106	✓	1	✓
Mandurah	15	<0.05	2.4	0.2	✓	3	✓	0	(1)	40	0.009	0.075	0.035	✓	0	(1)
Melville	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	13	0.019	0.150	0.067	✓	1	✓
Mirrabooka	4	0.2	0.4	0.3	✓	1	✓	1	✓	13	0.077	0.140	0.114	✓	1	✓
Mt. Eliza	1	<0.05	<0.05	<0.05	✓	1	✓	1	✓	13	0.031	0.120	0.078	✓	0	(1)
Mt. Hawthorn	4	0.3	0.4	0.3	✓	1	✓	1	✓	13	0.056	0.180	0.118	✓	1	✓
Mt. Yokine	4	0.3	0.4	0.3	✓	1	✓	1	✓	13	0.099	0.140	0.121	✓	1	✓
Mundaring	4	0.1	0.1	0.1	✓	1	✓	1	✓	13	0.005	0.017	0.012	✓	2	✓
Neerabup	4	1.7	2.9	2.3	✓	1	✓	1	✓	14	0.030	0.080	0.051	✓	1	✓
North Dandalup	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.019	0.099	0.053	✓	1	✓
Pinjarra	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.013	0.032	0.023	✓	1	✓
South Perth/Kewdale	5	<0.05	0.7	0.2	✓	1	✓	1	✓	13	0.015	0.150	0.056	✓	1	✓
Tamworth Hill	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	13	0.007	0.064	0.029	✓	1	✓
Thomsons Lake	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	13	0.002	0.130	0.052	✓	1	✓
Two Rocks	4	0.4	1.0	0.8	✓	1	✓	1	✓	13	0.004	0.016	0.010	✓	0	(1)
Wanneroo	5	0.5	1.9	0.9	✓	1	✓	0	(1)	13	0.061	0.140	0.094	✓	1	✓
West Yokine	4	0.2	0.5	0.3	✓	1	✓	1	✓	13	0.100	0.190	0.138	✓	1	✓
Whitfords	4	0.2	0.8	0.5	✓	1	✓	1	✓	13	0.068	0.150	0.099	✓	1	✓
Yanchep	5	0.7	0.9	0.9	✓	2	✓	1	✓	14	<0.001	0.012	0.004	✓	2	✓

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

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**Table 3 Aesthetic (Non-health related) Variables**

Perth Region	Alkalinity (as CaCO3)					Aluminium				Chloride				Hardness						
Locality	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
		Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean	
Armadale/Kelmscott	4	51	65	58	(1)	4	0.016	0.030	0.023	✓	4	115	130	123	✓	4	57	70	64	✓
Bold Park	4	61	90	69	(1)	4	0.020	0.025	0.024	✓	4	70	100	81	✓	4	55	58	56	✓
Buckland Hill	5	59	95	82	(1)	5	0.016	0.035	0.026	✓	5	50	180	147	✓	5	53	70	65	✓
Dwellingup	4	12	14	13	(1)	4	0.008	0.020	0.013	✓	4	65	75	70	✓	4	30	35	33	✓
Foothills	5	55	83	69	(1)	5	0.018	0.030	0.025	✓	5	65	150	97	✓	5	54	87	68	✓
Greenmount	5	137	173	148	(1)	5	0.012	0.016	0.014	✓	5	150	185	174	✓	5	98	110	101	✓
Greenmount/Darlington	4	63	111	84	(1)	4	0.020	0.025	0.024	✓	4	75	140	108	✓	4	58	85	72	✓
Hamilton Hill	4	53	76	66	(1)	4	0.020	0.025	0.024	✓	4	45	120	89	✓	4	54	72	65	✓
Hills Direct	9	46	72	59	(1)	9	0.020	0.050	0.032	✓	9	31	70	47	✓	9	51	61	56	✓
Lexia	4	98	113	108	(1)	4	0.020	0.030	0.024	✓	4	70	105	88	✓	4	93	170	112	✓
Mandurah	15	56	74	65	(1)	15	0.020	0.040	0.033	✓	15	32	46	38	✓	15	52	65	59	✓
Melville	4	54	93	71	(1)	4	0.018	0.030	0.022	✓	4	55	190	120	✓	4	54	65	59	✓
Mirraboooka	4	58	78	71	(1)	4	0.030	0.040	0.034	✓	4	150	190	176	✓	4	110	130	120	✓
Mt. Eliza	1	85	85	85	(1)	1	0.025	0.025	0.025	✓	1	195	195	195	✓	1	72	72	72	✓
Mt. Hawthorn	4	141	153	147	(1)	4	0.010	0.020	0.015	✓	4	180	205	194	✓	4	87	110	98	✓
Mt. Yokine	4	128	155	146	(1)	4	0.008	0.025	0.015	✓	4	165	225	188	✓	4	84	100	91	✓
Mundaring	4	73	92	81	(1)	4	0.035	0.095	0.068	✓	4	140	150	143	✓	4	81	85	83	✓
Neerabup	4	177	215	194	(1)	4	0.012	0.018	0.016	✓	4	120	125	124	✓	4	160	190	175	✓
North Dandalup	4	15	72	55	(1)	4	0.016	0.045	0.033	✓	4	31	70	44	✓	4	36	65	56	✓
Pinjarra	4	64	72	68	(1)	4	0.030	0.035	0.033	✓	4	33	40	36	✓	4	56	63	60	✓
South Perth/Kewdale	5	49	142	87	(1)	5	0.018	0.035	0.024	✓	5	42	180	116	✓	5	49	120	80	✓
Tamworth Hill	4	53	71	64	(1)	4	0.025	0.035	0.030	✓	4	31	50	38	✓	4	55	62	59	✓
Thomsons Lake	4	62	105	89	(1)	4	0.018	0.035	0.025	✓	4	43	220	145	✓	4	56	93	83	✓
Two Rocks	4	236	238	237	(1)	4	<0.008	0.012	<0.008	✓	4	105	110	108	✓	4	220	230	223	(2)
Wanneroo	5	101	160	116	(1)	5	0.016	0.045	0.024	✓	5	85	185	119	✓	5	94	130	107	✓
West Yokine	4	147	152	150	(1)	4	0.014	0.025	0.021	✓	4	160	205	183	✓	4	88	99	95	✓
Whitfords	4	100	111	104	(1)	4	0.016	0.045	0.032	✓	4	100	195	126	✓	4	86	110	96	✓
Yanchep	5	222	231	227	(1)	5	0.010	0.014	0.011	✓	5	105	110	107	✓	5	210	220	214	(2)

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

**Table 4 Aesthetic (Non-health related) Variables**

Perth Region	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	
Armadale/Kelmscott	4	0.020	0.040	0.033	✓	4	<0.002	0.008	0.003	✓	4	7.44	7.81	7.64	✓	4	3	4.3	3.7	✓
Bold Park	4	0.045	0.160	0.081	✓	4	0.004	0.014	0.010	✓	4	7.70	8.02	7.92	✓	4	3.2	4.9	4.0	✓
Buckland Hill	5	0.035	0.120	0.067	✓	5	0.003	0.025	0.010	✓	5	7.83	8.11	7.97	✓	5	2.7	7.3	5.6	✓
Dwellingup	4	0.045	0.080	0.066	✓	4	<0.002	0.006	0.004	✓	4	6.98	7.27	7.15	✓	4	2.4	3.1	2.7	✓
Foothills	5	0.010	0.050	0.027	✓	5	0.003	0.009	0.006	✓	5	7.82	8.14	7.95	✓	5	2.6	4.4	3.6	✓
Greenmount	5	0.008	0.040	0.023	✓	5	<0.002	0.002	<0.002	✓	5	8.22	8.42	8.33	✓	5	15	17	16.4	✓
Greenmount/Darlington	4	0.008	0.045	0.028	✓	4	0.002	0.005	0.004	✓	4	8.06	8.30	8.15	✓	4	4.2	11	6.0	✓
Hamilton Hill	4	0.010	0.040	0.023	✓	4	0.004	0.014	0.008	✓	4	7.93	8.10	8.00	✓	4	2.5	3.9	3.1	✓
Hills Direct	9	0.004	0.140	0.034	✓	9	<0.002	0.018	0.005	✓	9	7.64	8.10	7.86	✓	9	1.4	3	2.3	✓
Lexia	4	0.010	0.030	0.018	✓	4	0.004	0.016	0.008	✓	4	7.33	7.87	7.58	✓	4	13	18	16.5	✓
Mandurah	15	<0.003	0.020	0.009	✓	15	<0.002	0.006	<0.002	✓	15	7.88	8.22	8.06	✓	15	1.8	3.6	2.6	✓
Melville	4	0.015	0.080	0.044	✓	4	0.002	0.012	0.009	✓	4	7.78	7.99	7.92	✓	4	2.1	7.3	4.6	✓
Mirraboooka	4	0.015	0.025	0.020	✓	4	<0.002	0.003	<0.002	✓	4	7.34	7.49	7.41	✓	4	14	16	14.8	✓
Mt. Eliza	1	0.050	0.050	0.050	✓	1	0.012	0.012	0.012	✓	1	8.01	8.01	8.01	✓	1	6.4	6.4	6.4	✓
Mt. Hawthorn	4	0.030	0.200	0.113	✓	4	0.003	0.007	0.006	✓	4	7.90	8.11	7.99	✓	4	18	19	18.3	✓
Mt. Yokine	4	0.008	0.060	0.040	✓	4	<0.002	0.004	<0.002	✓	4	7.82	8.09	7.98	✓	4	17	19	18.3	✓
Mundaring	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	8.03	8.35	8.21	✓	4	4.2	4.7	4.5	✓
Neerabup	4	0.010	0.015	0.014	✓	4	<0.002	<0.002	<0.002	✓	4	7.74	7.97	7.83	✓	4	20	22	20.5	✓
North Dandalup	4	0.008	0.070	0.031	✓	4	<0.002	0.007	0.003	✓	4	7.32	8.70	8.24	✓	4	1.6	3.6	2.6	✓
Pinjarra	4	<0.003	0.015	0.007	✓	4	<0.002	0.004	<0.002	✓	4	7.79	8.15	8.00	✓	4	2.2	3.7	2.6	✓
South Perth/Kewdale	5	0.025	0.140	0.052	✓	5	0.002	0.007	0.005	✓	5	7.50	7.90	7.73	✓	5	2.1	17	8.4	✓
Tamworth Hill	4	0.006	0.025	0.013	✓	4	<0.002	0.004	<0.002	✓	4	7.49	7.99	7.82	✓	4	1.4	4.9	2.6	✓
Thomsons Lake	4	<0.003	0.010	0.006	✓	4	<0.002	0.005	0.003	✓	4	7.92	8.26	8.02	✓	4	0.9	5.4	3.9	✓
Two Rocks	4	<0.003	0.006	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	7.59	7.80	7.70	✓	4	11	12	11.8	✓
Wanneroo	5	0.006	0.020	0.010	✓	5	<0.002	0.004	<0.002	✓	5	7.54	8.01	7.77	✓	5	17	20	18.0	✓
West Yokine	4	0.015	0.260	0.149	✓	4	<0.002	0.014	0.008	✓	4	7.96	8.19	8.08	✓	4	18	19	18.3	✓
Whitfords	4	0.008	0.025	0.016	✓	4	<0.002	0.007	0.004	✓	4	7.90	8.05	7.97	✓	4	17	18	17.8	✓
Yanchep	5	<0.003	<0.003	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.47	7.87	7.72	✓	5	14	16	15.0	✓

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**Table 5 Aesthetic (Non-health related) Variables**

Perth Region	Aesthetic (Non-health related) Variables																			
	Sodium					TDS					True Colour					Turbidity				
	Locality	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Value (TCU)			Guideline Met	Samples Taken	Value (NTU)		
Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	
Armadale/Kelmscott	4	68	78	72	✓	4	281	322	301	✓	4	<1	<1	<1	✓	4	0.2	0.3	0.2	✓
Bold Park	4	40	61	49	✓	4	209	261	235	✓	4	<1	<1	<1	✓	4	0.2	0.3	0.3	✓
Buckland Hill	5	30	120	94	✓	5	171	443	369	✓	5	<1	<1	<1	✓	5	0.2	0.3	0.3	✓
Dwellingup	4	35	40	38	✓	4	143	166	156	✓	4	<1	2	<1	✓	4	0.3	0.4	0.4	✓
Foothills	5	37	87	56	✓	5	193	380	267	✓	5	<1	1	<1	✓	5	<0.1	0.3	0.2	✓
Greenmount	5	105	145	126	✓	5	483	593	538	✓	5	<1	<1	<1	✓	5	<0.1	0.1	<0.1	✓
Greenmount/Darlington	4	43	98	68	✓	4	217	420	312	✓	4	<1	<1	<1	✓	4	0.1	0.3	0.2	✓
Hamilton Hill	4	28	70	51	✓	4	158	319	248	✓	4	<1	<1	<1	✓	4	<0.1	0.3	0.2	✓
Hills Direct	9	19	40	28	✓	9	139	198	165	✓	9	<1	2	<1	✓	9	0.1	0.7	0.2	✓
Lexia	4	34	61	52	✓	4	333	371	349	✓	4	<1	1	<1	✓	4	0.2	0.4	0.3	✓
Mandurah	15	20	27	22	✓	15	148	169	158	✓	15	<1	<1	<1	✓	15	<0.1	0.2	<0.1	✓
Melville	4	32	130	79	✓	4	176	467	312	✓	4	<1	<1	<1	✓	4	0.2	0.5	0.3	✓
Mirrabooka	4	84	110	97	✓	4	434	480	464	✓	4	<1	1	<1	✓	4	<0.1	0.3	<0.1	✓
Mt. Eliza	1	120	120	120	✓	1	451	451	451	✓	1	<1	<1	<1	✓	1	0.4	0.4	0.4	✓
Mt. Hawthorn	4	130	150	140	✓	4	558	600	574	✓	4	<1	<1	<1	✓	4	0.2	0.2	0.2	✓
Mt. Yokine	4	115	150	129	✓	4	501	618	550	✓	4	<1	1	<1	✓	4	<0.1	0.2	<0.1	✓
Mundaring	4	82	89	87	✓	4	358	385	375	✓	4	<1	2	<1	✓	4	<0.1	0.2	<0.1	✓
Neerabup	4	70	73	71	✓	4	476	535	504	✓	4	<1	<1	<1	✓	4	0.1	0.4	0.3	✓
North Dandalup	4	19	36	25	✓	4	151	161	157	✓	4	<1	2	<1	✓	4	<0.1	0.4	0.2	✓
Pinjarra	4	20	23	22	✓	4	153	160	157	✓	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓
South Perth/Kewdale	5	25	115	72	✓	5	159	536	338	✓	5	<1	<1	<1	✓	5	<0.1	0.2	0.2	✓
Tamworth Hill	4	19	28	23	✓	4	149	170	157	✓	4	<1	<1	<1	✓	4	0.1	0.2	0.1	✓
Thomsons Lake	4	28	140	91	✓	4	160	532	381	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Two Rocks	4	56	57	57	✓	4	519	522	520	✓	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓
Wanneroo	5	52	110	72	✓	5	321	496	398	✓	5	<1	<1	<1	✓	5	<0.1	<0.1	<0.1	✓
West Yokine	4	115	135	128	✓	4	517	572	549	✓	4	<1	<1	<1	✓	4	<0.1	0.3	0.2	✓
Whitfords	4	61	115	77	✓	4	342	516	390	✓	4	<1	<1	<1	✓	4	0.1	0.3	0.2	✓
Yanchep	5	52	54	53	✓	5	489	508	500	✓	5	<1	<1	<1	✓	5	<0.1	<0.1	<0.1	✓

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Table 6 Health related variables

Mid West Locality	E. coli			Thermophilic Naegleria			Fluoride			Hydrocarbons		Metals			
	Samples Taken	Samples with >0 cfu/100mL	Max cfu/100mL	Requirement Met	Samples Taken	Samples with Thermophilic Naegleria	Requirement Met	Concentration (mg/L)			Samples Taken	Guideline Met	Samples Taken	Guideline Met	
								Min	Max	Mean					
Badgingarra	13	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Bindoon /Chittering	64	0	0	✓	26	0	✓	2	0.35	0.35	0.35	1	✓	2	✓
Bolgart	12	0	0	✓	8	0	✓	2	0.20	0.20	0.20	2	✓	2	✓
Calingiri	12	0	0	✓	8	0	✓	1	<0.1	<0.1	<0.1	2	✓	2	✓
Carnamah	13	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Carnarvon	63	0	0	✓	39	0	✓	2	0.50	0.55	0.53	2	✓	2	✓
Cervantes	52	0	0	✓	9	0	✓	1	0.15	0.15	0.15	2	✓	2	✓
Coomberdale	13	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Coorow	13	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	1	✓	2	✓
Coral Bay	12	0	0	✓	12	0	✓	2	<0.1	<0.1	<0.1	0	(1)	3	✓
Cue	13	0	0	✓	13	0	✓	1	0.25	0.25	0.25	0	(1)	2	✓
Dandaragan	13	0	0	✓	8	0	✓	2	0.25	0.25	0.25	2	✓	2	✓
Denham	51	0	0	✓	27	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Dongara/Denison	51	0	0	✓	26	0	✓	2	0.35	0.35	0.35	2	✓	2	✓
Eneabba	13	0	0	✓	13	0	✓	2	0.15	0.15	0.15	2	✓	11	✓
Exmouth	65	0	0	✓	40	0	✓	55	0.55	0.85	0.70	2	✓	2	✓
Gascoyne Junction	26	0	0	✓	26	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Geraldton	176	0	0	✓	163	0	✓	56	0.50	0.90	0.76	3	✓	4	✓
Gingin	51	0	0	✓	17	0	✓	2	<0.1	<0.1	<0.1	1	✓	2	✓
Greenhead	53	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Guilderton	52	0	0	✓	17	0	✓	2	0.20	0.25	0.23	2	✓	2	✓
Horrocks	13	0	0	✓	13	0	✓	2	0.35	0.55	0.45	2	✓	3	✓
Jurien Bay	52	0	0	✓	9	0	✓	1	0.20	0.20	0.20	2	✓	2	✓
Kalbarri	52	0	0	✓	26	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Lancelin	52	0	0	✓	17	0	✓	2	0.20	0.20	0.20	2	✓	2	✓
Latham	12	0	0	✓	12	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Ledge Point	52	0	0	✓	8	0	✓	2	0.10	0.15	0.13	2	✓	2	✓
Leeman	53	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Meekatharra	50	0	0	✓	11	0	✓	2	0.55	0.60	0.58	2	✓	15	✓
Mingenew	13	0	0	✓	13	0	✓	1	0.15	0.15	0.15	2	✓	1	✓
Moora	52	0	0	✓	18	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Morawa	53	0	0	✓	14	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Mt Magnet	49	0	0	✓	12	0	✓	2	0.30	0.30	0.30	2	✓	2	✓
Mullewa	13	0	0	✓	13	0	✓	2	0.75	0.80	0.78	2	✓	2	✓
Nabawa	13	0	0	✓	13	0	✓	2	0.70	0.75	0.73	2	✓	2	✓
New Norcia	14	0	0	✓	8	0	✓	2	0.15	0.20	0.18	2	✓	2	✓
Nilgern (Ocean Farms)	13	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Northampton	51	0	0	✓	13	0	✓	2	0.75	0.80	0.78	2	✓	2	✓
Perenjori	12	0	0	✓	12	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Piawaning	26	0	0	✓	17	0	✓	2	<0.1	0.10	<0.1	1	✓	2	✓
Port Kalbarri	13	0	0	✓	13	0	✓	2	0.15	0.15	0.15	2	✓	2	✓
Sandstone	13	0	0	✓	13	0	✓	2	0.40	0.40	0.40	2	✓	7	✓
Seabird	26	0	0	✓	17	0	✓	2	0.25	0.25	0.25	2	✓	2	✓
Seaview Park	13	0	0	✓	9	0	✓	1	<0.1	<0.1	<0.1	2	✓	2	✓
Sovereign Hills	26	0	0	✓	18	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Three Springs	13	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Watheroo	13	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Woodridge	13	0	0	✓	9	0	✓	2	0.30	0.30	0.30	2	✓	2	✓
Yalgoo	11	0	0	✓	11	0	✓	2	0.20	0.25	0.23	2	✓	2	✓
Yerecoin	12	0	0	✓	8	0	✓	2	<0.1	0.15	<0.1	1	✓	2	✓
Yuna	13	0	0	✓	13	0	✓	2	0.75	0.75	0.75	2	✓	3	✓

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

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**Table 7 Health related variables**

Mid West	Health related variables															
	Locality	Nitrate				Pesticides		Radiological		Trihalomethanes					Other Health Related	
		Concentration (mg/L)	Min	Max	Mean	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Min	Max	Mean	Guideline Met	Samples Taken
Badgingarra	2	0.2	0.2	0.2	✓	1	✓	1	✓	2	<1	<1	<1	✓	2	✓
Bindoon /Chittering	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	8	8	8	✓	2	✓
Bolgart	2	7.6	9.0	8.3	✓	1	✓	0	(1)	2	4	6	5	✓	1	✓
Calingiri	5	4.6	5.3	4.9	✓	1	✓	1	✓	2	14	16	15	✓	1	✓
Carnamah	2	0.2	0.2	0.2	✓	1	✓	1	✓	2	12	13	13	✓	1	✓
Carnarvon	2	0.8	0.8	0.8	✓	1	✓	0	(1)	2	1	6	4	✓	2	✓
Cervantes	5	2.9	3.4	3.2	✓	1	✓	1	✓	2	10	18	14	✓	2	✓
Coomberdale	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	120	200	160	✓	2	✓
Coorow	2	0.1	0.2	0.1	✓	1	✓	1	✓	2	12	18	15	✓	2	✓
Coral Bay	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	<1	4	2	✓	0	(1)
Cue	10	10.9	11.9	11.6	(2)	1	✓	1	✓	2	4	4	4	✓	2	✓
Dandaragan	3	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	4	7	6	✓	2	✓
Denham	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	10	84	47	✓	1	✓
Dongara/Denison	6	1.4	2.8	2.4	✓	1	✓	0	(1)	2	6	8	7	✓	1	✓
Eneabba	3	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	7	38	23	✓	2	✓
Exmouth	2	1.7	1.8	1.8	✓	1	✓	0	(1)	2	2	3	3	✓	2	✓
Gascoyne Junction	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	9	10	10	✓	1	✓
Geraldton	4	0.6	0.7	0.7	✓	3	✓	1	✓	3	4	8	6	✓	1	✓
Gingin	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	1	3	2	✓	2	✓
Greenhead	2	0.8	0.9	0.9	✓	1	✓	1	✓	2	2	3	3	✓	2	✓
Guilderton	13	7.1	7.8	7.5	✓	1	✓	1	✓	2	12	29	21	✓	2	✓
Horrocks	3	<0.05	<0.05	<0.05	✓	1	✓	1	✓	1	19	19	19	✓	2	✓
Jurien Bay	7	3.0	3.2	3.1	✓	1	✓	1	✓	2	7	15	11	✓	2	✓
Kalbarri	2	0.6	0.7	0.6	✓	1	✓	1	✓	2	2	5	4	✓	1	✓
Lancelin	4	0.8	1.2	1.0	✓	1	✓	1	✓	2	12	12	12	✓	2	✓
Latham	2	0.1	0.2	0.1	✓	1	✓	0	(1)	2	<1	<1	<1	✓	2	✓
Ledge Point	5	4.1	4.5	4.2	✓	1	✓	1	✓	2	14	18	16	✓	2	✓
Leeman	2	0.8	0.9	0.8	✓	1	✓	1	✓	2	<1	3	2	✓	2	✓
Meekatharra	4	13.2	15.2	14.0	(2)	1	✓	0	(1)	2	<1	<1	<1	✓	2	✓
Mingenew	2	1.0	1.7	1.4	✓	1	✓	1	✓	1	6	6	6	✓	2	✓
Moora	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	11	19	15	✓	2	✓
Morawa	2	0.1	0.2	0.1	✓	1	✓	0	(1)	2	5	15	10	✓	2	✓
Mt Magnet	10	14.0	16.7	15.5	(2)	1	✓	0	(1)	2	3	5	4	✓	1	✓
Mullewa	2	0.6	0.8	0.7	✓	1	✓	1	✓	2	33	38	36	✓	1	✓
Nabawa	2	0.6	0.7	0.7	✓	1	✓	1	✓	2	16	16	16	✓	1	✓
New Norcia	10	10.4	11.7	11.2	(2)	1	✓	0	(1)	2	3	9	6	✓	1	✓
Nilgern (Ocean Farms)	2	4.9	5.0	5.0	✓	1	✓	1	✓	2	1	1	1	✓	0	(1)
Northampton	2	0.5	0.7	0.6	✓	1	✓	1	✓	2	22	37	30	✓	2	✓
Perenjori	2	0.1	0.2	0.1	✓	1	✓	1	✓	2	4	8	6	✓	2	✓
Piawaning	2	2.0	4.0	3.0	✓	4	✓	1	✓	2	41	77	59	✓	2	✓
Port Kalbarri	2	0.1	0.7	0.4	✓	1	✓	1	✓	2	4	6	5	✓	0	(1)
Sandstone	7	11.3	13.1	12.5	(2)	1	✓	0	(1)	2	2	11	7	✓	2	✓
Seabird	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	41	63	52	✓	1	✓
Seaview Park	3	5.0	5.1	5.0	✓	1	✓	1	✓	2	6	7	7	✓	2	✓
Sovereign Hills	3	3.4	4.9	4.1	✓	1	✓	1	✓	2	25	27	26	✓	1	✓
Three Springs	2	0.3	0.3	0.3	✓	1	✓	1	✓	2	3	7	5	✓	2	✓
Watheroo	5	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	3	81	170	120	✓	0	(1)
Woodridge	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	65	100	83	✓	1	✓
Yalgoo	2	18.4	19.2	18.8	(2)	1	✓	1	✓	2	10	11	11	✓	2	✓
Yerecoin	28	1.5	6.7	3.3	✓	5	✓	0	(1)	2	32	67	50	✓	1	✓
Yuna	2	0.5	0.7	0.6	✓	1	✓	1	✓	2	34	57	46	✓	2	✓

(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.

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Table 8 Aesthetic (Non-health related) Variables

Mid West	Aesthetic (Non-health related) Variables																			
	Alkalinity (as CaCO3)					Aluminium					Chloride					Hardness				
	Locality	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)		
Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	
Badgingarra	2	93	110	102	(1)	2	<0.008	<0.008	<0.008	✓	2	230	230	230	✓	2	42	43	43	✓
Bindoon /Chittering	2	78	111	95	(1)	1	<0.008	<0.008	<0.008	✓	2	155	160	158	✓	2	49	51	50	✓
Bolgart	2	35	40	38	(1)	2	<0.008	<0.008	<0.008	✓	2	240	275	258	(2)	2	110	130	120	✓
Calingiri	3	22	24	23	(1)	3	<0.008	<0.008	<0.008	✓	3	235	385	318	(2)	3	78	140	113	✓
Carnamah	2	12	14	13	(1)	2	<0.008	<0.008	<0.008	✓	2	435	440	438	(2)	2	120	130	125	✓
Carnarvon	4	118	138	125	(1)	2	<0.008	0.010	<0.008	✓	4	175	195	186	✓	2	180	210	195	✓
Cervantes	5	274	285	280	(1)	3	<0.008	<0.008	<0.008	✓	5	285	305	298	(2)	5	300	310	308	(3)
Coomberdale	2	206	227	217	(1)	2	0.020	0.025	0.023	✓	2	195	205	200	✓	2	230	270	250	(3)
Coorow	2	14	17	16	(1)	2	<0.008	0.010	<0.008	✓	2	415	430	423	(2)	2	120	140	130	✓
Coral Bay	2	78	93	86	(1)	2	<0.008	<0.008	<0.008	✓	2	41	55	48	✓	2	67	80	74	✓
Cue	5	77	79	78	(1)	2	<0.008	<0.008	<0.008	✓	5	280	290	285	(2)	5	180	180	180	✓
Dandaragan	3	100	126	111	(1)	3	<0.008	<0.008	<0.008	✓	3	235	240	237	✓	3	88	93	90	✓
Denham	2	19	20	20	(1)	2	<0.008	0.012	<0.008	✓	2	170	175	173	✓	2	60	61	61	✓
Dongara/Denison	6	95	127	118	(1)	2	<0.008	<0.008	<0.008	✓	10	345	415	362	(2)	6	110	120	112	✓
Eneabba	3	17	21	19	(1)	3	<0.008	<0.008	<0.008	✓	3	330	350	338	(2)	3	95	98	97	✓
Exmouth	2	293	295	294	(1)	2	<0.008	<0.008	<0.008	✓	2	230	265	248	✓	2	310	330	320	(3)
Gascoyne Junction	2	24	32	28	(1)	2	<0.008	<0.008	<0.008	✓	2	110	130	120	✓	2	66	70	68	✓
Geraldton	4	69	80	75	(1)	4	<0.008	0.030	0.010	✓	4	370	390	381	(2)	4	100	120	110	✓
Gingin	4	42	50	47	(1)	4	<0.008	<0.008	<0.008	✓	4	100	110	106	✓	4	30	35	32	✓
Greenhead	2	26	27	27	(1)	2	<0.008	<0.008	<0.008	✓	2	290	290	290	(2)	2	100	100	100	✓
Guilderton	3	228	247	235	(1)	3	<0.008	0.010	<0.008	✓	3	305	365	338	(2)	3	300	310	303	(3)
Horrocks	3	108	132	122	(1)	3	<0.008	<0.008	<0.008	✓	3	600	615	608	(2)	3	130	130	130	✓
Jurien Bay	7	286	314	294	(1)	4	<0.008	0.010	<0.008	✓	7	200	385	273	(2)	7	280	380	313	(3)
Kalbarri	2	8	11	10	(1)	2	<0.008	<0.008	<0.008	✓	2	190	195	193	✓	2	61	64	63	✓
Lancelin	4	238	245	243	(1)	4	<0.008	<0.008	<0.008	✓	4	200	230	209	✓	4	270	280	273	(3)
Latham	2	42	52	47	(1)	2	0.010	0.010	0.010	✓	2	290	295	293	(2)	2	85	100	93	✓
Ledge Point	5	241	250	246	(1)	3	<0.008	0.010	<0.008	✓	5	175	185	181	✓	7	250	260	256	(3)
Leeman	2	25	27	26	(1)	2	<0.008	<0.008	<0.008	✓	2	290	295	293	(2)	2	100	110	105	✓
Meekatharra	4	195	204	198	(1)	4	<0.008	0.010	<0.008	✓	4	305	310	308	(2)	4	270	280	278	(3)
Mingenew	2	21	29	25	(1)	2	<0.008	<0.008	<0.008	✓	2	330	350	340	(2)	2	72	81	77	✓
Moora	2	28	36	32	(1)	2	<0.008	<0.008	<0.008	✓	2	240	245	243	✓	2	59	62	61	✓
Morawa	2	25	25	25	(1)	2	<0.008	<0.008	<0.008	✓	2	300	300	300	(2)	2	68	70	69	✓
Mt Magnet	6	225	229	228	(1)	2	<0.008	0.010	<0.008	✓	6	215	270	243	✓	6	250	270	258	(3)
Mullewa	2	87	96	92	(1)	2	<0.008	0.020	0.010	✓	2	380	380	380	(2)	2	120	130	125	✓
Nabawa	2	72	75	74	(1)	2	0.020	0.025	0.023	✓	2	375	390	383	(2)	2	110	120	115	✓
New Norcia	6	36	38	37	(1)	2	<0.008	<0.008	<0.008	✓	6	500	615	554	(2)	6	200	240	223	(3)
Nilgern (Ocean Farms)	2	280	280	280	(1)	2	<0.008	0.012	<0.008	✓	2	140	145	143	✓	2	250	250	250	(3)
Norhampton	2	85	85	85	(1)	2	0.010	0.012	0.011	✓	2	385	385	385	(2)	2	120	120	120	✓
Perenjori	2	28	29	29	(1)	2	<0.008	<0.008	<0.008	✓	2	300	305	303	(2)	2	73	78	76	✓
Plawanning	2	43	49	46	(1)	2	<0.008	<0.008	<0.008	✓	2	145	175	160	✓	2	110	110	110	✓
Port Kalbarri	2	10	91	50	(1)	2	<0.008	<0.008	<0.008	✓	2	195	345	270	(2)	2	64	120	92	✓
Sandstone	2	109	116	113	(1)	2	<0.008	<0.008	<0.008	✓	2	335	350	343	(2)	2	310	320	315	(3)
Seabird	2	98	99	99	(1)	2	<0.008	<0.008	<0.008	✓	2	205	210	208	✓	2	94	96	95	✓
Seaview Park	3	214	216	215	(1)	3	<0.008	<0.008	<0.008	✓	3	95	100	97	✓	3	190	200	193	✓
Sovereign Hills	3	168	200	181	(1)	3	<0.008	<0.008	<0.008	✓	3	235	235	235	✓	3	240	240	240	(3)
Three Springs	2	28	32	30	(1)	2	<0.008	<0.008	<0.008	✓	2	325	370	348	(2)	2	81	83	82	✓
Watheroo	5	219	236	225	(1)	3	<0.008	0.012	<0.008	✓	5	170	200	184	✓	5	230	270	248	(3)
Woodridge	2	72	73	73	(1)	2	0.055	0.055	0.055	✓	2	180	185	183	✓	2	50	51	51	✓
Yalgoo	2	216	231	224	(1)	2	<0.008	0.010	<0.008	✓	2	310	320	315	(2)	2	330	330	330	(3)
Yerecoin	2	52	54	53	(1)	2	<0.008	<0.008	<0.008	✓	2	120	140	130	✓	2	100	100	100	✓
Yuna	2	75	79	77	(1)	2	0.016	0.020	0.018	✓	2	365	385	375	(2)	2	110	120	115	✓

(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.

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Table 9 Aesthetic (Non-health related) Variables

Mid West	Aesthetic (Non-health related) Variables																						
	Locality	Iron				Guideline Met	Samples Taken	Manganese				Guideline Met	Samples Taken	pH				Guideline Met	Samples Taken	Silica			
		Concentration (mg/L)	Min	Max	Mean			Concentration (mg/L)	Min	Max	Mean			Value (pH units)	Min	Max	Mean			Concentration (mg/L)	Min	Max	Mean
Badgingarra	2	0.004	0.010	0.007	✓	2	<0.002	0.003	<0.002	✓	2	6.81	7.13	6.97	✓	2	43	43	43	✓			
Bindoon /Chittering	2	0.020	0.045	0.033	✓	2	<0.002	0.003	<0.002	✓	2	6.94	7.23	7.09	✓	2	36	37	37	✓			
Bolgart	2	0.015	0.035	0.025	✓	2	<0.002	<0.002	<0.002	✓	2	7.05	7.19	7.12	✓	2	38	41	40	✓			
Calingiri	3	0.015	0.025	0.018	✓	3	<0.002	<0.002	<0.002	✓	3	6.99	7.23	7.11	✓	3	17	18	18	✓			
Carnamah	2	0.050	0.070	0.060	✓	2	<0.002	0.003	<0.002	✓	2	6.76	7.20	6.98	✓	2	23	26	25	✓			
Carnarvon	2	<0.003	0.010	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.78	7.98	7.91	✓	4	43	48	45	✓			
Cervantes	5	<0.003	0.004	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.70	7.85	7.75	✓	5	13	14	13	✓			
Coomberdale	2	0.025	0.050	0.038	✓	2	<0.002	0.004	<0.002	✓	2	8.50	8.65	8.58	(1)	2	13	15	14	✓			
Coorow	2	0.025	0.080	0.053	✓	2	<0.002	0.012	0.006	✓	2	7.15	7.31	7.23	✓	2	23	26	25	✓			
Coral Bay	2	0.006	0.008	0.007	✓	2	<0.002	<0.002	<0.002	✓	2	7.23	7.49	7.36	✓	2	0.2	0.3	0	✓			
Cue	5	<0.003	0.008	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.75	8.00	7.87	✓	5	80	80	80	✓			
Dandaragan	3	0.040	0.060	0.048	✓	3	<0.002	<0.002	<0.002	✓	3	7.04	7.19	7.12	✓	3	42	43	42	✓			
Denham	2	0.035	0.045	0.040	✓	2	<0.002	<0.002	<0.002	✓	2	7.43	7.46	7.45	✓	2	2.1	2.2	2	✓			
Dongara/Denison	6	0.010	0.140	0.053	✓	6	<0.002	0.006	<0.002	✓	6	6.98	7.27	7.13	✓	6	25	33	30	✓			
Eneabba	3	0.010	0.020	0.015	✓	3	<0.002	0.009	0.003	✓	3	7.01	7.18	7.07	✓	3	44	47	45	✓			
Exmouth	2	0.004	0.004	0.004	✓	2	<0.002	<0.002	<0.002	✓	2	7.47	7.75	7.61	✓	2	15	16	16	✓			
Gascoyne Junction	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.22	7.45	7.34	✓	2	4.5	6.5	6	✓			
Geraldton	5	0.004	1.000	0.216	✓	4	<0.002	0.045	0.011	✓	4	6.99	7.40	7.15	✓	4	21	23	22	✓			
Gingin	4	0.045	0.050	0.048	✓	4	<0.002	<0.002	<0.002	✓	4	7.29	7.70	7.44	✓	4	28	31	30	✓			
Greenhead	2	0.010	0.015	0.013	✓	2	<0.002	<0.002	<0.002	✓	2	6.99	7.26	7.13	✓	2	24	25	25	✓			
Guilderton	3	<0.003	0.004	<0.003	✓	3	<0.002	<0.002	<0.002	✓	3	7.75	8.02	7.90	✓	3	8.7	9	9	✓			
Horrocks	3	0.025	0.120	0.058	✓	3	0.003	0.020	0.009	✓	3	7.28	7.36	7.31	✓	3	15	16	15	✓			
Jurien Bay	7	<0.003	<0.003	<0.003	✓	7	<0.002	<0.002	<0.002	✓	7	7.43	7.84	7.61	✓	7	14	15	15	✓			
Kalbarri	2	0.070	0.160	0.115	✓	2	<0.002	<0.002	<0.002	✓	2	6.91	6.97	6.94	✓	2	42	43	43	✓			
Lancelin	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	7.77	7.93	7.85	✓	4	15	16	16	✓			
Latham	2	0.025	0.030	0.028	✓	2	<0.002	<0.002	<0.002	✓	2	8.97	9.20	9.09	(1)	2	40	45	43	✓			
Ledge Point	5	<0.003	0.006	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.76	8.15	7.93	✓	5	15	16	15	✓			
Leeman	2	0.010	0.020	0.015	✓	2	<0.002	<0.002	<0.002	✓	2	7.36	7.58	7.47	✓	2	24	25	25	✓			
Meekatharra	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	8.09	8.24	8.16	✓	4	75	80	76	✓			
Mingenew	2	0.015	0.040	0.028	✓	2	<0.002	<0.002	<0.002	✓	2	6.99	7.22	7.11	✓	2	55	55	55	✓			
Moora	2	0.020	0.045	0.033	✓	2	<0.002	<0.002	<0.002	✓	2	7.25	7.35	7.30	✓	2	23	24	24	✓			
Morawa	2	0.010	0.015	0.013	✓	2	<0.002	<0.002	<0.002	✓	2	7.20	7.30	7.25	✓	2	44	47	46	✓			
Mt Magnet	6	<0.003	<0.003	<0.003	✓	6	<0.002	<0.002	<0.002	✓	6	8.01	8.22	8.11	✓	6	75	75	75	✓			
Mullewa	2	0.015	0.035	0.025	✓	2	<0.002	<0.002	<0.002	✓	2	8.14	8.22	8.18	✓	2	21	21	21	✓			
Nabawa	2	0.015	0.030	0.023	✓	2	<0.002	<0.002	<0.002	✓	2	7.81	7.92	7.87	✓	2	23	23	23	✓			
New Norcia	6	0.015	0.015	0.015	✓	6	<0.002	<0.002	<0.002	✓	6	6.53	6.77	6.63	✓	6	42	45	43	✓			
Nilgern (Ocean Farms)	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.59	7.74	7.67	✓	2	19	21	20	✓			
Northampton	2	0.010	0.015	0.013	✓	2	<0.002	<0.002	<0.002	✓	2	7.89	8.52	8.21	✓	2	21	23	22	✓			
Perenjori	2	0.020	0.040	0.030	✓	2	<0.002	<0.002	<0.002	✓	2	7.31	7.50	7.41	✓	2	43	45	44	✓			
Piawaning	2	0.040	0.050	0.045	✓	2	<0.002	<0.002	<0.002	✓	2	7.21	7.24	7.23	✓	2	18	18	18	✓			
Port Kalbarri	2	0.015	0.180	0.098	✓	2	<0.002	<0.002	<0.002	✓	7	6.94	7.46	7.26	✓	2	42	45	44	✓			
Sandstone	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.29	7.48	7.39	✓	2	36	37	37	✓			
Seabird	2	0.010	0.025	0.018	✓	2	<0.002	<0.002	<0.002	✓	2	7.80	8.03	7.92	✓	2	17	18	18	✓			
Seaview Park	3	<0.003	<0.003	<0.003	✓	3	<0.002	<0.002	<0.002	✓	3	7.77	7.86	7.81	✓	3	17	17	17	✓			
Sovereign Hills	3	<0.003	<0.003	<0.003	✓	3	<0.002	<0.002	<0.002	✓	3	8.00	8.06	8.03	✓	3	19	20	19	✓			
Three Springs	2	0.035	0.060	0.048	✓	2	0.005	0.012	0.009	✓	2	7.53	7.68	7.61	✓	2	48	50	49	✓			
Watheroo	7	0.006	0.220	0.067	✓	5	<0.002	0.018	0.006	✓	5	7.40	7.58	7.51	✓	5	13	14	13	✓			
Woodridge	2	0.020	0.025	0.023	✓	2	0.012	0.012	0.012	✓	2	7.40	7.60	7.50	✓	2	24	25	25	✓			
Yalgoo	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.71	7.92	7.82	✓	2	46	85	66	✓			
Yerecoin	28	0.025	0.300	0.085	✓	2	<0.002	<0.002	<0.002	✓	2	7.34	7.36	7.35	✓	2	18	19	19	✓			
Yuna	2	0.060	0.070	0.065	✓	2	<0.002	<0.002	<0.002	✓	2	7.78	7.79	7.79	✓	2	21	23	22	✓			

(1) High pH is characteristic of the source supplying this locality.

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Table 10 Aesthetic (Non-health related) Variables

Mid West	Aesthetic (Non-health related) Variables																			
	Sodium					TDS					True Colour					Turbidity				
	Locality	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Value (TCU)			Guideline Met	Samples Taken	Value (NTU)		
Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	
Badgingarra	2	155	165	160	✓	2	564	591	578	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Bindoon /Chittering	2	100	110	105	✓	2	417	459	438	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Bolgart	2	125	150	138	✓	2	542	608	575	✓	2	<1	<1	<1	✓	2	0.2	0.4	0.3	✓
Calligiri	3	130	210	173	✓	3	474	734	617	(2)	3	<1	<1	<1	✓	3	0.2	0.2	0.2	✓
Carnamah	2	225	240	233	(1)	2	796	812	804	(2)	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Carnarvon	4	88	93	91	✓	2	567	594	584	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Cervantes	5	140	165	157	✓	5	874	937	912	(2)	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
Coomberdale	2	86	96	91	✓	2	613	645	629	(2)	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Coorow	2	235	240	238	(1)	2	785	814	800	(2)	2	<1	<1	<1	✓	2	0.1	0.4	0.3	✓
Coral Bay	2	25	30	28	✓	2	191	194	193	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Cue	5	170	175	171	✓	5	808	817	813	(2)	5	<1	<1	<1	✓	5	<0.1	<0.1	<0.1	✓
Dandaragan	3	145	160	150	✓	3	589	629	606	(2)	3	<1	<1	<1	✓	3	<0.1	0.3	<0.1	✓
Denham	2	89	100	95	✓	2	341	359	350	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Dongara/Denison	10	230	260	244	(1)	6	846	895	859	(2)	6	<1	<1	<1	✓	6	0.1	1.2	0.4	✓
Eneabba	3	170	180	177	✓	3	634	650	643	(2)	3	<1	<1	<1	✓	3	<0.1	0.3	<0.1	✓
Exmouth	2	120	135	128	✓	2	805	867	836	(2)	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Gascoyne Junction	2	63	64	64	✓	2	276	280	278	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Geraldton	4	230	240	234	(1)	4	802	810	806	(2)	4	<1	<1	<1	✓	4	<0.1	7.7	2.0	✓
Gingin	4	64	69	67	✓	4	275	287	281	✓	4	<1	<1	<1	✓	4	<0.1	0.3	<0.1	✓
Greenhead	2	155	155	155	✓	2	572	573	573	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Guilderton	3	160	195	182	(1)	3	907	990	953	(2)	3	<1	<1	<1	✓	3	<0.1	0.2	<0.1	✓
Horrocks	3	385	445	408	(1)	3	1268	1357	1303	(2)	3	<1	<1	<1	✓	3	0.2	0.6	0.3	✓
Jurien Bay	7	110	220	147	✓	7	756	1105	890	(2)	7	<1	<1	<1	✓	7	<0.1	0.1	<0.1	✓
Kalbarri	2	97	100	99	✓	2	385	393	389	✓	2	<1	<1	<1	✓	2	0.2	0.7	0.5	✓
Lancelin	4	97	105	100	✓	4	679	723	694	(2)	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Latham	2	175	180	178	✓	2	643	647	645	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Ledge Point	5	105	105	105	✓	5	699	707	702	(2)	5	<1	<1	<1	✓	5	<0.1	0.1	<0.1	✓
Leeman	2	155	155	155	✓	2	570	576	573	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Meekatharra	4	195	195	195	(1)	4	1055	1075	1064	(2)	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓
Mingenew	2	195	200	198	(1)	2	677	691	684	(2)	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Moora	2	135	135	135	✓	2	487	494	491	✓	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Morawa	2	175	180	178	✓	2	619	627	623	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Mt Magnet	6	150	180	165	✓	6	892	982	934	(2)	6	<1	<1	<1	✓	6	<0.1	0.2	<0.1	✓
Mullewa	2	235	240	238	(1)	2	834	841	838	(2)	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Nabawa	2	235	245	240	(1)	2	811	822	817	(2)	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
New Norcia	6	270	325	303	(1)	6	996	1193	1100	(2)	6	<1	<1	<1	✓	6	0.3	0.7	0.5	✓
Nilgern (Ocean Farms)	2	90	91	91	✓	2	670	675	673	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Northampton	2	240	240	240	(1)	2	828	837	833	(2)	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Perenjori	2	175	180	178	✓	2	630	631	631	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Piawaning	2	72	84	78	✓	2	382	408	395	✓	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Port Kalbarri	2	99	215	157	✓	2	395	785	590	✓	2	<1	<1	<1	✓	2	<0.1	0.7	0.4	✓
Sandstone	2	175	185	180	✓	2	944	979	962	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Seabird	2	130	130	130	✓	2	534	535	535	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Seaview Park	3	63	67	65	✓	3	500	508	505	✓	3	<1	<1	<1	✓	3	<0.1	0.2	<0.1	✓
Sovereign Hills	3	105	115	110	✓	3	666	686	673	(2)	3	<1	<1	<1	✓	3	<0.1	0.2	<0.1	✓
Three Springs	2	205	215	210	(1)	2	687	736	712	(2)	2	<1	<1	<1	✓	2	0.2	0.4	0.3	✓
Watheroo	5	80	85	83	✓	5	587	644	609	(2)	5	<1	<1	<1	✓	7	<0.1	0.2	<0.1	✓
Woodridge	2	125	125	125	✓	2	466	470	468	✓	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Yalgoo	2	175	175	175	✓	2	1011	1064	1038	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Yerecoin	2	72	73	73	✓	2	366	372	369	✓	2	<1	<1	<1	✓	2	0.1	0.3	0.2	✓
Yuna	2	240	240	240	(1)	2	798	824	811	(2)	2	<1	<1	<1	✓	2	0.3	0.3	0.3	✓

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



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Table 11 Health related variables

Goldfields and Agricultural	Health related variables															
	E. coli				Thermophilic Naegleria			Fluoride					Hydrocarbons		Metals	
	Locality	Samples Taken	Samples with >0 cfu/100mL	Max cfu/100mL	Requirement Met	Samples Taken	Samples with Thermophilic Naegleria	Requirement Met	Samples Taken	Concentration (mg/L)			Samples Taken	Guideline Met	Samples Taken	Guideline Met
Min										Max	Mean					
Ardath	7	0	0	✓	7	0	✓	1	0.90	0.90	0.90	2	✓	2	✓	
Avon Hills	72	0	0	✓	37	0	✓	2	0.85	0.95	0.90	1	✓	2	✓	
Ballidu	12	0	0	✓	12	0	✓	2	0.80	0.95	0.88	2	✓	2	✓	
Beacon	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	1	✓	2	✓	
Bencubbin	12	0	0	✓	12	0	✓	2	0.90	0.95	0.93	1	✓	2	✓	
Beverley	53	0	0	✓	26	0	✓	2	0.85	0.90	0.88	1	✓	2	✓	
Bind Bindi	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	1	✓	2	✓	
Broad Arrow	12	0	0	✓	12	0	✓	2	0.80	0.90	0.85	2	✓	2	✓	
Bruce Rock	53	0	0	✓	12	0	✓	2	0.90	0.90	0.90	1	✓	2	✓	
Bullfinch	12	0	0	✓	12	0	✓	2	0.85	0.95	0.90	0	(1)	2	✓	
Buntine	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	1	✓	2	✓	
Cadoux	12	0	0	✓	12	0	✓	2	0.80	0.95	0.88	1	✓	2	✓	
Coolgardie	53	0	0	✓	27	0	✓	2	0.85	0.90	0.88	2	✓	2	✓	
Corrigin	53	0	0	✓	24	0	✓	2	0.90	0.90	0.90	1	✓	2	✓	
Cunderdin	53	0	0	✓	12	0	✓	2	0.80	0.95	0.88	1	✓	2	✓	
Dalwallinu	53	0	0	✓	12	0	✓	2	0.85	0.90	0.88	1	✓	2	✓	
Dowerin	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	1	✓	2	✓	
Goomalling	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	1	✓	2	✓	
Greater Bodallin	8	0	0	✓	8	0	✓	1	0.95	0.95	0.95	2	✓	2	✓	
Greater Burracoppin	23	0	0	✓	23	0	✓	1	0.95	0.95	0.95	2	✓	2	✓	
Greater Doolakine	23	0	0	✓	23	0	✓	1	1.00	1.00	1.00	2	✓	2	✓	
Greenhills	8	0	0	✓	8	0	✓	1	0.95	0.95	0.95	0	(1)	2	✓	
Jennacubbine	8	0	0	✓	8	0	✓	1	0.90	0.90	0.90	1	✓	2	✓	
Kalannie	12	0	0	✓	12	0	✓	2	0.85	0.95	0.90	1	✓	2	✓	
Kalgoorlie	126	0	0	✓	122	0	✓	54	0.80	0.95	0.87	4	✓	4	✓	
Kambalda	51	0	0	✓	51	0	✓	2	0.85	0.95	0.90	0	(1)	2	✓	
Kellerberrin	53	0	0	✓	25	0	✓	2	0.80	0.95	0.88	1	✓	2	✓	
Koolyanobbing	12	0	0	✓	12	0	✓	2	0.80	0.90	0.85	1	✓	2	✓	
Koorda	12	0	0	✓	12	0	✓	2	0.80	0.90	0.85	1	✓	2	✓	
Kununoppin	12	0	0	✓	12	0	✓	2	0.85	0.85	0.85	1	✓	2	✓	
Laverton	12	0	0	✓	8	0	✓	4	0.80	1.10	0.99	2	✓	5	✓	
Leonora	52	0	0	✓	17	0	✓	2	0.45	0.55	0.50	2	✓	2	✓	
Marvel Loch	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	1	✓	2	✓	
Meckering	39	0	0	✓	37	0	✓	3	0.80	0.90	0.83	2	✓	4	✓	
Menzies	12	0	0	✓	8	0	✓	2	0.75	0.75	0.75	2	✓	8	✓	
Merredin	53	0	0	✓	53	0	✓	53	0.75	1.00	0.86	1	✓	2	✓	
Miling	12	0	0	✓	12	0	✓	2	0.90	0.90	0.90	1	✓	2	✓	
Mukinbudin	12	0	0	✓	12	0	✓	2	0.90	0.95	0.93	1	✓	2	✓	
Muntadgin	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	1	✓	2	✓	
Narembeen	12	0	0	✓	12	0	✓	2	0.80	0.95	0.88	1	✓	2	✓	
Norseman	49	0	0	✓	26	0	✓	2	0.90	0.90	0.90	1	✓	2	✓	
Northam	65	0	0	✓	65	0	✓	52	0.75	1.00	0.85	0	(1)	3	✓	
Nungarin	12	0	0	✓	12	0	✓	2	0.80	0.85	0.83	1	✓	2	✓	
Ora Banda	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	2	✓	2	✓	
Pithara	12	0	0	✓	12	0	✓	2	0.85	0.85	0.85	1	✓	2	✓	
Quairading	53	0	0	✓	27	0	✓	2	0.85	0.90	0.88	1	✓	2	✓	
Seabrook	8	0	0	✓	8	0	✓	1	0.90	0.90	0.90	0	(1)	1	✓	
Shackleton	7	0	0	✓	7	0	✓	1	0.90	0.90	0.90	2	✓	2	✓	
Southern Cross	52	0	0	✓	35	0	✓	2	0.85	0.90	0.88	1	✓	2	✓	
Spencers Brook	8	0	0	✓	8	0	✓	1	1.00	1.00	1.00	0	(1)	2	✓	
Tammin	24	0	0	✓	24	0	✓	2	0.85	0.85	0.85	1	✓	2	✓	
Toodyay	52	0	0	✓	27	0	✓	2	0.85	0.85	0.85	1	✓	2	✓	
Trayning	12	0	0	✓	12	0	✓	2	0.85	0.85	0.85	1	✓	2	✓	
Warralakin	12	0	0	✓	12	0	✓	2	0.85	0.85	0.85	1	✓	2	✓	
Westonia	12	0	0	✓	12	0	✓	2	0.90	0.90	0.90	1	✓	2	✓	
Wiluna	12	0	0	✓	12	0	✓	2	0.30	0.30	0.30	1	✓	2	✓	
Wongan Hills	53	0	0	✓	28	0	✓	2	0.80	0.95	0.88	1	✓	2	✓	
Wubin	12	0	0	✓	12	0	✓	2	0.90	0.90	0.90	1	✓	2	✓	
Wyalkatchem	12	0	0	✓	12	0	✓	2	0.80	0.90	0.85	1	✓	2	✓	
York	53	0	0	✓	53	0	✓	53	0.75	0.95	0.85	1	✓	2	✓	

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

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Table 12 Health related variables

Goldfields and Agricultural	Health related variables															
	Nitrate					Pesticides		Radiological		Trihalomethanes					Other Health Related	
	Locality	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken
Min			Max	Mean	Min							Max	Mean			
Ardath	1	0.5	0.5	0.5	✓	1	✓	1	✓	1	0.005	0.005	0.005	✓	2	✓
Avon Hills	3	0.1	0.1	0.1	✓	1	✓	1	✓	3	0.002	0.010	0.007	✓	1	✓
Ballidu	2	0.2	0.6	0.4	✓	1	✓	0	(1)	2	0.016	0.031	0.024	✓	1	✓
Beacon	2	0.9	1	1	✓	1	✓	1	✓	2	0.013	0.021	0.017	✓	2	✓
Bencubbin	2	0.1	0.2	0.2	✓	5	✓	1	✓	2	0.007	0.013	0.010	✓	1	✓
Beverley	2	0.2	0.2	0.2	✓	1	✓	0	(1)	2	0.009	0.011	0.010	✓	2	✓
Bind Bindi	2	0.3	0.6	0.4	✓	1	✓	1	✓	2	0.007	0.012	0.010	✓	1	✓
Broad Arrow	2	0.4	0.5	0.4	✓	1	✓	1	✓	2	0.031	0.059	0.045	✓	1	✓
Bruce Rock	2	0.3	1	0.6	✓	1	✓	1	✓	2	0.024	0.025	0.025	✓	2	✓
Bullfinch	2	0.3	1	0.7	✓	1	✓	0	(1)	2	0.003	0.009	0.006	✓	0	(1)
Buntine	2	1.2	1.2	1.2	✓	1	✓	1	✓	2	0.047	0.073	0.060	✓	1	✓
Cadoux	2	0.1	0.3	0.2	✓	1	✓	1	✓	2	<0.001	0.003	0.002	✓	1	✓
Coolgardie	2	0.2	0.6	0.4	✓	1	✓	1	✓	2	0.019	0.024	0.022	✓	1	✓
Corrigin	2	0.3	0.5	0.4	✓	1	✓	1	✓	2	0.002	0.009	0.006	✓	2	✓
Cunderdin	2	0.1	0.1	0.1	✓	1	✓	1	✓	2	0.009	0.017	0.013	✓	1	✓
Dalwallinu	2	0.7	0.7	0.7	✓	1	✓	1	✓	2	0.010	0.016	0.013	✓	1	✓
Dowerin	2	0.2	0.4	0.3	✓	1	✓	1	✓	2	<0.001	0.007	0.004	✓	1	✓
Goomalling	2	0.1	0.4	0.3	✓	1	✓	1	✓	2	<0.001	0.012	0.006	✓	1	✓
Greater Bodallin	1	0.1	0.1	0.1	✓	1	✓	1	✓	1	0.010	0.010	0.010	✓	2	✓
Greater Burracoppin	1	0.2	0.2	0.2	✓	1	✓	1	✓	1	0.009	0.009	0.009	✓	2	✓
Greater Doolakine	1	0.1	0.1	0.1	✓	1	✓	1	✓	1	0.007	0.007	0.007	✓	2	✓
Greenhills	1	0.7	0.7	0.7	✓	1	✓	1	✓	1	0.014	0.023	0.019	✓	2	✓
Jennacubbine	1	0.3	0.3	0.3	✓	1	✓	0	(1)	1	0.002	0.002	0.002	✓	2	✓
Kalannie	2	0.7	0.8	0.8	✓	1	✓	1	✓	2	0.020	0.027	0.024	✓	1	✓
Kalgoorlie	4	0.3	0.4	0.3	✓	2	✓	2	✓	4	0.033	0.069	0.051	✓	2	✓
Kambalda	2	0.2	0.5	0.3	✓	1	✓	0	(1)	2	0.058	0.062	0.060	✓	0	(1)
Kellerberrin	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.006	0.007	0.007	✓	1	✓
Koolyanobbing	2	0.2	0.4	0.3	✓	1	✓	1	✓	2	<0.001	0.005	0.003	✓	1	✓
Koorda	2	0.1	0.7	0.4	✓	1	✓	1	✓	2	<0.001	0.004	0.002	✓	1	✓
Kununoppin	2	0.4	0.5	0.5	✓	1	✓	1	✓	2	0.008	0.009	0.009	✓	1	✓
Laverton	4	5.9	7.9	7.1	✓	1	✓	1	✓	2	0.051	0.079	0.065	✓	1	✓
Leonora	10	3.8	7.1	5.8	✓	1	✓	1	✓	2	<0.001	0.002	<0.001	✓	1	✓
Marvel Loch	2	0.8	0.9	0.8	✓	1	✓	1	✓	2	0.007	0.020	0.014	✓	1	✓
Meckering	3	<0.05	0.1	<0.05	✓	2	✓	2	✓	3	0.007	0.020	0.014	✓	2	✓
Menzies	7	7.9	12	10.4	(2)	1	✓	1	✓	2	0.007	0.015	0.011	✓	1	✓
Merredin	2	0.1	0.3	0.2	✓	1	✓	0	(1)	2	0.003	0.011	0.007	✓	1	✓
Miling	2	0.7	1.5	1.1	✓	1	✓	0	(1)	2	0.005	0.013	0.009	✓	1	✓
Mukinbudin	2	0.2	0.3	0.2	✓	1	✓	1	✓	2	<0.001	0.006	0.003	✓	1	✓
Muntadgin	2	0.1	1	0.5	✓	1	✓	1	✓	2	0.005	0.011	0.008	✓	1	✓
Narembeen	2	0.1	0.2	0.1	✓	1	✓	1	✓	2	0.004	0.006	0.005	✓	1	✓
Norseman	2	0.3	0.4	0.3	✓	1	✓	1	✓	2	0.029	0.048	0.039	✓	1	✓
Northam	2	0.3	0.3	0.3	✓	2	✓	0	(1)	2	0.007	0.015	0.011	✓	0	(1)
Nungarin	2	0.1	0.2	0.1	✓	1	✓	1	✓	2	0.001	0.008	0.005	✓	1	✓
Ora Banda	2	0.2	0.5	0.4	✓	1	✓	1	✓	2	0.035	0.039	0.037	✓	1	✓
Pithara	2	0.1	0.8	0.5	✓	1	✓	1	✓	2	0.009	0.013	0.011	✓	1	✓
Quairading	2	0.7	0.8	0.8	✓	1	✓	0	(1)	2	0.029	0.031	0.030	✓	1	✓
Seabrook	1	0.3	0.3	0.3	✓	1	✓	0	(1)	1	0.007	0.007	0.007	✓	2	✓
Shackleton	1	0.4	0.4	0.4	✓	1	✓	1	✓	1	0.010	0.010	0.010	✓	2	✓
Southern Cross	2	0.2	1.1	0.7	✓	1	✓	1	✓	2	0.007	0.009	0.008	✓	1	✓
Spencers Brook	1	0.1	0.1	0.1	✓	1	✓	0	(1)	1	0.013	0.013	0.013	✓	2	✓
Tammin	2	0.1	0.1	0.1	✓	1	✓	1	✓	2	0.008	0.012	0.010	✓	1	✓
Toodyay	2	0.2	0.2	0.2	✓	1	✓	1	✓	2	0.004	0.008	0.006	✓	1	✓
Trayning	2	0.4	0.4	0.4	✓	1	✓	1	✓	2	0.009	0.011	0.010	✓	1	✓
Warralakin	2	0.2	1.1	0.6	✓	1	✓	1	✓	2	0.005	0.007	0.006	✓	1	✓
Westonia	2	0.6	0.8	0.7	✓	1	✓	1	✓	2	0.006	0.007	0.007	✓	1	✓
Wiluna	5	14.2	17.5	15.8	(2)	1	✓	1	✓	2	0.003	0.003	0.003	✓	2	✓
Wongan Hills	2	0.1	0.5	0.3	✓	1	✓	1	✓	2	<0.001	<0.001	<0.001	✓	1	✓
Wubin	2	1.1	1.2	1.2	✓	1	✓	1	✓	2	0.030	0.039	0.035	✓	1	✓
Wyalkatchem	2	0.1	0.3	0.2	✓	1	✓	1	✓	2	<0.001	<0.001	<0.001	✓	1	✓
York	2	0.1	0.1	0.1	✓	1	✓	1	✓	2	0.003	0.005	0.004	✓	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.

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Table 13 Aesthetic (Non-health related) Variables

Goldfields and Agricultural	Aesthetic (Non-health related) Variables																			
	Alkalinity (as CaCO <sub>3</sub> )					Aluminium					Chloride					Hardness				
	Locality	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)		
Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	
Ardath	1	86	86	86.0	(1)	1	0.075	0.075	0.075	✓	1	150	150	150.0	✓	1	84	84	84	✓
Avon Hills	3	70	85	77.0	(1)	3	0.065	0.080	0.072	✓	3	135	150	145.0	✓	3	78	85	83	✓
Ballidu	2	78	93	85.5	(1)	2	0.035	0.070	0.053	✓	2	155	175	165.0	✓	2	88	91	90	✓
Beacon	2	79	82	80.5	(1)	2	0.040	0.040	0.040	✓	2	155	165	160.0	✓	2	88	94	91	✓
Bencubbin	2	91	97	94.0	(1)	2	0.018	0.020	0.019	✓	2	165	190	177.5	✓	2	97	100	99	✓
Beverley	2	79	82	80.5	(1)	2	0.045	0.075	0.060	✓	2	140	150	145.0	✓	2	87	88	88	✓
Bind Bindi	2	87	109	98.0	(1)	2	0.030	0.095	0.063	✓	2	140	155	147.5	✓	2	92	95	94	✓
Broad Arrow	2	67	76	71.5	(1)	2	0.050	0.085	0.068	✓	2	155	165	160.0	✓	2	88	92	90	✓
Bruce Rock	2	62	68	65.0	(1)	2	0.055	0.065	0.060	✓	2	150	160	155.0	✓	2	84	92	88	✓
Bullfinch	2	69	78	73.5	(1)	2	0.025	0.025	0.025	✓	2	140	170	155.0	✓	2	78	93	86	✓
Buntine	2	75	91	83.0	(1)	2	0.018	0.045	0.032	✓	2	155	175	165.0	✓	2	97	100	99	✓
Cadoux	2	73	88	80.5	(1)	2	0.045	0.095	0.070	✓	2	145	155	150.0	✓	2	85	89	87	✓
Coolgardie	2	71	73	72.0	(1)	2	0.040	0.060	0.050	✓	2	155	155	155.0	✓	2	88	90	89	✓
Corrigin	2	81	81	81.0	(1)	2	0.025	0.065	0.045	✓	2	150	160	155.0	✓	2	85	89	87	✓
Cunderdin	2	74	85	79.5	(1)	2	0.065	0.110	0.088	✓	2	145	150	147.5	✓	2	83	88	86	✓
Dalwallinu	2	72	81	76.5	(1)	2	0.035	0.035	0.035	✓	2	150	155	152.5	✓	2	89	99	94	✓
Dowerin	2	76	80	78.0	(1)	2	0.045	0.050	0.048	✓	2	140	155	147.5	✓	2	82	91	87	✓
Goomalling	2	74	79	76.5	(1)	2	0.065	0.075	0.070	✓	2	140	145	142.5	✓	2	79	90	85	✓
Greater Bodallin	1	94	94	94.0	(1)	1	0.085	0.085	0.085	✓	1	145	145	145.0	✓	1	86	86	86	✓
Greater Burracoppin	1	78	78	78.0	(1)	1	0.085	0.085	0.085	✓	1	145	145	145.0	✓	1	83	83	83	✓
Greater Doolakine	1	79	79	79.0	(1)	1	0.100	0.100	0.100	✓	1	145	145	145.0	✓	1	83	83	83	✓
Greenhills	3	70	84	76.3	(1)	1	0.080	0.080	0.080	✓	3	135	150	143.3	✓	1	82	82	82	✓
Jennacubbine	2	69	74	71.5	(1)	1	0.110	0.110	0.110	✓	2	140	150	145.0	✓	1	89	89	89	✓
Kalannie	1	74	74	74.0	(1)	2	0.040	0.075	0.058	✓	1	145	145	145.0	✓	2	91	98	95	✓
Kalgoorlie	1	77	77	77.0	(1)	4	0.040	0.055	0.046	✓	1	145	145	145.0	✓	4	87	110	99	✓
Kambalda	2	72	84	78.0	(1)	2	0.025	0.030	0.028	✓	2	145	155	150.0	✓	2	90	95	93	✓
Kellerberrin	4	70	74	72.5	(1)	2	0.060	0.095	0.078	✓	4	155	175	165.0	✓	2	81	86	84	✓
Koolyanobbing	2	70	70	70.0	(1)	2	0.040	0.050	0.045	✓	2	160	160	160.0	✓	2	82	93	88	✓
Koorda	2	71	79	75.0	(1)	2	0.035	0.050	0.043	✓	2	145	145	145.0	✓	2	88	90	89	✓
Kununoppin	2	75	81	78.0	(1)	2	0.030	0.060	0.045	✓	2	145	155	150.0	✓	2	81	92	87	✓
Laverton	2	66	88	77.0	(1)	4	<0.008	0.014	<0.008	✓	2	145	155	150.0	✓	4	100	110	108	✓
Leonora	2	74	80	77.0	(1)	2	<0.008	0.010	<0.008	✓	2	140	155	147.5	✓	6	42	150	124	✓
Marvel Loch	4	104	138	124.5	(1)	2	0.025	0.065	0.045	✓	4	120	150	133.8	✓	2	90	91	91	✓
Meckering	6	55	143	120.8	(1)	3	0.070	0.110	0.087	✓	6	60	170	145.0	✓	3	77	87	82	✓
Menzies	2	89	96	92.5	(1)	2	0.010	0.014	0.012	✓	2	155	155	155.0	✓	12	250	320	299	(2)
Merredin	7	192	241	226.4	(1)	2	0.050	0.095	0.073	✓	7	170	180	175.7	✓	2	85	90	88	✓
Milling	2	74	86	80.0	(1)	2	0.035	0.035	0.035	✓	2	145	155	150.0	✓	2	89	97	93	✓
Mukinbudin	2	75	77	76.0	(1)	2	0.050	0.050	0.050	✓	2	145	150	147.5	✓	2	80	81	81	✓
Muntadgin	2	79	82	80.5	(1)	2	0.055	0.070	0.063	✓	2	135	150	142.5	✓	2	85	88	87	✓
Narembeen	2	82	93	87.5	(1)	2	0.040	0.080	0.060	✓	2	145	145	145.0	✓	2	86	87	87	✓
Norseman	2	83	88	85.5	(1)	2	0.035	0.040	0.038	✓	2	150	155	152.5	✓	2	99	100	100	✓
Northam	2	72	81	76.5	(1)	2	0.020	0.110	0.065	✓	2	170	170	170.0	✓	2	79	84	82	✓
Nungarin	2	68	78	73.0	(1)	2	0.060	0.080	0.070	✓	2	135	145	140.0	✓	2	85	87	86	✓
Ora Banda	2	79	83	81.0	(1)	2	0.025	0.035	0.030	✓	2	145	145	145.0	✓	2	92	110	101	✓
Pithara	2	72	78	75.0	(1)	2	0.030	0.065	0.048	✓	2	160	170	165.0	✓	2	91	91	91	✓
Quairading	2	75	87	81.0	(1)	2	0.040	0.065	0.053	✓	2	145	155	150.0	✓	2	85	92	89	✓
Seabrook	2	66	77	71.5	(1)	1	0.095	0.095	0.095	✓	2	145	150	147.5	✓	1	88	88	88	✓
Shackleton	1	78	78	78.0	(1)	1	0.055	0.055	0.055	✓	1	140	140	140.0	✓	1	92	92	92	✓
Southern Cross	1	100	100	100.0	(1)	2	0.060	0.075	0.068	✓	1	145	145	145.0	✓	2	80	88	84	✓
Spencers Brook	1	76	76	76.0	(1)	1	0.120	0.120	0.120	✓	1	145	145	145.0	✓	1	83	83	83	✓
Tammin	2	73	80	76.5	(1)	2	0.075	0.075	0.075	✓	2	145	150	147.5	✓	2	79	92	86	✓
Toodyay	2	77	78	77.5	(1)	2	0.070	0.120	0.095	✓	2	140	140	140.0	✓	2	81	84	83	✓
Trayning	2	72	80	76.0	(1)	2	0.035	0.050	0.043	✓	2	140	155	147.5	✓	2	85	92	89	✓
Warralakin	2	75	77	76.0	(1)	2	0.055	0.075	0.065	✓	2	140	150	145.0	✓	2	79	84	82	✓
Westonia	2	70	79	74.5	(1)	2	0.060	0.065	0.063	✓	2	140	150	145.0	✓	2	80	85	83	✓
Wiluna	2	154	164	159.0	(1)	2	<0.008	<0.008	<0.008	✓	2	130	150	140.0	✓	2	240	320	280	(2)
Wongan Hills	2	93	96	94.5	(1)	2	0.060	0.080	0.070	✓	2	145	145	145.0	✓	2	87	90	89	✓
Wubin	2	83	91	87.0	(1)	2	0.025	0.055	0.040	✓	2	150	170	160.0	✓	2	97	99	98	✓
Wyalkatchem	2	71	87	79.0	(1)	2	0.030	0.070	0.050	✓	2	140	150	145.0	✓	2	84	89	87	✓
York	2	78	79	78.5	(1)	2	0.065	0.095	0.080	✓	2	140	145	142.5	✓	2	81	85	83	✓

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

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Table 14 Aesthetic (Non-health related) Variables

Goldfields and Agricultural	Aesthetic (Non-health related) Variables																			
	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)		
Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	
Ardath	1	0.010	0.010	0.010	✓	1	<0.002	<0.002	<0.002	✓	1	8.31	8.31	8.31	✓	1	5.1	5.1	5.1	✓
Avon Hills	3	0.004	0.025	0.012	✓	3	<0.002	<0.002	<0.002	✓	3	8.16	8.32	8.22	✓	3	4.1	4.3	4.2	✓
Ballidu	2	0.008	0.020	0.014	✓	2	<0.002	<0.002	<0.002	✓	2	7.44	7.57	7.51	✓	2	4.1	4.2	4.2	✓
Beacon	2	0.060	0.060	0.060	✓	2	0.003	0.008	0.006	✓	2	7.87	7.87	7.87	✓	2	4.2	4.7	4.45	✓
Bencubbin	2	0.045	0.080	0.063	✓	2	0.009	0.016	0.013	✓	2	8.00	8.05	8.03	✓	2	4	7.4	5.7	✓
Beverley	2	0.004	0.008	0.006	✓	2	<0.002	<0.002	<0.002	✓	2	8.44	8.88	8.66	(1)	2	4.2	4.6	4.4	✓
Bind Bindi	2	0.015	0.020	0.018	✓	2	<0.002	<0.002	<0.002	✓	2	7.19	8.63	7.91	✓	2	4.1	4.9	4.5	✓
Broad Arrow	2	0.060	0.080	0.070	✓	2	<0.002	0.006	0.003	✓	2	7.97	8.02	8.00	✓	2	4.4	4.6	4.5	✓
Bruce Rock	2	0.008	0.010	0.009	✓	2	<0.002	<0.002	<0.002	✓	2	7.65	7.75	7.70	✓	2	4.5	4.7	4.6	✓
Bullfinch	2	0.008	0.020	0.014	✓	2	<0.002	<0.002	<0.002	✓	2	8.70	8.79	8.75	(1)	2	4.1	5.1	4.6	✓
Buntine	2	0.015	0.015	0.015	✓	2	<0.002	<0.002	<0.002	✓	2	8.21	8.39	8.30	✓	2	4.5	4.9	4.7	✓
Cadoux	2	0.020	0.090	0.055	✓	2	<0.002	0.006	0.003	✓	2	8.33	8.65	8.49	✓	2	4.1	4.3	4.2	✓
Coolgardie	2	0.008	0.010	0.009	✓	2	<0.002	<0.002	<0.002	✓	2	7.47	7.56	7.52	✓	2	4.2	4.3	4.3	✓
Corrigin	2	0.004	0.006	0.005	✓	2	<0.002	<0.002	<0.002	✓	2	8.27	8.39	8.33	✓	2	4	5	4.5	✓
Cunderdin	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.08	8.15	8.12	✓	2	4.2	4.3	4.25	✓
Dalwallinu	2	0.010	0.025	0.018	✓	2	<0.002	<0.002	<0.002	✓	2	8.42	8.48	8.45	✓	2	4.2	4.6	4.4	✓
Dowerin	2	0.006	0.010	0.008	✓	2	<0.002	<0.002	<0.002	✓	2	8.44	8.69	8.57	(1)	2	4.1	4.2	4.2	✓
Goomalling	2	<0.003	0.015	0.008	✓	2	<0.002	<0.002	<0.002	✓	2	8.18	8.57	8.38	✓	2	4	4.3	4.15	✓
Greater Bodallin	1	0.006	0.006	0.006	✓	1	<0.002	<0.002	<0.002	✓	1	8.44	8.44	8.44	✓	1	4.8	4.8	4.8	✓
Greater Burracoppin	1	0.008	0.008	0.008	✓	1	<0.002	<0.002	<0.002	✓	1	8.50	8.50	8.50	✓	1	4.7	4.7	4.7	✓
Greater Doolakine	1	0.004	0.004	0.004	✓	1	<0.002	<0.002	<0.002	✓	1	8.15	8.15	8.15	✓	1	4.2	4.2	4.2	✓
Greenhills	1	0.010	0.010	0.010	✓	1	<0.002	<0.002	<0.002	✓	1	7.77	7.77	7.77	✓	3	4	4.3	4.1	✓
Jennacubbine	1	0.060	0.060	0.060	✓	1	0.010	0.010	0.010	✓	1	8.32	8.32	8.32	✓	2	4.2	4.5	4.4	✓
Kalannie	2	0.010	0.035	0.023	✓	2	<0.002	0.003	<0.002	✓	2	8.21	8.33	8.27	✓	1	3.9	3.9	3.9	✓
Kalgoorlie	4	0.010	0.015	0.011	✓	4	<0.002	<0.002	<0.002	✓	4	7.68	7.91	7.80	✓	1	3.9	3.9	3.9	✓
Kambalda	2	0.015	0.015	0.015	✓	2	<0.002	<0.002	<0.002	✓	2	8.01	8.42	8.22	✓	2	4.4	4.4	4.5	✓
Kellerberrin	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.17	8.18	8.18	✓	4	4.2	4.8	4.5	✓
Koolyanobbing	2	0.004	0.015	0.010	✓	2	<0.002	<0.002	<0.002	✓	2	8.56	8.77	8.67	(1)	2	4.4	4.6	4.5	✓
Koorda	2	0.006	0.015	0.011	✓	2	<0.002	<0.002	<0.002	✓	2	7.51	8.42	7.97	✓	2	4.2	4.6	4.4	✓
Kununoppin	2	0.004	0.004	0.004	✓	2	<0.002	<0.002	<0.002	✓	2	8.49	8.52	8.51	(1)	2	4.1	4.2	4.2	✓
Laverton	4	0.008	0.030	0.015	✓	4	<0.002	<0.002	<0.002	✓	4	7.96	8.08	8.01	✓	2	3.9	4.1	4.0	✓
Leonora	6	<0.003	<0.003	<0.003	✓	6	<0.002	<0.002	<0.002	✓	6	7.45	7.82	7.68	✓	2	4.1	4.8	4.45	✓
Marvel Loch	2	0.008	0.030	0.019	✓	2	<0.002	<0.002	<0.002	✓	2	8.36	8.42	8.39	✓	4	37	42	39.0	✓
Meckering	3	<0.003	<0.003	<0.003	✓	3	<0.002	<0.002	<0.002	✓	3	8.21	8.32	8.25	✓	6	9.5	31	17.8	✓
Menzies	7	<0.003	0.004	<0.003	✓	7	<0.002	<0.002	<0.002	✓	7	7.27	7.62	7.45	✓	2	4.1	5.2	4.7	✓
Merredin	2	0.004	0.004	0.004	✓	2	<0.002	<0.002	<0.002	✓	2	8.42	8.48	8.45	✓	7	9	60	48.1	✓
Milling	2	0.020	0.060	0.040	✓	2	<0.002	0.004	<0.002	✓	2	7.84	8.38	8.11	✓	2	4.2	4.5	4.4	✓
Mukinbudin	2	0.060	0.070	0.065	✓	2	0.005	0.014	0.010	✓	2	8.07	8.30	8.19	✓	2	4.3	4.5	4.4	✓
Muntadgin	2	0.004	0.006	0.005	✓	2	<0.002	<0.002	<0.002	✓	2	7.79	8.64	8.22	✓	2	4.4	5.1	4.8	✓
Narembeen	2	0.008	0.120	0.064	✓	2	<0.002	0.010	0.005	✓	2	8.43	8.55	8.49	✓	2	4.1	4.6	4.35	✓
Norseman	2	0.010	0.020	0.015	✓	2	<0.002	<0.002	<0.002	✓	2	7.76	7.97	7.87	✓	2	4.3	4.6	4.5	✓
Northam	2	0.015	0.015	0.015	✓	2	<0.002	<0.002	<0.002	✓	2	8.02	8.11	8.07	✓	2	4.3	5.1	4.7	✓
Nungarin	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.65	8.84	8.75	(1)	2	4.3	4.4	4.4	✓
Ora Banda	2	0.004	0.035	0.020	✓	2	<0.002	<0.002	<0.002	✓	2	8.11	8.59	8.35	✓	2	4.2	4.3	4.3	✓
Pithara	2	0.004	0.030	0.017	✓	2	<0.002	<0.002	<0.002	✓	2	8.29	8.50	8.40	✓	2	4.4	5	4.7	✓
Quairading	2	0.006	0.010	0.008	✓	2	<0.002	<0.002	<0.002	✓	2	7.88	7.99	7.94	✓	2	3.9	4.6	4.3	✓
Seabrook	1	<0.003	<0.003	<0.003	✓	1	<0.002	<0.002	<0.002	✓	1	8.45	8.45	8.45	✓	2	4.2	4.3	4.3	✓
Shackleton	1	0.040	0.040	0.040	✓	1	<0.002	<0.002	<0.002	✓	1	8.53	8.53	8.53	(1)	1	4.1	4.1	4.1	✓
Southern Cross	2	0.008	0.008	0.008	✓	2	<0.002	<0.002	<0.002	✓	2	8.28	8.39	8.34	✓	1	4.9	4.9	4.9	✓
Spencers Brook	1	<0.003	<0.003	<0.003	✓	1	<0.002	<0.002	<0.002	✓	1	8.04	8.04	8.04	✓	1	4.1	4.1	4.1	✓
Tammin	2	0.008	0.010	0.009	✓	2	<0.002	<0.002	<0.002	✓	2	8.23	8.24	8.24	✓	2	4.4	4.5	4.5	✓
Toodyay	2	0.004	0.008	0.006	✓	2	<0.002	<0.002	<0.002	✓	2	8.23	8.50	8.37	✓	2	4.3	4.7	4.5	✓
Trayning	2	0.004	0.010	0.007	✓	2	<0.002	<0.002	<0.002	✓	2	8.49	8.61	8.55	(1)	2	4.2	4.3	4.3	✓
Warralakin	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.83	8.80	8.32	✓	2	4.2	4.6	4.4	✓
Westonia	2	0.004	0.004	0.004	✓	2	<0.002	<0.002	<0.002	✓	2	8.03	8.26	8.15	✓	2	4.3	4.5	4.4	✓
Wiluna	2	0.004	0.035	0.020	✓	2	<0.002	<0.002	<0.002	✓	2	7.91	8.12	8.02	✓	2	85	85	85	(2)
Wongan Hills	2	0.004	0.008	0.006	✓	2	<0.002	<0.002	<0.002	✓	2	8.50	8.70	8.60	(1)	2	4.4	4.7	4.6	✓
Wubin	2	0.008	0.020	0.014	✓	2	<0.002	<0.002	<0.002	✓	2	8.03	8.56	8.30	✓	2	4.1	4.5	4.3	✓
Wyalkatchem	2	0.008	0.020	0.014	✓	2	<0.002	<0.002	<0.002	✓	2	8.06	8.38	8.22	✓	2	3.8	4.2	4.0	✓
York	2	<0.003	0.010	0.005	✓	2	<0.002	<0.002	<0.002	✓	2	8.20	8.43	8.32	✓	2	4.1	4.3	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.

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Table 15 Aesthetic (Non-health related) Variables

Goldfields and Agricultural	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
		Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean	
Ardath	1	93	93	93	✓	1	399	399	399	✓	1	<1	<1	<1	✓	1	0.2	0.2	0.2	✓
Avon Hills	3	79	91	85.7	✓	3	346	390	372	✓	3	<1	<1	<1	✓	3	<0.1	<0.1	<0.1	✓
Ballidu	2	89	105	97	✓	2	389	442	416	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Beacon	2	89	95	92	✓	2	397	418	408	✓	2	<1	<1	<1	✓	2	1	1.2	1.1	✓
Bencubbin	2	95	110	102.5	✓	2	418	471	445	✓	2	<1	2	<1	✓	2	0.7	1.7	1.2	✓
Beverley	2	87	87	87	✓	2	379	383	381	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Bind Bind	2	87	95	91	✓	2	388	430	409	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Broad Arrow	2	84	92	88	✓	2	373	405	389	✓	2	<1	<1	<1	✓	2	0.4	0.6	0.5	✓
Bruce Rock	2	84	94	89	✓	2	362	399	381	✓	2	<1	1	<1	✓	2	0.1	0.2	0.2	✓
Bullfinch	2	84	95	89.5	✓	2	359	415	387	✓	2	<1	1	<1	✓	2	<0.1	0.2	<0.1	✓
Buntine	2	84	100	92	✓	2	389	443	416	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Cadoux	2	83	92	87.5	✓	2	365	398	382	✓	2	<1	<1	<1	✓	2	0.1	0.9	0.5	✓
Coolgardie	2	85	87	86	✓	2	382	382	382	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Corrigin	2	91	100	95.5	✓	2	389	408	399	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Cunderdin	2	81	94	87.5	✓	2	364	393	379	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Dalwallinu	2	80	92	86	✓	2	370	402	386	✓	2	<1	1	<1	✓	2	<0.1	0.3	0.2	✓
Dowerin	2	79	94	86.5	✓	2	360	399	380	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Goomalling	2	78	89	83.5	✓	2	352	386	369	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Greater Bodallin	1	91	91	91	✓	1	398	398	398	✓	1	<1	<1	<1	✓	1	<0.1	<0.1	<0.1	✓
Greater Burracoppin	1	86	86	86	✓	1	376	376	376	✓	1	<1	<1	<1	✓	1	0.3	0.3	0.3	✓
Greater Doolakine	1	85	85	85	✓	1	373	373	373	✓	1	<1	<1	<1	✓	1	0.1	0.1	0.1	✓
Greenhills	3	82	93	87	✓	1	367	367	367	✓	1	<1	<1	<1	✓	1	0.3	0.3	0.3	✓
Jennacubbine	2	88	91	89.5	✓	1	375	375	375	✓	1	<1	<1	<1	✓	1	0.6	0.6	0.6	✓
Kalannie	1	84	84	84	✓	2	374	399	387	✓	2	<1	<1	<1	✓	2	0.1	0.4	0.3	✓
Kalgoorlie	1	86	86	86	✓	4	376	426	402	✓	4	<1	<1	<1	✓	4	0.1	0.3	0.2	✓
Kambalda	2	84	91	87.5	✓	2	386	390	388	✓	2	<1	<1	<1	✓	2	<0.1	0.7	0.4	✓
Kellerberrin	4	83	98	90.3	✓	2	359	377	368	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Koolyanobbing	2	87	88	87.5	✓	2	362	401	382	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Koorda	2	80	85	82.5	✓	2	361	400	381	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Kununoppin	2	80	94	87	✓	2	357	391	374	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Laverton	2	82	92	87	✓	4	470	598	540	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Leonora	2	76	87	81.5	✓	6	232	607	523	✓	6	<1	<1	<1	✓	6	<0.1	<0.1	<0.1	✓
Marvel Loch	4	91	130	111.5	✓	2	407	418	413	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Meckering	6	51	120	105.2	✓	3	356	388	369	✓	3	<1	2	<1	✓	3	<0.1	<0.1	<0.1	✓
Menzies	2	95	95	95.0	✓	7	755	860	832	(1)	7	<1	<1	<1	✓	7	<0.1	0.3	<0.1	✓
Merredin	7	115	125	117.9	✓	2	369	402	386	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Milling	2	82	96	89	✓	2	375	393	384	✓	2	<1	<1	<1	✓	2	0.1	0.4	0.3	✓
Mukinbudin	2	81	88	84.5	✓	2	362	382	372	✓	2	1	2	2	✓	2	1.6	1.7	1.7	✓
Muntadgin	2	81	85	83	✓	2	384	403	394	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Narembeen	2	90	93	91.5	✓	2	396	403	400	✓	2	<1	<1	<1	✓	2	0.1	0.8	0.5	✓
Norseman	2	93	96	94.5	✓	2	407	422	415	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Northam	2	87	93	90	✓	2	345	373	359	✓	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Nungarin	2	77	85	81	✓	2	379	382	381	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Ora Banda	2	88	88	88	✓	2	388	411	400	✓	2	<1	<1	<1	✓	2	<0.1	0.4	0.2	✓
Pithara	2	86	87	86.5	✓	2	375	399	387	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Quairading	2	82	91	86.5	✓	2	358	388	373	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Seabrook	2	79	88	83.5	✓	1	375	375	375	✓	1	<1	<1	<1	✓	1	<0.1	<0.1	<0.1	✓
Shackleton	1	87	87	87	✓	1	404	404	404	✓	1	<1	<1	<1	✓	1	0.4	0.4	0.4	✓
Southern Cross	1	91	91	91	✓	2	376	381	379	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Spencers Brook	1	84	84	84	✓	1	368	368	368	✓	1	2	2	2	✓	1	<0.1	<0.1	<0.1	✓
Tammin	2	76	93	84.5	✓	2	354	390	372	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Toodyay	2	82	84	83	✓	2	365	365	365	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Trayning	2	80	89	84.5	✓	2	360	393	377	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Warralakin	2	78	83	80.5	✓	2	356	374	365	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Westonia	2	78	86	82	✓	2	351	381	366	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Wiluna	2	81	82	81.5	✓	2	685	783	734	(1)	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Wongan Hills	2	85	90	87.5	✓	2	388	397	393	✓	2	<1	1	<1	✓	2	<0.1	<0.1	<0.1	✓
Wubin	2	87	95	91	✓	2	395	431	413	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Wyalkatchem	2	83	92	87.5	✓	2	361	395	378	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
York	2	84	87	85.5	✓	2	368	373	371	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓

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

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Table 16 Health related variables

South West	E. coli			Thermophilic Naegleria			Fluoride			Hydrocarbons		Metals			
Locality	Samples Taken	Samples with >0 cfu/100mL	Max cfu/100mL	Requirement Met	Samples Taken	Samples with Thermophilic Naegleria	Requirement Met	Concentration (mg/L)			Samples Taken	Guideline Met	Samples Taken	Guideline Met	
								Min	Max	Mean					
Allanson	13	0	0	✓	7	0	✓	4	0.65	0.95	0.80	0	(1)	2	✓
Augusta	65	0	0	✓	32	0	✓	4	0.15	0.20	0.16	4	✓	4	✓
Australind	120	0	0	✓	120	0	✓	4	0.20	0.25	0.23	1	✓	4	✓
Balingup	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Binningup	53	0	0	✓	25	0	✓	1	0.80	0.80	0.80	1	✓	1	✓
Boyanup	53	0	0	✓	13	0	✓	2	0.15	0.15	0.15	0	(1)	2	✓
Boyup Brook	52	0	0	✓	14	0	✓	2	<0.1	0.15	<0.1	0	(1)	3	✓
Bridgetown	62	0	0	✓	30	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Brunswick Junction	53	0	0	✓	13	0	✓	2	0.20	0.20	0.20	2	✓	2	✓
Capel	52	0	0	✓	13	0	✓	2	0.20	0.20	0.20	0	(1)	2	✓
Collie	75	0	0	✓	30	0	✓	55	0.15	1.10	0.81	2	✓	4	✓
Cowaramup	52	0	0	✓	6	0	✓	2	0.15	0.25	0.20	0	(1)	2	✓
Dalyellup	67	0	0	✓	40	0	✓	2	<0.1	<0.1	<0.1	2	✓	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	0.85	0.78	2	✓	2	✓
Donnybrook	53	0	0	✓	26	0	✓	2	<0.1	<0.1	<0.1	0	(1)	5	✓
Dunsborough	78	0	0	✓	78	0	✓	56	0.70	0.95	0.85	0	(1)	2	✓
Eaton	80	0	0	✓	75	0	✓	2	0.15	0.25	0.20	0	(1)	2	✓
Greenbushes	64	0	0	✓	12	0	✓	2	<0.1	<0.1	<0.1	1	✓	2	✓
Harvey	52	0	0	✓	52	0	✓	53	0.15	0.95	0.81	0	(1)	2	✓
Hester TWS	13	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	2	✓	3	✓
Kirup	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Logue Brook	13	0	0	✓	7	0	✓	2	0.40	0.45	0.43	0	(1)	2	✓
Manjimup	66	0	0	✓	32	0	✓	53	0.60	0.90	0.79	3	✓	2	✓
Margaret River	78	0	0	✓	39	0	✓	2	0.15	0.25	0.20	2	✓	2	✓
Mullalyup	13	0	0	✓	7	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Myalup	13	0	0	✓	13	0	✓	1	0.90	0.90	0.90	0	(1)	(2) 0	✓
Nannup	26	0	0	✓	13	0	✓	4	<0.1	<0.1	<0.1	4	✓	4	✓
Northcliffe	27	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Pemberton	52	0	0	✓	14	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Peppermint Grove	52	0	0	✓	7	0	✓	2	0.25	0.25	0.25	0	(1)	2	✓
Preston Beach	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	1	✓	2	✓
Quinninup	21	0	0	✓	6	0	✓	2	<0.1	0.30	0.15	2	✓	2	✓
Waroona	52	0	0	✓	52	0	✓	55	0.25	0.95	0.82	0	(1)	2	✓
Yarloop	13	0	0	✓	7	0	✓	2	0.80	0.90	0.85	0	(1)	2	✓

(1) No samples required in this 12 month period. (2) Data are for 5 samples from previous 5 years

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**Table 17 Health related variables**

South West	Health related variables															
	Nitrate					Pesticides		Radiological		Trihalomethanes					Other Health Related	
	Locality	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken
Min			Max	Mean	Min							Max	Mean			
Allanson	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.088	0.120	0.104	✓	0	(1)
Augusta	8	<0.05	0.8	0.2	✓	2	✓	2	✓	4	0.012	0.044	0.022	✓	4	✓
Australind	8	<0.05	<0.05	<0.05	✓	2	✓	2	✓	4	0.008	0.077	0.038	✓	1	✓
Balingup	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.037	0.084	0.061	✓	2	✓
Binningup	2	<0.05	<0.05	<0.05	✓	(2) 0	✓	0	(1)	3	0.004	0.094	0.063	✓	0	(1)
Boyanup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	<0.001	0.003	0.002	✓	0	(1)
Boyup Brook	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.073	0.140	0.106	✓	0	(1)
Bridgetown	4	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.034	0.034	0.034	✓	2	✓
Brunswick Junction	3	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.012	0.015	0.014	✓	0	(1)
Capel	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	<0.001	0.002	<0.001	✓	0	(1)
Collie	4	<0.05	<0.05	<0.05	✓	2	✓	0	(1)	4	0.087	0.130	0.107	✓	2	✓
Cowaramup	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.004	0.130	0.076	✓	1	✓
Dalyellup	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.031	0.034	0.033	✓	2	✓
Dardanup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	0	(1)
Darkan	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.140	0.200	0.170	✓	0	(1)
Donnybrook	4	2.0	3.6	3.0	✓	1	✓	0	(1)	2	0.008	0.009	0.009	✓	0	(1)
Dunsborough	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.019	0.022	0.021	✓	0	(1)
Eaton	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.012	0.074	0.043	✓	0	(1)
Greenbushes	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.055	0.120	0.088	✓	0	(1)
Harvey	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.033	0.095	0.064	✓	0	(1)
Hester TWS	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.034	0.080	0.057	✓	2	✓
Kirup	4	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.059	0.086	0.073	✓	2	✓
Logue Brook	2	<0.05	0.9	0.4	✓	1	✓	0	(1)	2	0.005	0.035	0.020	✓	0	(1)
Manjimup	4	<0.05	1.0	0.2	✓	5	✓	0	(1)	2	0.058	0.110	0.084	✓	1	✓
Margaret River	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.004	0.110	0.057	✓	1	✓
Mullalyup	4	<0.05	1.9	0.5	✓	1	✓	1	✓	2	0.056	0.087	0.072	✓	2	✓
Myalup	1	<0.05	<0.05	<0.05	✓	(2) 0	✓	0	(1)	3	0.010	0.094	0.062	✓	0	(1)
Nannup	8	<0.05	0.1	<0.05	✓	2	✓	0	(1)	4	0.036	0.075	0.048	✓	4	✓
Northcliffe	4	0.1	0.4	0.3	✓	1	✓	0	(1)	2	0.055	0.082	0.069	✓	1	✓
Pemberton	4	0.2	0.4	0.3	✓	4	✓	0	(1)	4	0.089	0.098	0.094	✓	0	(1)
Peppermint Grove	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	<0.001	<0.001	<0.001	✓	0	(1)
Preston Beach	4	0.8	1.1	1.0	✓	1	✓	1	✓	4	0.170	0.220	0.200	✓	0	(1)
Quinninup	4	<0.05	0.4	0.2	✓	1	✓	0	(1)	4	0.086	0.130	0.107	✓	2	✓
Waroona	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	3	0.033	0.062	0.052	✓	1	✓
Yarloop	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.005	0.045	0.025	✓	1	✓

(1) No samples required in this 12 month period. (2) Data are for 5 samples from previous 5 years

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Table 18 Aesthetic (Non-health related) Variables

South West	Aesthetic (Non-health related) Variables																			
	Alkalinity (as CaCO <sub>3</sub> )					Aluminium					Chloride					Hardness				
	Locality	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)		
Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	
Allanson	2	14	17	16	(1)	2	0.014	0.018	0.016	✓	2	75	80	78	✓	2	38	40	39	✓
Augusta	8	52	300	109	(1)	8	<0.008	0.020	0.010	✓	8	130	255	167	✓	8	88	370	149	✓
Australind	8	110	140	120	(1)	8	<0.008	0.010	<0.008	✓	8	145	175	159	✓	8	76	120	95	✓
Balingup	4	28	43	35	(1)	4	0.016	0.030	0.021	✓	4	100	145	121	✓	4	49	67	58	✓
Binningup	2	38	120	46	(1)	2	0.018	0.020	0.019	✓	2	55	100	58	✓	2	56	74	65	✓
Boyanup	2	110	120	115	(1)	2	<0.008	<0.008	<0.008	✓	2	95	100	98	✓	2	100	110	105	✓
Boyup Brook	4	42	110	72	(1)	4	0.018	0.045	0.033	✓	4	60	105	88	✓	4	58	120	92	✓
Bridgetown	4	78	100	90	(1)	4	0.025	0.070	0.048	✓	4	85	95	90	✓	4	100	120	113	✓
Brunswick Junction	3	110	120	117	(1)	3	<0.008	<0.008	<0.008	✓	3	170	175	172	✓	3	79	82	80	✓
Capel	4	75	79	77	(1)	4	<0.008	<0.008	<0.008	✓	4	55	60	59	✓	4	47	49	48	✓
Collie	4	11	13	12	(1)	4	0.018	0.020	0.019	✓	4	55	80	74	✓	4	27	36	33	✓
Cowaramup	4	23	64	41	(1)	4	0.010	0.030	0.023	✓	4	70	90	84	✓	4	37	46	43	✓
Dalyellup	4	130	130	130	(1)	4	<0.008	<0.008	<0.008	✓	4	90	95	91	✓	4	70	75	72	✓
Dardanup	2	28	72	50	(1)	2	<0.008	<0.008	<0.008	✓	2	80	80	80	✓	2	25	26	26	✓
Darkan	2	18	24	21	(1)	2	0.025	0.030	0.028	✓	2	80	80	80	✓	2	42	50	46	✓
Donnybrook	4	64	77	71	(1)	4	0.120	0.160	0.140	✓	4	205	220	214	✓	4	82	93	88	✓
Dunsborough	4	140	150	143	(1)	4	0.010	0.030	0.017	✓	4	100	175	143	✓	4	59	67	64	✓
Eaton	2	97	100	99	(1)	2	<0.008	<0.008	<0.008	✓	2	130	130	130	✓	2	110	120	115	✓
Greenbushes	4	46	62	55	(1)	4	0.018	0.035	0.027	✓	4	90	115	105	✓	4	67	86	80	✓
Harvey	2	40	59	50	(1)	2	0.018	0.030	0.024	✓	2	35	60	48	✓	2	57	59	58	✓
Hester	2	62	77	70	(1)	2	0.030	0.050	0.040	✓	2	90	100	95	✓	2	86	100	93	✓
Kirup	4	7	13	11	(1)	4	0.012	0.025	0.018	✓	4	42	70	57	✓	4	15	25	21	✓
Logue Brook	2	68	81	75	(1)	2	0.016	0.065	0.041	✓	2	70	135	103	✓	2	71	76	74	✓
Manjimup	3	17	55	30	(1)	3	0.025	0.060	0.042	✓	3	80	90	87	✓	3	53	92	72	✓
Margaret River	4	23	63	41	(1)	4	<0.008	0.030	0.018	✓	4	70	90	84	✓	4	36	46	42	✓
Mullalyup	4	8	77	27	(1)	4	<0.008	0.140	0.045	✓	4	55	230	109	✓	4	16	87	37	✓
Myalup	1	60	60	60	(1)	1	0.050	0.050	0.050	✓	1	30	30	30	✓	1	64	64	64	✓
Nannup	8	4	10	7	(1)	8	0.020	0.040	0.027	✓	8	50	65	58	✓	8	46	61	56	✓
Northcliffe	4	15	23	19	(1)	4	0.035	0.150	0.065	✓	4	75	90	83	✓	4	46	63	53	✓
Pemberton	4	17	20	18	(1)	4	0.020	0.140	0.051	✓	4	75	85	80	✓	4	48	53	50	✓
Peppermint Grove	4	81	95	87	(1)	4	<0.008	<0.008	<0.008	✓	4	60	60	60	✓	4	54	56	55	✓
Preston Beach	4	250	280	265	(1)	4	<0.008	0.008	<0.008	✓	4	185	235	204	✓	4	310	320	313	(2)
Quinninup	4	11	30	22	(1)	4	0.040	0.120	0.064	✓	4	75	90	85	✓	4	48	75	61	✓
Waroona	2	42	57	50	(1)	2	0.025	0.050	0.038	✓	2	41	50	46	✓	2	63	63	63	✓
Yarloop	2	45	65	55	(1)	2	0.018	0.040	0.029	✓	2	29	42	35.5	✓	2	54	61	58	✓

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



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Table 19 Aesthetic (Non-health related) Variables

South West Locality	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
		Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean	
Allanson	2	0.060	0.080	0.070	✓	2	0.002	0.012	0.007	✓	2	7.29	7.38	7.34	✓	2	1.4	1.7	1.6	✓
Augusta	8	0.004	0.120	0.068	✓	8	<0.002	<0.002	<0.002	✓	8	7.28	8.10	7.66	✓	8	8.2	14	10	✓
Australind	8	0.045	0.100	0.069	✓	8	<0.002	<0.002	<0.002	✓	8	7.01	8.27	7.78	✓	8	22	50	37	✓
Balingup	4	0.004	0.008	0.006	✓	4	<0.002	<0.002	<0.002	✓	4	7.66	7.84	7.74	✓	4	2.5	6.9	4.5	✓
Binningup	2	0.025	0.045	0.035	✓	2	0.005	0.025	0.015	✓	2	7.52	7.83	7.68	✓	2	5.8	20	6.1	✓
Boyanup	2	0.020	0.020	0.020	✓	2	<0.002	<0.002	<0.002	✓	2	7.88	8.24	8.06	✓	2	18	20	19.0	✓
Boyup Brook	4	0.015	0.240	0.079	✓	4	<0.002	0.010	0.003	✓	4	7.84	8.33	8.13	✓	4	1.2	7.5	4.4	✓
Bridgetown	4	0.006	0.035	0.020	✓	4	<0.002	<0.002	<0.002	✓	4	7.81	7.99	7.88	✓	4	4.3	7.5	6.0	✓
Brunswick Junction	3	0.060	0.070	0.067	✓	3	<0.002	0.004	<0.002	✓	3	7.75	7.88	7.81	✓	3	50	55	52	✓
Capel	4	0.060	0.090	0.078	✓	4	<0.002	<0.002	<0.002	✓	4	6.71	6.95	6.87	✓	4	14	15	14.5	✓
Collie	4	0.050	0.080	0.063	✓	4	0.003	0.008	0.007	✓	4	6.90	7.08	6.99	✓	4	1	1.7	1.4	✓
Cowaramup	4	0.025	0.160	0.096	✓	4	0.002	0.010	0.005	✓	4	7.45	7.67	7.56	✓	4	4.8	16	8.3	✓
Dalyellup	4	0.020	0.040	0.028	✓	4	0.002	0.004	0.003	✓	4	8.05	8.06	8.06	✓	4	16	17	17	✓
Dardanup	2	0.006	0.015	0.011	✓	2	<0.002	<0.002	<0.002	✓	2	6.99	7.38	7.19	✓	2	20	20	20.0	✓
Darkan	2	0.050	0.120	0.085	✓	2	0.003	0.030	0.017	✓	2	7.55	8.54	8.05	✓	2	2.3	2.6	2.5	✓
Donnybrook	4	0.015	0.080	0.056	✓	4	<0.002	0.004	<0.002	✓	4	7.08	7.41	7.23	✓	4	9.3	17	12.6	✓
Dunsborough	4	<0.003	0.020	0.009	✓	4	<0.002	<0.002	<0.002	✓	4	8.11	8.47	8.32	✓	4	17	18	17.3	✓
Eaton	2	0.080	0.160	0.120	✓	2	<0.002	0.003	<0.002	✓	2	7.27	7.44	7.36	✓	2	25	26	26	✓
Greenbushes	4	0.015	0.025	0.019	✓	4	<0.002	0.003	<0.002	✓	4	7.85	8.81	8.29	✓	4	2	16	6.9	✓
Harvey	2	0.015	0.025	0.020	✓	2	<0.002	0.014	0.007	✓	2	7.62	8.27	7.95	✓	2	3.2	6.1	4.7	✓
Hester	2	0.015	0.030	0.023	✓	2	<0.002	0.003	<0.002	✓	2	8.06	8.81	8.44	✓	2	2.2	7.6	4.9	✓
Kirup	4	<0.003	0.008	0.005	✓	4	<0.002	<0.002	<0.002	✓	4	7.02	7.66	7.32	✓	4	1.1	4.1	2.8	✓
Logue Brook	2	0.015	0.030	0.023	✓	2	<0.002	0.002	<0.002	✓	2	7.88	7.99	7.94	✓	2	9.8	11	10.4	✓
Manjimup	3	0.030	0.120	0.067	✓	3	<0.002	0.007	0.003	✓	3	7.38	7.94	7.58	✓	3	3.8	8.4	6.2	✓
Margaret River	4	0.030	0.140	0.089	✓	4	<0.002	0.009	0.005	✓	4	7.27	7.61	7.48	✓	4	4.7	16	8.3	✓
Mullalyup	4	0.010	0.030	0.020	✓	4	<0.002	0.008	<0.002	✓	4	6.88	8.05	7.36	✓	4	1	16	5.7	✓
Myalup	1	0.004	0.004	0.004	✓	1	<0.002	<0.002	<0.002	✓	1	8.88	8.88	8.88	(1)	1	2.5	2.5	2.5	✓
Nannup	8	<0.003	0.050	0.020	✓	8	<0.002	0.014	0.003	✓	8	6.93	7.42	7.21	✓	8	3.8	8.6	6.3	✓
Northcliffe	4	0.020	0.025	0.023	✓	4	0.012	0.040	0.023	✓	4	7.17	8.48	7.73	✓	4	5	7.2	6.2	✓
Pemberton	4	0.010	0.025	0.019	✓	4	0.006	0.010	0.008	✓	4	7.37	7.73	7.54	✓	4	5.1	6.9	5.9	✓
Peppermint Grove	4	0.010	0.060	0.033	✓	4	<0.002	<0.002	<0.002	✓	4	6.95	7.15	7.09	✓	4	15	16	15.3	✓
Preston Beach	4	0.006	0.045	0.017	✓	4	<0.002	<0.002	<0.002	✓	4	7.72	7.95	7.82	✓	4	16	17	17	✓
Quinninup	4	0.040	0.060	0.049	✓	4	0.007	0.018	0.011	✓	4	7.45	8.37	7.82	✓	4	5.1	6.8	6.3	✓
Waroona	2	0.006	0.015	0.011	✓	2	<0.002	0.002	<0.002	✓	2	7.72	7.81	7.77	✓	2	3.2	5.4	4.3	✓
Yarloop	2	<0.003	0.015	0.008	✓	2	<0.002	0.003	<0.002	✓	2	7.70	7.76	7.73	✓	2	1.4	3.3	2.4	✓

(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.

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Table 20 Aesthetic (Non-health related) Variables

South West Locality	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
		Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean	
Allanson	2	38	45	42	✓	2	164	182	173	✓	2	<1	2	<1	✓	2	0.4	0.8	0.6	✓
Augusta	8	66	130	82	✓	8	348	928	471	✓	8	<1	<1	<1	✓	8	<0.1	0.2	0.2	✓
Australind	8	86	110	99	✓	8	474	524	501	✓	8	<1	2	<1	✓	8	0.1	0.3	0.2	✓
Balingup	4	57	81	69	✓	4	232	332	279	✓	4	<1	1	<1	✓	4	<0.1	<0.1	<0.1	✓
Binningup	2	30	62	31	✓	2	173	204	189	✓	2	1	2	2	✓	2	0.2	0.6	0.4	✓
Boyanup	2	61	62	62	✓	2	385	386	386	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Boyup Brook	4	32	55	45	✓	4	192	355	290	✓	4	<1	7	2	✓	4	0.2	0.9	0.4	✓
Bridgetown	4	44	51	47	✓	4	304	348	328	✓	4	<1	<1	<1	✓	4	<0.1	0.4	0.2	✓
Brunswick Junction	3	115	115	115	✓	3	521	532	527	✓	3	<1	<1	<1	✓	3	0.2	0.3	0.3	✓
Capel	4	45	48	46	✓	4	259	266	262	✓	4	<1	<1	<1	✓	4	<0.1	0.3	<0.1	✓
Collie	4	32	43	39	✓	4	128	167	157	✓	4	<1	2	<1	✓	4	0.2	0.5	0.4	✓
Cowaramup	4	45	53	49	✓	4	205	258	238	✓	4	<1	3	<1	✓	4	0.3	0.9	0.6	✓
Dalyellup	4	74	78	76	✓	4	400	410	406	✓	4	<1	<1	<1	✓	4	<0.1	0.1	<0.1	✓
Dardanup	2	50	69	60	✓	2	204	277	241	✓	2	<1	<1	<1	✓	2	<0.1	0.4	0.2	✓
Darkan	2	39	41	40	✓	2	176	191	184	✓	2	<1	2	<1	✓	2	0.2	0.5	0.4	✓
Donnybrook	4	130	135	131	✓	4	495	512	500	✓	4	<1	<1	<1	✓	4	0.2	0.4	0.3	✓
Dunsborough	4	120	155	141	✓	4	484	598	555	✓	4	<1	<1	<1	✓	4	<0.1	0.1	<0.1	✓
Eaton	2	64	65	65	✓	2	406	412	409	✓	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Greenbushes	4	48	60	56	✓	4	274	318	295	✓	4	<1	1	<1	✓	4	0.1	0.2	0.1	✓
Harvey	2	22	33	28	✓	2	158	181	170	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Hester	2	44	55	50	✓	2	299	306	303	✓	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Kirup	4	30	43	39	✓	4	115	173	147	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Logue Brook	2	41	79	60	✓	2	264	350	307	✓	2	<1	<1	<1	✓	2	0.1	0.1	0.1	✓
Manjimup	3	43	47	45	✓	3	210	288	243	✓	3	<1	3	<1	✓	3	0.4	0.5	0.5	✓
Margaret River	4	43	51	47	✓	4	202	257	235	✓	4	<1	3	2	✓	4	0.2	0.7	0.4	✓
Mullalyup	4	40	130	66	✓	4	139	520	254	✓	4	<1	1	<1	✓	4	<0.1	0.2	<0.1	✓
Myalup	1	19	19	19	✓	1	150	150	150	✓	1	<1	<1	<1	✓	1	0.2	0.2	0.2	✓
Nannup	8	42	55	49	✓	8	208	242	223	✓	8	<1	<1	<1	✓	8	<0.1	0.3	<0.1	✓
Northcliffe	4	50	62	55	✓	4	216	250	239	✓	4	<1	<1	<1	✓	4	0.2	0.3	0.3	✓
Pemberton	4	47	61	53	✓	4	214	248	231	✓	4	<1	<1	<1	✓	4	<0.1	0.1	<0.1	✓
Peppermint Grove	4	45	47	46	✓	4	271	290	281	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Preston Beach	4	93	130	105	✓	4	774	839	799	(1)	4	<1	2	<1	✓	4	<0.1	<0.1	<0.1	✓
Quinninup	4	51	60	54	✓	4	219	265	248	✓	4	<1	<1	<1	✓	4	0.2	0.3	0.2	✓
Waroona	2	25	27	26	✓	2	168	176	172	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Yarloop	2	18	25	22	✓	2	153	154	154	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓

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

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Table 21 Health related variables

Great Southern	Health related variables														
	E. coli				Thermophilic Naegleria			Fluoride			Hydrocarbons		Metals		
	Locality	Samples Taken	Samples with >0 cfu/100mL	Max cfu/100mL	Requirement Met	Samples Taken	Samples with Thermophilic Naegleria	Requirement Met	Samples Taken	Concentration (mg/L)			Samples Taken	Guideline Met	Samples Taken
Min										Max	Mean				
Albany	156	0	0	✓	78	0	✓	52	0.35	0.80	0.68	4	✓	8	✓
Boddington	46	0	0	✓	46	0	✓	4	0.70	0.95	0.80	0	(1)	2	✓
Borden	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Bremer Bay	26	0	0	✓	13	0	✓	4	0.50	0.55	0.54	0	(1)	3	✓
Brookton	48	0	0	✓	48	0	✓	4	0.70	0.90	0.81	0	(1)	2	✓
Broomehill	12	0	0	✓	12	0	✓	4	0.75	0.85	0.81	2	✓	2	✓
Bullaring	12	0	0	✓	12	0	✓	4	0.70	0.85	0.79	0	(1)	2	✓
Condingup	12	0	0	✓	8	0	✓	2	0.30	0.35	0.33	0	(1)	2	✓
Cranbrook	12	0	0	✓	6	0	✓	2	0.10	0.10	0.10	0	(1)	2	✓
Cuballing	12	0	0	✓	12	0	✓	4	0.80	0.90	0.85	0	(1)	2	✓
Denmark	66	0	0	✓	32	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Dudinin	12	0	0	✓	12	0	✓	4	0.65	0.90	0.81	2	✓	2	✓
Dumbleyung	12	0	0	✓	12	0	✓	4	0.70	0.85	0.78	0	(1)	2	✓
Esperance	80	0	0	✓	51	0	✓	53	0.75	0.95	0.83	4	✓	4	✓
Frankland	13	0	0	✓	7	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Gibson	12	0	0	✓	8	0	✓	2	0.30	0.40	0.35	0	(1)	2	✓
Gnowangerup	50	0	0	✓	50	0	✓	4	0.75	0.90	0.84	0	(1)	2	✓
Grass Patch	12	0	0	✓	8	0	✓	4	0.75	0.85	0.80	0	(1)	5	✓
Harrismith	12	0	0	✓	12	0	✓	4	0.65	0.85	0.79	0	(1)	2	✓
Highbury	12	0	0	✓	12	0	✓	4	0.80	0.90	0.85	0	(1)	2	✓
Hopetoun	53	0	0	✓	26	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Hyden	12	0	0	✓	12	0	✓	4	0.30	0.80	0.65	1	✓	2	✓
Jerramungup	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Karlgarin	12	0	0	✓	12	0	✓	4	0.75	0.85	0.81	0	(1)	2	✓
Katanning	66	0	0	✓	66	0	✓	53	0.70	0.95	0.83	0	(1)	2	✓
Kendenup	12	0	0	✓	6	0	✓	4	0.60	0.75	0.69	0	(1)	2	✓
Kojonup	52	0	0	✓	52	0	✓	4	0.75	0.90	0.83	0	(1)	2	✓
Kondinin	12	0	0	✓	12	0	✓	4	0.70	0.85	0.79	1	✓	2	✓
Kukerin	12	0	0	✓	12	0	✓	4	0.70	0.85	0.76	0	(1)	2	✓
Kulin	12	0	0	✓	12	0	✓	4	0.65	0.85	0.79	1	✓	2	✓
Lake Grace	50	0	0	✓	49	0	✓	4	0.75	0.85	0.83	0	(1)	2	✓
Lake King	12	0	0	✓	5	0	✓	4	0.65	0.90	0.79	0	(1)	2	✓
Mt Barker	52	0	0	✓	26	0	✓	52	0.45	0.80	0.69	2	✓	2	✓
Munglinup	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Muradup	12	0	0	✓	11	0	✓	4	0.75	0.90	0.83	0	(1)	2	✓
Narrakup	13	0	0	✓	7	0	✓	4	0.60	0.75	0.69	0	(1)	2	✓
Narrogin	67	0	0	✓	67	0	✓	53	0.50	0.90	0.83	0	(1)	2	✓
Newdegate	12	0	0	✓	11	0	✓	4	0.60	0.85	0.78	0	(1)	2	✓
Nyabing	12	0	0	✓	12	0	✓	4	0.75	0.85	0.81	0	(1)	2	✓
Ongerup	12	0	0	✓	6	0	✓	2	0.15	0.15	0.15	0	(1)	2	✓
Pingaring	12	0	0	✓	11	0	✓	4	0.75	0.85	0.80	0	(1)	2	✓
Pingelly	48	0	0	✓	48	0	✓	4	0.65	0.85	0.79	0	(1)	2	✓
Pingrup	12	0	0	✓	12	0	✓	4	0.75	0.90	0.84	0	(1)	2	✓
Popanyinning	12	0	0	✓	12	0	✓	4	0.80	0.85	0.83	0	(1)	2	✓
Ravensthorpe	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Rocky Gully	13	0	0	✓	6	0	✓	4	0.50	0.75	0.66	2	✓	2	✓
Salmon Gums	12	0	0	✓	8	0	✓	3	0.35	0.45	0.40	1	✓	2	✓
Tambellup	12	0	0	✓	12	0	✓	4	0.70	0.90	0.81	0	(1)	2	✓
Tincurrin	12	0	0	✓	12	0	✓	4	0.65	0.85	0.79	0	(1)	2	✓
Varley	12	0	0	✓	5	0	✓	3	0.85	0.85	0.85	0	(1)	2	✓
Wagin	51	0	0	✓	51	0	✓	4	0.75	0.85	0.81	0	(1)	2	✓
Walpole	52	0	0	✓	26	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Wandering	12	0	0	✓	12	0	✓	4	0.85	0.90	0.88	0	(1)	2	✓
Wellstead	12	0	0	✓	6	0	✓	2	0.25	0.30	0.28	0	(1)	2	✓
Wickepin	12	0	0	✓	12	0	✓	4	0.55	0.85	0.75	0	(1)	2	✓
Williams	12	0	0	✓	12	0	✓	4	0.65	0.95	0.80	0	(1)	2	✓
Woodanilling	12	0	0	✓	12	0	✓	4	0.80	0.90	0.85	0	(1)	2	✓
Yealering	12	0	<1	✓	12	0	✓	4	0.60	0.85	0.76	0	(1)	2	✓

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

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Table 22 Health related variables

Great Southern	Nitrate				Pesticides		Radiological		Trihalomethanes				Other Health Related			
Locality	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Guideline Met	Samples Taken	Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Requirement Met
		Min	Max	Mean							Min	Max	Mean			
Albany	16	0.1	0.2	0.2	✓	4	✓	0	(1)	8	0.12	0.16	0.133	✓	4	✓
Boddington	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.06	0.086	0.073	✓	0	(1)
Borden	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.05	0.061	0.055	✓	0	(1)
Bremer Bay	4	4.5	5.5	5.1	✓	1	✓	0	(1)	2	0.10	0.12	0.109	✓	1	✓
Brookton	3	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.05	0.096	0.077	✓	0	(1)
Broomehill	2	<0.05	<0.05	<0.05	✓	1	✓	2	✓	3	0.09	0.11	0.098	✓	2	✓
Bullaring	4	<0.05	0.1	0.1	✓	1	✓	1	✓	4	0.09	0.17	0.122	✓	0	(1)
Condingup	4	0.3	0.3	0.3	✓	1	✓	0	(1)	3	0.01	0.015	0.014	✓	1	✓
Cranbrook	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	3	0.07	0.093	0.083	✓	0	(1)
Cuballing	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.07	0.12	0.095	✓	0	(1)
Denmark	4	0.1	0.2	0.1	✓	1	✓	1	✓	2	0.07	0.15	0.112	✓	0	(1)
Dudin	4	<0.05	0.1	<0.05	✓	1	✓	0	(1)	4	0.07	0.12	0.09	✓	0	(1)
Dumbleyung	2	0.1	0.1	0.1	✓	1	✓	1	✓	4	0.11	0.15	0.133	✓	0	(1)
Esperance	10	0.2	4.1	2.4	✓	2	✓	2	✓	4	0.01	0.054	0.027	✓	2	✓
Frankland	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.05	0.053	0.051	✓	0	(1)
Gibson	4	1.7	3.0	2.5	✓	1	✓	0	(1)	2	0.02	0.051	0.036	✓	1	✓
Gnowangerup	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.02	0.029	0.024	✓	0	(1)
Grass Patch	4	2.7	4.6	3.6	✓	4	✓	0	(1)	2	0.07	0.075	0.071	✓	1	✓
Harrismith	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.15	0.19	0.17	✓	2	✓
Highbury	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.05	0.084	0.069	✓	0	(1)
Hopetoun	4	0.2	0.7	0.4	✓	1	✓	1	✓	2	0.01	0.012	0.01	✓	2	✓
Hyden	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.05	0.14	0.085	✓	0	(1)
Jerramungup	4	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.07	0.077	0.074	✓	0	(1)
Karlgarin	4	<0.05	0.1	<0.05	✓	1	✓	1	✓	4	0.05	0.09	0.072	✓	0	(1)
Katanning	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.05	0.067	0.056	✓	0	(1)
Kendenup	4	0.1	0.2	0.2	✓	1	✓	1	✓	4	0.14	0.17	0.158	✓	0	(1)
Kojonup	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.11	0.14	0.125	✓	0	(1)
Kondinin	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.08	0.1	0.092	✓	0	(1)
Kukerin	2	0.1	0.1	0.1	✓	1	✓	1	✓	4	0.11	0.16	0.133	✓	0	(1)
Kulin	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.12	0.16	0.148	✓	0	(1)
Lake Grace	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.12	0.18	0.143	✓	0	(1)
Lake King	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.07	0.13	0.096	✓	0	(1)
Mt Barker	4	0.1	0.2	0.2	✓	1	✓	1	✓	4	0.15	0.18	0.163	✓	1	✓
Munglinup	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.05	0.059	0.052	✓	0	(1)
Muradup	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.11	0.15	0.128	✓	0	(1)
Narrikup	4	0.1	0.2	0.2	✓	1	✓	1	✓	3	0.14	0.18	0.157	✓	0	(1)
Narrogin	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.07	0.085	0.076	✓	0	(1)
Newdegate	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	4	0.12	0.13	0.125	✓	0	(1)
Nyabing	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.08	0.11	0.096	✓	0	(1)
Ongerup	2	<0.05	0.3	0.1	✓	1	✓	0	(1)	2	0.06	0.084	0.07	✓	0	(1)
Pingaring	4	<0.05	0.1	0.1	✓	1	✓	1	✓	4	0.18	0.19	0.183	✓	0	(1)
Pingelly	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.08	0.12	0.101	✓	0	(1)
Pingrup	2	0.1	0.2	0.1	✓	1	✓	1	✓	4	0.04	0.084	0.053	✓	0	(1)
Popanyinning	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.10	0.14	0.119	✓	0	(1)
Ravensthorpe	4	<0.05	0.1	<0.05	✓	4	✓	0	(1)	4	0.04	0.097	0.074	✓	0	(1)
Rocky Gully	4	0.1	0.2	0.2	✓	1	✓	1	✓	2	0.06	0.14	0.102	✓	1	✓
Salmon Gums	3	0.2	0.4	0.3	✓	1	✓	0	(1)	2	0.06	0.067	0.062	✓	1	✓
Tambellup	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.07	0.12	0.088	✓	0	(1)
Tincurrin	4	<0.05	0.1	<0.05	✓	1	✓	1	✓	4	0.08	0.15	0.128	✓	0	(1)
Varley	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.06	0.067	0.062	✓	0	(1)
Wagin	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.08	0.14	0.113	✓	0	(1)
Walpole	4	0.2	0.4	0.3	✓	1	✓	1	✓	8	0.06	0.14	0.108	✓	0	(1)
Wandering	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.06	0.13	0.102	✓	0	(1)
Wellstead	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.04	0.043	0.043	✓	0	(1)
Wickepin	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.09	0.16	0.115	✓	0	(1)
Williams	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.09	0.14	0.107	✓	0	(1)
Woodanilling	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.09	0.17	0.125	✓	0	(1)
Yealering	4	<0.05	0.1	<0.05	✓	1	✓	1	✓	4	0.12	0.17	0.15	✓	0	(1)

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

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Table 23 Aesthetic (Non-health related) Variables

Great Southern	Aesthetic (Non-health related) Variables																			
	Alkalinity (as CaCO3)					Aluminium					Chloride					Hardness				
	Locality	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)		
Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	
Albany	16	176	257	220	(1)	16	<0.008	0.014	0.009	✓	16	120	145	128	✓	16	190	260	228	(3)
Boddington	2	18	20	19	(1)	2	0.02	0.025	0.023	✓	2	80	90	85	✓	2	37	44	41	✓
Borden	2	34	46	40	(1)	2	0.04	0.04	0.04	✓	2	21	22	22	✓	2	29	29	29	✓
Bremer Bay	4	332	352	341	(1)	4	<0.008	<0.008	<0.008	✓	4	190	215	204	✓	4	170	180	175	✓
Brookton	3	16	26	23	(1)	3	0.05	0.055	0.052	✓	3	90	100	93	✓	3	49	55	53	✓
Broomehill	2	20	20	20	(1)	2	0.025	0.025	0.025	✓	2	100	115	108	✓	2	52	58	55	✓
Bullaring	4	28	36	32	(1)	4	0.018	0.04	0.031	✓	4	90	95	93	✓	4	57	62	59	✓
Condingup	4	172	177	174	(1)	4	<0.008	<0.008	<0.008	✓	4	380	405	391	(2)	4	73	79	77	✓
Cranbrook	2	10	12	11	(1)	2	0.025	0.025	0.025	✓	2	18	18	18	✓	2	15	17	16	✓
Cuballing	2	11	15	13	(1)	2	0.012	0.014	0.013	✓	2	85	95	90	✓	2	41	42	42	✓
Denmark	4	11	27	18	(1)	4	0.018	0.045	0.032	✓	4	200	350	270	(2)	4	80	120	102	✓
Dudin	4	24	32	28	(1)	4	0.016	0.03	0.023	✓	4	90	100	93	✓	4	55	67	62	✓
Dumbleyung	2	28	34	31	(1)	2	0.018	0.02	0.019	✓	2	95	100	98	✓	2	58	59	59	✓
Esperance	10	320	338	328	(1)	9	<0.008	0.012	<0.008	✓	10	190	220	204	✓	11	320	360	339	(3)
Frankland	4	2	4	3	(1)	4	0.012	0.02	0.016	✓	4	11	13	12	✓	4	9	11	10	✓
Gibson	4	79	85	81	(1)	4	<0.008	0.012	<0.008	✓	4	215	225	219	✓	4	33	41	37	✓
Gnowangerup	4	19	30	23	(1)	4	0.025	0.045	0.031	✓	4	100	115	108	✓	4	56	59	57	✓
Grass Patch	4	321	328	326	(1)	4	0.012	0.02	0.016	✓	4	200	215	208	✓	4	330	360	345	(3)
Harrismith	4	20	27	24	(1)	4	0.014	0.025	0.02	✓	4	90	95	91	✓	4	51	56	54	✓
Highbury	4	11	17	15	(1)	4	0.01	0.016	0.014	✓	4	85	95	88	✓	4	38	43	41	✓
Hopetoun	4	63	209	130	(1)	4	<0.008	0.01	<0.008	✓	4	190	270	225	✓	4	57	190	120	✓
Hyden	4	20	30	26	(1)	4	0.018	0.03	0.023	✓	4	85	100	93	✓	4	53	60	57	✓
Jerramungup	4	7	13	10	(1)	5	0.065	0.1	0.077	✓	4	46	55	49	✓	4	19	22	21	✓
Karlgarin	4	28	31	30	(1)	4	0.018	0.025	0.021	✓	4	100	105	103	✓	4	62	63	63	✓
Katanning	2	14	15	15	(1)	2	0.018	0.035	0.027	✓	2	100	110	105	✓	2	49	51	50	✓
Kendenup	4	238	263	249	(1)	4	0.01	0.016	0.012	✓	4	120	130	125	✓	4	260	280	265	(3)
Kojonup	4	19	36	26	(1)	4	0.025	0.03	0.026	✓	4	100	115	106	✓	4	54	59	57	✓
Kondinin	4	28	31	30	(1)	4	0.02	0.03	0.026	✓	4	95	105	103	✓	4	63	67	65	✓
Kukerin	2	30	32	31	(1)	2	0.02	0.025	0.023	✓	2	90	90	90	✓	2	56	60	58	✓
Kulin	4	25	27	26	(1)	4	0.014	0.02	0.017	✓	4	90	95	91	✓	4	54	55	55	✓
Lake Grace	2	29	32	31	(1)	2	0.008	0.025	0.017	✓	2	95	100	98	✓	2	60	61	61	✓
Lake King	2	29	32	31	(1)	2	0.02	0.025	0.023	✓	2	90	100	95	✓	2	59	60	60	✓
Mt Barker	4	224	253	243	(1)	4	<0.008	0.016	0.011	✓	4	120	130	125	✓	4	240	270	253	(3)
Munghlinup	2	3	7	5	(1)	2	0.008	0.01	0.009	✓	2	27	28	28	✓	2	13	14	14	✓
Muradup	2	26	33	30	(1)	2	0.02	0.025	0.023	✓	2	110	125	118	✓	2	56	62	59	✓
Narrikup	4	233	254	244	(1)	4	<0.008	0.012	<0.008	✓	4	120	130	124	✓	4	250	280	260	(3)
Narrogin	4	11	15	13	(1)	4	0.01	0.02	0.015	✓	4	90	90	90	✓	4	37	43	40	✓
Newdegate	2	29	31	30	(1)	2	0.025	0.025	0.025	✓	2	95	100	98	✓	2	60	61	61	✓
Nyabing	4	13	19	15	(1)	4	0.018	0.025	0.021	✓	4	100	110	105	✓	4	49	52	51	✓
Ongerup	2	31	33	32	(1)	2	0.02	0.025	0.023	✓	2	26	27	27	✓	2	19	21	20	✓
Pingaring	4	29	35	33	(1)	4	0.018	0.025	0.021	✓	4	95	105	99	✓	4	64	70	68	✓
Pingelly	2	15	18	17	(1)	2	0.02	0.03	0.025	✓	2	90	95	93	✓	2	46	48	47	✓
Pingrup	2	17	21	19	(1)	2	<0.008	0.02	0.01	✓	2	100	110	105	✓	2	48	49	49	✓
Popanyinning	2	14	17	15	(1)	2	0.014	0.02	0.017	✓	2	90	90	90	✓	2	41	44	43	✓
Ravensthorpe	4	28	42	36	(1)	4	0.04	0.09	0.065	✓	4	34	40	36	✓	4	27	40	33	✓
Rocky Gully	4	228	257	242	(1)	4	0.01	0.016	0.014	✓	4	110	130	123	✓	4	250	260	258	(3)
Salmon Gums	3	219	238	228	(1)	3	0.025	0.04	0.033	✓	3	41	44	42	✓	3	110	120	113	✓
Tambellup	2	25	28	27	(1)	2	0.025	0.04	0.033	✓	2	105	115	110	✓	2	56	60	58	✓
Tincurrin	4	25	28	27	(1)	4	0.03	0.065	0.05	✓	4	90	95	93	✓	4	54	56	55	✓
Varley	2	32	34	33	(1)	2	0.035	0.045	0.04	✓	2	95	100	98	✓	2	61	64	63	✓
Wagin	2	13	18	15	(1)	2	0.012	0.018	0.015	✓	2	85	90	88	✓	2	40	43	42	✓
Walpole	4	33	73	44	(1)	4	0.014	0.025	0.02	✓	4	140	175	164	✓	4	53	66	61	✓
Wandering	2	17	25	21	(1)	2	0.02	0.03	0.025	✓	2	80	90	85	✓	2	38	47	43	✓
Wellstead	2	3	3	3	(1)	2	0.025	0.045	0.035	✓	2	34	39	37	✓	2	12	15	14	✓
Wickepin	4	13	17	15	(1)	4	0.012	0.02	0.017	✓	4	85	90	89	✓	4	42	46	44	✓
Williams	2	11	17	14	(1)	2	0.016	0.016	0.016	✓	2	75	85	80	✓	2	32	38	35	✓
Woodanilling	2	16	18	17	(1)	2	0.02	0.025	0.023	✓	2	90	95	93	✓	2	41	44	43	✓
Yealering	4	26	30	29	(1)	4	0.02	0.025	0.024	✓	4	90	95	93	✓	4	53	57	55	✓

(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.

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Table 24 Aesthetic (Non-health related) Variables

Great Southern	Aesthetic (Non-health related) Variables																			
	Locality	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)		
	Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean		
Albany	16	0.025	0.240	0.112	✓	16	<0.002	<0.002	<0.002	✓	16	7.51	8.04	7.72	✓	16	15	31	21	✓
Boddington	2	0.060	0.060	0.060	✓	2	0.007	0.012	0.01	✓	2	7.46	7.5	7.48	✓	2	1.7	1.9	1.8	✓
Borden	2	0.008	0.008	0.008	✓	2	<0.002	<0.002	<0.002	✓	2	7.56	7.62	7.59	✓	2	0.6	1.2	0.9	✓
Bremer Bay	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	8.18	8.37	8.3	✓	4	50	55	51	✓
Brookton	3	0.140	0.160	0.153	✓	3	0.007	0.02	0.012	✓	3	8.04	8.57	8.22	✓	3	1.3	2.0	1.7	✓
Broomehill	2	0.120	0.200	0.160	✓	2	0.002	0.004	0.003	✓	2	7.47	8.04	7.76	✓	2	1.7	1.8	1.8	✓
Bullaring	4	0.045	0.420	0.156	✓	4	<0.002	0.02	0.006	✓	4	7.42	7.86	7.68	✓	4	1.3	1.4	1.4	✓
Condingup	4	0.006	0.050	0.025	✓	4	<0.002	<0.002	<0.002	✓	4	6.77	7.13	6.97	✓	4	60	65	61	✓
Cranbrook	2	0.100	0.260	0.180	✓	2	<0.002	0.01	0.006	✓	2	6.82	7.24	7.03	✓	2	1.1	1	1.1	✓
Cuballing	2	0.120	0.180	0.150	✓	2	0.006	0.018	0.012	✓	2	7.31	7.37	7.34	✓	2	1.0	1.1	1.1	✓
Denmark	4	0.015	0.030	0.020	✓	4	<0.002	0.018	0.005	✓	4	7.49	8	7.7	✓	4	7.3	8.2	7.8	✓
Dudinin	4	0.140	0.200	0.165	✓	4	0.002	0.006	0.004	✓	4	8.96	9.92	9.46	(2)	4	1.1	1.4	1.3	✓
Dumbleyung	2	0.070	0.120	0.095	✓	2	<0.002	0.004	<0.002	✓	2	7.93	8.48	8.21	✓	2	1.3	1.4	1.4	✓
Esperance	10	<0.003	0.004	<0.003	✓	10	<0.002	<0.002	<0.002	✓	10	7.43	7.93	7.7	✓	10	10	11	10.7	✓
Frankland	4	0.045	0.140	0.091	✓	4	<0.002	0.006	<0.002	✓	4	6.6	6.99	6.8	✓	4	0.9	1.5	1.1	✓
Gibson	4	0.025	0.070	0.045	✓	4	<0.002	<0.002	<0.002	✓	4	6.54	6.98	6.85	✓	4	44	45	44	✓
Gnowangerup	4	0.140	0.240	0.180	✓	4	<0.002	0.014	0.006	✓	4	7.24	7.42	7.3	✓	4	1.5	2.0	1.8	✓
Grass Patch	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	8.07	8.27	8.16	✓	4	10	11	10.5	✓
Harrismith	4	0.100	0.220	0.180	✓	4	0.004	0.016	0.009	✓	4	7.7	9.3	8.7	(3)	4	1.2	1.3	1.3	✓
Highbury	4	0.080	0.200	0.150	✓	4	0.005	0.014	0.009	✓	4	6.95	7.32	7.18	✓	4	0.9	1.2	1.0	✓
Hopetoun	4	<0.003	0.010	0.006	✓	4	<0.002	<0.002	<0.002	✓	4	7.13	7.78	7.54	✓	4	18	32	26	✓
Hyden	4	0.050	0.080	0.068	✓	4	<0.002	<0.002	<0.002	✓	4	7.45	7.7	7.55	✓	4	1.0	2.0	1.4	✓
Jerramungup	4	0.050	0.060	0.058	✓	4	<0.002	<0.002	<0.002	✓	4	6.99	7.62	7.29	✓	4	1.5	2.9	2.1	✓
Karlgarin	4	0.070	0.100	0.083	✓	4	<0.002	<0.002	<0.002	✓	4	7.6	7.93	7.73	✓	4	1.3	1.8	1.5	✓
Katanning	2	0.220	0.260	0.240	✓	2	0.01	0.014	0.012	✓	2	7.16	7.35	7.26	✓	2	1.1	1.3	1.2	✓
Kendenup	4	0.030	0.090	0.054	✓	4	<0.002	<0.002	<0.002	✓	4	7.93	8.21	8.07	✓	4	16	17	16	✓
Kojonup	4	0.140	0.200	0.165	✓	4	0.003	0.008	0.006	✓	4	7.46	7.86	7.61	✓	4	1.3	1.8	1.6	✓
Kondinin	4	0.080	0.100	0.090	✓	4	<0.002	0.007	0.003	✓	4	7.56	8.05	7.87	✓	4	0.9	2.0	1.5	✓
Kukerin	2	0.060	0.140	0.100	✓	2	0.002	0.004	0.003	✓	2	7.99	8.89	8.44	✓	2	1.4	1.5	1.5	✓
Kulin	4	0.120	0.180	0.135	✓	4	0.003	0.01	0.006	✓	4	7.83	8.85	8.29	✓	4	1.2	1.4	1.3	✓
Lake Grace	2	0.090	0.100	0.095	✓	2	<0.002	0.003	<0.002	✓	2	8.46	8.85	8.66	(2)	2	1.4	1.4	1.4	✓
Lake King	2	0.100	0.120	0.110	✓	2	0.004	0.007	0.006	✓	2	7.58	7.71	7.65	✓	2	1.3	1.4	1.4	✓
Mt Barker	4	0.040	0.100	0.075	✓	4	<0.002	<0.002	<0.002	✓	4	7.75	8.02	7.88	✓	4	16	18	16.5	✓
Munglinup	2	0.050	0.200	0.125	✓	2	<0.002	0.003	<0.002	✓	2	6.16	6.55	6.36	(4)	2	0.7	0.7	0.7	✓
Muradup	2	0.100	0.160	0.130	✓	2	<0.002	0.004	<0.002	✓	2	7.32	7.7	7.51	✓	2	1.5	1.8	1.7	✓
Narrikup	4	0.040	0.100	0.073	✓	4	<0.002	<0.002	<0.002	✓	4	7.7	8.04	7.85	✓	4	15	17	16.0	✓
Narrogin	4	0.140	0.240	0.190	✓	4	0.009	0.03	0.015	✓	4	7.23	7.36	7.29	✓	4	0.7	1.1	0.9	✓
Newdegate	2	0.080	0.100	0.090	✓	2	0.002	0.003	0.003	✓	2	7.85	7.87	7.86	✓	2	1.4	1.5	1.5	✓
Nyabing	4	0.140	0.200	0.180	✓	4	0.003	0.009	0.006	✓	4	6.99	7.28	7.17	✓	4	0.9	1.4	1.1	✓
Ongerup	2	0.006	0.006	0.006	✓	2	<0.002	<0.002	<0.002	✓	2	7.52	7.74	7.63	✓	2	3.2	3.3	3.3	✓
Pingaring	4	0.070	0.100	0.083	✓	4	<0.002	0.008	0.004	✓	4	9.08	9.45	9.26	(2)	4	1.3	1.5	1.4	✓
Pingelly	2	0.100	0.160	0.130	✓	2	0.004	0.012	0.008	✓	2	7.64	7.9	7.77	✓	2	1.4	1.5	1.5	✓
Pingrup	2	0.040	0.240	0.140	✓	2	0.003	0.012	0.008	✓	2	7.22	7.3	7.26	✓	2	0.9	1.3	1.1	✓
Popanyinning	2	0.100	0.180	0.140	✓	2	0.005	0.014	0.01	✓	2	7.5	7.74	7.62	✓	2	0.9	1.1	1.0	✓
Ravensthorpe	4	0.015	0.080	0.035	✓	4	<0.002	0.007	0.004	✓	4	7.43	7.73	7.58	✓	4	1.5	2	1.8	✓
Rocky Gully	4	0.040	0.120	0.068	✓	4	<0.002	<0.002	<0.002	✓	4	8.29	8.47	8.39	✓	4	16	17	16.5	✓
Salmon Gums	3	<0.003	0.008	0.005	✓	3	<0.002	<0.002	<0.002	✓	3	8.45	8.69	8.56	(3)	3	7	8	7.0	✓
Tambellup	2	0.180	0.180	0.180	✓	2	0.003	0.01	0.007	✓	2	7.8	8.37	8.09	✓	2	1.7	1.9	1.8	✓
Tincurrin	8	0.140	0.860	0.393	(1)	4	0.003	0.035	0.018	✓	4	7.62	7.92	7.76	✓	4	1.3	1.6	1.5	✓
Varley	2	0.090	0.140	0.115	✓	2	0.004	0.005	0.005	✓	2	7.78	7.88	7.83	✓	2	1.4	1.4	1.4	✓
Wagin	2	0.100	0.160	0.130	✓	2	0.004	0.007	0.006	✓	2	7.22	7.41	7.32	✓	2	1.1	1.2	1.2	✓
Walpole	4	0.006	0.015	0.009	✓	4	<0.002	<0.002	<0.002	✓	4	7.63	8.03	7.75	✓	4	8.3	17	11.6	✓
Wandering	2	0.100	0.160	0.130	✓	2	0.008	0.02	0.014	✓	2	7.65	7.82	7.74	✓	2	1.6	2.0	1.8	✓
Wellstead	2	0.045	0.100	0.073	✓	2	0.003	0.012	0.008	✓	2	6.09	6.28	6.19	(4)	2	0.3	0.5	0.4	✓
Wickepin	4	0.080	0.160	0.118	✓	4	0.005	0.009	0.008	✓	4	7.27	7.77	7.57	✓	4	1.0	1.2	1.1	✓
Williams	2	0.050	0.060	0.055	✓	2	0.01	0.012	0.011	✓	2	6.99	7.24	7.12	✓	2	1.3	1.6	1.5	✓
Woodanilling	2	0.100	0.140	0.120	✓	2	0.003	0.012	0.008	✓	2	7.12	7.49	7.31	✓	2	1.2	1.2	1.2	✓
Yealering	4	0.060	0.180	0.098	✓	4	<0.002	0.018	0.005	✓	4	9.26	9.54	9.41	(2)	4	1.1	1.4	1.3	✓

(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.

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Table 25 Aesthetic (Non-health related) Variables

Great Southern	Aesthetic (Non-health related) Variables																			
	Sodium					TDS					True Colour					Turbidity				
	Locality	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Value (TCU)			Guideline Met	Samples Taken	Value (NTU)		
Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	Min			Max	Mean	
Albany	16	58	79	69	✓	16	533	591	561	✓	16	<1	1	<1	✓	16	0.1	1.2	0.6	✓
Boddington	2	39	44	42	✓	2	169	188	179	✓	2	2	2	2	✓	2	0.3	0.4	0.4	✓
Borden	2	13	17	15	✓	2	90	106	98	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Bremer Bay	4	170	195	181	(1)	4	876	930	895	(2)	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓
Brookton	3	44	45	44	✓	3	189	209	200	✓	3	<1	3	2	✓	3	0.4	0.6	0.5	✓
Broomehill	2	47	53	50	✓	2	208	234	221	✓	2	2	4	3	✓	2	0.4	1.2	0.8	✓
Bullaring	4	44	47	45	✓	4	202	214	210	✓	4	<1	2	<1	✓	4	0.2	1.6	0.6	✓
Condingup	4	300	310	304	(1)	4	1014	1053	1030	(2)	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Cranbrook	2	9	10	10	✓	2	64	73	69	✓	2	2	5	4	✓	2	0.8	2.0	1.4	✓
Cuballing	2	43	44	44	✓	2	176	185	181	✓	2	2	2	2	✓	2	0.3	0.6	0.5	✓
Denmark	4	150	185	166	✓	4	538	654	591	✓	4	<1	<1	<1	✓	4	<0.1	0.4	0.2	✓
Dudin	4	43	47	45	✓	4	200	220	210	✓	4	2	4	3	✓	4	0.4	0.5	0.5	✓
Dumbleyung	2	45	45	45	✓	2	210	214	212	✓	2	2	1	2	✓	2	0.1	0.3	0.2	✓
Esperance	10	98	125	107	✓	10	795	859	819	(2)	10	<1	<1	<1	✓	10	<0.1	<0.1	<0.1	✓
Frankland	4	4.6	5.5	5	✓	4	31	37	35	✓	4	1	3	2	✓	4	0.3	0.8	0.5	✓
Gibson	4	175	185	181	(1)	4	618	631	623	(2)	4	<1	<1	<1	✓	4	0.1	0.2	0.2	✓
Gnowangerup	4	49	53	51	✓	4	215	241	226	✓	4	2	3	3	✓	4	0.7	1.7	1.1	✓
Grass Patch	4	105	120	111	✓	4	819	857	836	(2)	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓
Harrismith	4	39	45	43	✓	4	191	204	198	✓	4	<1	3	2	✓	4	0.4	0.7	0.5	✓
Highbury	4	42	46	44	✓	4	170	188	180	✓	4	2	3	3	✓	4	0.4	0.6	0.5	✓
Hopetoun	4	105	180	139	✓	4	556	641	599	✓	4	<1	<1	<1	✓	4	<0.1	0.5	0.3	✓
Hyden	4	36	47	43	✓	4	184	220	203	✓	4	<1	2	<1	✓	4	0.2	0.6	0.4	✓
Jerramungup	4	25	30	28	✓	4	98	118	107	✓	4	<1	<1	<1	✓	4	0.2	0.3	0.3	✓
Karlgarin	4	45	49	48	✓	4	221	230	225	✓	4	1	1	1	✓	4	0.2	0.4	0.3	✓
Katanning	2	49	52	51	✓	2	199	213	206	✓	2	2	4	3	✓	2	1.2	2.4	1.8	✓
Kendenup	4	62	71	66	✓	4	580	616	597	✓	4	<1	<1	<1	✓	4	0.1	0.4	0.3	✓
Kojonup	4	49	51	50	✓	4	211	233	224	✓	4	3	4	4	✓	4	0.7	1.0	0.9	✓
Kondinin	4	46	50	48	✓	4	219	233	229	✓	4	<1	2	<1	✓	4	0.5	0.7	0.6	✓
Kukerin	2	44	47	46	✓	2	201	211	206	✓	2	1	2	2	✓	2	0.1	0.3	0.2	✓
Kulin	4	44	45	45	✓	4	201	205	203	✓	4	1	3	2	✓	4	0.3	0.5	0.4	✓
Lake Grace	2	44	45	45	✓	2	209	217	213	✓	2	1	3	2	✓	2	0.2	0.2	0.2	✓
Lake King	2	42	45	44	✓	2	206	217	212	✓	2	1	2	2	✓	2	0.3	0.3	0.3	✓
Mt Barker	4	63	71	68	✓	4	569	596	585	✓	4	<1	<1	<1	✓	4	0.2	0.8	0.4	✓
Munglinup	2	15	15	15	✓	2	73	78	76	✓	2	2	3	3	✓	2	0.7	0.7	0.7	✓
Muradup	2	50	60	55	✓	2	225	259	242	✓	2	2	4	3	✓	2	0.5	0.6	0.6	✓
Narrikup	4	65	67	66	✓	4	576	601	588	✓	4	<1	<1	<1	✓	4	0.2	0.6	0.4	✓
Narrogin	4	43	47	45	✓	4	179	183	180	✓	4	2	4	3	✓	4	0.5	0.9	0.6	✓
Newdegate	2	43	45	44	✓	2	208	218	213	✓	2	2	2	2	✓	2	0.3	0.3	0.3	✓
Nyabing	4	48	52	50	✓	4	201	221	210	✓	4	2	3	3	✓	4	0.8	1.2	1.0	✓
Ongerup	2	18	21	20	✓	2	99	101	100	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Pingarling	4	44	48	46	✓	4	209	232	221	✓	4	1	2	2	✓	4	0.2	0.4	0.3	✓
Pingelly	2	43	45	44	✓	2	185	196	191	✓	2	<1	2	<1	✓	2	0.3	0.5	0.4	✓
Pingrup	2	51	53	52	✓	2	201	220	211	✓	2	<1	2	<1	✓	2	0.2	0.8	0.5	✓
Popanyinning	2	45	46	46	✓	2	185	187	186	✓	2	2	3	3	✓	2	0.3	0.5	0.4	✓
Ravensthorpe	4	23	26	24	✓	4	115	143	128	✓	4	<1	2	<1	✓	4	0.5	1.9	1.0	✓
Rocky Gully	4	62	68	65	✓	4	563	602	583	✓	4	<1	<1	<1	✓	4	0.3	0.8	0.5	✓
Salmon Gums	3	63	65	64	✓	3	387	412	399	✓	3	<1	<1	<1	✓	3	<0.1	0.4	0.2	✓
Tambellup	2	47	54	51	✓	2	219	243	231	✓	2	2	4	3	✓	2	0.8	1.4	1.1	✓
Tincurrin	4	44	45	44	✓	4	196	210	203	✓	4	2	3	3	✓	4	0.4	3.9	1.8	✓
Varley	2	46	49	48	✓	2	219	225	222	✓	2	1	2	2	✓	2	0.3	0.5	0.4	✓
Wagin	2	41	46	44	✓	2	174	187	181	✓	2	2	3	3	✓	2	0.3	0.3	0.3	✓
Walpole	4	93	110	102	✓	4	331	419	377	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Wandering	2	42	48	45	✓	2	174	200	187	✓	2	1	1	1	✓	2	0.4	0.7	0.6	✓
Wellstead	2	19	22	21	✓	2	74	89	82	✓	2	2	3	3	✓	2	0.7	2.3	1.5	✓
Wickepin	4	44	46	45	✓	4	180	188	185	✓	4	1	3	2	✓	4	0.3	0.6	0.5	✓
Williams	2	40	44	42	✓	2	158	181	170	✓	2	1	2	2	✓	2	0.4	0.4	0.4	✓
Woodanilling	2	43	46	45	✓	2	183	190	187	✓	2	3	4	4	✓	2	0.3	0.4	0.4	✓
Yealering	4	45	48	47	✓	4	203	209	206	✓	4	1	2	2	✓	4	0.2	1.5	0.5	✓

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

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**Table 26 Health related variables**

North West	E. coli				Thermophilic Naegleria			Fluoride			Hydrocarbons		Metals		
Locality	Samples Taken	Samples with >0 cfu/100mL	Max cfu/100mL	Requirement Met	Samples Taken	Samples with Thermophilic Naegleria	Requirement Met	Concentration (mg/L)			Samples Taken	Guideline Met	Samples Taken	Guideline Met	
								Min	Max	Mean					
Broome	92	0	0	✓	78	0	✓	53	0.40	0.80	0.72	0	(1)	2	✓
Burrup LNG	13	0	0	✓	13	0	✓	2	0.40	0.70	0.55	0	(1)	2	✓
Burrup Supply	13	0	0	✓	13	0	✓	2	0.40	0.70	0.55	0	(1)	2	✓
Camballin	12	0	0	✓	12	0	✓	2	0.25	0.25	0.25	0	(1)	2	✓
Cape Lambert TWS	13	0	0	✓	13	0	✓	2	0.70	0.70	0.70	0	(1)	2	✓
Derby	53	0	0	✓	53	0	✓	52	0.50	0.65	0.60	0	(1)	2	✓
Fitzroy Crossing	11	0	0	✓	11	0	✓	2	0.25	0.25	0.25	0	(1)	2	✓
Halls Creek	51	0	0	✓	51	0	✓	2	0.55	0.60	0.58	0	(1)	2	✓
Hedland	93	0	0	✓	78	0	✓	4	0.40	0.45	0.43	0	(1)	4	✓
Karratha	94	0	0	✓	80	0	✓	53	0.25	0.75	0.62	0	(1)	2	✓
Kununurra	64	0	0	✓	53	0	✓	2	0.40	0.45	0.43	0	(1)	2	✓
Marble Bar	12	0	0	✓	12	0	✓	2	0.70	0.75	0.73	0	(1)	2	✓
Newman	65	0	0	✓	52	0	✓	2	0.20	0.25	0.23	0	(1)	3	✓
Nullagine	12	0	0	✓	12	0	✓	2	0.35	0.40	0.38	1	✓	2	✓
Onslow TWS	49	0	0	✓	26	0	✓	3	0.70	1.00	0.85	0	(1)	2	✓
Point Samson	13	0	0	✓	13	0	✓	2	0.65	0.70	0.68	0	(1)	2	✓
Roebourne	53	0	0	✓	40	0	✓	2	0.40	0.65	0.53	2	✓	2	✓
Wickham	53	0	0	✓	39	0	✓	2	0.45	0.55	0.50	0	(1)	2	✓
Wyndham	53	0	0	✓	53	0	✓	2	<0.1	<0.1	<0.1	1	✓	2	✓

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

**Table 27 Health related variables**

North West	Nitrate				Pesticides		Radiological		Trihalomethanes				Other Health Related			
Locality	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Guideline Met	Samples Taken	Guideline Met	Concentration (mg/L)			Guideline Met	Samples Taken	Requirement Met	
		Min	Max	Mean						Min	Max	Mean				
Broome	2	4.7	4.8	4.8	✓	1	✓	1	✓	2	0.004	0.005	0.005	✓	0	(1)
Burrup LNG	2	1.4	1.5	1.5	✓	2	✓	0	(1)	2	<0.001	0.110	0.055	✓	0	(1)
Burrup Supply	2	1.4	1.5	1.5	✓	2	✓	0	(1)	2	<0.001	0.100	0.050	✓	0	(1)
Camballin	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	0	(1)
Cape Lambert TWS	2	1.2	1.5	1.4	✓	1	✓	1	✓	2	<0.001	0.002	<0.001	✓	0	(1)
Derby	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	<0.001	0.001	<0.001	✓	0	(1)
Fitzroy Crossing	2	0.9	0.9	0.9	✓	1	✓	1	✓	2	<0.001	<0.001	<0.001	✓	1	✓
Halls Creek	2	1.0	1.0	1.0	✓	1	✓	1	✓	2	0.001	0.003	0.002	✓	0	(1)
Hedland	4	0.8	0.9	0.9	✓	2	✓	0	(1)	4	<0.001	0.003	<0.001	✓	0	(1)
Karratha	3	1.4	1.4	1.4	✓	1	✓	1	✓	5	<0.001	0.011	0.005	✓	0	(1)
Kununurra	83	<0.05	0.4	<0.05	✓	1	✓	1	✓	2	0.006	0.009	0.008	✓	0	(1)
Marble Bar	2	1.4	1.5	1.5	✓	1	✓	1	✓	2	0.005	0.010	0.008	✓	0	(1)
Newman	2	0.3	0.4	0.4	✓	1	✓	0	(1)	2	<0.001	0.008	0.004	✓	1	✓
Nullagine	2	<0.05	0.7	0.4	✓	1	✓	1	✓	2	<0.001	<0.001	<0.001	✓	0	(1)
Onslow TWS	2	0.3	0.4	0.4	✓	1	✓	1	✓	3	<0.001	0.003	<0.001	✓	1	✓
Point Samson	2	1.5	1.5	1.5	✓	1	✓	1	✓	1	0.004	0.004	0.004	✓	0	(1)
Roebourne	2	1.4	1.4	1.4	✓	1	✓	1	✓	2	<0.001	0.002	<0.001	✓	0	(1)
Wickham	2	1.4	1.6	1.5	✓	1	✓	0	(1)	2	<0.001	0.006	0.003	✓	0	(1)
Wyndham	2	0.1	0.3	0.2	✓	1	✓	1	✓	4	0.068	0.120	0.096	✓	1	✓

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



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Table 28 Aesthetic (Non-health related) Variables

North West	Alkalinity (as CaCO3)														Aluminium				Chloride				Hardness			
	Locality	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					
			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean						
Broome	2	91	94	93	(1)	2	<0.008	<0.008	<0.008	✓	2	120	130	125	✓	2	61	67	64	✓						
Burrup LNG	2	243	249	246	(1)	2	<0.008	<0.008	<0.008	✓	2	80	85	83	✓	2	230	240	235	(3)						
Burrup Supply	2	242	247	245	(1)	2	<0.008	<0.008	<0.008	✓	2	80	85	83	✓	2	230	240	235	(3)						
Camballin	2	67	72	70	(1)	2	<0.008	<0.008	<0.008	✓	2	40	41	41	✓	2	41	44	43	✓						
Cape Lambert	2	220	265	243	(1)	2	0.014	0.020	0.017	✓	2	80	100	90	✓	2	210	270	240	(3)						
Derby	2	185	193	189	(1)	2	<0.008	<0.008	<0.008	✓	2	90	95	93	✓	2	14	14	14	✓						
Fitzroy Crossing	2	206	218	212	(1)	2	<0.008	0.014	<0.008	✓	2	37	38	38	✓	2	150	160	155	✓						
Halls Creek	2	418	448	433	(1)	2	<0.008	<0.008	<0.008	✓	2	125	130	128	✓	2	280	280	280	(2)						
Hedland	4	194	232	214	(1)	4	<0.008	0.010	<0.008	✓	4	135	210	171	✓	4	190	210	200	✓						
Karratha	3	238	268	250	(1)	3	<0.008	<0.008	<0.008	✓	3	90	90	90	✓	3	240	270	253	(3)						
Kununurra	4	259	266	262	(1)	4	<0.008	0.010	<0.008	✓	4	18	20	19	✓	4	160	170	168	✓						
Marble Bar	2	459	479	469	(1)	2	<0.008	<0.008	<0.008	✓	2	215	250	233	✓	2	320	330	325	(2)						
Newman	2	142	188	165	(1)	2	<0.008	<0.008	<0.008	✓	2	60	80	70	✓	2	120	170	145	✓						
Nullagine	2	196	244	220	(1)	2	<0.008	<0.008	<0.008	✓	2	90	115	103	✓	2	180	220	200	✓						
Onslow	2	229	229	229	(1)	2	<0.008	<0.008	<0.008	✓	2	105	110	108	✓	2	180	190	185	✓						
Point Samson	2	256	308	282	(1)	2	0.008	0.014	0.011	✓	2	100	110	105	✓	2	260	310	285	(3)						
Roebourne	2	249	250	250	(1)	2	0.008	0.012	0.010	✓	2	75	95	85	✓	2	240	250	245	(3)						
Wickham	2	247	287	267	(1)	2	<0.008	0.012	<0.008	✓	2	80	120	100	✓	2	250	290	270	(3)						
Wyndham	2	50	53	52	(1)	2	0.030	0.045	0.038	✓	2	28	29	29	✓	2	37	39	38	✓						

(1) No guideline value available as per ADWG 2011. (2) Elevated hardness is characteristic of the source 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								
	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	
Broome	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.07	8.26	8.17	✓	2	85	90	88	(1)	
Burrup LNG	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.06	8.31	8.19	✓	2	55	55	55	✓	
Burrup Supply	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.10	8.32	8.21	✓	2	55	55	55	✓	
Camballin	2	0.015	0.080	0.048	✓	2	<0.002	0.005	0.003	✓	2	7.26	7.46	7.36	✓	2	23	23	23	✓	
Cape Lambert	2	0.004	0.030	0.017	✓	2	<0.002	<0.002	<0.002	✓	2	8.14	8.23	8.19	✓	2	42	55	49	✓	
Derby	2	0.006	0.006	0.006	✓	2	<0.002	<0.002	<0.002	✓	2	7.98	8.03	8.01	✓	2	16	17	17	✓	
Fitzroy Crossing	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.43	7.73	7.58	✓	2	21	22	22	✓	
Halls Creek	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.86	7.97	7.92	✓	2	44	46	45	✓	
Hedland	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	7.98	8.16	8.06	✓	4	49	50	50	✓	
Karratha	3	<0.003	<0.003	<0.003	✓	3	<0.002	<0.002	<0.002	✓	3	7.84	8.18	8.04	✓	3	55	55	55	✓	
Kununurra	4	<0.003	<0.003	<0.003	✓	4	0.002	0.020	0.008	✓	9	7.76	8.08	7.89	✓	4	55	60	56	✓	
Marble Bar	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.80	7.85	7.83	✓	2	41	42	42	✓	
Newman	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	6.96	7.15	7.06	✓	2	16	22	19	✓	
Nullagine	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.32	7.47	7.40	✓	2	26	29	28	✓	
Onslow	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.00	8.10	8.05	✓	2	65	75	70	✓	
Point Samson	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.14	8.24	8.19	✓	2	55	55	55	✓	
Roebourne	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.81	8.04	7.93	✓	2	55	55	55	✓	
Wickham	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.15	8.32	8.24	✓	2	55	55	55	✓	
Wyndham	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.69	7.75	7.72	✓	2	2.7	6.7	4.7	✓	

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

Table 30 Aesthetic (Non-health related) Variables

North West	Sodium				TDS				True Colour				Turbidity								
	Locality	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
			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean	
Broome	2	88	94	91	✓	2	440	457	449	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓	
Burrup LNG	2	44	45	45	✓	2	558	561	560	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓	
Burrup Supply	2	44	45	45	✓	2	556	560	558	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓	
Camballin	2	34	36	35	✓	2	226	232	229	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓	
Cape Lambert	2	49	53	51	✓	2	511	623	567	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓	
Derby	2	115	125	120	✓	2	428	445	437	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓	
Fitzroy Crossing	2	32	33	33	✓	2	367	380	374	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓	
Halls Creek	2	130	130	130	✓	2	870	892	881	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓	
Hedland	4	77	130	103	✓	4	551	732	641	(2)	4	<1	<1	<1	✓	4	<0.1	0.1	<0.1	✓	
Karratha	3	48	50	49	✓	3	569	609	584	✓	3	<1	<1	<1	✓	3	<0.1	<0.1	<0.1	✓	
Kununurra	4	32	34	33	✓	4	428	439	434	✓	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓	
Marble Bar	2	200	210	205	(1)	2	1101	1180	1141	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓	
Newman	2	43	57	50	✓	2	336	450	393	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓	
Nullagine	2	65	105	85	✓	2	491	654	573	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓	
Onslow	2	56	58	57	✓	2	548	558	553	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓	
Point Samson	2	51	58	55	✓	2	602	702	652	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓	
Roebourne	2	45	52	49	✓	2	558	594	576	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓	
Wickham	2	46	61	54	✓	2	564	685	625	(3)	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓	
Wyndham	2	20	21	21	✓	2	124	126	125	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓	

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