

Drinking Water Quality

Annual Report 2013/14

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About this Report

The Water Corporation's 2013/14 Drinking Water Quality Annual Report is a review of our performance for the financial year ending 30 June 2014.

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

ADWG	Australian Drinking Water Guidelines
DOC	Dissolved organic carbon
EDR	Electrodialysis Reversal
GAWS	Goldfields and Agricultural Water Supply
GSTWS	Great Southern Towns Water Supply
IWSS	Perth Integrated Water Supply Scheme
LGSTWS	Lower Great Southern Towns Water Supply
LTE	Long Term Evaluation
MIEX	Magnetic Ion Exchange
NHMRC	National Health and Medical Research Council
PDWSA	Public Drinking Water Source Area
RO	Reverse Osmosis
UF	Ultra filtration
UV	Ultra-violet
WSAA	Water Services Association of Australia
WSP	Water Safety Plan

Summary

Supplying safe drinking water is our highest priority. In 2013/14, 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:

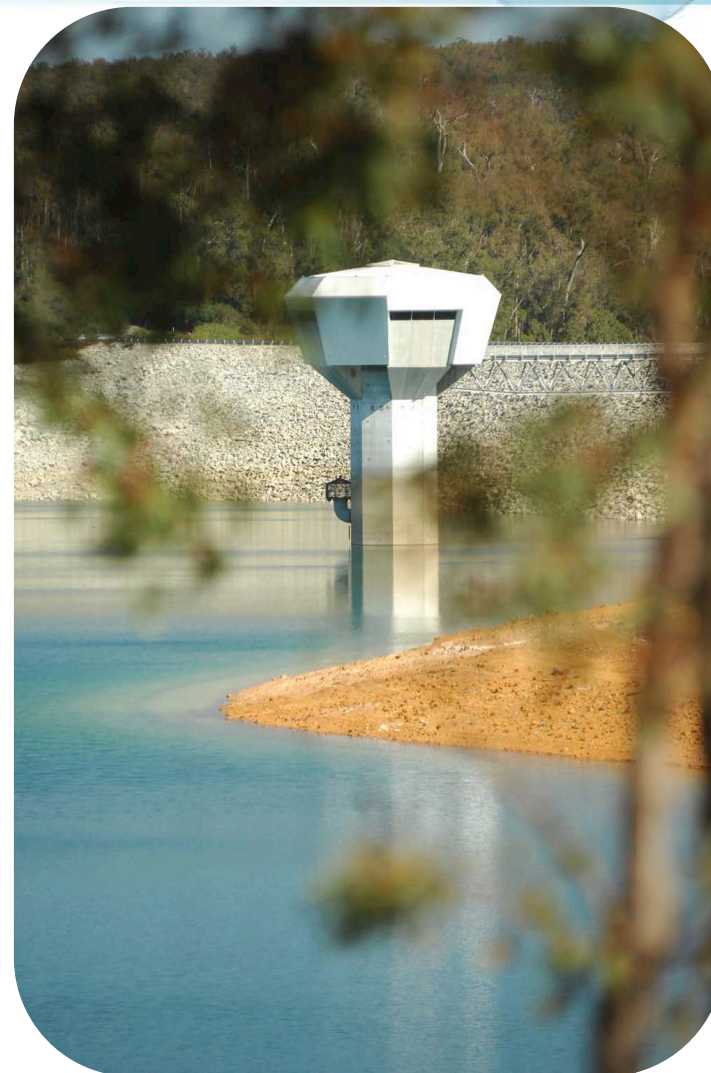
- 100 per cent compliance with microbiological guidelines
- 100 per cent compliance with health related chemical guidelines

Non-health (aesthetic) related performance:

While we strive to meet guidelines for aesthetic characteristics, this is very difficult 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 12th 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.



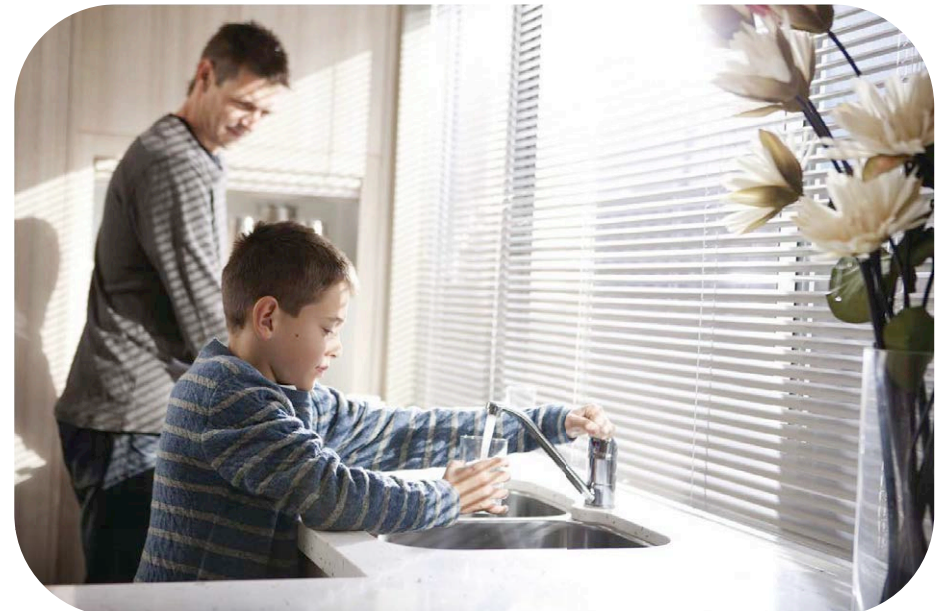
North Dandalup Dam

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.



- 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 371.4 billion litres of drinking water from 60 dams and weirs, 94 licensed borefields, two major desalination plants (the Perth and Southern Seawater Desalination plants) and six regional desalination plants, to more than a million properties through 34,156 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.

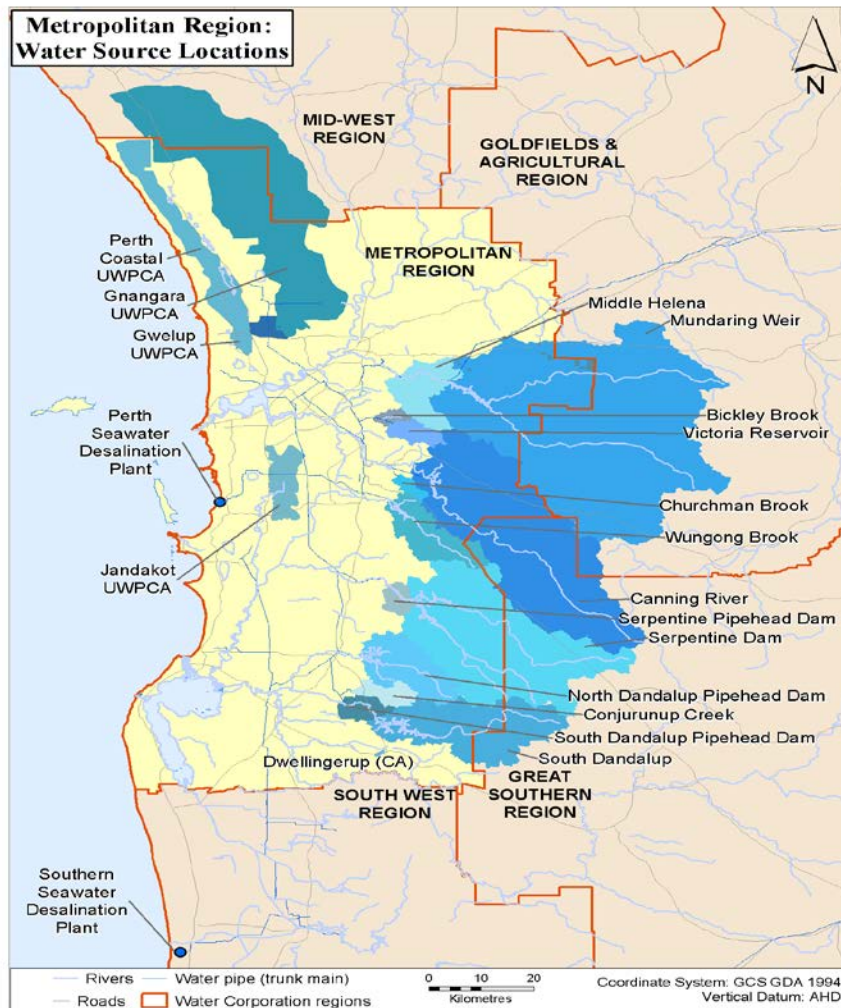
Our performance (chemical, microbiological, and radiological) has this year again resulted in 100 per cent of metropolitan and country localities meeting the high standards set by the Department of Health.



Victoria Dam

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

Where does your water come from?



Perth Metropolitan Region

Our largest scheme, the Integrated Water Supply Scheme (IWSS) delivered more than 289 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 12 independent artesian bores which pump water directly into service reservoirs.

In 2013/14, drinking water production for the IWSS was delivered on target and within overall water allocation and licence parameters. Total groundwater abstracted was 125.7 billion litres, against an allocation of 125.8 billion litres. Water supplied consisted of 17 per cent surface water, 44 per cent groundwater and 39 per cent from desalination. The proportion of desalinated water has increased as the second stage of the Southern Seawater Desalination Plant was fully commissioned.

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

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 48 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 65 billion litres of water for the IWSS in 2013-14. The completion of the second stage of the plant doubled its capacity to 100 billion litres a year.

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

The Mundaring Water Treatment Plant and pump station 30km east of Perth went into commercial operations in December 2013. This plant was funded, built and is now operated by Helena Water (compromising ACCIONA Agua, TRILITY and Aberdeen Asset Management). Helena Water will treat drinking water to a high standard to meet the needs of the Goldfields and Agricultural Water Supply (GAWS) and some of the hills area over a 35year partnership, until the plant is handed over to us in full operating condition (see Mundaring Water Treatment Plant Case Study).

The Groundwater Replenishment Trial (GWRT) was formally completed on 31 December 2012 and the trial water recycling



Southern Seawater Desalination plant, near Binningup

plant has continued to add 1.3 billion litres of recharge water per year into the aquifer. Construction of the full advanced water recycling plant will commence construction next year and will be operational in late 2016.

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.



Harris Dam, South West Region



Goldfields and Agricultural Region

The Goldfields and Agricultural Water Supply (GAWS) draws most of its water from Mundaring Weir near Perth and supplies the majority of towns in the Goldfields and Agricultural Region. The remaining towns, Laverton, Leonora, Menzies and Wiluna are supplied from local groundwater sources.

Work is due to start on the construction of the Cunderdin storage tanks which will replace an unroofed reservoir. In advance of this, a new ammonia analyser has been commissioned to enable better disinfection management on the GAWS.



Mundaring Weir



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, Salmon Gums and Grass Patch are all supplied from local surface water sources. Supplementation for some of these schemes is necessary with Ravensthorpe getting additional supplies from groundwater, while Salmon Gums and Grass Patch also receive some water that is transported from Esperance.

We commissioned a new chlorinator at South Kulin tank to deliver improved disinfection to a large section of the upper GSTWS.

Extensive works are nearing completion in Gnowangerup where two new tanks and an upgrade to the supply main will provide for an improved scheme into the future.

We have improved the overall water quality at Pinwernying dam in Katanning by decommissioning the old catchment.

At Salmon Gums a significant upgrade to the water treatment plant is almost complete which increases the Corporation's ability to use the local water source.



An upgrade to the Hyden water treatment plant to allow improved remote access and control was completed early in the year.

We completed a source protection initiative in the region, upgrading fences and gates at a number of sites including Jerramungup, Ongerup and Borden. This will limit human and animal access to the dams and therefore minimise the potential contamination of these sources.

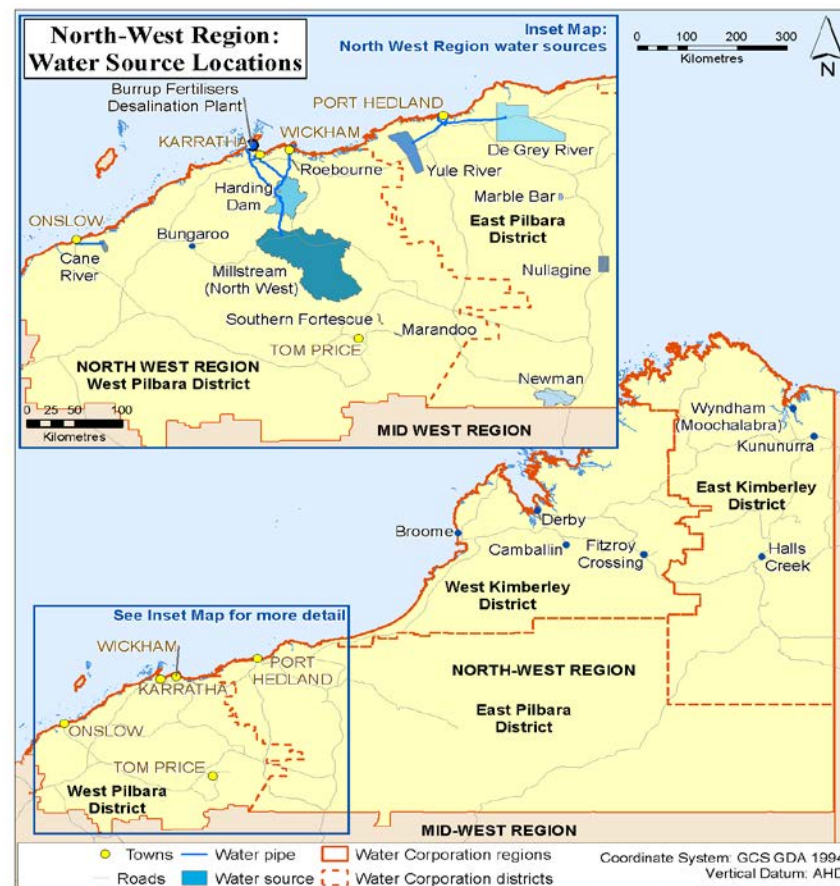
North West Region

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 new groundwater source in the Bungaroo Valley developed by Rio Tinto Iron Ore, which is now supplying the scheme.

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.

Expansion of the Cane River borefield in Onslow was completed at the end of 2013. The Yule and De Grey River borefield expansion to supply the Hedland scheme will be complete by 2014. Chevron is working with us on a new water source for Onslow.



Mid West Region

The Mid West Region, which supplies drinking water to 52 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.

Further work has been undertaken in the coastal towns of Yerecoin, Seabird, Moora 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.

Desalination

Desalination, using reverse osmosis (a membrane based treatment), has been used in Denham for many years to treat brackish groundwater. Reverse osmosis 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.



Reverse Osmosis racks

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 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.

Ultra-filtration 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.

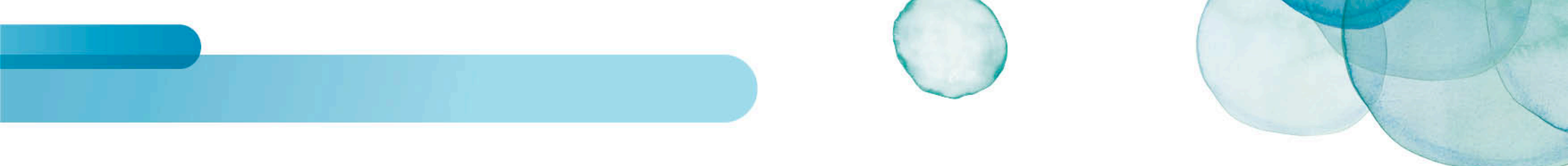
Chloramination involves the use of chlorine and ammonia to produce a longer lasting disinfectant. Chloramination is used in the Goldfields and Agricultural Water Supply Scheme to maintain a disinfectant residual along the length of the extensive pipe network (see also Disinfection in long pipes on page 36).

Ultraviolet 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

Public water supplies are fluoridated due to the beneficial effects of fluoride in protecting against tooth decay. Fluoride strengthens the enamel (surface) of teeth making them more resistant to cavities.

In Western Australia, fluoridation is regulated by the *Fluoridation of Public Water Supplies Act 1966* which is administered by the Department of Health. The Fluoridation of Public Water Supplies Advisory Committee (FAC) oversees fluoridation and makes



recommendations to the Minister for Health who may issue or rescind directives as appropriate.

To maximise the public health benefit from fluoridation the FAC has initially sought to ensure towns with a population exceeding 3,000 are given priority for fluoride. Currently, over 90 percent of the state's population receive the benefits of fluoridation.

Fluoride is a naturally occurring element and is found in many water supplies in concentrations varying from less than 0.1 mg/L in surface waters through to greater than 1.5 mg/L in some groundwater sources. The water fluoridation process involves adding or removing fluoride to the targeted fluoride concentration.

Fluoridated water supplies (see Table 1) are sampled at least weekly to confirm acceptable fluoridation performance.

Fluoridation performance is reported monthly to the Department of Health and quarterly to the Advisory Committee for Purity of Water.

Water fluoridation is supported by the World Health Organisation, the Australian Dental Association, the Australian Medical Association and the National Health Medical and Research Council. Table 1 shows the localities we are required to fluoridate or de-fluoridate as directed by the Minister for Health.

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

Locality	FAC recommended fluoride range ^[1]	FAC recommended optimum concentration ^[1]
<i>Perth Integrated Water Supply Scheme</i>		
Armadale/Kelmscott	0.7 - 1.0 mg/L	0.9 mg/L
Bold Park	0.7 - 1.0 mg/L	0.9 mg/L
Buckland Hill	0.7 - 1.0 mg/L	0.9 mg/L
Foothills	0.7 - 1.0 mg/L	0.9 mg/L
Greenmount	0.7 - 1.0 mg/L	0.9 mg/L
Greenmount/Darlington	0.7 - 1.0 mg/L	0.9 mg/L
Hamilton Hill	0.7 - 1.0 mg/L	0.9 mg/L
Harvey	0.7 - 1.0 mg/L	0.9 mg/L
Hills Direct	0.7 - 1.0 mg/L	0.9 mg/L
Lake Thompson	0.7 - 1.0 mg/L	0.9 mg/L
Lexia	0.7 - 1.0 mg/L	0.9 mg/L
Mandurah	0.7 - 1.0 mg/L	0.9 mg/L
Melville	0.7 - 1.0 mg/L	0.9 mg/L
Mirrabooka	0.7 - 1.0 mg/L	0.9 mg/L
Mt. Eliza	0.7 - 1.0 mg/L	0.9 mg/L
Mt. Hawthorn	0.7 - 1.0 mg/L	0.9 mg/L
Mt. Yokine	0.7 - 1.0 mg/L	0.9 mg/L
Mundaring	0.7 - 1.0 mg/L	0.9 mg/L
Neerabup	0.7 - 1.0 mg/L	0.9 mg/L
Pinjarra	0.7 - 1.0 mg/L	0.9 mg/L
South Perth/Kewdale	0.7 - 1.0 mg/L	0.9 mg/L
Tamworth Hill	0.7 - 1.0 mg/L	0.9 mg/L
Wanneroo	0.7 - 1.0 mg/L	0.9 mg/L
Waroona	0.7 - 1.0 mg/L	0.9 mg/L
West Yokine	0.7 - 1.0 mg/L	0.9 mg/L
Whitfords	0.7 - 1.0 mg/L	0.9 mg/L

Locality	FAC recommended fluoride range ^[1]	FAC recommended optimum concentration ^[1]
<i>Great Southern Region</i>		
Albany	0.7 - 1.0 mg/L	0.9 mg/L
Esperance	0.7 - 1.0 mg/L	0.9 mg/L
Katanning (GSTWS)	0.7 - 1.0 mg/L	0.8 mg/L
Mt Barker	0.7 - 1.0 mg/L	0.9 mg/L
Narrogin (GSTWS)	0.7 - 1.0 mg/L	0.8 mg/L
<i>Goldfields & Agricultural Water Supply Scheme</i>		
Kalgoorlie	0.7 - 1.0 mg/L	0.8 mg/L
Merredin	0.7 - 1.0 mg/L	0.8 mg/L
Northam	0.7 - 1.0 mg/L	0.8 mg/L
York	0.7 - 1.0 mg/L	0.8 mg/L
<i>North West Region</i>		
Broome	0.6 - 0.8 mg/L	0.7 mg/L
Derby	0.5 - 0.7 mg/L	0.6 mg/L
Exmouth	0.6 - 0.8 mg/L	0.7 mg/L
Karratha	0.6 - 0.8 mg/L	0.7 mg/L
<i>South West Region</i>		
Collie (GSTWS)	0.7 - 1.0 mg/L	0.8 mg/L
Dunsborough [2]	0.7 - 1.0 mg/L	0.9 mg/L
<i>Mid West Region</i>		
Geraldton	0.7 - 1.0 mg/L	0.8 mg/L
Manjimup	0.7 - 1.0 mg/L	0.9 mg/L

[1] Fluoride concentration in water supplies has been determined based on average daily water consumption. Concentration is lower in towns where ambient temperature and, therefore, average water consumption is higher.

[2] This scheme is de-fluoridated. This is not covered by the Fluoridation Act. The recommended range and optimum concentration have been specified to provide a duty of care target.

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 Department of Health, contribute to the rolling revision of the ADWG.

We have a [Memorandum of Understanding](#) with the Department of Health 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 Department of Health, 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. In addition to this we now undertake a Long Term Evaluation (LTE) of the system when there is an *E. coli* detection greater than 5 CFU/ 100 ml or any *Naegleria* detection (refer to section on understanding water quality test results page 28). An LTE is used to evaluate whether the system is sufficiently robust to deliver safe drinking water under all foreseeable conditions.

For aesthetic parameters, the [Memorandum of Understanding](#) states that we should comply as far as practical with the ADWG for



Part of the Drinking Water Quality Team, Perth Seawater Desalination Plant

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 36.

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 for each of our schemes is a large part of implementing the ADWG Framework for Management of Drinking Water Quality. Water Safety Plans use a systematic risk management approach from catchment to tap assessing the risks to each water supply scheme, ensuring appropriate preventative measures are in place, and identifying the operational controls necessary to consistently ensure the safety of drinking water. All Water Safety Plans 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 31 schemes in the country and 7 in the metropolitan region.

Source Protection

Water Corporation manages approximately 140 drinking water catchments at over 240 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 2013/14, nearly 14,000 surveillance hours were undertaken state-wide with 212 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 75,000 water samples each year from water sources, treatment plants and pipe networks which supply our customers, and have in excess of 300,000 individual analyses performed by our contracted analytical laboratories.



Water Corporation staff collecting a sample

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

In addition, we conduct regular incident scenarios with the Department of Health to continually improve our incident management processes.



Preparing mobile UF plant

Engagement with Department of Health

Department of Health 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 Department of Health within 24-hours when any sample exceeds a set health value or where any other event could pose a risk to public health. The Department of Health regularly reviews our monitoring results and corrective actions. The current Memorandum of Understanding provides for the Department of Health 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 Department of Health commissions 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.



Department of Health, Department of Water and Water Corporation at Victoria Dam

Case Study 1: Source Protection

With ever growing pressure to demonstrate value for money in all facets of the water industry it is timely to highlight the significant return on investment achieved through effective source protection. Pristine, protected catchments should be viewed as a water treatment asset, and to keep them that way requires active source protection in the form of surveillance, by-law enforcement, inspections, sampling and community engagement.

The greatest risk to consumers of drinking water comes from pathogenic organisms (ADWG 2011). The association between people in the catchment, especially if they have contact with the water or its immediate surroundings, and the presence of pathogens in the source water is well established. One of the best methods to control this water quality risk is by protecting the catchment and source, therefore restricting access to and activities occurring in catchment areas. These activities may include swimming and marroning in the dams or camping and dumping of rubbish in the catchments. Although many people do observe the restrictions to access and activities in catchments there are some that ignore the need for the primacy of the water quality over other activities. Because of this it is necessary to undertake source protection activities which may consist of catchment surveillance, by-laws enforcement, water quality sampling, stakeholder liaison, supervision and inspection of conditional catchment activities. A large part of this work is undertaken by Catchment Rangers, who spend much of their time in the field.



Marroning is not permitted in drinking water reservoirs

Through maintaining source protection the reliance on complex water treatment is greatly reduced. The outcome from this approach is the sustainable supply of clean, affordable and safe drinking water.

The return on investment through effective source protection is substantial, not only from capital and operational expenditure but also from reduced risk to public health. Today, much of Western Australia enjoys reliable, safe drinking water as the result of the foresight in protecting drinking water sources from harmful

activities. As pressure grows to increase access to and development in drinking water sources it is essential to understand the cost of increased treatment and the role that protecting the source has in provision of safe drinking water.

Catchment rangers' response to catchment fire

In early April 2014, a Department of Parks and Wildlife controlled burn passed containment lines and burnt through 90 per cent of the Quickup Dam catchment area in the Great Southern Region, approximately 29.7 km².

With a significant amount of the catchment area burnt before winter, the risk to water quality increased significantly. Increased risk to water quality was largely as a result of the ash in the catchment being taken in the overland flow to the dam and increased erosion.

In an attempt to mitigate this risk, catchment rangers responded quickly to minimise the run off of poor quality water into the dam. A plan to reduce the risk to water quality was devised and catchment rangers organised and laid out close to 200 coil logs (made of coconut fibre) throughout the catchment to absorb nutrients in water runoff; laid rubble in the leach drain that leads from a cow paddock to minimise the runoff of ash; and replaced source protection information signs around the catchment.

The Source Protection team also implemented a detailed sampling program at the dam and the main tributary to measure parameters that would be expected to increase in water runoff after a bush fire, to monitor and document changes in water quality post fire.



Illegal camp site at Harding Dam

Despite the below average rainfall for the winter that followed, the sampling has shown there was no noticeable change in water quality or chemistry that would suggest a fire had occurred in the catchment area. This shows the importance of source protection as the first barrier in providing safe, clean drinking water. The detailed sampling program will continue as the catchment area continues to recover from the fire.

Case Study 2: Mundaring Water Treatment Plant

Background

The Goldfields and Agricultural Water Supply Scheme (GAWS) provides water to around 100,000 Water Corporation customers. This is an iconic water supply scheme that extends from Mundaring Weir in the west to Kalgoorlie in the east with many pipeline extensions to feed towns and farms to the north and south of the main pipeline, and is one of the largest drinking water distribution networks in the world with 9000 km of pipeline. The scheme has provided water from the Mundaring Weir for the Goldfields and Agricultural region and some services in the hills areas between Perth and Kalgoorlie since it was first completed in 1903. The scheme initially delivered 23 million litres of water per day through 580km of pipe and eight steam driven pump stations.

New treatment plant

More recently a pump station and water treatment plant were built to ensure a safe, secure and long term supply to the region.

The Mundaring Water Treatment Plant which includes a treated water pump station was officially opened in March 2014. It was built by Helena Water, comprising ACCIONA Agua, TRILITY and Aberdeen Asset Management, and is the first Public Private Partnership (PPP) project to be delivered in the Western Australian water industry.

The plant can treat up to 165 million litres per day with potential for expansion to 240 million litres per day. Treatment includes dissolved air flotation and filtration (DAFF) to remove organic and



Mundaring Water Treatment Plant

other solids followed by biological activated carbon (BAC) filtration to remove dissolved organics. Disinfection is achieved through chloramination (Refer disinfection section page 16)

Water for the scheme is provided from the surface water sources of Mundaring Weir and the Lower Helena Dam, and water from the Integrated Water Supply Scheme (IWSS) which includes groundwater, surface water and desalinated water. The Mundaring Water Treatment Plant was built to provide flexibility to treat water of variable quality, providing consistent, aesthetically pleasing, high quality water that surpasses the requirements of the Australian Drinking Water Quality guidelines. This means it is microbiologically safe and achieves the disinfection requirements throughout the scheme.

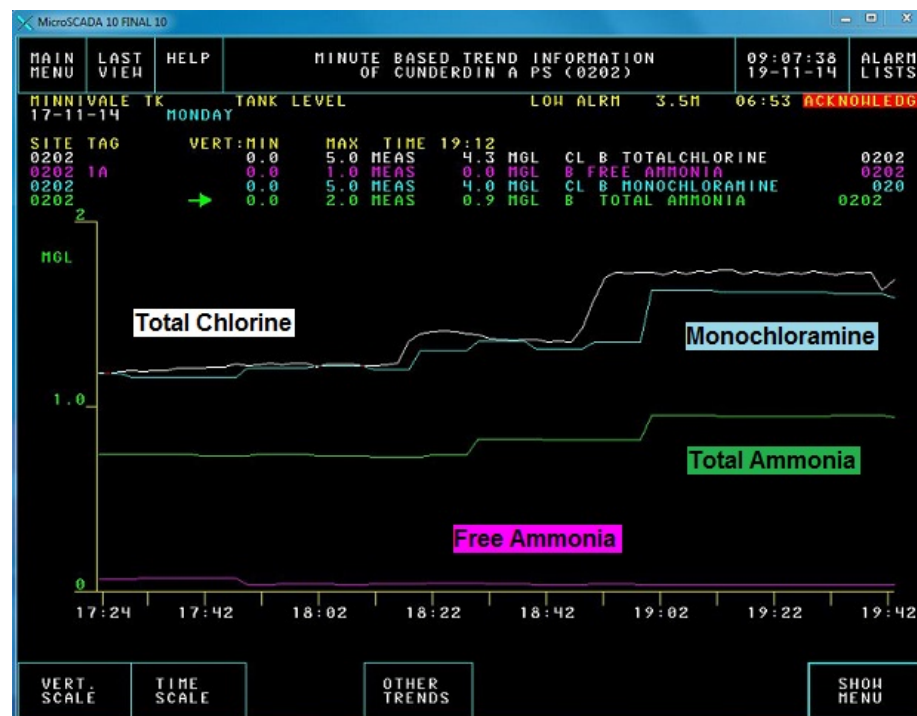
Technical Case Study 3: Chlorine Control in Chloraminated Systems

Challenge

The GAWS is considered to be one of the most extensive water supply systems in the world. For this reason, chloramination (using monochloramine - a combination of chlorine and ammonia) is used as the preferred form of disinfection as it persists in the water much longer than chlorine. The monochloramine, however, decays over time releasing free ammonia and chlorine. The chlorine is consumed but the ammonia persists and may be reused. To reform the chloramine, chlorine must be added at regular intervals. The challenge has been finding a way to continuously monitor the ammonia concentration in the water and control the dose of chlorine to fully utilise the available free ammonia. This is particularly difficult at the two Cunderdin pump stations where water in the Main Conduit is periodically blended with water drawn from Cunderdin Reservoir.

Solution

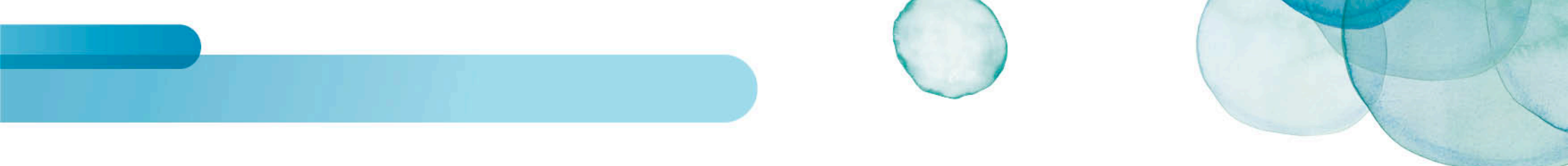
A comparison of commercially available on-line ammonia analysers was carried out and the Chemsan UV-2150/S was selected for a trial based on its claimed consistency and reliability. It uses a multiple wavelength UV absorbance detection system to measure total and free ammonia, monochloramine and also total chlorine. All four parameters are measured directly, which enables more accurate control of the chlorine dose.



Trend Screen

Results

An analyser was acquired for a six month trial at Mundaring Water Treatment Plant to compare its performance with existing analysers. The outcome was favourable, resulting in the installation of one in Cunderdin B pump station to control the dosing east along the Main Conduit. This analyser has been operating for over twelve months and controlling the chlorine dose for most of this period. The performance has been impressive; it can immediately match the chlorine dose to the available free ammonia, even when the



ammonia concentration varies. This is illustrated in the Trend Screen which shows the chlorine dose increasing proportionally to the increase in total ammonia, boosting the monochloramine concentration and keeping the free ammonia below 0.1 mg/L. The analyser has also required minimal maintenance during this time, with routine replacement of reagents the only requirement.

Way Forward

Given the success of this analyser in Cunderdin B pump station a second one has been installed in Cunderdin A pump station to control the dosing of water supplied to the north and south. Further ammonia analysers are intended to be utilised in future chlorine booster installations (in chloraminated systems).

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.

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 residuals of chlorine or chloramine can control *Naegleria*. Any detection of thermophilic *Naegleria* is responded to immediately to ensure the potential risk to public health is managed.

Fluoride

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



Seawater Desalination Plant

Nitrate

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

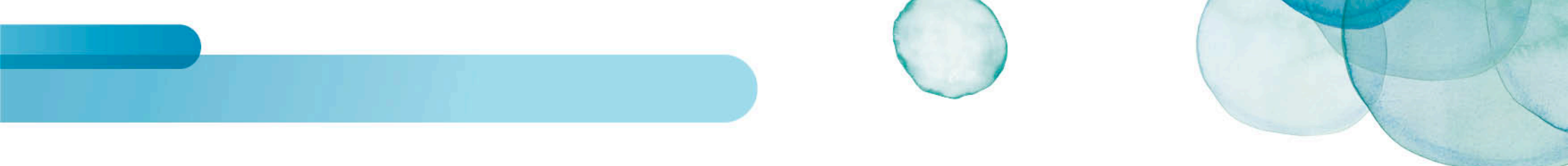
Alkalinity is a measure of the parameters in water that have acid-neutralising ability, typically expressed in mg/L of equivalent calcium carbonate. Alkalinity can be affected by naturally occurring minerals or water treatment chemicals. There are no aesthetic or health considerations for alkalinity, 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, 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.

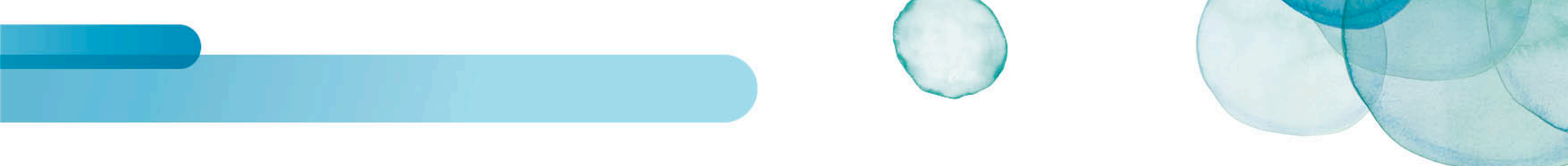
Elevated manganese can make water look black and stain laundry. The ADWG specify an aesthetic guideline of 0.1 mg/L.

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 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. Total dissolved solids 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 2013/14 (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 28).

Compliance with health-related chemical guidelines is also at 100 per cent of all schemes meeting the guidelines.

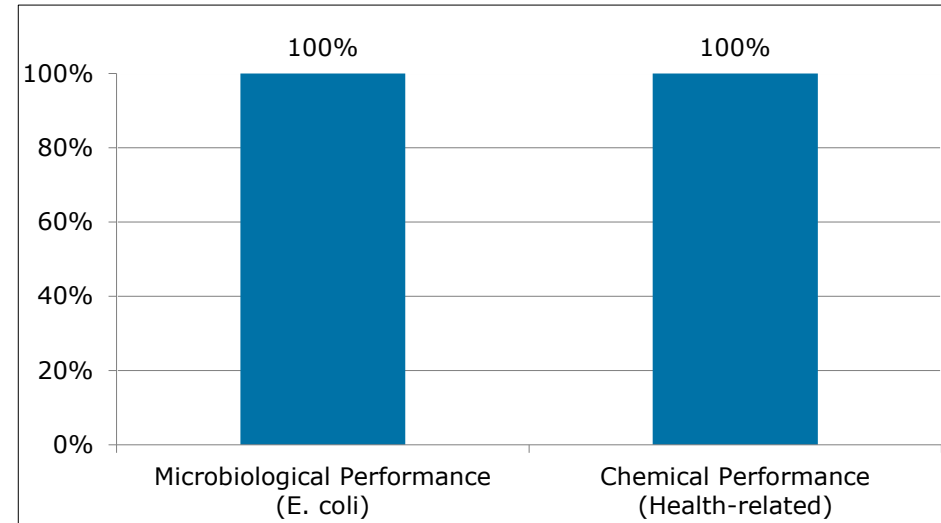
For this report, compliance is achieved if the yearly average concentration for each chemical is less than the guideline value.

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 2013/14

Appendix B provides a detailed summary of test results for each scheme throughout the state. In 2013/14 there were 159 out of 243 schemes where the mean concentration for the year was less than the aesthetic guidelines. Our performance for all aesthetic analyses (alkalinity, aluminium, true colour, hardness, iron, manganese, pH, TDS, turbidity, sodium, chloride and silica) across



Graph 1: Microbiological and Chemical Health Performance

our 243 schemes was 94 per cent, with 8,404 out of 8,976 analyses complying with the aesthetic guidelines.

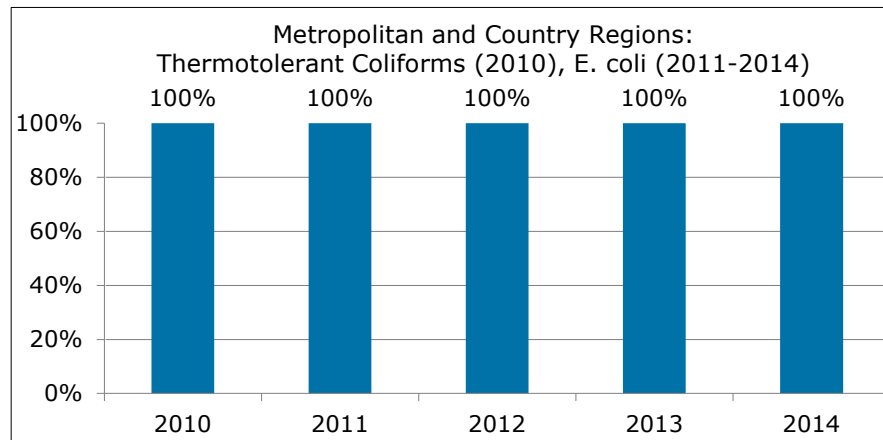
The results in Appendix B show a small number of excursions above the guidelines in aesthetic quality. These excursions are caused by the unique quality of local sources, lack of alternative sources, impact of the drying climate on groundwater production and abstraction from groundwater in proximity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

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

Health performance review 2010 to 2014

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.

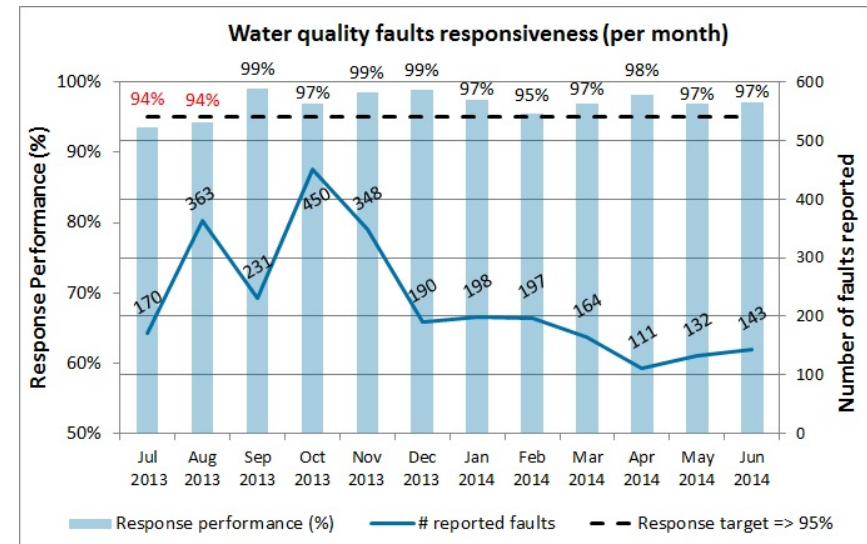
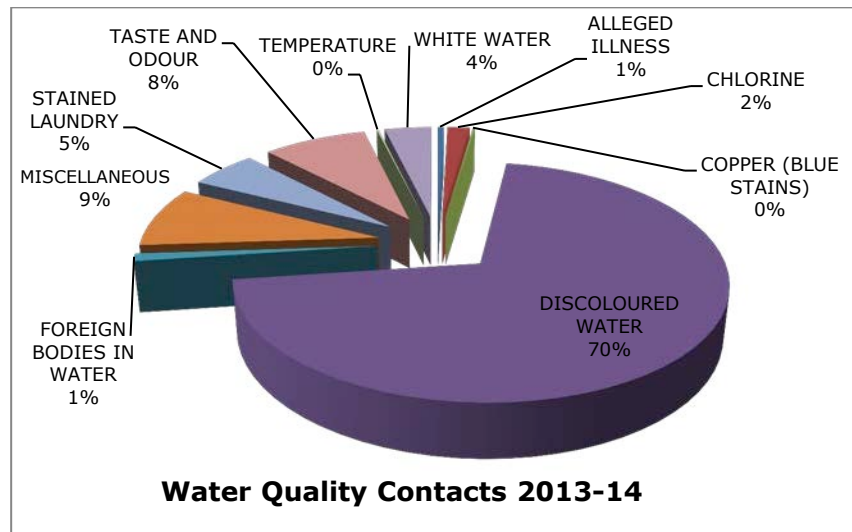


Graph 2: Five year microbiological performance

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 2013/14 our Operations Centre received 7,529 water quality related customer contacts (compared with 7,724 in 2012/13). The graph below shows the type and proportion of the water quality contacts.



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 2013/14 once a fault was recorded we responded to 96.9 per cent within the target of two hours (see graph above for monthly, state-wide statistics).

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 2013	December 2013	March 2014	June 2014	End of year average
How would you rate the Water Corporation on providing an acceptable standard of water quality?	6.8	7.1	7.1	7.1	7.0
How would you rate the Water Corporation on providing a consistent level of water quality?	6.9	7.2	7.2	7.2	7.1

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.

Gascoyne Junction Water Treatment Plant was upgraded in 2013 to meet the increased challenge of rising manganese levels in the source water. This upgrade now provides stable operation of the downstream membrane processes as well as greatly improved water quality delivered to the end user.



**Water Corporation staff,
Perth Seawater
Desalination Plant**

Tank roofs

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

Pipes and pipelines

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

Disinfection in long pipes

A major project is continuing to improve the persistence of chloramine through the long pipelines of the Goldfields and Agricultural Water Supply Scheme (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 (see also Technical Case Study 3 - Chlorine Control in Chloraminated Systems on page 26).



Goldfields Pipeline

Appendix A – List of sampling parameters

Pesticide

Pesticide	Health Guideline Value (µg/L)
2,4,5-T (2,4,5-trichlorophenoxyacetic acid)	100
2,4-D ([2,4-dichlorophenoxy]acetic acid)	30
Aldrin + Dieldrin	0.3
Atrazine	20
Azinphos-methyl	30
Bromophos-ethyl	10
Chlordane	2
Chlorothalonil	50
Chlorpyrifos	10
Clopyralid	2000
DDT (total isomers)	9
Diazinon	4
Dicamba	100
Diclofop-methyl	5
Dieldrin	see Aldrin
Dimethoate	7
Diuron	20
Endosulfan	20
Ethion	4
Fenitrothion	7
Fluazifop ^[1]	10
Fluometuron	70
Glyphosate	1000

Pesticide	Health Guideline Value (µg/L)
Heptachlor & heptachlor epoxide (total)	0.3
Hexachlorobenzene	Value not set
Hexazinone	400
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)

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
Hexachlorobutadiene [1]	0.7	Not set

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

Radiological

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

Inorganic Chemicals

Chemical	Health Guideline Value (mg/L)	Aesthetic Guideline Value (mg/L)
Chloride	Not set	250
Cyanide [1]	0.08	Not set
Fluoride	1.5	Not set
Iodide [1]	0.5	Not set
Nitrate + Nitrite [2]	50 mg/L as NO ₃	Not set
Silica	Not set	80
Sodium	Not set	180
Sulphate	500	250

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

[2] Nitrate+Nitrite health guideline is for infants < 3 months of age (50 mg/L as NO₃ also reported as 11.3 mg/L as nitrogen).

Physical Characteristics

Characteristics	Health Guideline Value	Aesthetic Guideline Value
Hardness as CaCO ₃	Not set	200 mg/L
pH	Not set	6.5 – 8.5
Total filterable solids (by summation)	Not set	600 mg/L
True colour	Not set	15 HU
Turbidity	Not set	5 NTU

HU = Hazen Units

NTU = Nephelometric turbidity units

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

Microbiological

Organism
<i>Escherichia coli</i>
<i>Naegleria</i> tolerant to ≤ 42°C

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: 18 October 2013

Coordinate System: Geographic Coordinate System, GDA 1994

Drinking Water Quality Annual Report Data 01/07/2013 to 30/06/2014

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	275	0	0	✓	275	0	✓	52	0.55	0.90	0.78	0	(1)	2	✓
Bold Park	235	0	0	✓	131	0	✓	52	0.70	0.85	0.80	1	✓	2	✓
Buckland Hill	104	0	0	✓	78	0	✓	48	0.70	0.85	0.76	2	✓	2	✓
Dwellingup	13	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Foothills	142	0	0	✓	142	0	✓	51	0.70	0.90	0.81	0	(1)	2	✓
Greenmount	142	0	0	✓	103	0	✓	51	0.70	0.95	0.81	0	(1)	2	✓
Greenmount/Darlington	117	0	0	✓	91	0	✓	52	0.70	0.90	0.80	1	✓	2	✓
Hamilton Hill	207	0	0	✓	90	0	✓	52	0.75	0.85	0.80	1	✓	2	✓
Hills Direct	680	0	0	✓	303	0	✓	51	0.70	0.95	0.81	0	(1)	4	✓
Lexia	117	0	0	✓	52	0	✓	51	0.45	0.90	0.79	0	(1)	2	✓
Mandurah	403	0	0	✓	325	0	✓	52	0.75	0.95	0.86	0	(1)	6	✓
Melville	169	0	0	✓	91	0	✓	52	0.65	0.85	0.77	0	(1)	2	✓
Mirrabooka	261	0	0	✓	118	0	✓	52	0.70	0.90	0.80	1	✓	2	✓
Mt. Eliza	418	0	0	✓	131	0	✓	52	0.65	0.90	0.78	2	✓	2	✓
Mt. Hawthorn	157	0	0	✓	78	0	✓	53	0.70	0.95	0.81	0	(1)	2	✓
Mt. Yokine	469	0	0	✓	183	0	✓	48	0.70	1.00	0.81	1	✓	2	✓
Mundaring	111	0	0	✓	111	0	✓	52	0.75	0.95	0.86	0	(1)	2	✓
Neerabup	221	0	0	✓	117	0	✓	52	0.55	0.95	0.86	2	✓	5	✓
North Dandalup	13	0	0	✓	7	0	✓	4	0.40	0.85	0.73	0	(1)	2	✓
Pinjarra	66	0	0	✓	53	0	✓	50	0.70	0.95	0.85	0	(1)	2	✓
South Perth/Kewdale	414	0	0	✓	220	0	✓	52	0.70	0.95	0.80	0	(1)	2	✓
Tamworth Hill	339	0	0	✓	144	0	✓	52	0.75	0.95	0.85	1	✓	2	✓
Thomsons Lake	222	0	0	✓	78	0	✓	52	0.70	0.90	0.79	0	(1)	2	✓
Two Rocks	104	0	0	✓	39	0	✓	2	0.10	0.15	0.13	0	(1)	2	✓
Wanneroo	405	0	0	✓	156	0	✓	55	0.70	0.85	0.77	0	(1)	5	✓
West Yokine	235	0	0	✓	130	0	✓	44	0.75	0.90	0.82	0	(1)	2	✓
Whitfords	143	0	0	✓	65	0	✓	52	0.70	0.85	0.77	1	✓	2	✓
Yanchep	102	0	0	✓	51	0	✓	2	<0.1	<0.1	<0.1	1	✓	2	✓

(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	5	<0.05	0.1	<0.05	✓	1	✓	0	(1)	13	0.039	0.170	0.095	✓	0	(1)
Bold Park	5	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	13	0.035	0.120	0.073	✓	0	(1)
Buckland Hill	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	14	0.033	0.170	0.092	✓	2	✓
Dwellingup	4	<0.05	0.7	0.2	✓	3	✓	1	✓	3	0.049	0.064	0.054	✓	0	(1)
Foothills	4	<0.05	0.1	<0.05	✓	1	✓	1	✓	12	0.033	0.130	0.078	✓	0	(1)
Greenmount	4	<0.05	0.3	0.2	✓	1	✓	0	(1)	12	0.067	0.190	0.129	✓	1	✓
Greenmount/Darlington	5	<0.05	0.2	0.1	✓	1	✓	0	(1)	13	0.053	0.100	0.083	✓	1	✓
Hamilton Hill	5	<0.05	<0.05	<0.05	✓	1	✓	1	✓	13	0.026	0.088	0.058	✓	1	✓
Hills Direct	8	<0.05	<0.05	<0.05	✓	2	✓	1	✓	25	<0.001	0.084	0.043	✓	0	(1)
Lexia	4	<0.05	0.9	0.6	✓	1	✓	1	✓	13	0.066	0.150	0.108	✓	0	(1)
Mandurah	13	<0.05	<0.05	<0.05	✓	3	✓	0	(1)	39	<0.001	0.110	0.038	✓	0	(1)
Melville	5	<0.05	0.1	<0.05	✓	1	✓	0	(1)	13	0.024	0.130	0.080	✓	1	✓
Mirrabooka	4	0.1	0.3	0.2	✓	1	✓	0	(1)	13	0.085	0.180	0.129	✓	1	✓
Mt. Eliza	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	13	0.019	0.150	0.097	✓	2	✓
Mt. Hawthorn	4	0.2	0.3	0.3	✓	1	✓	0	(1)	13	0.095	0.150	0.118	✓	1	✓
Mt. Yokine	5	0.1	0.3	0.2	✓	1	✓	0	(1)	13	0.073	0.180	0.125	✓	1	✓
Mundaring	4	<0.05	0.1	0.1	✓	1	✓	0	(1)	13	0.005	0.017	0.014	✓	0	(1)
Neerabup	4	0.3	2.8	2	✓	1	✓	0	(1)	13	0.033	0.092	0.053	✓	1	✓
North Dandalup	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	13	0.006	0.110	0.054	✓	0	(1)
Pinjarra	5	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.014	0.039	0.027	✓	0	(1)
South Perth/Kewdale	4	<0.05	0.2	0.1	✓	1	✓	0	(1)	13	0.053	0.170	0.117	✓	0	(1)
Tamworth Hill	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	21	<0.001	0.088	0.044	✓	1	✓
Thomsons Lake	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	13	0.020	0.180	0.075	✓	0	(1)
Two Rocks	5	0.6	1.1	1	✓	1	✓	0	(1)	13	0.005	0.022	0.012	✓	0	(1)
Wanneroo	4	0.6	0.9	0.8	✓	1	✓	1	✓	13	0.067	0.190	0.102	✓	1	✓
West Yokine	5	0.1	0.7	0.3	✓	1	✓	0	(1)	13	0.110	0.180	0.149	✓	1	✓
Whitfords	5	0.2	1.3	0.7	✓	1	✓	0	(1)	13	0.069	0.120	0.095	✓	1	✓
Yanchep	4	0.9	1	0.9	✓	1	✓	0	(1)	13	<0.001	0.003	<0.001	✓	0	(1)

(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	5	43	53	47	(1)	5	0.014	0.025	0.019	✓	5	105	120	112	✓	5	56	66	61	✓
Bold Park	5	56	61	59	(1)	5	0.020	0.035	0.028	✓	5	48	105	81	✓	5	54	62	59	✓
Buckland Hill	4	43	77	62	(1)	4	0.025	0.025	0.025	✓	4	95	190	142.5	✓	4	65	72	68	✓
Dwellingup	4	9	35	18	(1)	4	0.012	0.110	0.041	✓	4	41	80	66.5	✓	4	31	40	35	✓
Foothills	5	45	81	65	(1)	4	0.018	0.040	0.027	✓	5	65	160	111	✓	4	58	87	71	✓
Greenmount	4	75	130	114	(1)	4	0.014	0.050	0.030	✓	4	140	190	169	✓	4	82	110	94	✓
Greenmount/Darlington	5	74	110	92	(1)	5	0.016	0.025	0.021	✓	5	110	165	142	✓	5	77	94	83	✓
Hamilton Hill	5	63	81	71	(1)	5	0.020	0.025	0.021	✓	5	75	155	125	✓	5	63	100	80	✓
Hills Direct	8	43	57	52	(1)	8	0.025	0.040	0.032	✓	8	32	80	50	✓	8	52	65	60	✓
Lexia	4	91	120	102	(1)	4	0.020	0.030	0.023	✓	4	70	195	122.5	✓	4	110	190	135	✓
Mandurah	13	39	64	54	(1)	13	0.030	0.060	0.041	✓	13	30	46	38	✓	13	51	66	60	✓
Melville	5	57	83	74	(1)	5	0.020	0.035	0.026	✓	5	39	205	158	✓	5	56	66	63	✓
Mirrabooka	4	53	70	61	(1)	4	0.030	0.040	0.034	✓	4	145	200	174	✓	4	110	130	118	✓
Mt. Eliza	4	54	73	62	(1)	4	0.025	0.035	0.030	✓	4	55	175	114	✓	4	61	73	66	✓
Mt. Hawthorn	4	120	130	128	(1)	4	<0.008	0.018	0.013	✓	4	155	205	186	✓	4	96	100	99	✓
Mt. Yokine	5	99	130	118	(1)	5	0.014	0.030	0.019	✓	5	165	195	185	✓	5	84	100	93	✓
Mundaring	4	68	80	75	(1)	4	0.018	0.190	0.092	✓	4	145	165	154	✓	4	87	90	89	✓
Neerabup	4	82	170	141	(1)	4	0.008	0.020	0.016	✓	4	100	140	124	✓	4	90	200	158	✓
North Dandalup	4	32	62	50	(1)	4	0.030	0.060	0.043	✓	4	32	46	40.5	✓	4	48	69	60	✓
Pinjarra	5	47	62	54	(1)	5	0.030	0.045	0.036	✓	5	19	41	35	✓	5	57	66	60	✓
South Perth/Kewdale	4	42	110	85	(1)	4	0.012	0.035	0.021	✓	4	105	180	146	✓	4	58	110	83	✓
Tamworth Hill	4	48	62	55	(1)	4	0.035	0.065	0.044	✓	4	26	43	35	✓	4	57	65	61	✓
Thomsons Lake	4	69	84	77	(1)	4	0.014	0.018	0.016	✓	4	95	180	155	✓	4	68	98	85	✓
Two Rocks	5	200	210	202	(1)	5	<0.008	0.010	<0.008	✓	5	95	110	101	✓	5	210	230	222	(2)
Wanneroo	4	100	100	100	(1)	4	0.016	0.025	0.020	✓	4	95	170	119	✓	4	100	110	108	✓
West Yokine	5	110	130	122	(1)	5	0.016	0.025	0.020	✓	5	145	190	171	✓	5	82	120	100	✓
Whitfords	5	78	110	95	(1)	5	0.020	0.025	0.022	✓	5	85	180	114	✓	5	82	120	104	✓
Yanchep	4	180	190	188	(1)	4	0.008	0.012	0.010	✓	4	100	105	102.5	✓	4	210	230	220	(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	5	0.030	0.045	0.038	✓	5	<0.002	0.007	0.003	✓	5	7.60	7.87	7.72	✓	5	2.9	4.5	3.7	✓
Bold Park	5	0.020	0.140	0.082	✓	5	0.004	0.012	0.008	✓	5	7.89	8.08	7.97	✓	5	1.9	6	4.3	✓
Buckland Hill	4	0.030	0.400	0.158	✓	4	0.002	0.008	0.005	✓	4	7.91	8.09	8.02	✓	4	4.1	8.4	6.1	✓
Dwellingup	4	0.020	0.070	0.050	✓	4	<0.002	0.009	0.004	✓	4	7.19	7.60	7.32	✓	4	2.3	8.4	4.2	✓
Foothills	4	0.010	0.060	0.034	✓	4	<0.002	0.005	0.003	✓	4	7.87	8.21	8.04	✓	5	2.7	11	5.5	✓
Greenmount	4	0.015	0.540	0.171	✓	4	<0.002	0.035	0.010	✓	4	8.05	8.54	8.36	✓	4	4.9	19	14.5	✓
Greenmount/Darlington	5	0.020	0.070	0.041	✓	5	0.003	0.005	0.004	✓	5	8.19	8.38	8.25	✓	5	5.6	15	10.0	✓
Hamilton Hill	5	0.010	0.020	0.015	✓	5	0.003	0.007	0.005	✓	5	8.11	8.29	8.17	✓	5	2.4	6.3	4.2	✓
Hills Direct	8	0.004	0.040	0.021	✓	8	<0.002	0.008	<0.002	✓	8	7.84	8.15	7.97	✓	8	1.7	4	2.8	✓
Lexia	4	0.004	0.015	0.009	✓	4	<0.002	0.010	0.005	✓	4	7.86	8.05	7.95	✓	4	13	20	17.8	✓
Mandurah	13	0.008	0.080	0.021	✓	13	<0.002	0.018	0.003	✓	13	7.88	8.40	8.13	✓	13	1.5	4.4	3.0	✓
Melville	5	0.020	0.040	0.031	✓	5	<0.002	0.005	0.004	✓	5	7.93	8.19	8.06	✓	5	1.6	8.1	6.1	✓
Mirrabooka	4	0.015	0.030	0.019	✓	4	0.003	0.004	0.004	✓	4	7.09	7.75	7.49	✓	4	16	18	16.8	✓
Mt. Eliza	4	0.035	0.140	0.069	✓	4	0.002	0.020	0.009	✓	4	7.98	8.10	8.04	✓	4	2.6	7	4.7	✓
Mt. Hawthorn	4	0.030	0.120	0.083	✓	4	0.005	0.009	0.007	✓	4	7.97	8.08	8.03	✓	4	17	20	18.5	✓
Mt. Yokine	5	0.006	1.000	0.239	✓	5	<0.002	0.055	0.014	✓	5	7.97	8.23	8.12	✓	5	17	19	17.8	✓
Mundaring	4	<0.003	0.025	0.006	✓	4	<0.002	0.003	<0.002	✓	4	8.10	8.23	8.17	✓	4	4.9	6.9	5.7	✓
Neerabup	4	0.008	0.010	0.010	✓	4	<0.002	0.003	<0.002	✓	4	7.88	8.16	8.01	✓	4	19	22	20.5	✓
North Dandalup	4	0.015	0.100	0.041	✓	4	<0.002	<0.002	<0.002	✓	4	8.17	8.68	8.44	✓	4	1.6	4.1	3.4	✓
Pinjarra	5	0.004	0.030	0.016	✓	5	<0.002	0.003	<0.002	✓	5	7.80	8.25	8.11	✓	5	1.6	3.7	2.7	✓
South Perth/Kewdale	4	0.010	0.050	0.025	✓	4	<0.002	0.005	<0.002	✓	4	7.64	8.13	7.95	✓	4	4.8	17	11.5	✓
Tamworth Hill	4	0.010	0.040	0.024	✓	4	<0.002	0.006	<0.002	✓	4	7.56	8.21	7.94	✓	4	1.1	4	2.7	✓
Thomsons Lake	4	0.006	0.020	0.014	✓	4	0.003	0.006	0.005	✓	4	8.08	8.15	8.11	✓	4	3.4	5.6	4.8	✓
Two Rocks	5	<0.003	0.004	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.59	7.82	7.70	✓	5	11	13	12.2	✓
Wanneroo	4	<0.003	0.010	0.006	✓	4	<0.002	0.004	0.003	✓	4	7.53	7.73	7.65	✓	4	18	20	18.8	✓
West Yokine	5	0.015	0.070	0.036	✓	5	<0.002	0.005	<0.002	✓	5	7.95	8.32	8.14	✓	5	17	20	18.4	✓
Whitfords	5	0.004	0.015	0.008	✓	5	<0.002	0.007	0.003	✓	5	7.94	8.18	8.08	✓	5	17	19	18.0	✓
Yanchep	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	7.50	7.91	7.68	✓	4	14	16	15.0	✓

Table 5 Aesthetic (Non-health related) Variables																				
Perth Region	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	
Armadale/Kelmscott	5	64	70	67	✓	5	272	295	281	✓	5	<1	2	<1	✓	5	0.4	0.5	0.4	✓
Bold Park	5	28	70	53	✓	5	177	290	247	✓	5	<1	<1	<1	✓	5	0.3	0.7	0.5	✓
Buckland Hill	4	62	125	93	✓	4	270	464	359	✓	4	<1	<1	<1	✓	4	0.3	1.3	0.6	✓
Dwellingup	4	36	50	41	✓	4	150	184	168	✓	4	<1	<1	<1	✓	4	0.3	0.9	0.5	✓
Foothills	5	41	100	72	✓	4	201	415	311	✓	4	<1	<1	<1	✓	4	<0.1	0.4	0.2	✓
Greenmount	4	88	135	118	✓	4	372	566	503	✓	4	<1	<1	<1	✓	4	<0.1	1.9	0.6	✓
Greenmount/Darlington	5	71	120	98	✓	5	345	506	419	✓	5	<1	<1	<1	✓	5	0.1	0.3	0.2	✓
Hamilton Hill	5	46	98	77	✓	5	233	408	342	✓	5	<1	<1	<1	✓	5	<0.1	0.3	<0.1	✓
Hills Direct	8	18	51	30	✓	8	148	238	177	✓	8	<1	<1	<1	✓	8	<0.1	0.6	0.2	✓
Lexia	4	33	125	75	✓	4	390	534	431	✓	4	<1	<1	<1	✓	4	0.1	0.2	0.2	✓
Mandurah	13	19	26	22	✓	13	147	174	159	✓	13	<1	<1	<1	✓	13	0.1	0.6	0.3	✓
Melville	5	23	145	109	✓	5	160	497	404	✓	5	<1	<1	<1	✓	5	0.2	0.4	0.3	✓
Mirrabooka	4	85	115	100	✓	4	424	509	469	✓	4	<1	<1	<1	✓	4	<0.1	0.1	<0.1	✓
Mt. Eliza	4	38	110	74	✓	4	195	416	309	✓	4	<1	<1	<1	✓	4	0.3	1	0.7	✓
Mt. Hawthorn	4	110	145	130	✓	4	512	593	562	✓	4	<1	<1	<1	✓	4	0.1	0.3	0.2	✓
Mt. Yokine	5	115	140	131	✓	5	528	567	550	✓	5	<1	<1	<1	✓	5	0.1	1.3	0.5	✓
Mundaring	4	95	100	97	✓	4	392	425	408	✓	4	<1	<1	<1	✓	4	<0.1	0.9	0.3	✓
Neerabup	4	62	78	71	✓	4	341	541	475	✓	4	<1	<1	<1	✓	4	0.2	0.3	0.2	✓
North Dandalup	4	20	25	23	✓	4	142	173	159	✓	4	<1	<1	<1	✓	4	0.1	1.5	0.7	✓
Pinjarra	5	21	24	22	✓	5	143	168	155	✓	5	<1	<1	<1	✓	5	<0.1	0.3	0.2	✓
South Perth/Kewdale	4	67	115	99	✓	4	273	492	418	✓	4	<1	<1	<1	✓	4	0.1	0.5	0.3	✓
Tamworth Hill	4	16	25	21	✓	4	134	169	155	✓	4	<1	<1	<1	✓	4	0.1	0.4	0.3	✓
Thomsons Lake	4	60	120	100	✓	4	281	463	409	✓	4	<1	<1	<1	✓	4	<0.1	0.3	<0.1	✓
Two Rocks	5	55	60	58	✓	5	511	535	522	✓	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
Wanneroo	4	62	105	76	✓	4	368	497	408	✓	4	<1	<1	<1	✓	4	<0.1	0.3	0.2	✓
West Yokine	5	105	140	124	✓	5	492	565	535	✓	5	<1	<1	<1	✓	5	0.1	0.3	0.2	✓
Whitfords	5	54	120	73	✓	5	328	505	386	✓	5	<1	<1	<1	✓	5	<0.1	0.4	0.2	✓
Yanchep	4	52	56	54	✓	4	495	504	499	✓	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓

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Table 6 Health related variables

Mid 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	Samples Taken	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	0	(1)	2	✓
Bindoon /Chittering	70	0	0	✓	26	0	✓	2	0.35	0.35	0.35	0	(1)	2	✓
Bolgart	14	0	0	✓	9	0	✓	2	0.20	0.25	0.23	0	(1)	2	✓
Calingiri	14	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Carnamah	13	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Carnarvon	65	0	0	✓	39	0	✓	4	0.45	0.55	0.50	0	(1)	6	✓
Cervantes	53	0	0	✓	10	0	✓	2	0.15	0.15	0.15	0	(1)	2	✓
Coomberdale	13	0	0	✓	9	0	✓	1	<0.1	<0.1	<0.1	0	(1)	2	✓
Coorow	13	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	1	✓	2	✓
Coral Bay	11	0	0	✓	11	0	✓	2	<0.1	<0.1	<0.1	0	(1)	1	✓
Cue	13	0	0	✓	13	0	✓	2	0.25	0.30	0.28	2	✓	2	✓
Dandaragan	13	0	0	✓	9	0	✓	2	0.25	0.25	0.25	0	(1)	2	✓
Denham	49	0	0	✓	25	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Dongara/Denison	54	0	0	✓	27	0	✓	2	0.35	0.35	0.35	0	(1)	2	✓
Eneabba	13	0	0	✓	13	0	✓	2	0.15	0.15	0.15	0	(1)	11	✓
Exmouth	64	0	0	✓	41	0	✓	53	0.40	0.75	0.66	0	(1)	2	✓
Gascoyne Junction	22	0	0	✓	22	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Geraldton	181	0	0	✓	175	0	✓	56	0.70	0.95	0.87	0	(1)	4	✓
Gingin	52	0	0	✓	18	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Greenhead	52	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Guilderton	49	0	0	✓	17	0	✓	2	0.20	0.25	0.23	0	(1)	2	✓
Horrocks	13	0	0	✓	13	0	✓	2	0.35	0.40	0.38	0	(1)	2	✓
Jurien Bay	53	0	0	✓	10	0	✓	2	0.25	0.30	0.28	0	(1)	2	✓
Kalbarri	49	0	0	✓	24	0	✓	2	<0.1	<0.1	<0.1	2	(1)	2	✓
Lancelin	51	0	0	✓	19	0	✓	2	0.20	0.20	0.20	0	(1)	2	✓
Latham	12	0	0	✓	12	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Ledge Point	50	0	0	✓	9	0	✓	2	0.10	0.15	0.13	0	(1)	4	✓
Leeman	52	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Meekatharra	48	0	0	✓	13	0	✓	2	0.55	0.60	0.58	0	(1)	15	✓
Mingenew	14	0	0	✓	14	0	✓	3	0.10	0.15	0.12	0	(1)	4	✓
Moora	52	0	0	✓	19	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Morawa	52	0	0	✓	13	0	✓	1	<0.1	<0.1	<0.1	0	(1)	2	✓
Mt Magnet	51	0	0	✓	13	0	✓	2	0.30	0.30	0.30	2	✓	4	✓
Mullewa	11	0	0	✓	11	0	✓	2	0.85	0.85	0.85	2	✓	5	✓
Nabawa	13	0	0	✓	13	0	✓	2	0.90	0.95	0.93	0	(1)	2	✓
New Norcia	13	0	0	✓	8	0	✓	2	0.20	0.20	0.20	0	(1)	2	✓
Nilgern (Ocean Farms)	14	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Northampton	52	0	0	✓	13	0	✓	2	0.90	0.90	0.90	0	(1)	2	✓
Perenjori	12	0	0	✓	12	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Piawaning	20	0	0	✓	14	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Port Kalbarri	13	0	0	✓	12	0	✓	2	0.15	0.15	0.15	0	(1)	2	✓
Sandstone	12	0	0	✓	12	0	✓	2	0.40	0.45	0.43	0	(1)	11	✓
Seabird	19	0	0	✓	14	0	✓	2	0.25	0.25	0.25	0	(1)	2	✓
Seaview Park	13	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Sovereign Hills	25	0	0	✓	17	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Three Springs	13	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Watheroo	13	0	0	✓	9	0	✓	2	<0.1	<0.1	<0.1	0	(1)	3	✓
Woodridge	12	0	0	✓	8	0	✓	2	0.30	0.30	0.30	0	(1)	2	✓
Yalgoo	13	0	0	✓	13	0	✓	2	0.20	0.20	0.20	0	(1)	2	✓
Yerecoin	14	0	0	✓	8	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Yuna	14	0	0	✓	14	0	✓	2	0.90	0.90	0.90	0	(1)	1	✓

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

Table 7 Health related variables																
Mid West	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			
Badgingarra	2	0.2	0.2	0.2	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	0	(1)
Bindoon /Chittering	3	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.012	0.016	0.014	✓	0	(1)
Bolgart	5	3.9	7.7	6.9	✓	1	✓	1	✓	2	0.005	0.005	0.005	✓	0	(1)
Calingiri	4	4.3	5.6	4.9	✓	1	✓	0	(1)	2	0.012	0.019	0.016	✓	0	(1)
Carnamah	2	0.1	0.2	0.2	✓	1	✓	0	(1)	2	0.003	0.012	0.008	✓	0	(1)
Carnarvon	2	0.8	0.9	0.8	✓	4	✓	1	✓	2	0.002	0.006	0.004	✓	0	(1)
Cervantes	6	3.1	3.3	3.2	✓	1	✓	0	(1)	2	0.008	0.018	0.013	✓	0	(1)
Coomberdale	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.120	0.150	0.135	✓	0	(1)
Coorow	2	0.2	0.2	0.2	✓	1	✓	0	(1)	2	0.010	0.016	0.013	✓	0	(1)
Coral Bay	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	1	0.001	0.001	0.001	✓	2	✓
Cue	9	10.4	12.3	11.4	(2)	1	✓	0	(1)	2	0.001	0.009	0.005	✓	0	(1)
Dandaragan	3	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.004	0.006	0.005	✓	0	(1)
Denham	4	<0.05	0.2	0.1	✓	1	✓	0	(1)	2	0.005	0.006	0.006	✓	0	(1)
Dongara/Denison	4	1.7	3	2.5	✓	1	✓	1	✓	2	0.006	0.010	0.008	✓	0	(1)
Eneabba	3	<0.05	<0.05	<0.05	✓	2	✓	1	✓	2	<0.001	0.009	0.005	✓	0	(1)
Exmouth	5	1.8	1.8	1.8	✓	1	✓	1	✓	2	<0.001	<0.001	<0.001	✓	0	(1)
Gascoyne Junction	2	<0.05	0.1	<0.05	✓	1	✓	1	✓	2	0.008	0.026	0.017	✓	0	(1)
Geraldton	4	0.6	0.7	0.6	✓	2	✓	0	(1)	4	0.007	0.013	0.011	✓	0	(1)
Gingin	5	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	0	(1)
Greenhead	2	0.8	0.8	0.8	✓	1	✓	0	(1)	2	0.002	0.002	0.002	✓	0	(1)
Guilderton	12	7.1	7.7	7.3	✓	1	✓	0	(1)	2	0.014	0.021	0.018	✓	0	(1)
Horrocks	5	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	3	0.009	0.016	0.012	✓	0	(1)
Jurien Bay	5	2.9	3.2	3	✓	1	✓	0	(1)	2	0.006	0.009	0.008	✓	0	(1)
Kalbarri	2	0.6	0.7	0.6	✓	1	✓	0	(1)	2	<0.001	0.004	0.002	✓	0	(1)
Lancelin	3	0.7	0.8	0.8	✓	1	✓	0	(1)	2	0.011	0.014	0.013	✓	0	(1)
Latham	2	0.1	0.2	0.2	✓	1	✓	3	✓	2	<0.001	0.029	0.015	✓	0	(1)
Ledge Point	5	3.9	4.5	4.2	✓	1	✓	0	(1)	2	0.007	0.018	0.013	✓	0	(1)
Leeman	2	0.9	0.9	0.9	✓	1	✓	0	(1)	2	<0.001	0.005	0.003	✓	0	(1)
Meekatharra	5	13.2	15.8	14.3	(2)	1	✓	1	✓	2	0.006	0.006	0.006	✓	0	(1)
Mingenew	1	1.7	1.7	1.7	✓	2	✓	0	(1)	3	<0.001	<0.001	<0.001	✓	0	(1)
Moora	3	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.016	0.017	0.017	✓	0	(1)
Morawa	2	0.1	0.1	0.1	✓	1	✓	1	✓	2	0.003	0.013	0.008	✓	0	(1)
Mt Magnet	10	14.5	16.7	15.7	(2)	1	✓	1	✓	2	0.004	0.005	0.005	✓	1	✓
Mullewa	2	0.6	0.6	0.6	✓	2	✓	1	✓	2	0.015	0.032	0.024	✓	0	(1)
Nabawa	2	0.5	0.6	0.6	✓	1	✓	0	(1)	2	0.014	0.017	0.016	✓	0	(1)
New Norcia	9	10.7	12.6	11.4	(2)	1	✓	1	✓	2	0.004	0.009	0.007	✓	0	(1)
Nilgern (Ocean Farms)	2	5.2	5.3	5.3	✓	1	✓	0	(1)	2	0.002	0.004	0.003	✓	0	(1)
Northampton	3	0.7	0.7	0.7	✓	1	✓	0	(1)	2	0.025	0.036	0.031	✓	0	(1)
Perenjori	2	0.1	0.2	0.2	✓	1	✓	0	(1)	2	0.004	0.012	0.008	✓	0	(1)
Piawaning	3	3.4	8.2	5.6	✓	4	✓	0	(1)	2	0.052	0.095	0.074	✓	0	(1)
Port Kalbarri	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.006	0.006	0.006	✓	0	(1)
Sandstone	5	11.1	12.5	12.2	(2)	1	✓	2	✓	2	0.005	0.009	0.007	✓	0	(1)
Seabird	2	<0.05	0.1	0.1	✓	1	✓	0	(1)	2	0.033	0.040	0.037	✓	0	(1)
Seaview Park	2	4.9	5	5	✓	1	✓	0	(1)	2	<0.001	0.003	0.002	✓	0	(1)
Sovereign Hills	2	3.3	4.9	4.1	✓	1	✓	0	(1)	2	0.029	0.031	0.030	✓	0	(1)
Three Springs	2	0.4	0.4	0.4	✓	1	✓	0	(1)	2	0.004	0.006	0.005	✓	0	(1)
Watheroo	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.083	0.150	0.126	✓	0	(1)
Woodridge	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.072	0.088	0.080	✓	0	(1)
Yalgoo	2	19.2	19.5	19.4	(2)	1	✓	0	(1)	2	0.011	0.011	0.011	✓	0	(1)
Yerecoin	20	3.4	7.5	5.7	✓	4	✓	1	✓	2	0.025	0.073	0.049	✓	0	(1)
Yuna	4	0.6	0.7	0.6	✓	1	✓	0	(1)	2	0.013	0.033	0.023	✓	0	(1)

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

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Table 8 Aesthetic (Non-health related) Variables

Mid West	Aesthetic (Non-health related) Variables																			
	Alkalinity (as CaCO ₃)					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	86	110	98	(1)	2	<0.008	<0.008	<0.008	✓	2	225	225	225	✓	2	44	46	45	✓
Bindoon /Chittering	3	83	94	90	(1)	3	<0.008	<0.008	<0.008	✓	3	150	155	152	✓	3	49	56	52	✓
Bolgart	5	32	57	39	(1)	3	<0.008	<0.008	<0.008	✓	5	260	415	304	(2)	4	120	180	136	✓
Calingiri	1	33	33	33	(1)	1	<0.008	<0.008	<0.008	✓	1	400	400	400	(2)	1	150	150	150	✓
Carnamah	3	8	13	10	(1)	2	<0.008	<0.008	<0.008	✓	3	425	435	432	(2)	2	120	130	127	✓
Carnarvon	2	93	100	97	(1)	2	<0.008	<0.008	<0.008	✓	2	150	175	163	✓	2	160	180	170	✓
Cervantes	6	230	240	233	(1)	2	0.008	0.01	0.009	✓	6	275	290	283	(2)	6	310	320	313	(3)
Coomberdale	2	180	190	185	(1)	2	0.02	0.025	0.023	✓	2	180	185	183	✓	2	230	240	235	(3)
Coorow	2	9	17	13	(1)	2	<0.008	<0.008	<0.008	✓	2	430	435	433	(2)	2	120	130	125	✓
Coral Bay	2	77	83	80	(1)	2	<0.008	<0.008	<0.008	✓	2	37	70	54	✓	2	72	82	77	✓
Cue	6	64	73	67	(1)	3	<0.008	<0.008	<0.008	✓	6	275	285	278	(2)	6	180	190	187	✓
Dandaragan	3	74	95	84	(1)	3	<0.008	<0.008	<0.008	✓	3	235	240	237	✓	3	91	93	92	✓
Denham	4	16	20	18	(1)	4	<0.008	0.018	0.01	✓	4	155	200	169	✓	4	51	62	58	✓
Dongara/Denison	4	86	120	103	(1)	2	<0.008	<0.008	<0.008	✓	6	340	365	351	(2)	4	110	110	110	✓
Eneabba	3	14	18	17	(1)	3	<0.008	<0.008	<0.008	✓	3	320	340	328	(2)	3	96	99	98	✓
Exmouth	5	240	250	248	(1)	3	<0.008	0.012	<0.008	✓	5	235	250	245	✓	7	310	340	326	(3)
Gascoyne Junction	2	32	34	33	(1)	2	<0.008	<0.008	<0.008	✓	2	105	215	160	✓	2	66	110	88	✓
Geraldton	4	59	64	63	(1)	4	<0.008	0.014	<0.008	✓	4	380	415	398	(2)	4	110	130	118	✓
Gingin	5	35	42	39	(1)	5	<0.008	<0.008	<0.008	✓	5	90	105	96	✓	5	27	32	30	✓
Greenhead	2	22	23	23	(1)	2	<0.008	<0.008	<0.008	✓	2	280	285	283	(2)	2	110	110	110	✓
Guilderton	2	200	210	205	(1)	2	0.016	0.016	0.016	✓	2	400	410	405	(2)	2	320	340	330	(3)
Horrocks	5	78	110	96	(1)	5	<0.008	<0.008	<0.008	✓	5	585	610	602	(2)	5	130	140	134	✓
Jurien Bay	5	230	250	242	(1)	2	<0.008	<0.008	<0.008	✓	5	215	455	279	(2)	5	300	360	318	(3)
Kalbarri	2	8	9	9	(1)	2	<0.008	<0.008	<0.008	✓	2	185	185	185	✓	2	60	63	62	✓
Lancelin	3	200	210	207	(1)	3	<0.008	0.01	<0.008	✓	3	205	205	205	✓	3	280	280	280	(3)
Latham	2	31	39	35	(1)	2	<0.008	<0.008	<0.008	✓	2	290	305	298	(2)	2	79	87	83	✓
Ledge Point	5	200	220	210	(1)	2	0.01	0.012	0.011	✓	5	175	180	176	✓	8	260	270	263	(3)
Leeman	2	22	23	23	(1)	2	<0.008	0.008	<0.008	✓	2	285	295	290	(2)	2	100	110	105	✓
Meekatharra	5	160	180	166	(1)	5	<0.008	<0.008	<0.008	✓	5	295	305	302	(2)	5	270	300	282	(3)
Mingenew	1	28	28	28	(1)	2	<0.008	<0.008	<0.008	✓	1	305	305	305	(2)	2	66	78	72	✓
Moora	3	27	31	29	(1)	3	<0.008	<0.008	<0.008	✓	3	230	235	233	✓	3	61	64	62	✓
Morawa	2	21	21	21	(1)	2	<0.008	<0.008	<0.008	✓	2	285	295	290	(2)	2	70	71	71	✓
Mt Magnet	5	190	200	196	(1)	2	<0.008	<0.008	<0.008	✓	5	220	260	239	✓	5	250	280	262	(3)
Mullewa	2	76	76	76	(1)	2	<0.008	0.012	<0.008	✓	2	395	395	395	(2)	2	130	130	130	✓
Nabawa	2	60	64	62	(1)	2	0.014	0.02	0.017	✓	2	390	395	393	(2)	2	110	120	115	✓
New Norcia	6	28	33	31	(1)	3	<0.008	<0.008	<0.008	✓	6	430	570	502	(2)	6	170	220	202	(3)
Nilgern (Ocean Farms)	2	230	230	230	(1)	2	0.012	0.025	0.019	✓	2	145	145	145	✓	2	250	260	255	(3)
Northampton	3	64	76	71	(1)	3	<0.008	0.055	0.024	✓	3	355	395	380	(2)	3	120	130	123	✓
Perenjori	2	24	25	25	(1)	2	<0.008	<0.008	<0.008	✓	2	295	300	298	(2)	2	76	78	77	✓
Piawaning	3	38	44	40	(1)	3	<0.008	<0.008	<0.008	✓	3	115	150	132	✓	3	99	120	110	✓
Port Kalbarri	2	55	69	62	(1)	2	<0.008	<0.008	<0.008	✓	2	350	355	353	(2)	2	110	120	115	✓
Sandstone	5	90	100	94	(1)	4	<0.008	<0.008	<0.008	✓	5	320	330	324	(2)	4	300	330	310	(3)
Seabird	2	83	84	84	(1)	2	<0.008	<0.008	<0.008	✓	2	205	205	205	✓	2	95	97	96	✓
Seaview Park	2	180	190	185	(1)	2	0.01	0.012	0.011	✓	2	95	100	98	✓	2	190	200	195	✓
Sovereign Hills	2	150	170	160	(1)	2	<0.008	<0.008	<0.008	✓	2	200	220	210	✓	2	240	240	240	(3)
Three Springs	2	20	25	23	(1)	2	<0.008	<0.008	<0.008	✓	2	355	355	355	(2)	2	88	89	89	✓
Watheroo	4	180	190	185	(1)	3	<0.008	<0.008	<0.008	✓	4	170	175	173	✓	4	240	250	245	(3)
Woodridge	2	61	63	62	(1)	2	0.055	0.07	0.063	✓	2	175	180	178	✓	2	50	52	51	✓
Yalgoo	2	190	200	195	(1)	2	<0.008	0.008	<0.008	✓	2	300	310	305	(2)	2	330	350	340	(3)
Yerecoin	2	39	41	40	(1)	2	<0.008	<0.008	<0.008	✓	2	115	145	130	✓	2	98	120	109	✓
Yuna	4	59	63	61	(1)	4	0.02	0.04	0.03	✓	4	380	400	391	(2)	4	110	120	118	✓

(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.

Table 9 Aesthetic (Non-health related) Variables																				
Mid 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	
Badgingarra	2	0.004	0.010	0.007	✓	2	0.004	0.005	0.005	✓	2	7.00	7.22	7.11	✓	2	42	44	43	✓
Bindoon /Chittering	3	0.100	0.420	0.240	✓	3	0.002	0.014	0.008	✓	3	7.28	7.68	7.42	✓	3	36	38	37	✓
Bolgart	4	0.015	0.030	0.022	✓	4	<0.002	<0.002	<0.002	✓	4	6.88	7.19	7.04	✓	5	40	45	43	✓
Calingiri	1	0.025	0.025	0.025	✓	1	<0.002	<0.002	<0.002	✓	1	6.57	6.57	6.57	✓	1	20	20	20	✓
Carnamah	2	0.015	0.035	0.022	✓	2	<0.002	0.003	<0.002	✓	2	6.83	7.16	7.01	✓	3	24	26	25	✓
Carnarvon	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.90	8.12	8.01	✓	2	41	44	43	✓
Cervantes	6	<0.003	0.020	0.010	✓	6	<0.002	<0.002	<0.002	✓	6	7.68	7.94	7.82	✓	6	13	14	13	✓
Coomberdale	2	0.015	0.100	0.058	✓	2	<0.002	0.012	0.006	✓	2	8.56	8.73	8.65	(1)	2	12	16	14	✓
Coorow	2	0.015	0.020	0.018	✓	2	<0.002	<0.002	<0.002	✓	2	7.07	7.40	7.24	✓	2	25	26	26	✓
Coral Bay	2	0.004	0.006	0.005	✓	2	0.003	0.004	0.004	✓	2	7.51	7.97	7.74	✓	2	0.3	0.4	0	✓
Cue	6	<0.003	0.008	0.005	✓	6	<0.002	<0.002	<0.002	✓	6	7.77	8.00	7.92	✓	6	75	80	79	✓
Dandaragan	3	0.035	0.045	0.042	✓	3	<0.002	0.005	<0.002	✓	3	6.66	7.15	6.93	✓	3	43	44	44	✓
Denham	4	0.060	0.090	0.078	✓	4	<0.002	0.003	<0.002	✓	4	7.41	7.56	7.48	✓	4	2.1	2.5	2	✓
Dongara/Denison	4	0.006	0.060	0.034	✓	4	<0.002	0.006	<0.002	✓	4	7.19	7.35	7.26	✓	4	28	34	31	✓
Eneabba	3	0.010	0.050	0.030	✓	3	<0.002	0.007	<0.002	✓	3	7.20	7.36	7.30	✓	3	44	49	46	✓
Exmouth	5	<0.003	0.004	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.46	7.84	7.70	✓	5	15	16	16	✓
Gascoyne Junction	2	<0.003	0.006	<0.003	✓	2	0.002	0.007	0.005	✓	2	7.10	7.53	7.32	✓	2	4.8	5.4	5	✓
Geraldton	4	0.006	0.100	0.031	✓	4	<0.002	0.004	<0.002	✓	4	7.06	7.26	7.17	✓	4	22	27	24	✓
Gingin	5	0.035	0.100	0.059	✓	5	<0.002	<0.002	<0.002	✓	5	7.41	7.84	7.59	✓	5	28	30	29	✓
Greenhead	2	0.015	0.035	0.025	✓	2	<0.002	<0.002	<0.002	✓	2	7.21	7.31	7.26	✓	2	24	24	24	✓
Guilderton	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.81	8.00	7.91	✓	2	9.5	9.5	10	✓
Horrocks	5	0.015	0.240	0.071	✓	5	0.002	0.018	0.008	✓	5	6.93	7.72	7.33	✓	5	15	17	15	✓
Jurien Bay	5	<0.003	0.006	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.60	7.89	7.76	✓	5	14	15	14	✓
Kalbarri	2	0.006	0.010	0.008	✓	2	<0.002	<0.002	<0.002	✓	3	6.72	6.87	6.81	✓	2	44	44	44	✓
Lancelin	3	0.004	0.010	0.006	✓	3	<0.002	<0.002	<0.002	✓	3	7.90	8.03	7.98	✓	3	15	15	15	✓
Latham	2	0.030	0.080	0.055	✓	2	<0.002	<0.002	<0.002	✓	2	8.71	9.10	8.91	(1)	2	36	49	43	✓
Ledge Point	5	<0.003	0.006	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.83	8.00	7.93	✓	5	15	16	15	✓
Leeman	2	0.015	0.020	0.018	✓	2	<0.002	<0.002	<0.002	✓	2	7.53	7.66	7.60	✓	2	24	25	25	✓
Meekatharra	5	<0.003	0.006	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	7.95	8.22	8.07	✓	5	75	80	77	✓
Mingenew	2	0.015	0.015	0.015	✓	2	<0.002	<0.002	<0.002	✓	1	7.46	7.46	7.46	✓	1	55	55	55	✓
Moora	3	0.030	0.160	0.078	✓	3	<0.002	0.005	<0.002	✓	3	7.09	7.48	7.22	✓	3	23	24	23	✓
Morawa	2	0.010	0.015	0.013	✓	2	<0.002	<0.002	<0.002	✓	2	6.91	7.44	7.18	✓	2	48	48	48	✓
Mt Magnet	5	<0.003	<0.003	<0.003	✓	5	<0.002	<0.002	<0.002	✓	5	8.11	8.20	8.17	✓	5	75	80	78	✓
Mullewa	2	0.020	0.040	0.030	✓	2	<0.002	<0.002	<0.002	✓	2	8.05	8.13	8.09	✓	2	22	23	23	✓
Nabawa	2	0.030	0.030	0.030	✓	2	<0.002	<0.002	<0.002	✓	2	7.77	7.87	7.82	✓	2	22	22	22	✓
New Norcia	6	0.015	0.025	0.018	✓	6	<0.002	<0.002	<0.002	✓	6	6.53	6.99	6.74	✓	6	43	45	44	✓
Nilgern (Ocean Farms)	2	<0.003	0.006	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.77	7.88	7.83	✓	2	20	22	21	✓
Northampton	3	0.015	0.340	0.132	✓	3	<0.002	0.018	0.006	✓	3	7.99	8.59	8.35	✓	3	22	22	22	✓
Perenjori	2	0.025	0.025	0.025	✓	2	<0.002	<0.002	<0.002	✓	2	7.52	7.72	7.62	✓	2	43	47	45	✓
Piawaning	3	0.008	0.025	0.016	✓	3	<0.002	<0.002	<0.002	✓	3	7.27	7.48	7.35	✓	3	16	18	17	✓
Port Kalbarri	2	0.015	0.025	0.020	✓	2	<0.002	0.003	<0.002	✓	6	6.79	7.67	7.30	✓	2	45	46	46	✓
Sandstone	4	<0.003	0.015	0.004	✓	4	<0.002	<0.002	<0.002	✓	4	7.43	7.60	7.51	✓	5	37	40	38	✓
Seabird	2	0.020	0.025	0.023	✓	2	<0.002	0.014	0.007	✓	2	8.02	8.03	8.03	✓	2	17	18	18	✓
Seaview Park	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.86	8.00	7.93	✓	2	17	18	18	✓
Sovereign Hills	2	0.004	0.004	0.004	✓	2	<0.002	<0.002	<0.002	✓	2	7.97	8.05	8.01	✓	2	19	20	20	✓
Three Springs	2	0.050	0.060	0.055	✓	2	0.006	0.007	0.007	✓	2	7.52	7.81	7.67	✓	2	47	50	49	✓
Watheroo	6	0.015	0.050	0.033	✓	4	<0.002	0.003	<0.002	✓	4	7.55	7.69	7.61	✓	4	13	14	13	✓
Woodridge	2	0.015	0.015	0.015	✓	2	0.002	0.014	0.008	✓	2	7.57	7.65	7.61	✓	2	25	26	26	✓
Yalgoo	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.94	7.97	7.96	✓	2	80	85	83	(2)
Yerecoin	21	0.006	0.180	0.060	✓	2	<0.002	<0.002	<0.002	✓	2	7.24	7.33	7.29	✓	2	17	18	18	✓
Yuna	4	0.045	0.140	0.078	✓	4	<0.002	0.004	<0.002	✓	4	7.69	7.91	7.80	✓	4	21	24	23	✓

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

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	175	180	178	✓	2	597	625	611	(2)	2	<1	<1	<1	✓	2	0.3	0.4	0.4	✓
Bindoon /Chittering	3	115	115	115	✓	3	456	461	458	✓	3	<1	<1	<1	✓	3	0.3	0.3	0.3	✓
Bolgart	5	145	220	166	✓	4	590	854	662	(2)	4	<1	<1	<1	✓	4	0.4	1.2	0.9	✓
Calingiri	1	215	215	215	(1)	1	776	776	776	(2)	1	<1	<1	<1	✓	1	0.3	0.3	0.3	✓
Carnamah	3	235	245	240	(1)	2	801	816	807	(2)	2	<1	<1	<1	✓	2	0.2	0.3	0.2	✓
Carnarvon	2	77	93	85	✓	2	497	568	533	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Cervantes	6	150	170	158	✓	6	881	923	906	(2)	6	<1	<1	<1	✓	6	<0.1	0.2	<0.1	✓
Coomberdale	2	91	94	93	✓	2	604	623	614	(2)	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Coorow	2	230	230	230	(1)	2	794	805	800	(2)	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Coral Bay	2	27	41	34	✓	2	190	247	219	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Cue	6	165	190	177	✓	6	797	833	816	(2)	6	<1	<1	<1	✓	6	<0.1	0.2	<0.1	✓
Dandaragan	3	145	150	147	✓	3	584	610	598	✓	3	<1	<1	<1	✓	3	<0.1	0.3	0.2	✓
Denham	4	89	115	102	✓	4	328	396	355	✓	4	<1	<1	<1	✓	4	0.2	0.3	0.3	✓
Dongara/Denison	6	245	250	248	(1)	4	849	881	865	(2)	4	<1	<1	<1	✓	4	0.1	0.5	0.3	✓
Eneabba	3	175	190	183	(1)	3	637	646	642	(2)	3	<1	<1	<1	✓	3	0.2	0.2	0.2	✓
Exmouth	5	120	130	126	✓	5	813	860	837	(2)	5	<1	<1	<1	✓	5	<0.1	0.3	0.2	✓
Gascoyne Junction	2	65	135	100	✓	2	281	504	393	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Geraldton	4	235	265	253	(1)	4	811	884	848	(2)	4	<1	<1	<1	✓	4	0.2	1.5	0.6	✓
Gingin	5	60	68	63	✓	5	257	279	264	✓	5	<1	<1	<1	✓	5	<0.1	0.4	0.2	✓
Greenhead	2	155	170	163	✓	2	569	574	572	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Guilderton	2	225	225	225	(1)	2	1077	1112	1095	(2)	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Horrocks	5	390	430	410	(1)	5	1242	1327	1289	(2)	5	<1	<1	<1	✓	5	0.2	0.8	0.5	✓
Jurien Bay	5	125	215	149	✓	5	814	1149	897	(2)	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
Kalbarri	2	97	99	98	✓	2	380	382	381	✓	2	<1	<1	<1	✓	2	0.1	0.3	0.2	✓
Lancelin	3	97	105	101	✓	3	687	700	695	(2)	3	<1	<1	<1	✓	3	0.1	0.3	0.2	✓
Latham	2	170	185	178	✓	2	642	642	642	(2)	2	<1	<1	<1	✓	2	0.3	0.4	0.4	✓
Ledge Point	5	100	110	106	✓	5	704	720	710	(2)	5	<1	<1	<1	✓	5	<0.1	0.3	<0.1	✓
Leeman	2	150	155	153	✓	2	567	576	572	✓	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Meekatharra	5	195	215	204	(1)	5	1061	1100	1076	(2)	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
Mingenew	2	195	200	198	(1)	1	654	654	654	(2)	1	<1	<1	<1	✓	1	0.2	0.2	0.2	✓
Moora	3	135	135	135	✓	3	486	493	489	✓	3	<1	<1	<1	✓	3	0.2	0.5	0.3	✓
Morawa	2	180	185	183	(1)	2	617	619	618	(2)	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Mt Magnet	5	150	180	165	✓	5	906	973	940	(2)	5	<1	<1	<1	✓	5	<0.1	0.2	<0.1	✓
Mullewa	2	250	255	253	(1)	2	870	873	872	(2)	2	<1	<1	<1	✓	2	0.1	0.4	0.3	✓
Nabawa	2	225	255	240	(1)	2	810	847	829	(2)	2	<1	<1	<1	✓	2	0.3	0.3	0.3	✓
New Norcia	6	240	295	278	(1)	6	883	1100	1013	(2)	6	<1	<1	<1	✓	6	0.4	1	0.6	✓
Nilgern (Ocean Farms)	2	91	96	94	✓	2	683	691	687	(2)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Northampton	3	240	245	243	(1)	3	815	853	834	(2)	3	<1	<1	<1	✓	3	0.3	9	3.3	✓
Perenjori	2	180	190	185	(1)	2	627	644	636	(2)	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Piawaning	3	62	76	71	✓	3	329	401	373	✓	3	<1	<1	<1	✓	3	0.2	0.3	0.2	✓
Port Kalbarri	2	205	210	208	(1)	2	765	772	769	(2)	2	<1	<1	<1	✓	2	0.1	0.4	0.3	✓
Sandstone	5	175	185	180	✓	4	924	964	940	(2)	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Seabird	2	130	130	130	✓	2	534	540	537	✓	2	<1	<1	<1	✓	2	0.3	0.3	0.3	✓
Seaview Park	2	64	67	66	✓	2	508	523	516	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Sovereign Hills	2	110	115	113	✓	2	657	681	669	(2)	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Three Springs	2	210	215	213	✓	2	720	727	724	(2)	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Watheroo	4	86	92	89	✓	4	591	609	599	✓	4	<1	<1	<1	✓	6	<0.1	0.2	<0.1	✓
Woodridge	2	120	130	125	✓	2	457	470	464	✓	2	<1	<1	<1	✓	2	<0.1	0.4	0.2	✓
Yalgoo	2	175	175	175	✓	2	1057	1063	1060	(2)	2	<1	<1	<1	✓	2	0.1	0.1	0.1	✓
Yerecoin	2	63	77	70	✓	2	335	393	364	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Yuna	4	245	250	248	(1)	4	825	845	835	(2)	4	<1	<1	<1	✓	4	0.2	1.1	0.7	✓

(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
Min										Max	Mean				
Avon Hills	118	0	0	✓	36	0	✓	6	0.85	0.95	0.88	0	(1)	6	✓
Ballidu	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Beacon	12	0	0	✓	12	0	✓	2	0.80	0.80	0.80	1	✓	2	✓
Bencubbin	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Beverley	51	0	0	✓	26	0	✓	2	0.85	0.85	0.85	0	(1)	2	✓
Bind Bindi	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Broad Arrow	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Bruce Rock	52	0	0	✓	12	0	✓	2	0.90	0.90	0.90	0	(1)	2	✓
Bullfinch	21	0	0	✓	12	0	✓	2	0.80	0.85	0.83	0	(1)	2	✓
Buntine	12	0	0	✓	12	0	✓	2	0.90	0.90	0.90	0	(1)	2	✓
Cadoux	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Coolgardie	52	0	0	✓	26	0	✓	2	0.75	0.90	0.83	0	(1)	2	✓
Corrigin	52	0	0	✓	26	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Cunderdin	51	0	0	✓	13	0	✓	2	0.90	0.90	0.90	0	(1)	2	✓
Dalwallinu	51	0	0	✓	13	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Dowerin	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Goomalling	12	0	0	✓	12	0	✓	2	0.90	0.90	0.90	0	(1)	2	✓
Grass Valley	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Kalannie	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Kalgoorlie	133	0	0	✓	129	0	✓	52	0.80	0.95	0.89	0	(1)	4	✓
Kambalda	53	0	0	✓	53	0	✓	2	0.90	0.95	0.93	0	(1)	2	✓
Kellerberrin	52	0	0	✓	26	0	✓	2	0.80	0.85	0.83	0	(1)	2	✓
Koolyanobbing	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Koorda	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Kununoppin	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Laverton	12	0	0	✓	8	0	✓	4	0.95	1.10	1.04	0	(1)	5	✓
Leonora	51	0	0	✓	16	0	✓	2	0.50	0.50	0.50	0	(1)	2	✓
Marvel Loch	12	0	0	✓	12	1	✓	2	0.85	0.85	0.85	0	(1)	2	✓
Meckering	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Menzies	12	0	0	✓	8	0	✓	2	0.75	0.80	0.78	0	(1)	10	✓
Merredin	52	0	0	✓	52	0	✓	52	0.75	0.95	0.87	0	(1)	2	✓
Miling	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Mukinbudin	12	0	0	✓	12	0	✓	2	0.75	0.90	0.83	0	(1)	2	✓
Muntadgin	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Narembeen	12	0	0	✓	12	0	✓	2	0.85	0.95	0.90	0	(1)	2	✓
Norseman	49	0	0	✓	25	0	✓	2	0.90	0.95	0.93	0	(1)	2	✓
Northam	66	0	0	✓	66	0	✓	53	0.75	0.95	0.86	0	(1)	2	✓
Nungarin	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Ora Banda	12	0	0	✓	12	0	✓	2	0.80	0.95	0.88	0	(1)	2	✓
Pithara	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Quairading	51	0	0	✓	26	0	✓	2	0.80	0.85	0.83	0	(1)	2	✓
Southern Cross	52	0	0	✓	26	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Tammin	24	0	0	✓	24	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Toodyay	53	0	0	✓	26	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Trayning	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Warralakin	12	0	0	✓	12	0	✓	2	0.80	0.90	0.85	0	(1)	2	✓
Westonia	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Wiluna	11	0	0	✓	11	0	✓	2	0.25	0.30	0.28	0	(1)	2	✓
Wongan Hills	52	0	0	✓	26	0	✓	2	0.85	0.85	0.85	0	(1)	2	✓
Wubin	12	0	0	✓	12	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓
Wyalkatchem	12	0	0	✓	12	0	✓	2	0.80	0.85	0.83	0	(1)	2	✓
York	52	0	0	✓	52	0	✓	54	0.70	0.95	0.86	0	(1)	2	✓

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

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			
Avon Hills	6	<0.05	0.1	0.1	✓	3	✓	0	(1)	6	0.009	0.017	0.013	✓	1	✓
Ballidu	2	0.3	0.7	0.5	✓	1	✓	1	✓	2	0.028	0.048	0.038	✓	1	✓
Beacon	2	0.7	0.8	0.8	✓	1	✓	0	(1)	2	0.007	0.010	0.009	✓	2	✓
Bencubbin	2	0.2	0.4	0.3	✓	1	✓	0	(1)	4	0.001	0.005	0.003	✓	1	✓
Beverley	2	0.1	0.1	0.1	✓	1	✓	1	✓	2	0.010	0.069	0.040	✓	0	(1)
Bind Bindi	2	0.5	0.6	0.6	✓	1	✓	0	(1)	2	0.047	0.055	0.051	✓	1	✓
Broad Arrow	2	0.3	0.6	0.4	✓	1	✓	0	(1)	2	0.076	0.120	0.098	✓	0	(1)
Bruce Rock	2	0.4	1	0.7	✓	1	✓	0	(1)	2	0.029	0.044	0.037	✓	0	(1)
Bullfinch	2	1.1	1.2	1.2	✓	1	✓	0	(1)	2	0.012	0.029	0.021	✓	0	(1)
Buntine	2	0.9	1.4	1.1	✓	1	✓	0	(1)	2	0.083	0.089	0.086	✓	1	✓
Cadoux	2	0.2	0.2	0.2	✓	1	✓	0	(1)	2	0.007	0.014	0.011	✓	1	✓
Coolgardie	2	0.2	0.8	0.5	✓	1	✓	0	(1)	2	0.015	0.069	0.042	✓	1	✓
Corrigin	2	0.2	0.5	0.4	✓	1	✓	0	(1)	2	<0.001	0.005	0.003	✓	0	(1)
Cunderdin	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.009	0.011	0.010	✓	1	✓
Dalwallinu	2	0.7	0.7	0.7	✓	1	✓	0	(1)	2	0.009	0.017	0.013	✓	1	✓
Dowerin	2	0.2	0.3	0.2	✓	1	✓	0	(1)	2	0.008	0.011	0.010	✓	1	✓
Goomalling	2	0.1	0.3	0.2	✓	1	✓	0	(1)	2	0.013	0.015	0.014	✓	1	✓
Grass Valley	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.002	0.016	0.009	✓	1	✓
Kalannie	2	0.7	0.7	0.7	✓	1	✓	0	(1)	2	0.024	0.032	0.028	✓	1	✓
Kalgoorlie	4	0.2	0.7	0.4	✓	2	✓	0	(1)	4	0.025	0.077	0.059	✓	2	✓
Kambalda	2	0.2	0.5	0.3	✓	1	✓	0	(1)	2	0.031	0.080	0.056	✓	0	(1)
Kellerberrin	2	0.1	0.1	0.1	✓	1	✓	1	✓	2	0.004	0.014	0.009	✓	1	✓
Koolyanobbing	2	0.2	0.4	0.3	✓	1	✓	0	(1)	2	0.007	0.007	0.007	✓	1	✓
Koorda	2	0.7	0.7	0.7	✓	1	✓	0	(1)	2	0.014	0.021	0.018	✓	1	✓
Kununoppin	2	0.1	0.3	0.2	✓	1	✓	0	(1)	2	0.012	0.013	0.013	✓	1	✓
Laverton	4	2.4	8	6.3	✓	1	✓	0	(1)	2	0.045	0.069	0.057	✓	1	✓
Leonora	10	5.9	7.5	6.4	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	1	✓
Marvel Loch	2	1	1.2	1.1	✓	1	✓	0	(1)	2	0.014	0.043	0.029	✓	1	✓
Meckering	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.013	0.015	0.014	✓	1	✓
Menzies	6	11.1	14.1	12.1	(2)	1	✓	0	(1)	2	0.011	0.012	0.012	✓	1	✓
Merredin	2	0.2	0.3	0.3	✓	1	✓	1	✓	2	0.007	0.012	0.010	✓	1	✓
Miling	2	0.7	1.4	1.1	✓	1	✓	1	✓	2	0.014	0.014	0.014	✓	1	✓
Mukinbudin	2	0.2	0.3	0.2	✓	1	✓	0	(1)	2	<0.001	0.017	0.009	✓	1	✓
Muntadgin	2	0.1	1	0.6	✓	1	✓	0	(1)	2	0.005	0.011	0.008	✓	1	✓
Narembeen	2	0.2	0.2	0.2	✓	1	✓	0	(1)	2	0.008	0.008	0.008	✓	1	✓
Norseman	2	0.4	0.4	0.4	✓	1	✓	0	(1)	2	0.030	0.063	0.047	✓	0	(1)
Northam	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.006	0.014	0.010	✓	1	✓
Nungarin	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.004	0.008	0.006	✓	1	✓
Ora Banda	2	0.3	0.6	0.4	✓	1	✓	0	(1)	2	0.028	0.056	0.042	✓	1	✓
Pithara	2	0.3	0.6	0.4	✓	1	✓	0	(1)	2	0.015	0.017	0.016	✓	1	✓
Quairading	2	0.7	0.8	0.7	✓	1	✓	1	✓	2	0.047	0.053	0.050	✓	1	✓
Southern Cross	2	0.3	0.4	0.4	✓	1	✓	0	(1)	2	0.008	0.014	0.011	✓	1	✓
Tammin	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.007	0.011	0.009	✓	1	✓
Toodyay	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.011	0.012	0.012	✓	1	✓
Trayning	2	0.1	0.2	0.2	✓	1	✓	0	(1)	2	0.010	0.010	0.010	✓	1	✓
Warralakin	2	0.3	1.1	0.7	✓	1	✓	0	(1)	2	0.006	0.007	0.007	✓	1	✓
Westonia	2	0.3	0.9	0.6	✓	1	✓	0	(1)	2	0.006	0.022	0.014	✓	1	✓
Wiluna	6	12.4	16	14.7	(2)	1	✓	0	(1)	2	0.001	0.005	0.003	✓	0	(1)
Wongan Hills	2	0.1	0.2	0.1	✓	1	✓	0	(1)	2	0.009	0.042	0.026	✓	1	✓
Wubin	2	1.2	1.6	1.4	✓	1	✓	0	(1)	2	0.026	0.061	0.044	✓	1	✓
Wyalkatchem	2	0.2	0.6	0.4	✓	1	✓	0	(1)	2	0.021	0.040	0.031	✓	1	✓
York	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.011	0.015	0.013	✓	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 ₃)					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	
Avon Hills	6	73	83	75.3	(1)	6	0.012	0.220	0.095	✓	6	135	160	152.5	✓	6	84	92	89	✓
Ballidu	2	74	86	80.0	(1)	2	0.010	0.035	0.023	✓	2	165	195	180.0	✓	2	98	100	99	✓
Beacon	2	75	86	80.5	(1)	2	0.030	0.055	0.043	✓	2	155	205	180.0	✓	2	91	110	101	✓
Bencubbin	2	90	93	91.5	(1)	2	0.014	0.020	0.017	✓	2	165	180	172.5	✓	2	100	100	100	✓
Beverley	2	76	87	81.5	(1)	2	0.016	0.095	0.056	✓	2	150	160	155.0	✓	2	94	96	95	✓
Bind Bindi	2	70	80	75.0	(1)	2	<0.008	0.040	0.020	✓	2	160	185	172.5	✓	2	98	100	99	✓
Broad Arrow	2	65	68	66.5	(1)	2	0.030	0.045	0.038	✓	2	165	175	170.0	✓	2	94	97	96	✓
Bruce Rock	2	61	67	64.0	(1)	2	0.020	0.045	0.033	✓	2	160	170	165.0	✓	2	94	98	96	✓
Bullfinch	2	74	77	75.5	(1)	2	0.014	0.016	0.015	✓	2	150	175	162.5	✓	2	91	100	96	✓
Buntine	2	72	88	80.0	(1)	2	0.012	0.035	0.024	✓	2	165	200	182.5	✓	2	100	110	105	✓
Cadoux	2	70	85	77.5	(1)	2	0.010	0.060	0.035	✓	2	155	170	162.5	✓	2	97	97	97	✓
Coolgardie	2	67	75	71.0	(1)	2	0.018	0.060	0.039	✓	2	160	165	162.5	✓	2	99	99	99	✓
Corrigin	2	75	81	78.0	(1)	2	0.008	0.030	0.019	✓	2	170	170	170.0	✓	2	93	96	95	✓
Cunderdin	2	71	82	76.5	(1)	2	0.012	0.180	0.096	✓	2	160	175	167.5	✓	2	89	97	93	✓
Dalwallinu	2	75	80	77.5	(1)	2	0.020	0.020	0.020	✓	2	150	170	160.0	✓	2	93	100	97	✓
Dowerin	2	76	80	78.0	(1)	2	0.020	0.055	0.038	✓	2	140	165	152.5	✓	2	86	96	91	✓
Goomalling	2	73	80	76.5	(1)	2	0.025	0.110	0.068	✓	2	140	165	152.5	✓	2	84	95	90	✓
Grass Valley	2	73	74	73.5	(1)	2	0.040	0.120	0.080	✓	2	135	160	147.5	✓	2	82	92	87	✓
Kalannie	2	69	76	72.5	(1)	2	0.025	0.040	0.033	✓	2	155	170	162.5	✓	2	93	95	94	✓
Kalgoorlie	4	62	70	66.0	(1)	4	<0.008	0.040	0.025	✓	4	155	185	167.5	✓	4	95	100	98	✓
Kambalda	2	66	74	70.0	(1)	2	0.020	0.035	0.028	✓	2	165	175	170.0	✓	2	95	100	98	✓
Kellerberrin	2	68	73	70.5	(1)	2	0.060	0.065	0.063	✓	2	150	150	150.0	✓	2	87	91	89	✓
Koolyanobbing	2	77	82	79.5	(1)	2	0.012	0.025	0.019	✓	2	140	170	155.0	✓	2	86	96	91	✓
Koorda	2	65	82	73.5	(1)	2	0.010	0.025	0.018	✓	2	155	165	160.0	✓	2	96	99	98	✓
Kununoppin	2	74	78	76.0	(1)	2	0.025	0.040	0.033	✓	2	145	165	155.0	✓	2	90	98	94	✓
Laverton	4	74	110	101.0	(1)	4	<0.008	0.010	<0.008	✓	4	42	130	105.5	✓	4	31	110	90	✓
Leonora	6	100	120	115.0	(1)	2	<0.008	<0.008	<0.008	✓	6	150	170	159.2	✓	6	130	160	145	✓
Marvel Loch	2	81	82	81.5	(1)	2	0.012	0.045	0.029	✓	2	165	175	170.0	✓	2	100	100	100	✓
Meckering	2	72	83	77.5	(1)	2	0.014	0.150	0.082	✓	2	160	175	167.5	✓	2	90	94	92	✓
Menzies	6	190	210	205.0	(1)	2	<0.008	0.012	<0.008	✓	6	165	190	177.5	✓	10	290	340	323	(2)
Merredin	2	70	86	78.0	(1)	2	0.008	0.090	0.049	✓	2	165	170	167.5	✓	2	91	96	94	✓
Miling	2	70	85	77.5	(1)	2	0.018	0.025	0.022	✓	2	155	170	162.5	✓	2	97	100	99	✓
Mukinbudin	2	79	80	79.5	(1)	2	0.025	0.050	0.038	✓	2	150	180	165.0	✓	2	85	100	93	✓
Muntadgin	2	71	85	78.0	(1)	2	0.016	0.080	0.048	✓	2	165	165	165.0	✓	2	95	96	96	✓
Narembeen	2	73	83	78.0	(1)	2	0.020	0.035	0.028	✓	2	170	170	170.0	✓	2	94	96	95	✓
Norseman	2	68	75	71.5	(1)	2	0.025	0.035	0.030	✓	2	175	180	177.5	✓	2	110	110	110	✓
Northam	2	65	73	69.0	(1)	2	0.065	0.070	0.068	✓	2	150	150	150.0	✓	2	86	91	89	✓
Nungarin	2	76	79	77.5	(1)	2	0.018	0.095	0.057	✓	2	140	165	152.5	✓	2	85	95	90	✓
Ora Banda	2	86	92	89.0	(1)	2	0.010	0.014	0.012	✓	2	175	185	180.0	✓	2	120	120	120	✓
Pithara	2	72	83	77.5	(1)	2	0.010	0.040	0.025	✓	2	155	190	172.5	✓	2	99	110	105	✓
Quairading	2	66	75	70.5	(1)	2	0.025	0.050	0.038	✓	2	150	165	157.5	✓	2	92	94	93	✓
Southern Cross	2	74	82	78.0	(1)	2	0.014	0.065	0.040	✓	2	145	170	157.5	✓	2	84	99	92	✓
Tammin	2	71	76	73.5	(1)	2	0.020	0.100	0.060	✓	2	140	165	152.5	✓	2	85	94	90	✓
Toodyay	2	77	86	81.5	(1)	2	0.030	0.160	0.095	✓	2	155	160	157.5	✓	2	91	92	92	✓
Trayning	2	78	79	78.5	(1)	2	0.018	0.040	0.029	✓	2	135	165	150.0	✓	2	90	100	95	✓
Warralakin	2	72	76	74.0	(1)	2	0.016	0.080	0.048	✓	2	145	170	157.5	✓	2	86	97	92	✓
Westonia	2	71	73	72.0	(1)	2	0.018	0.065	0.042	✓	2	145	165	155.0	✓	2	86	96	91	✓
Wiluna	2	120	130	125.0	(1)	2	<0.008	<0.008	<0.008	✓	2	120	125	122.5	✓	2	230	240	235	(2)
Wongan Hills	2	78	87	82.5	(1)	2	0.012	0.050	0.031	✓	2	160	160	160.0	✓	2	94	95	95	✓
Wubin	2	78	89	83.5	(1)	2	0.020	0.030	0.025	✓	2	170	170	170.0	✓	2	110	110	110	✓
Wyalkatchem	2	69	83	76.0	(1)	2	0.012	0.030	0.021	✓	2	165	170	167.5	✓	2	94	95	95	✓
York	2	77	81	79.0	(1)	2	0.020	0.150	0.085	✓	2	145	155	150.0	✓	2	88	95	92	✓

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

Table 14 Aesthetic (Non-health related) Variables

Agricultural	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			
Avon Hills	6	<0.003	0.035	0.015	✓	6	<0.002	0.004	<0.002	✓	6	8.11	8.40	8.21	✓	6	4.9	6.7	5.9	✓
Ballidu	2	0.020	0.020	0.020	✓	2	<0.002	0.004	<0.002	✓	2	7.45	7.57	7.51	✓	2	5.5	6.5	6	✓
Beacon	2	0.035	0.160	0.098	✓	2	0.003	0.005	0.004	✓	2	7.90	8.14	8.02	✓	2	4.7	5.3	5	✓
Bencubbin	2	0.040	0.060	0.050	✓	2	0.004	0.012	0.008	✓	2	8.38	8.48	8.43	✓	2	7.7	13	10.4	✓
Beverley	2	0.015	0.020	0.018	✓	2	0.002	0.002	0.002	✓	7	8.32	8.82	8.63	(1)	2	6	6.7	6.4	✓
Bind Bindi	2	0.015	0.025	0.020	✓	2	<0.002	<0.002	<0.002	✓	2	8.12	8.39	8.26	✓	2	5.9	6.7	6.3	✓
Broad Arrow	2	0.045	0.060	0.053	✓	2	0.002	0.005	0.004	✓	2	8.09	8.12	8.11	✓	2	5	6.4	5.7	✓
Bruce Rock	2	0.006	0.030	0.018	✓	2	<0.002	0.003	<0.002	✓	2	7.86	7.87	7.87	✓	2	4.9	7	6.0	✓
Bullfinch	2	0.004	0.006	0.005	✓	2	<0.002	0.002	<0.002	✓	2	8.70	8.75	8.73	(1)	2	4.7	8.2	6.5	✓
Buntine	2	0.020	0.030	0.025	✓	2	<0.002	<0.002	<0.002	✓	2	8.32	8.39	8.36	✓	2	6.3	6.5	6.4	✓
Cadoux	2	0.020	0.025	0.023	✓	2	0.003	0.005	0.004	✓	2	8.46	8.46	8.46	✓	2	5.7	7.1	6.4	✓
Coolgardie	2	0.010	0.025	0.018	✓	2	0.002	0.002	0.002	✓	2	7.78	7.79	7.79	✓	2	5.5	6.5	6	✓
Corrigin	2	0.006	0.015	0.011	✓	2	<0.002	0.004	<0.002	✓	2	8.48	8.68	8.58	(2)	2	5.8	6.8	6.3	✓
Cunderdin	2	<0.003	0.020	0.010	✓	2	<0.002	0.008	0.004	✓	2	7.98	8.04	8.01	✓	2	5.3	6.8	6.1	✓
Dalwallinu	2	0.015	0.045	0.030	✓	2	<0.002	0.002	<0.002	✓	2	8.15	8.29	8.22	✓	2	4.8	6.9	5.9	✓
Dowerin	2	0.015	0.035	0.025	✓	2	<0.002	0.002	<0.002	✓	2	8.54	8.56	8.55	(2)	2	5	6.8	5.9	✓
Goomalling	2	0.004	0.035	0.020	✓	2	<0.002	0.004	<0.002	✓	2	8.18	8.44	8.31	✓	2	4.8	6.5	5.7	✓
Grass Valley	2	0.004	0.035	0.020	✓	2	<0.002	0.004	<0.002	✓	2	8.15	8.17	8.16	✓	2	4.8	6.1	5.5	✓
Kalannie	2	0.015	0.020	0.018	✓	2	<0.002	<0.002	<0.002	✓	2	8.13	8.15	8.14	✓	2	4.7	5.7	5.2	✓
Kalgoorlie	4	0.006	0.040	0.022	✓	4	<0.002	0.005	0.003	✓	4	7.82	8.01	7.91	✓	4	4.9	6.6	5.8	✓
Kambalda	2	0.025	0.050	0.038	✓	2	0.003	0.005	0.004	✓	2	8.17	8.21	8.19	✓	2	5	7	6	✓
Kellerberrin	2	0.004	0.006	0.005	✓	2	<0.002	<0.002	<0.002	✓	2	8.12	8.37	8.25	✓	2	4.2	5.9	5.1	✓
Koolyanobbing	2	0.004	0.030	0.017	✓	2	<0.002	0.003	<0.002	✓	2	8.57	8.63	8.60	(2)	2	4.9	7.3	6.1	✓
Koorda	2	0.010	0.020	0.015	✓	2	<0.002	0.005	0.003	✓	2	7.74	7.87	7.81	✓	2	5.5	6.7	6.1	✓
Kununoppin	2	0.006	0.020	0.013	✓	2	<0.002	0.003	<0.002	✓	2	8.74	8.84	8.79	(2)	2	5.5	7.4	6.5	✓
Laverton	4	0.030	0.080	0.048	✓	4	<0.002	<0.002	<0.002	✓	4	7.90	8.27	8.06	✓	4	30	41	37.3	✓
Leonora	6	<0.003	0.006	<0.003	✓	6	<0.002	<0.002	<0.002	✓	6	7.72	7.91	7.78	✓	6	15	34	24.8	✓
Marvel Loch	2	0.015	0.015	0.015	✓	2	<0.002	0.003	<0.002	✓	2	8.08	8.50	8.29	✓	2	6.6	6.7	6.7	✓
Meckering	2	0.004	0.020	0.012	✓	2	<0.002	0.005	0.003	✓	2	8.26	8.33	8.30	✓	2	5.2	6.7	6.0	✓
Menzies	6	<0.003	<0.003	<0.003	✓	6	<0.002	<0.002	<0.002	✓	6	7.59	8.02	7.70	✓	6	60	65	63.3	✓
Merredin	2	0.010	0.015	0.013	✓	2	0.002	0.006	0.004	✓	2	8.25	8.61	8.43	✓	2	5.8	6.7	6.3	✓
Miling	2	0.015	0.030	0.023	✓	2	<0.002	0.002	<0.002	✓	2	7.90	8.51	8.21	✓	2	5.1	7.1	6.1	✓
Mukinbudin	2	0.030	0.100	0.065	✓	2	0.004	0.006	0.005	✓	2	8.49	8.81	8.65	(2)	2	4.5	5.2	4.9	✓
Muntadgin	2	0.015	0.020	0.018	✓	2	0.005	0.006	0.006	✓	2	7.75	8.67	8.21	✓	2	5	7.3	6.2	✓
Narembeen	2	0.030	0.040	0.035	✓	2	0.003	0.003	0.003	✓	2	8.26	8.40	8.33	✓	2	5.4	5.5	5.5	✓
Norseman	2	0.008	0.010	0.009	✓	2	<0.002	<0.002	<0.002	✓	2	7.71	7.88	7.80	✓	2	5.3	7.2	6.3	✓
Northam	2	<0.003	0.006	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.17	8.26	8.22	✓	2	4.2	5.4	4.8	✓
Nungarin	2	0.004	0.025	0.015	✓	2	<0.002	0.003	<0.002	✓	2	8.78	8.82	8.80	(2)	2	5.3	6.8	6.1	✓
Ora Banda	2	0.004	0.030	0.017	✓	2	<0.002	<0.002	<0.002	✓	2	8.31	8.56	8.44	✓	2	6.3	8.4	7.4	✓
Pithara	2	0.025	0.030	0.028	✓	2	0.003	0.003	0.003	✓	2	7.95	8.75	8.35	✓	2	5.6	6.8	6.2	✓
Quairading	2	0.008	0.015	0.012	✓	2	<0.002	0.002	<0.002	✓	2	7.99	8.01	8.00	✓	2	4.7	6.1	5.4	✓
Southern Cross	2	0.004	0.030	0.017	✓	2	<0.002	0.004	<0.002	✓	2	8.33	8.53	8.43	✓	2	4.9	7	6.0	✓
Tammin	2	0.010	0.040	0.025	✓	2	<0.002	0.006	0.003	✓	2	8.04	8.14	8.09	✓	2	5.2	6.6	5.9	✓
Toodyay	2	<0.003	0.015	0.008	✓	2	<0.002	0.003	<0.002	✓	2	8.39	8.50	8.45	✓	2	5.4	7	6.2	✓
Trayning	2	0.006	0.035	0.021	✓	2	0.002	0.006	0.004	✓	2	8.45	8.84	8.65	(2)	2	5.4	6.9	6.2	✓
Warralakin	2	0.008	0.025	0.017	✓	2	<0.002	<0.002	<0.002	✓	2	8.00	8.71	8.36	✓	2	4.9	7.1	6.0	✓
Westonia	2	0.020	0.030	0.025	✓	2	<0.002	0.004	<0.002	✓	2	8.21	8.60	8.41	✓	2	4.9	6.4	5.7	✓
Wiluna	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.01	8.12	8.07	✓	2	80	85	82.5	(3)
Wongan Hills	2	0.006	0.008	0.007	✓	2	<0.002	0.003	<0.002	✓	2	8.64	8.73	8.69	(2)	2	4.8	6.8	5.8	✓
Wubin	2	0.015	0.025	0.020	✓	2	<0.002	0.002	<0.002	✓	2	8.08	8.56	8.32	✓	2	5.8	6.8	6.3	✓
Wyalkatchem	2	0.015	0.020	0.018	✓	2	<0.002	0.006	0.003	✓	2	8.06	8.06	8.06	✓	2	5.7	7.1	6.4	✓
York	2	0.020	0.025	0.023	✓	2	0.002	0.003	0.003	✓	2	8.32	8.34	8.33	✓	2	5.5	6.5	6.0	✓

(1) Elevated pH is caused by leaching of calcium carbonate from the protective cement lining of the pipes after long water transit times. This characteristic is found in a number of our localities on our large water supply schemes. (2) Elevated pH is a result of the chloramination process (pH increase). Experience shows that pH at this level is not objectionable to our customers. (3) Elevated Silica is a natural characteristic of the source supplying this locality.

Table 15 Aesthetic (Non-health related) Variables

Goldfields and Agricultural	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	
Avon Hills	6	86	100	96	✓	6	370	428	406	✓	6	<1	<1	<1	✓	6	<0.1	1.3	0.6	✓
Ballidu	2	105	115	110	✓	2	433	496	465	✓	2	<1	<1	<1	✓	2	0.3	0.6	0.5	✓
Beacon	2	100	120	110	✓	2	423	508	466	✓	2	<1	<1	<1	✓	2	1	3.7	2.4	✓
Bencubbin	2	105	105	105	✓	2	455	476	466	✓	2	1	2	2	✓	2	0.4	1.3	0.9	✓
Beverley	2	98	100	99	✓	2	423	425	424	✓	2	<1	<1	<1	✓	2	0.3	0.6	0.5	✓
Bind Bindi	2	98	105	101.5	✓	2	418	467	443	✓	2	<1	<1	<1	✓	2	0.3	0.4	0.4	✓
Broad Arrow	2	99	100	99.5	✓	2	411	431	421	✓	2	<1	<1	<1	✓	2	0.7	1	0.9	✓
Bruce Rock	2	105	105	105	✓	2	409	433	421	✓	2	<1	<1	<1	✓	2	0.1	0.7	0.4	✓
Bullfinch	2	93	105	99	✓	2	409	445	427	✓	2	<1	<1	<1	✓	2	0.1	0.3	0.2	✓
Buntine	2	105	115	110	✓	2	441	503	472	✓	2	<1	<1	<1	✓	2	0.4	0.4	0.4	✓
Cadoux	2	99	105	102	✓	2	412	455	434	✓	2	<1	<1	<1	✓	2	0.5	0.5	0.5	✓
Coolgardie	2	100	105	102.5	✓	2	425	427	426	✓	2	<1	<1	<1	✓	2	0.3	0.5	0.4	✓
Corrigin	2	100	115	107.5	✓	2	431	455	443	✓	2	<1	<1	<1	✓	2	0.3	0.4	0.4	✓
Cunderdin	2	96	105	100.5	✓	2	408	456	432	✓	2	<1	<1	<1	✓	2	0.3	0.8	0.6	✓
Dalwallinu	2	91	100	95.5	✓	2	411	440	426	✓	2	<1	<1	<1	✓	2	0.3	0.8	0.6	✓
Dowerin	2	83	105	94	✓	2	384	435	410	✓	2	<1	<1	<1	✓	2	0.3	1	0.7	✓
Goomalling	2	87	100	93.5	✓	2	386	425	406	✓	2	<1	<1	<1	✓	2	0.2	1.6	0.9	✓
Grass Valley	2	85	100	92.5	✓	2	370	421	396	✓	2	<1	1	<1	✓	2	<0.1	1.4	0.7	✓
Kalannie	2	95	99	97	✓	2	407	432	420	✓	2	<1	<1	<1	✓	2	0.1	0.3	0.2	✓
Kalgoorlie	4	92	110	99	✓	4	395	448	422	✓	4	<1	<1	<1	✓	4	0.2	0.9	0.6	✓
Kambalda	2	97	105	101	✓	2	421	437	429	✓	2	<1	<1	<1	✓	2	0.8	1.2	1	✓
Kellerberrin	2	91	97	94	✓	2	394	401	398	✓	2	<1	<1	<1	✓	2	0.1	0.1	0.1	✓
Koolyanobbing	2	91	105	98	✓	2	398	440	419	✓	2	<1	<1	<1	✓	2	0.3	0.8	0.6	✓
Koorda	2	96	105	100.5	✓	2	400	451	426	✓	2	<1	<1	<1	✓	2	0.2	0.4	0.3	✓
Kununoppin	2	86	100	93	✓	2	390	428	409	✓	2	<1	<1	<1	✓	2	0.1	0.5	0.3	✓
Laverton	4	53	115	95.75	✓	4	257	552	474	✓	4	<1	<1	<1	✓	4	<0.1	0.4	<0.1	✓
Leonora	6	115	130	123.3	✓	6	575	621	601	(1)	6	<1	<1	<1	✓	6	<0.1	0.2	<0.1	✓
Marvel Loch	2	100	105	102.5	✓	2	449	451	450	✓	2	<1	<1	<1	✓	2	0.2	0.4	0.3	✓
Meckering	2	96	105	100.5	✓	2	408	452	430	✓	2	<1	<1	<1	✓	2	0.2	0.8	0.5	✓
Menzies	6	120	140	130.8	✓	6	855	921	898	(1)	6	<1	<1	<1	✓	6	<0.1	0.5	0.2	✓
Merredin	2	98	105	101.5	✓	2	416	455	436	✓	2	<1	<1	<1	✓	2	0.3	0.5	0.4	✓
Miling	2	92	100	96	✓	2	422	440	431	✓	2	<1	<1	<1	✓	2	0.5	0.5	0.5	✓
Mukinbudin	2	94	125	109.5	✓	2	403	479	441	✓	2	<1	<1	<1	✓	2	1.1	4.3	2.7	✓
Muntadgin	2	100	105	102.5	✓	2	429	447	438	✓	2	<1	<1	<1	✓	2	0.5	0.5	0.5	✓
Narembeen	2	105	105	105	✓	2	433	444	439	✓	2	<1	<1	<1	✓	2	0.7	1.2	1	✓
Norseman	2	105	105	105	✓	2	442	455	449	✓	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Northam	2	94	96	95	✓	2	395	396	396	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Nungarin	2	86	105	95.5	✓	2	379	437	408	✓	2	<1	<1	<1	✓	2	0.3	0.9	0.6	✓
Ora Banda	2	105	105	105	✓	2	470	487	479	✓	2	<1	<1	<1	✓	2	0.2	1	0.6	✓
Pithara	2	98	105	101.5	✓	2	415	475	445	✓	2	<1	1	<1	✓	2	0.5	0.7	0.6	✓
Quairading	2	90	94	92	✓	2	391	419	405	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Southern Cross	2	92	105	98.5	✓	2	399	439	419	✓	2	<1	<1	<1	✓	2	0.3	0.9	0.6	✓
Tammin	2	87	105	96	✓	2	380	429	405	✓	2	<1	1	<1	✓	2	0.2	1.1	0.7	✓
Toodyay	2	98	99	98.5	✓	2	421	425	423	✓	2	<1	<1	<1	✓	2	0.3	0.4	0.4	✓
Trayning	2	85	105	95	✓	2	380	437	409	✓	2	<1	<1	<1	✓	2	0.2	0.7	0.5	✓
Warralakin	2	88	110	99	✓	2	391	440	416	✓	2	<1	1	<1	✓	2	0.2	0.7	0.5	✓
Westonia	2	87	110	98.5	✓	2	384	437	411	✓	2	<1	<1	<1	✓	2	0.1	0.8	0.5	✓
Wiluna	2	75	79	77	✓	2	652	660	656	(1)	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Wongan Hills	2	94	95	94.5	✓	2	415	428	422	✓	2	<1	<1	<1	✓	2	0.4	0.4	0.4	✓
Wubin	2	105	105	105	✓	2	449	467	458	✓	2	<1	<1	<1	✓	2	0.2	0.4	0.3	✓
Wyalkatchem	2	100	110	105	✓	2	420	456	438	✓	2	<1	<1	<1	✓	2	0.2	0.7	0.5	✓
York	2	93	96	94.5	✓	2	404	420	412	✓	2	<1	<1	<1	✓	2	<0.1	0.6	0.3	✓

(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	Samples Taken	Concentration (mg/L)			Samples Taken	Guideline Met	Samples Taken	Guideline Met
									Min	Max	Mean				
Allanson	13	0	0	✓	7	0	✓	4	0.85	0.90	0.86	1	✓	2	✓
Augusta	67	0	0	✓	32	0	✓	4	0.20	0.20	0.20	0	(1)	4	✓
Australind	108	0	0	✓	108	0	✓	4	0.20	0.25	0.23	0	(1)	4	✓
Balingup	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Binningup	52	0	0	✓	24	0	✓	2	0.75	0.85	0.80	1	✓	2	✓
Boyanup	51	0	0	✓	13	0	✓	2	0.15	0.15	0.15	0	(1)	2	✓
Boyup Brook	52	0	0	✓	14	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Bridgetown	65	0	0	✓	33	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Brunswick Junction	51	0	0	✓	13	0	✓	2	0.20	0.20	0.20	0	(1)	2	✓
Capel	53	0	0	✓	13	0	✓	2	0.15	0.20	0.18	0	(1)	3	✓
Collie	72	0	0	✓	30	0	✓	54	<0.1	1.00	0.74	0	(1)	4	✓
Cowaramup	53	0	0	✓	6	0	✓	2	0.15	0.20	0.18	0	(1)	2	✓
Dalyellup	64	0	0	✓	36	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Dardanup	13	0	0	✓	7	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Darkan	12	0	0	✓	6	0	✓	4	0.75	0.95	0.86	0	(1)	2	✓
Donnybrook	51	0	0	✓	26	0	✓	2	<0.1	<0.1	<0.1	2	✓	5	✓
Dunsborough	75	0	0	✓	75	0	✓	56	0.70	0.90	0.81	1	✓	2	✓
Eaton	78	0	0	✓	65	0	✓	2	0.20	0.20	0.20	1	✓	2	✓
Greenbushes	41	0	0	✓	13	0	✓	2	<0.1	<0.1	<0.1	1	✓	2	✓
Harvey	48	0	0	✓	48	0	✓	54	0.70	0.95	0.82	2	✓	2	✓
Hester	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Kirup	13	0	0	✓	7	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Logue Brook	12	0	0	✓	6	0	✓	2	0.70	0.80	0.75	0	(1)	2	✓
Manjimup	60	0	0	✓	30	0	✓	51	0.70	1.00	0.85	0	(1)	2	✓
Margaret River	75	0	0	✓	38	0	✓	2	0.15	0.20	0.18	0	(1)	2	✓
Mullalyup	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Myalup	12	0	0	✓	12	0	✓	2	0.85	0.85	0.85	2	✓	2	✓
Nannup	26	0	0	✓	13	0	✓	4	<0.1	<0.1	<0.1	0	(1)	4	✓
Northcliffe	26	0	0	✓	13	0	✓	3	<0.1	<0.1	<0.1	0	(1)	2	✓
Pemberton	51	0	0	✓	12	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Peppermint Grove	30	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	0	(1)	2	✓
Quinninup	15	0	0	✓	5	0	✓	2	<0.1	<0.1	<0.1	1	✓	3	✓
Waroona	52	0	0	✓	52	0	✓	55	0.60	1.00	0.84	1	✓	2	✓
Yarloop	13	0	0	✓	7	0	✓	2	0.85	0.90	0.88	0	(1)	2	✓

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

Table 17 Health related variables

South West	Health related variables															
Locality	Nitrate				Pesticides		Radiological		Trihalomethanes					Other Health Related		
	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			
Allanson	4	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.130	0.150	0.140	✓	1	✓
Augusta	8	<0.05	0.1	<0.05	✓	2	✓	0	(1)	4	0.014	0.040	0.027	✓	0	(1)
Australind	8	<0.05	<0.05	<0.05	✓	2	✓	0	(1)	4	0.003	0.088	0.043	✓	0	(1)
Balingup	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.100	0.130	0.115	✓	0	(1)
Binningup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.043	0.090	0.071	✓	2	✓
Boyanup	3	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	<0.001	<0.001	<0.001	✓	0	(1)
Boyup Brook	4	<0.05	<0.05	<0.05	✓	3	✓	0	(1)	8	0.074	0.150	0.120	✓	0	(1)
Bridgetown	3	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.057	0.120	0.089	✓	0	(1)
Brunswick Junction	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.013	0.020	0.017	✓	0	(1)
Capel	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	0	(1)
Collie	4	<0.05	<0.05	<0.05	✓	2	✓	0	(1)	4	0.034	0.150	0.085	✓	0	(1)
Cowaramup	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.100	0.170	0.128	✓	1	✓
Dalyellup	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.035	0.059	0.047	✓	0	(1)
Dardanup	3	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	<0.001	<0.001	<0.001	✓	0	(1)
Darkan	4	<0.05	0.1	0.1	✓	1	✓	1	✓	4	0.130	0.210	0.170	✓	0	(1)
Donnybrook	4	1.8	4.4	3.2	✓	1	✓	1	✓	2	0.003	0.005	0.004	✓	1	✓
Dunsborough	5	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.023	0.028	0.026	✓	1	✓
Eaton	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.055	0.060	0.058	✓	1	✓
Greenbushes	4	<0.05	0.1	<0.05	✓	1	✓	0	(1)	4	0.067	0.140	0.107	✓	0	(1)
Harvey	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.071	0.088	0.080	✓	2	✓
Hester	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.067	0.092	0.080	✓	0	(1)
Kirup	4	<0.05	0.2	0.1	✓	1	✓	1	✓	4	0.066	0.140	0.097	✓	0	(1)
Logue Brook	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	1	0.041	0.041	0.041	✓	0	(1)
Manjimup	4	<0.05	0.1	<0.05	✓	4	✓	1	✓	2	0.061	0.120	0.091	✓	1	✓
Margaret River	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.097	0.140	0.119	✓	0	(1)
Mullalyup	4	<0.05	4.1	1	✓	1	✓	0	(1)	4	0.009	0.094	0.059	✓	0	(1)
Myalup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.074	0.120	0.097	✓	2	✓
Nannup	8	<0.05	0.2	0.1	✓	2	✓	2	✓	4	0.056	0.099	0.076	✓	0	(1)
Northcliffe	4	0.1	0.4	0.3	✓	2	✓	0	(1)	2	0.120	0.120	0.120	✓	1	✓
Pemberton	4	0.1	0.4	0.3	✓	4	✓	0	(1)	4	0.064	0.150	0.096	✓	0	(1)
Peppermint Grove	4	<0.05	<0.05	<0.05	✓	2	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	0	(1)
Preston Beach	4	1	1.2	1.1	✓	1	✓	0	(1)	3	0.180	0.210	0.200	✓	0	(1)
Quinninup	4	0.1	0.4	0.3	✓	1	✓	0	(1)	4	0.110	0.190	0.135	✓	0	(1)
Waroona	3	<0.05	0.1	<0.05	✓	1	✓	1	✓	2	0.043	0.098	0.071	✓	1	✓
Yarloop	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	<0.001	0.060	0.030	✓	0	(1)

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

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Table 18 Aesthetic (Non-health related) Variables

South West	Alkalinity (as CaCO ₃)				Aluminium				Chloride				Hardness							
	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						
Allanson	4	12	19	15	(1)	4	0.012	0.025	0.018	✓	4	80	100	85	✓	4	37	44	39	✓
Augusta	8	58	100	76	(1)	8	<0.008	0.02	<0.008	✓	8	120	145	132	✓	8	85	140	108	✓
Australind	8	76	120	112	(1)	8	<0.008	0.012	<0.008	✓	8	145	165	155	✓	8	76	120	96	✓
Balingup	4	30	50	42	(1)	4	0.018	0.03	0.025	✓	4	125	190	158	✓	4	60	88	78	✓
Binningup	2	39	50	45	(1)	2	0.014	0.045	0.03	✓	2	55	75	65	✓	2	59	71	65	✓
Boyanup	3	110	120	113	(1)	3	<0.008	<0.008	<0.008	✓	3	95	95	95	✓	3	98	110	103	✓
Boyup Brook	4	46	100	80	(1)	4	0.014	0.045	0.027	✓	4	70	100	86	✓	4	60	120	97	✓
Bridgetown	3	75	99	87	(1)	3	0.03	0.035	0.032	✓	3	80	95	88	✓	3	89	120	106	✓
Brunswick Junction	2	120	120	120	(1)	2	<0.008	<0.008	<0.008	✓	2	165	165	165	✓	2	81	81	81	✓
Capel	4	76	77	77	(1)	4	<0.008	<0.008	<0.008	✓	4	55	60	56	✓	4	47	49	49	✓
Collie	4	12	16	14	(1)	4	0.01	0.025	0.016	✓	4	43	90	73	✓	4	20	40	33	✓
Cowaramup	4	24	36	31	(1)	4	0.016	0.055	0.038	✓	4	75	85	81	✓	4	37	44	41	✓
Dalyellup	4	130	150	140	(1)	4	<0.008	<0.008	<0.008	✓	4	90	180	116	✓	4	67	94	77	✓
Dardanup	3	73	75	74	(1)	3	<0.008	<0.008	<0.008	✓	3	80	80	80	✓	3	25	29	27	✓
Darkan	4	20	28	24	(1)	4	0.02	0.03	0.025	✓	4	80	110	90	✓	4	49	59	52	✓
Donnybrook	4	34	66	52	(1)	4	0.17	0.59	0.278	(2)	4	160	220	196	✓	4	60	88	80	✓
Dunsborough	5	130	150	138	(1)	5	0.01	0.04	0.022	✓	5	100	155	135	✓	5	59	68	62	✓
Eaton	4	97	120	114	(1)	4	<0.008	<0.008	<0.008	✓	4	125	135	131	✓	4	110	120	113	✓
Greenbushes	4	68	110	86	(1)	4	0.016	0.03	0.024	✓	4	85	125	103	✓	4	88	120	105	✓
Harvey	2	6	48	27	(1)	2	0.018	0.02	0.019	✓	2	55	65	60	✓	2	29	60	45	✓
Hester	2	74	99	87	(1)	2	0.025	0.035	0.03	✓	2	80	95	88	✓	2	86	120	103	✓
Kirup	4	9	10	9	(1)	4	<0.008	0.025	0.012	✓	4	55	75	63	✓	4	21	27	24	✓
Logue Brook	2	42	57	50	(1)	2	0.03	0.04	0.035	✓	2	49	50	50	✓	2	51	60	56	✓
Manjimup	4	4	29	19	(1)	4	0.02	0.035	0.026	✓	4	80	105	90	✓	4	48	77	63	✓
Margaret River	4	25	37	31	(1)	4	0.018	0.05	0.037	✓	4	75	85	81	✓	4	36	43	41	✓
Mullalyup	4	9	32	16	(1)	4	0.01	0.07	0.027	✓	4	60	165	95	✓	4	21	64	34	✓
Myalup	2	13	45	29	(1)	2	0.02	0.03	0.025	✓	2	60	60	60	✓	2	32	65	49	✓
Nannup	8	6	66	26	(1)	8	0.018	0.035	0.023	✓	8	55	85	68	✓	8	49	97	70	✓
Northcliffe	4	11	26	21	(1)	4	0.018	0.05	0.03	✓	4	65	95	80	✓	4	49	56	53	✓
Pemberton	4	15	27	24	(1)	4	0.025	0.04	0.034	✓	4	65	95	81	✓	4	48	62	54	✓
Peppermint Grove	4	84	87	86	(1)	4	<0.008	<0.008	<0.008	✓	4	60	60	60	✓	4	56	57	57	✓
Preston Beach	4	270	290	280	(1)	4	<0.008	0.016	0.009	✓	4	180	190	184	✓	4	310	330	323	(3)
Quinninup	4	18	27	24	(1)	4	0.025	0.07	0.053	✓	4	70	95	81	✓	4	51	62	57	✓
Waroona	3	48	65	56	(1)	3	0.035	0.05	0.043	✓	3	35	48	42	✓	3	61	73	68	✓
Yarloop	2	48	56	52	(1)	2	0.03	0.05	0.04	✓	2	23	41	32	✓	2	54	57	56	✓

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

Table 19 Aesthetic (Non-health related) Variables

South West	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	
Allanson	4	0.060	0.100	0.083	✓	4	0.006	0.045	0.018	✓	4	6.87	7.13	7.04	✓	4	1.1	2.3	1.8	✓
Augusta	8	0.035	0.090	0.072	✓	8	<0.002	0.006	<0.002	✓	8	7.42	8.59	7.83	✓	8	13	17	14	✓
Australind	8	0.020	0.100	0.064	✓	8	<0.002	0.005	<0.002	✓	8	6.69	8.48	7.77	✓	8	22	55	39	✓
Balingup	4	0.010	0.015	0.011	✓	4	<0.002	<0.002	<0.002	✓	4	7.65	7.91	7.78	✓	4	2.4	3.9	3.3	✓
Binningup	2	0.035	0.070	0.053	✓	2	0.007	0.018	0.013	✓	2	7.61	8.00	7.81	✓	2	5.3	6.7	6.0	✓
Boyanup	3	0.015	0.020	0.017	✓	3	<0.002	<0.002	<0.002	✓	3	8.09	8.22	8.18	✓	3	19	20	19.3	✓
Boyup Brook	4	0.020	0.240	0.084	✓	4	<0.002	0.014	0.004	✓	4	7.93	8.28	8.12	✓	4	1.1	9.1	6.2	✓
Bridgetown	3	0.008	0.070	0.033	✓	3	<0.002	<0.002	<0.002	✓	3	7.80	8.06	7.95	✓	3	6.7	9.5	7.9	✓
Brunswick Junction	2	0.050	0.070	0.060	✓	2	0.003	0.003	0.003	✓	2	7.86	7.95	7.91	✓	2	50	50	50	✓
Capel	4	0.070	0.080	0.075	✓	4	<0.002	<0.002	<0.002	✓	4	6.97	7.15	7.06	✓	4	14	15	14.5	✓
Collie	4	0.070	0.140	0.100	✓	4	0.002	0.020	0.012	✓	4	6.92	7.10	7.01	✓	4	1	1.6	1.4	✓
Cowaramup	4	0.060	0.180	0.115	✓	4	0.004	0.012	0.008	✓	4	7.15	7.61	7.48	✓	4	5	8	6.1	✓
Dalyellup	4	0.025	0.070	0.053	✓	4	<0.002	0.010	0.006	✓	4	7.95	8.17	8.06	✓	4	15	17	16	✓
Dardanup	3	0.006	0.015	0.009	✓	3	<0.002	<0.002	<0.002	✓	3	7.35	7.75	7.49	✓	3	20	21	20.7	✓
Darkan	4	0.060	0.140	0.095	✓	4	0.003	0.010	0.007	✓	4	7.81	8.89	8.25	✓	4	1.8	3.6	2.7	✓
Donnybrook	4	0.020	0.140	0.055	✓	4	0.002	0.004	0.003	✓	4	7.26	7.40	7.33	✓	4	9.6	15	11.7	✓
Dunsborough	5	0.008	0.025	0.015	✓	5	<0.002	<0.002	<0.002	✓	5	8.16	8.36	8.29	✓	5	16	19	16.8	✓
Eaton	4	0.060	0.120	0.100	✓	4	<0.002	0.003	<0.002	✓	4	7.63	7.97	7.78	✓	4	22	26	24	✓
Greenbushes	4	0.010	0.030	0.018	✓	4	<0.002	0.004	<0.002	✓	4	8.09	8.50	8.29	✓	4	5.5	8.9	6.7	✓
Harvey	2	0.020	0.035	0.028	✓	2	<0.002	0.005	0.003	✓	2	6.66	7.67	7.17	✓	2	6.4	6.5	6.5	✓
Hester	2	0.015	0.045	0.030	✓	2	<0.002	0.003	<0.002	✓	2	8.02	8.28	8.15	✓	2	6.8	6.9	6.9	✓
Kirup	4	0.006	0.035	0.016	✓	4	<0.002	0.010	0.004	✓	4	7.00	7.40	7.19	✓	4	1.6	6.5	4.1	✓
Logue Brook	2	0.025	0.040	0.033	✓	2	0.002	0.003	0.003	✓	2	7.71	7.84	7.78	✓	2	5	5.3	5.2	✓
Manjimup	4	0.050	0.080	0.063	✓	4	<0.002	0.007	0.004	✓	4	7.01	7.47	7.24	✓	4	1.9	6.4	4.2	✓
Margaret River	4	0.060	0.160	0.105	✓	4	0.005	0.014	0.008	✓	4	7.17	7.55	7.38	✓	4	5	8.3	6.2	✓
Mullalyup	4	0.015	0.035	0.021	✓	4	<0.002	<0.002	<0.002	✓	4	7.23	7.73	7.39	✓	4	1.7	11	5.1	✓
Myalup	2	0.080	0.100	0.090	✓	2	<0.002	0.012	0.006	✓	2	7.69	7.82	7.76	✓	2	6.5	6.9	6.7	✓
Nannup	8	<0.003	0.090	0.022	✓	8	<0.002	0.020	0.004	✓	8	6.97	7.56	7.25	✓	8	6.3	10	7.7	✓
Northcliffe	4	0.020	0.035	0.024	✓	4	0.008	0.025	0.016	✓	4	6.95	7.48	7.33	✓	4	5.2	7.8	6.6	✓
Pemberton	4	0.015	0.035	0.026	✓	4	0.003	0.020	0.009	✓	4	7.37	7.79	7.62	✓	4	5.2	7.4	6.3	✓
Peppermint Grove	4	0.030	0.060	0.048	✓	4	<0.002	<0.002	<0.002	✓	4	7.10	7.43	7.27	✓	4	15	16	15.3	✓
Preston Beach	4	0.006	0.015	0.010	✓	4	<0.002	<0.002	<0.002	✓	4	7.84	7.92	7.89	✓	4	17	17	17	✓
Quinninup	4	0.020	0.045	0.033	✓	4	0.004	0.025	0.012	✓	4	7.25	8.06	7.71	✓	4	5	7.6	6.2	✓
Waroona	3	0.008	0.025	0.014	✓	3	<0.002	0.003	<0.002	✓	3	7.88	8.27	8.08	✓	3	3.7	5.3	4.7	✓
Yarloop	2	0.008	0.010	0.009	✓	2	<0.002	<0.002	<0.002	✓	2	7.89	8.08	7.99	✓	2	1.2	3.7	2.5	✓

Table 20 Aesthetic (Non-health related) Variables

South 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	
Allanson	4	41	50	44	✓	4	168	206	181	✓	4	1	3	2	✓	4	0.4	1.1	0.6	✓
Augusta	8	66	80	72	✓	8	324	422	370	✓	8	<1	<1	<1	✓	8	0.1	0.5	0.3	✓
Australind	8	87	120	101	✓	8	444	527	492	✓	8	<1	3	<1	✓	8	0.1	0.6	0.3	✓
Balingup	4	68	105	88	✓	4	278	402	351	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Binningup	2	31	39	35	✓	2	177	220	199	✓	2	<1	<1	<1	✓	2	0.4	0.9	0.7	✓
Boyanup	3	59	62	60	✓	3	374	385	379	✓	3	<1	<1	<1	✓	3	<0.1	0.2	<0.1	✓
Boyup Brook	4	37	51	46	✓	4	208	355	299	✓	4	<1	6	2	✓	4	0.4	1.3	0.8	✓
Bridgetown	3	43	53	48	✓	3	282	354	322	✓	3	<1	<1	<1	✓	3	0.2	2.1	0.8	✓
Brunswick Junction	2	110	115	113	✓	2	523	524	524	✓	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Capel	4	45	48	46	✓	4	258	263	260	✓	4	<1	<1	<1	✓	4	0.1	0.4	0.2	✓
Collie	4	27	49	41	✓	4	110	191	161	✓	4	1	3	2	✓	4	0.4	1.7	0.8	✓
Cowaramup	4	43	48	45	✓	4	200	231	217	✓	4	1	4	2	✓	4	0.6	2.5	1.4	✓
Dalyellup	4	72	145	93	✓	4	409	583	454	✓	4	<1	<1	<1	✓	4	0.1	0.5	0.3	✓
Dardanup	3	70	74	72	✓	3	281	287	284	✓	3	<1	<1	<1	✓	3	0.2	0.3	0.2	✓
Darkan	4	42	51	45	✓	4	190	234	205	✓	4	2	3	2	✓	4	0.3	0.9	0.5	✓
Donnybrook	4	98	130	117	✓	4	361	481	442	✓	4	<1	<1	<1	✓	4	0.2	1.0	0.4	✓
Dunsborough	5	110	165	141	✓	5	467	607	546	✓	5	<1	<1	<1	✓	5	<0.1	0.3	0.2	✓
Eaton	4	71	89	79	✓	4	409	471	446	✓	4	<1	<1	<1	✓	4	0.2	0.6	0.4	✓
Greenbushes	4	47	65	57	✓	4	284	372	336	✓	4	<1	<1	<1	✓	4	0.2	0.7	0.4	✓
Harvey	2	30	37	34	✓	2	141	184	163	✓	2	<1	<1	<1	✓	2	0.2	0.4	0.3	✓
Hester	2	43	51	47	✓	2	274	354	314	✓	2	<1	<1	<1	✓	2	0.2	0.9	0.6	✓
Kirup	4	38	50	45	✓	4	156	193	169	✓	4	<1	2	<1	✓	4	<0.1	0.3	<0.1	✓
Logue Brook	2	28	29	29	✓	2	163	187	175	✓	2	<1	<1	<1	✓	2	0.3	0.3	0.3	✓
Manjimup	4	45	52	49	✓	4	202	250	227	✓	4	<1	1	<1	✓	4	0.4	0.9	0.6	✓
Margaret River	4	44	49	47	✓	4	201	229	219	✓	4	1	5	3	✓	4	0.5	2.1	1.2	✓
Mullalyup	4	45	100	63	✓	4	165	370	232	✓	4	<1	<1	<1	✓	4	<0.1	0.2	0.2	✓
Myalup	2	33	33	33	✓	2	141	194	168	✓	2	<1	<1	<1	✓	2	0.4	0.7	0.6	✓
Nannup	8	46	56	50	✓	8	215	310	257	✓	8	<1	<1	<1	✓	8	<0.1	0.2	<0.1	✓
Northcliffe	4	52	62	57	✓	4	222	266	240	✓	4	<1	<1	<1	✓	4	0.2	0.5	0.4	✓
Pemberton	4	49	63	57	✓	4	219	265	244	✓	4	<1	<1	<1	✓	4	0.2	0.5	0.3	✓
Peppermint Grove	4	46	49	48	✓	4	279	286	282	✓	4	<1	<1	<1	✓	4	<0.1	0.4	0.2	✓
Preston Beach	4	94	100	98	✓	4	784	800	790	(1)	4	<1	2	<1	✓	4	<0.1	0.2	<0.1	✓
Quinninup	4	50	63	56	✓	4	224	274	244	✓	4	<1	<1	<1	✓	4	0.2	0.5	0.3	✓
Waroona	3	22	29	25	✓	3	167	188	177	✓	3	<1	<1	<1	✓	3	<0.1	0.4	0.2	✓
Yarloop	2	14	24	19	✓	2	128	157	143	✓	2	<1	<1	<1	✓	2	0.1	0.1	0.1	✓

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

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Table 21 Health related variables

Great Southern 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					
Albany	153	0	0	✓	78	0	✓	51	0.15	0.90	0.76	2	✓	8	✓
Boddington	48	0	0	✓	48	0	✓	4	0.25	0.90	0.70	0	(1)	2	✓
Borden	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	2	✓	3	✓
Bremer Bay	12	0	0	✓	6	0	✓	4	0.50	0.55	0.54	0	(1)	6	✓
Brookton	48	0	0	✓	48	0	✓	4	0.30	0.90	0.70	0	(1)	2	✓
Broomehill	12	0	0	✓	12	0	✓	4	0.35	0.95	0.74	0	(1)	2	✓
Bullaring	12	0	0	✓	12	0	✓	4	0.70	0.90	0.81	0	(1)	2	✓
Condingup	12	0	0	✓	8	0	✓	2	0.30	0.35	0.33	0	(1)	2	✓
Cranbrook	13	0	0	✓	6	0	✓	2	0.10	0.75	0.43	2	✓	2	✓
Cuballing	12	0	0	✓	12	0	✓	4	0.20	0.90	0.70	0	(1)	2	✓
Denmark	64	0	0	✓	32	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Dudinin	12	0	0	✓	12	0	✓	7	0.35	0.90	0.72	1	✓	2	✓
Dumbleyung	12	0	0	✓	12	0	✓	4	0.70	0.90	0.83	0	(1)	2	✓
Esperance	91	0	0	✓	61	0	✓	52	0.60	0.90	0.83	0	(1)	2	✓
Frankland	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Gibson	12	0	0	✓	8	0	✓	2	0.35	0.35	0.35	0	(1)	2	✓
Gnowangerup	48	0	0	✓	48	0	✓	4	0.40	0.90	0.74	0	(1)	2	✓
Grass Patch	12	0	0	✓	8	0	✓	3	0.85	0.90	0.88	2	✓	4	✓
Harrismith	12	0	0	✓	12	0	✓	4	0.70	0.90	0.84	0	(1)	2	✓
Highbury	12	0	0	✓	12	0	✓	4	0.20	0.95	0.71	0	(1)	2	✓
Hopetoun	48	0	0	✓	24	0	✓	2	<0.1	<0.1	<0.1	6	✓	7	✓
Hyden	12	0	0	✓	12	0	✓	4	0.45	0.80	0.65	1	✓	2	✓
Jerramungup	32	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Karlgarin	12	0	0	✓	12	0	✓	4	0.65	0.90	0.81	0	(1)	2	✓
Katanning	65	0	0	✓	65	0	✓	52	0.20	1.00	0.79	0	(1)	2	✓
Kendenup	12	1	1	✓	6	0	✓	4	0.55	0.80	0.71	0	(1)	2	✓
Kojonup	48	0	0	✓	48	0	✓	4	0.25	0.90	0.68	0	(1)	2	✓
Kondinin	12	0	0	✓	12	0	✓	4	0.65	1.00	0.84	1	✓	2	✓
Kukerin	12	0	0	✓	12	0	✓	4	0.65	0.90	0.80	0	(1)	2	✓
Kulin	12	0	0	✓	12	0	✓	4	0.30	0.90	0.73	1	✓	2	✓
Lake Grace	48	0	0	✓	48	0	✓	4	0.30	0.90	0.69	2	✓	2	✓
Lake King	12	0	0	✓	6	0	✓	2	0.50	0.90	0.70	0	(1)	2	✓
Mt Barker	52	0	0	✓	26	0	✓	54	0.35	0.85	0.75	0	(1)	2	✓
Munglinup	11	0	0	✓	5	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Muradup	12	0	0	✓	12	0	✓	4	0.45	0.90	0.73	0	(1)	2	✓
Narrikup	12	0	0	✓	6	0	✓	4	0.60	0.80	0.74	0	(1)	2	✓
Narrogin	65	0	0	✓	65	0	✓	54	0.15	0.95	0.78	0	(1)	2	✓
Newdegate	12	0	0	✓	12	0	✓	4	0.55	0.90	0.78	2	✓	2	✓
Nyabing	12	0	0	✓	12	0	✓	4	0.30	0.90	0.74	2	✓	2	✓
Ongerup	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Pingaring	12	0	0	✓	12	0	✓	4	0.60	0.90	0.81	0	(1)	2	✓
Pingelly	48	0	0	✓	48	0	✓	4	0.70	0.90	0.83	0	(1)	2	✓
Pingrup	12	0	0	✓	12	0	✓	4	0.30	0.95	0.73	2	✓	2	✓
Popanyinning	12	0	0	✓	12	0	✓	4	0.25	0.90	0.70	0	(1)	2	✓
Ravensthorpe	12	0	0	✓	6	0	✓	2	<0.1	<0.1	<0.1	2	✓	2	✓
Rocky Gully	12	0	0	✓	6	0	✓	4	0.70	0.80	0.75	0	(1)	2	✓
Salmon Gums	12	0	0	✓	8	0	✓	2	0.80	0.90	0.85	0	(1)	2	✓
Tambellup	12	0	0	✓	12	0	✓	4	0.50	0.90	0.75	2	✓	2	✓
Tincurrin	12	0	0	✓	12	0	✓	4	0.70	0.90	0.85	0	(1)	2	✓
Varley	12	0	0	✓	6	0	✓	2	0.25	0.90	0.58	2	✓	2	✓
Wagin	49	0	0	✓	49	0	✓	4	0.70	0.90	0.80	0	(1)	2	✓
Walpole	49	0	0	✓	26	0	✓	2	<0.1	<0.1	<0.1	0	(1)	2	✓
Wandering	12	0	0	✓	12	0	✓	4	0.10	0.90	0.68	0	(1)	2	✓
Wellstead	12	0	0	✓	6	0	✓	2	0.25	0.35	0.30	0	(1)	2	✓
Wickepin	12	0	0	✓	12	0	✓	4	0.75	0.90	0.83	0	(1)	2	✓
Williams	12	0	0	✓	12	0	✓	4	0.15	0.95	0.66	0	(1)	2	✓
Woodanilling	12	0	0	✓	12	0	✓	4	0.20	0.90	0.70	2	✓	2	✓
Yealering	12	0	0	✓	12	0	✓	4	0.75	0.85	0.83	0	(1)	2	✓

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

Table 22 Health related variables

Great Southern	Health related variables															
Locality	Nitrate					Pesticides		Radiological		Trihalomethanes					Other Health Related	
	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	20	0.1	0.2	0.2	✓	4	✓	4	✓	6	0.08	0.15	0.121	✓	2	✓
Boddington	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	4	0.04	0.089	0.07	✓	0	(1)
Borden	2	<0.05	0.1	<0.05	✓	3	✓	1	✓	2	0.05	0.062	0.058	✓	1	✓
Bremer Bay	4	4.7	5.5	5.3	✓	1	✓	1	✓	2	0.10	0.096	0.096	✓	0	(1)
Brookton	2	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.07	0.12	0.093	✓	0	(1)
Broomehill	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.18	0.18	0.18	✓	0	(1)
Bullaring	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	4	0.11	0.15	0.123	✓	0	(1)
Condingup	4	0.2	0.3	0.2	✓	1	✓	1	✓	2	0.01	0.012	0.012	✓	1	✓
Cranbrook	2	<0.05	0.2	0.1	✓	1	✓	0	(1)	2	0.08	0.15	0.114	✓	1	✓
Cuballing	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.09	0.13	0.105	✓	0	(1)
Denmark	4	0.1	0.2	0.1	✓	1	✓	0	(1)	2	0.11	0.12	0.115	✓	0	(1)
Dudinin	3	<0.05	<0.05	<0.05	✓	1	✓	1	✓	4	0.06	0.087	0.073	✓	0	(1)
Dumbleyung	2	0.1	0.1	0.1	✓	1	✓	0	(1)	4	0.09	0.15	0.128	✓	0	(1)
Esperance	6	3	4.5	3.8	✓	1	✓	0	(1)	2	0.05	0.054	0.052	✓	0	(1)
Frankland	4	<0.05	<0.05	<0.05	✓	1	✓	1	✓	2	0.04	0.073	0.057	✓	0	(1)
Gibson	4	2.2	3.3	2.7	✓	1	✓	1	✓	2	0.01	0.025	0.019	✓	1	✓
Gnowangerup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.03	0.036	0.035	✓	0	(1)
Grass Patch	4	3.1	4.8	3.9	✓	4	✓	1	✓	2	0.07	0.083	0.076	✓	1	✓
Harrismith	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.13	0.2	0.173	✓	0	(1)
Highbury	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.07	0.11	0.086	✓	0	(1)
Hopetoun	4	0.1	0.5	0.3	✓	3	✓	1	✓	2	0.01	0.019	0.014	✓	0	(1)
Hyden	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.07	0.1	0.077	✓	0	(1)
Jerramungup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.05	0.064	0.055	✓	0	(1)
Karlgarin	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.07	0.084	0.077	✓	0	(1)
Katanning	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.10	0.19	0.162	✓	0	(1)
Kendenup	4	0.1	0.2	0.2	✓	1	✓	0	(1)	2	0.12	0.12	0.12	✓	0	(1)
Kojonup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.15	0.17	0.165	✓	0	(1)
Kondinin	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	4	0.08	0.13	0.109	✓	0	(1)
Kukerin	2	0.1	0.1	0.1	✓	1	✓	0	(1)	4	0.12	0.13	0.125	✓	0	(1)
Kulin	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.13	0.18	0.155	✓	0	(1)
Lake Grace	2	0.1	0.1	0.1	✓	4	✓	1	✓	4	0.11	0.17	0.133	✓	2	✓
Lake King	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.08	0.077	0.077	✓	0	(1)
Mt Barker	4	0.2	0.2	0.2	✓	1	✓	0	(1)	4	0.06	0.13	0.1	✓	0	(1)
Munglinup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.05	0.071	0.058	✓	2	✓
Muradup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.16	0.18	0.17	✓	0	(1)
Narrikup	5	0.1	0.2	0.2	✓	1	✓	0	(1)	2	0.12	0.15	0.135	✓	0	(1)
Narrogin	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.10	0.11	0.104	✓	0	(1)
Newdegate	2	0.1	0.1	0.1	✓	1	✓	1	✓	2	0.12	0.13	0.125	✓	2	✓
Nyabing	4	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.14	0.17	0.155	✓	2	✓
Ongerup	2	<0.05	0.3	0.2	✓	1	✓	1	✓	2	0.04	0.058	0.05	✓	2	✓
Pingaring	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.13	0.17	0.15	✓	0	(1)
Pingelly	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.10	0.13	0.112	✓	0	(1)
Pingrup	2	0.1	0.1	0.1	✓	1	✓	0	(1)	4	0.05	0.11	0.081	✓	2	✓
Popanyinning	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.10	0.17	0.129	✓	0	(1)
Ravensthorpe	6	<0.05	0.2	0.1	✓	1	✓	1	✓	4	0.03	0.081	0.065	✓	2	✓
Rocky Gully	4	0.2	0.2	0.2	✓	1	✓	0	(1)	2	0.05	0.07	0.059	✓	0	(1)
Salmon Gums	2	3.4	4.4	3.9	✓	1	✓	1	✓	2	0.10	0.13	0.115	✓	1	✓
Tambellup	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.09	0.16	0.119	✓	2	✓
Tincurrin	2	0.1	0.1	0.1	✓	1	✓	0	(1)	4	0.11	0.16	0.14	✓	0	(1)
Varley	2	0.1	0.1	0.1	✓	1	✓	0	(1)	2	0.05	0.074	0.062	✓	2	✓
Wagin	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.11	0.17	0.14	✓	0	(1)
Walpole	4	<0.05	0.4	0.3	✓	1	✓	0	(1)	6	0.08	0.11	0.096	✓	0	(1)
Wandering	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	4	0.10	0.13	0.115	✓	0	(1)
Wellstead	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.04	0.043	0.041	✓	0	(1)
Wickepin	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.07	0.14	0.106	✓	0	(1)
Williams	2	<0.05	0.1	<0.05	✓	1	✓	0	(1)	2	0.12	0.17	0.145	✓	0	(1)
Woodanilling	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	4	0.10	0.17	0.121	✓	1	✓
Yealering	2	0.1	0.1	0.1	✓	1	✓	0	(1)	4	0.12	0.19	0.148	✓	0	(1)

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

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Table 23 Aesthetic (Non-health related) Variables

Great Southern Locality	Alkalinity (as CaCO3)					Aluminium					Chloride					Hardness				
	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met	Samples Taken	Concentration (mg/L)			Guideline Met
		Min	Max	Mean			Min	Max	Mean			Min	Max	Mean			Min	Max	Mean	
Albany	20	110	220	171	(1)	20	<0.008	0.018	0.011	✓	20	105	150	127	✓	20	140	250	210	(3)
Boddington	2	13	16	15	(1)	2	0.030	0.040	0.035	✓	2	80	85	83	✓	2	42	46	44	✓
Borden	2	45	48	47	(1)	2	0.035	0.065	0.050	✓	2	21	25	23	✓	2	37	41	39	✓
Bremer Bay	4	280	300	288	(1)	4	<0.008	<0.008	<0.008	✓	4	190	195	193	✓	4	170	190	178	✓
Brookton	2	17	24	21	(1)	2	0.050	0.065	0.058	✓	2	90	105	98	✓	2	50	57	54	✓
Broomehill	2	17	21	19	(1)	2	0.025	0.030	0.028	✓	2	90	105	98	✓	2	53	58	56	✓
Bullaring	2	30	31	31	(1)	2	0.030	0.035	0.033	✓	2	90	105	98	✓	2	59	61	60	✓
Condingup	4	140	150	145	(1)	4	<0.008	<0.008	<0.008	✓	4	375	420	400	(2)	4	74	80	78	✓
Cranbrook	2	9	190	100	(1)	2	0.020	0.025	0.023	✓	2	24	115	70	✓	2	19	230	125	✓
Cuballing	2	11	17	14	(1)	2	0.025	0.025	0.025	✓	2	90	105	98	✓	2	42	49	46	✓
Denmark	4	10	11	11	(1)	4	0.020	0.030	0.024	✓	4	155	195	180	✓	4	64	77	70	✓
Dudinin	3	25	32	28	(1)	3	0.018	0.025	0.023	✓	3	90	105	97	✓	3	59	62	60	✓
Dumbleyung	2	28	28	28	(1)	2	0.020	0.020	0.020	✓	2	90	105	98	✓	2	62	65	64	✓
Esperance	6	270	290	277	(1)	2	<0.008	<0.008	<0.008	✓	6	190	205	197	✓	10	350	370	359	(3)
Frankland	4	2	5	4	(1)	4	0.010	0.025	0.017	✓	4	12	14	13	✓	4	9	12	11	✓
Gibson	4	62	67	64	(1)	4	<0.008	<0.008	<0.008	✓	4	210	245	228	✓	4	32	34	33	✓
Gnowangerup	2	20	27	24	(1)	2	0.030	0.035	0.033	✓	2	95	105	100	✓	2	54	58	56	✓
Grass Patch	4	270	280	278	(1)	4	<0.008	0.018	0.011	✓	4	185	210	200	✓	4	340	360	353	(3)
Harrismith	4	20	31	26	(1)	4	0.016	0.025	0.022	✓	4	90	105	96	✓	4	52	62	59	✓
Highbury	2	13	19	16	(1)	2	0.020	0.045	0.033	✓	2	90	105	98	✓	2	41	51	46	✓
Hopetoun	4	45	160	100	(1)	4	<0.008	0.012	<0.008	✓	4	170	400	254	✓	4	64	180	121	✓
Hyden	2	23	29	26	(1)	2	0.020	0.030	0.025	✓	2	50	105	78	✓	2	39	66	53	✓
Jerramungup	2	8	9	9	(1)	2	0.075	0.095	0.085	✓	2	44	55	50	✓	2	18	22	20	✓
Karlgarin	2	28	28	28	(1)	2	0.016	0.020	0.018	✓	2	95	105	100	✓	2	64	66	65	✓
Katanning	2	14	22	18	(1)	2	0.035	0.055	0.045	✓	2	90	105	98	✓	2	46	56	51	✓
Kendenup	4	200	220	213	(1)	4	0.012	0.016	0.014	✓	4	110	125	115	✓	4	240	270	258	(3)
Kojonup	2	21	25	23	(1)	2	0.030	0.030	0.030	✓	2	90	105	98	✓	2	52	60	56	✓
Kondinin	2	25	28	27	(1)	2	0.025	0.030	0.028	✓	2	95	115	105	✓	2	64	69	67	✓
Kukerin	2	25	32	29	(1)	2	0.025	0.030	0.028	✓	2	90	100	95	✓	2	56	62	59	✓
Kulin	2	23	25	24	(1)	2	0.018	0.020	0.019	✓	2	95	105	100	✓	2	56	60	58	✓
Lake Grace	2	28	31	30	(1)	2	0.020	0.020	0.020	✓	2	85	105	95	✓	2	61	66	64	✓
Lake King	2	28	30	29	(1)	2	0.020	0.025	0.023	✓	2	95	105	100	✓	2	60	61	61	✓
Mt Barker	4	200	220	208	(1)	4	0.010	0.014	0.013	✓	4	115	125	120	✓	4	230	250	245	(3)
Munglinup	2	5	5	5	(1)	2	0.010	0.018	0.014	✓	2	22	27	25	✓	2	13	15	14	✓
Muradup	2	21	28	25	(1)	2	0.030	0.030	0.030	✓	2	100	105	103	✓	2	55	58	57	✓
Narrikup	5	200	210	204	(1)	4	<0.008	0.014	0.010	✓	5	110	125	116	✓	7	240	260	250	(3)
Narrogin	2	11	14	13	(1)	2	0.014	0.016	0.015	✓	2	85	95	90	✓	2	41	46	44	✓
Newdegate	2	28	31	30	(1)	2	0.025	0.035	0.030	✓	2	95	105	100	✓	2	62	63	63	✓
Nyabing	4	11	22	16	(1)	4	0.018	0.025	0.021	✓	4	90	150	109	✓	4	47	63	53	✓
Ongerup	2	32	35	34	(1)	3	0.020	0.070	0.038	✓	2	23	26	25	✓	2	17	24	21	✓
Pingaring	2	28	32	30	(1)	2	0.020	0.025	0.023	✓	2	95	110	103	✓	2	67	69	68	✓
Pingelly	2	14	22	18	(1)	2	0.025	0.030	0.028	✓	2	90	105	98	✓	2	46	54	50	✓
Pingrup	2	15	21	18	(1)	2	0.010	0.018	0.014	✓	2	95	105	100	✓	2	47	51	49	✓
Popanyinning	2	13	15	14	(1)	2	0.014	0.025	0.020	✓	2	90	95	93	✓	2	46	47	47	✓
Ravensthorpe	6	28	38	34	(1)	2	0.020	0.075	0.048	✓	6	33	210	94	✓	6	31	50	40	✓
Rocky Gully	4	190	210	205	(1)	4	0.014	0.025	0.018	✓	4	115	130	119	✓	4	230	260	253	(3)
Salmon Gums	2	280	280	280	(1)	2	0.016	0.020	0.018	✓	2	195	200	198	✓	2	360	360	360	(3)
Tambellup	2	17	28	23	(1)	2	0.035	0.035	0.035	✓	2	100	105	103	✓	2	57	61	59	✓
Tincurrin	2	24	24	24	(1)	2	0.020	0.050	0.035	✓	2	90	95	93	✓	2	58	58	58	✓
Varley	2	30	31	31	(1)	2	0.040	0.045	0.043	✓	2	95	105	100	✓	2	63	65	64	✓
Wagin	2	10	13	12	(1)	2	0.012	0.025	0.019	✓	2	90	95	93	✓	2	45	46	46	✓
Walpole	4	28	45	36	(1)	4	0.012	0.020	0.016	✓	4	95	190	160	✓	4	43	69	61	✓
Wandering	2	14	21	18	(1)	2	0.020	0.025	0.023	✓	2	80	90	85	✓	2	40	47	44	✓
Wellstead	2	4	5	5	(1)	2	0.030	0.045	0.038	✓	2	35	41	38	✓	2	12	15	14	✓
Wickepin	2	12	16	14	(1)	2	0.018	0.020	0.019	✓	2	95	100	98	✓	2	46	47	47	✓
Williams	2	10	16	13	(1)	2	0.016	0.030	0.023	✓	2	80	85	83	✓	2	37	39	38	✓
Woodanilling	2	14	19	17	(1)	2	0.025	0.025	0.025	✓	2	90	105	98	✓	2	44	51	48	✓
Yealering	2	26	26	26	(1)	2	0.025	0.030	0.028	✓	2	95	95	95	✓	2	58	58	58	✓

(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.

Table 24 Aesthetic (Non-health related) Variables

Great Southern	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	
Albany	20	0.020	0.200	0.078	✓	20	<0.002	<0.002	<0.002	✓	20	7.61	8.25	7.84	✓	20	14	30	21	✓
Boddington	2	0.090	0.160	0.125	✓	2	0.009	0.070	0.040	✓	2	7.36	7.38	7.37	✓	2	2.3	2.5	2.4	✓
Borden	2	0.008	0.015	0.012	✓	2	<0.002	<0.002	<0.002	✓	2	7.35	7.66	7.51	✓	2	0.9	1.2	1.1	✓
Bremer Bay	4	<0.003	0.008	0.004	✓	4	<0.002	<0.002	<0.002	✓	4	8.27	8.29	8.28	✓	4	50	55	53	✓
Brookton	2	0.160	0.180	0.170	✓	2	0.007	0.014	0.011	✓	2	7.86	8.35	8.11	✓	2	1.8	2.5	2.2	✓
Broomehill	2	0.120	0.220	0.170	✓	2	0.003	0.006	0.005	✓	2	7.72	7.96	7.84	✓	2	1.7	2.1	1.9	✓
Bullaring	6	0.120	0.800	0.250	✓	2	0.005	0.007	0.006	✓	6	7.14	7.72	7.44	✓	2	1.1	2.2	1.7	✓
Condingup	4	0.020	0.045	0.028	✓	4	<0.002	<0.002	<0.002	✓	4	6.93	7.31	7.14	✓	4	60	65	63	✓
Cranbrook	2	0.060	0.080	0.070	✓	2	<0.002	0.002	<0.002	✓	2	6.84	7.96	7.40	✓	2	1.7	1.5	8.4	✓
Cuballing	6	0.180	0.320	0.257	✓	2	0.030	0.040	0.035	✓	2	7.15	7.16	7.16	✓	2	0.7	1.3	1.0	✓
Denmark	4	0.010	0.020	0.018	✓	4	<0.002	<0.002	<0.002	✓	4	6.94	7.67	7.44	✓	4	6.7	8.9	7.6	✓
Dudinini	6	0.140	0.240	0.177	✓	3	0.004	0.005	0.005	✓	6	9.05	9.52	9.26	(2)	3	0.9	1.8	1.5	✓
Dumbleyung	2	0.100	0.140	0.120	✓	2	0.005	0.007	0.006	✓	2	8.48	8.65	8.57	(3)	2	1.3	1.7	1.5	✓
Esperance	6	<0.003	0.004	<0.003	✓	6	<0.002	<0.002	<0.002	✓	6	7.65	7.86	7.74	✓	6	10	13	11.2	✓
Frankland	4	0.035	0.280	0.129	✓	4	<0.002	0.007	<0.002	✓	4	6.41	6.97	6.62	✓	4	1.3	1.8	1.5	✓
Gibson	4	0.050	0.070	0.063	✓	4	<0.002	<0.002	<0.002	✓	4	6.80	7.09	6.91	✓	4	44	48	46	✓
Gnowangerup	2	0.140	0.140	0.140	✓	2	0.004	0.005	0.005	✓	2	7.51	7.55	7.53	✓	2	1.3	2.6	2.0	✓
Grass Patch	4	<0.003	0.006	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	8.19	8.23	8.21	✓	4	10	11	10.5	✓
Harrismith	4	0.160	0.280	0.215	✓	4	0.009	0.012	0.011	✓	4	8.04	9.39	8.72	(3)	4	0.9	2.0	1.5	✓
Highbury	6	0.140	0.300	0.213	✓	2	0.012	0.025	0.019	✓	2	7.14	7.23	7.19	✓	2	0.8	1.3	1.1	✓
Hopetoun	4	<0.003	0.020	0.011	✓	4	<0.002	0.003	<0.002	✓	4	6.89	8.51	7.59	✓	4	18	33	24	✓
Hyden	2	0.025	0.040	0.033	✓	2	<0.002	<0.002	<0.002	✓	2	7.54	7.75	7.65	✓	2	0.8	1.8	1.3	✓
Jerramungup	2	0.060	0.060	0.060	✓	2	<0.002	<0.002	<0.002	✓	2	6.90	7.13	7.02	✓	2	1.3	2.6	2.0	✓
Karlgarin	2	0.035	0.050	0.043	✓	2	<0.002	<0.002	<0.002	✓	2	7.67	7.87	7.77	✓	2	0.7	1.7	1.2	✓
Katanning	2	0.160	0.600	0.380	(1)	2	0.006	0.055	0.031	✓	2	7.43	7.58	7.51	✓	2	1.2	2.1	1.7	✓
Kendenup	4	0.025	0.080	0.053	✓	4	<0.002	<0.002	<0.002	✓	4	7.97	8.23	8.12	✓	4	14	16	15	✓
Kojonup	2	0.120	0.180	0.150	✓	2	0.006	0.010	0.008	✓	2	7.80	8.04	7.92	✓	2	1.1	2.0	1.6	✓
Kondinin	2	0.080	0.090	0.085	✓	2	0.004	0.010	0.007	✓	2	7.95	8.10	8.03	✓	2	0.8	1.2	1.0	✓
Kukerin	2	0.080	0.080	0.080	✓	2	<0.002	<0.002	<0.002	✓	2	7.90	8.98	8.44	✓	2	1.0	2.0	1.5	✓
Kulin	2	0.140	0.240	0.190	✓	2	0.006	0.012	0.009	✓	2	8.98	9.06	9.02	(2)	2	1.4	1.6	1.5	✓
Lake Grace	2	0.045	0.120	0.083	✓	2	<0.002	0.004	<0.002	✓	2	8.09	8.43	8.26	✓	2	0.9	1.9	1.4	✓
Lake King	2	0.090	0.100	0.095	✓	2	0.004	0.004	0.004	✓	2	7.65	7.73	7.69	✓	2	0.9	2.0	1.5	✓
Mt Barker	4	0.050	0.080	0.065	✓	4	<0.002	<0.002	<0.002	✓	4	7.78	8.01	7.94	✓	4	15	18	16.5	✓
Munglinup	2	0.070	0.080	0.075	✓	2	0.003	0.003	0.003	✓	2	6.42	6.85	6.64	✓	2	0.5	0.6	0.6	✓
Muradup	2	0.160	0.160	0.160	✓	2	0.006	0.006	0.006	✓	2	7.65	8.06	7.86	✓	2	1.1	2.4	1.8	✓
Narrikup	7	0.070	0.120	0.090	✓	5	<0.002	<0.002	<0.002	✓	5	7.82	8.27	7.94	✓	5	14	17	15.8	✓
Narrogin	2	0.120	0.340	0.230	✓	2	0.012	0.012	0.012	✓	2	7.20	7.23	7.22	✓	2	1.4	1.6	1.5	✓
Newdegate	2	0.045	0.320	0.183	✓	2	<0.002	0.018	0.009	✓	2	7.53	7.95	7.74	✓	2	1.4	2.1	1.8	✓
Nyabing	4	0.140	0.240	0.195	✓	4	0.004	0.008	0.006	✓	4	7.27	7.50	7.39	✓	4	1.0	2.0	1.5	✓
Ongerup	2	<0.003	0.008	0.004	✓	2	<0.002	<0.002	<0.002	✓	2	7.66	7.75	7.71	✓	2	2.3	3.7	3.0	✓
Pingaring	2	0.030	0.070	0.050	✓	2	0.004	0.004	0.004	✓	2	8.71	9.35	9.03	(2)	2	1.2	1.5	1.4	✓
Pingelly	2	0.140	0.240	0.190	✓	2	0.005	0.012	0.009	✓	2	7.71	8.00	7.86	✓	2	1.2	2.1	1.7	✓
Pingrup	2	0.060	0.160	0.110	✓	2	0.003	0.004	0.004	✓	2	7.29	7.57	7.43	✓	2	1.1	1.6	1.4	✓
Popanyinning	2	0.100	0.440	0.270	✓	2	0.006	0.035	0.021	✓	2	7.43	7.50	7.47	✓	2	1.5	1.6	1.6	✓
Ravensthorpe	6	0.020	0.090	0.039	✓	6	<0.002	0.006	0.003	✓	6	7.45	7.72	7.62	✓	6	2.1	19	7.9	✓
Rocky Gully	4	0.080	0.600	0.240	✓	4	<0.002	0.008	<0.002	✓	4	8.29	8.45	8.36	✓	4	14	16	15.3	✓
Salmon Gums	2	0.008	0.020	0.014	✓	2	<0.002	<0.002	<0.002	✓	2	8.35	8.56	8.46	✓	2	10	11	10.5	✓
Tambellup	2	0.140	0.160	0.150	✓	2	0.004	0.005	0.005	✓	2	7.92	8.18	8.05	✓	2	1.5	2.6	2.1	✓
Tincurrin	6	0.160	0.360	0.313	(1)	2	0.008	0.016	0.012	✓	2	7.63	7.85	7.74	✓	2	1.6	1.8	1.7	✓
Varley	2	0.080	0.100	0.090	✓	2	0.003	0.003	0.003	✓	2	7.74	7.93	7.84	✓	2	1.0	1.6	1.3	✓
Wagin	2	0.090	0.280	0.185	✓	2	0.006	0.007	0.007	✓	2	7.23	7.25	7.24	✓	2	1.6	1.7	1.7	✓
Walpole	4	0.006	0.015	0.011	✓	4	<0.002	0.004	<0.002	✓	4	7.52	7.92	7.72	✓	4	6.4	13	9.5	✓
Wandering	2	0.140	0.220	0.180	✓	2	0.008	0.016	0.012	✓	2	7.41	7.42	7.42	✓	2	2.0	2.8	2.4	✓
Wellstead	2	0.060	0.080	0.070	✓	2	<0.002	0.005	0.003	✓	2	6.20	6.71	6.46	(4)	2	0.2	0.8	0.5	✓
Wickepin	2	0.120	0.300	0.210	✓	2	0.012	0.014	0.013	✓	2	7.46	7.49	7.48	✓	2	1.4	1.8	1.6	✓
Williams	2	0.080	0.140	0.110	✓	2	0.010	0.025	0.018	✓	2	7.05	7.13	7.09	✓	2	1.8	2.5	2.2	✓
Woodanilling	2	0.140	0.340	0.240	✓	2	0.010	0.030	0.020	✓	2	7.33	7.41	7.37	✓	2	0.9	1.5	1.2	✓
Yealering	2	0.160	0.260	0.210	✓	2	0.012	0.018	0.015	✓	2	8.78	8.95	8.87	(2)	2	1.4	1.7	1.6	✓

(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.

Table 25 Aesthetic (Non-health related) Variables																				
Great Southern		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	
Albany	20	55	91	71	✓	20	485	582	537	✓	20	<1	<1	<1	✓	20	0.2	1.2	0.5	✓
Boddington	2	45	48	47	✓	2	184	189	187	✓	2	3	3	3	✓	2	0.8	1.0	0.9	✓
Borden	2	18	20	19	✓	2	123	129	126	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Bremer Bay	4	175	200	189	(1)	4	899	904	902	(2)	4	<1	<1	<1	✓	4	<0.1	0.3	0.2	✓
Brookton	2	45	50	48	✓	2	198	224	211	✓	2	2	2	2	✓	2	1.0	1.2	1.1	✓
Broomehill	2	46	61	54	✓	2	206	229	218	✓	2	4	4	4	✓	2	0.3	1.0	0.7	✓
Bullaring	2	44	52	48	✓	2	212	233	223	✓	2	<1	2	<1	✓	2	0.6	0.9	0.8	✓
Condingup	4	300	330	318	(1)	4	1023	1092	1057	(2)	4	<1	<1	<1	✓	4	0.2	0.4	0.3	✓
Cranbrook	2	13	60	37	✓	2	81	537	309	✓	2	<1	3	2	✓	2	0.3	0.5	0.4	✓
Cuballing	2	46	52	49	✓	2	188	213	201	✓	2	3	4	4	✓	2	1.4	1.9	1.7	✓
Denmark	4	135	160	146	✓	4	471	549	505	✓	4	<1	<1	<1	✓	4	<0.1	0.2	<0.1	✓
Dudinin	3	45	50	47	✓	3	209	233	217	✓	3	2	3	3	✓	3	0.4	1.0	0.7	✓
Dumbleyung	2	47	55	51	✓	2	213	237	225	✓	2	2	2	2	✓	2	0.3	0.8	0.6	✓
Esperance	6	105	120	112	✓	6	827	875	844	(2)	6	<1	<1	<1	✓	6	0.1	0.3	0.2	✓
Frankland	4	5.5	6.5	6	✓	4	39	47	43	✓	4	2	4	3	✓	4	0.5	1.1	0.9	✓
Gibson	4	180	190	188	(1)	4	613	650	636	(2)	4	<1	<1	<1	✓	4	0.3	0.5	0.4	✓
Gnowangerup	2	46	51	49	✓	2	207	230	219	✓	2	1	3	2	✓	2	0.8	0.9	0.9	✓
Grass Patch	4	110	130	118	✓	4	840	860	849	(2)	4	<1	<1	<1	✓	4	0.1	0.3	0.2	✓
Harrismith	4	44	56	49	✓	4	196	232	216	✓	4	1	4	3	✓	4	0.5	1.2	0.9	✓
Highbury	2	47	54	51	✓	2	189	219	204	✓	2	3	4	4	✓	2	1.0	2.0	1.5	✓
Hopetoun	4	91	250	158	✓	4	539	833	640	(2)	4	<1	<1	<1	✓	4	<0.1	0.9	0.3	✓
Hyden	2	26	57	42	✓	2	135	240	188	✓	2	<1	<1	<1	✓	2	0.3	0.3	0.3	✓
Jerramungup	2	24	29	27	✓	2	97	116	107	✓	2	<1	<1	<1	✓	2	0.3	0.9	0.6	✓
Karlgarin	2	52	56	54	✓	2	225	236	231	✓	2	<1	<1	<1	✓	2	0.2	0.4	0.3	✓
Katanning	2	46	54	50	✓	2	194	225	210	✓	2	3	3	3	✓	2	0.3	2.7	1.5	✓
Kendenup	4	63	66	64	✓	4	551	597	579	✓	4	<1	<1	<1	✓	4	0.2	0.7	0.4	✓
Kojonup	2	46	51	49	✓	2	204	228	216	✓	2	2	4	3	✓	2	0.4	1.1	0.8	✓
Kondinin	2	48	62	55	✓	2	218	257	238	✓	2	2	3	3	✓	2	0.3	0.7	0.5	✓
Kukerin	2	44	52	48	✓	2	203	232	218	✓	2	<1	<1	<1	✓	2	0.4	0.5	0.5	✓
Kulin	2	48	57	53	✓	2	210	230	220	✓	2	2	4	3	✓	2	0.5	0.8	0.7	✓
Lake Grace	2	46	53	50	✓	2	206	238	222	✓	2	<1	1	<1	✓	2	0.2	0.7	0.5	✓
Lake King	2	46	49	48	✓	2	213	230	222	✓	2	<1	<1	<1	✓	2	0.4	0.8	0.6	✓
Mt Barker	4	65	66	66	✓	4	563	598	577	✓	4	<1	<1	<1	✓	4	0.3	0.5	0.4	✓
Munglinup	2	12	13	13	✓	2	61	91	76	✓	2	<1	<1	<1	✓	2	0.7	1.7	1.2	✓
Muradup	2	48	52	50	✓	2	213	230	222	✓	2	<1	2	<1	✓	2	0.7	0.9	0.8	✓
Narrikup	5	60	65	63	✓	5	553	593	572	✓	5	<1	<1	<1	✓	5	0.5	0.8	0.6	✓
Narrogin	2	46	52	49	✓	2	186	200	193	✓	2	2	6	4	✓	2	0.3	1.2	0.8	✓
Newdegate	2	44	51	48	✓	2	212	234	223	✓	2	<1	2	<1	✓	2	0.2	2.1	1.2	✓
Nyabing	4	46	71	54	✓	4	188	293	223	✓	4	2	5	4	✓	4	0.5	1.2	0.9	✓
Ongerup	2	22	22	22	✓	2	101	114	108	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Pingaring	2	41	55	48	✓	2	215	244	230	✓	2	<1	<1	<1	✓	2	0.2	0.3	0.3	✓
Pingelly	2	46	51	49	✓	2	193	222	208	✓	2	2	3	3	✓	2	0.5	1.4	1.0	✓
Pingrup	2	49	54	52	✓	2	197	221	209	✓	2	<1	2	<1	✓	2	0.3	1.1	0.7	✓
Popanyinning	2	46	48	47	✓	2	191	197	194	✓	2	2	5	4	✓	2	0.3	1.9	1.1	✓
Ravensthorpe	6	21	135	60	✓	6	121	458	239	✓	6	<1	2	<1	✓	6	0.6	1.7	1.0	✓
Rocky Gully	4	64	68	66	✓	4	540	594	573	✓	4	<1	<1	<1	✓	4	0.6	3.5	1.5	✓
Salmon Gums	2	110	120	115	✓	2	850	852	851	(2)	2	<1	<1	<1	✓	2	0.2	0.4	0.3	✓
Tambellup	2	45	52	49	✓	2	208	233	221	✓	2	1	3	2	✓	2	0.5	0.8	0.7	✓
Tincurrin	2	46	47	47	✓	2	209	212	211	✓	2	4	4	4	✓	2	0.7	1.6	1.2	✓
Varley	2	46	52	49	✓	2	219	238	229	✓	2	<1	1	<1	✓	2	0.4	0.9	0.7	✓
Wagin	2	46	52	49	✓	2	187	196	192	✓	2	2	5	4	✓	2	0.3	0.9	0.6	✓
Walpole	4	67	125	104	✓	4	268	431	376	✓	4	<1	<1	<1	✓	4	0.1	0.2	0.2	✓
Wandering	2	43	45	44	✓	2	176	198	187	✓	2	3	4	4	✓	2	0.5	1.3	0.9	✓
Wellstead	2	20	22	21	✓	2	76	91	84	✓	2	<1	<1	<1	✓	2	1.0	1.1	1.1	✓
Wickepin	2	46	47	47	✓	2	197	198	198	✓	2	3	5	4	✓	2	0.6	1.1	0.9	✓
Williams	2	45	48	47	✓	2	175	182	179	✓	2	3	4	4	✓	2	0.5	0.8	0.7	✓
Woodanilling	2	45	53	49	✓	2	189	218	204	✓	2	2	3	3	✓	2	0.7	1.9	1.3	✓
Yealering	2	47	48	48	✓	2	215	215	215	✓	2	2	4	3	✓	2	0.8	1.3	1.1	✓

(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	89	0	0	✓	78	0	✓	52	0.25	0.80	0.71	0	(1)	2	✓
Burrup LNG	24	0	0	✓	13	0	✓	1	0.65	0.65	0.65	2	✓	2	✓
Burrup Supply	13	0	0	✓	13	0	✓	2	0.50	0.65	0.58	1	✓	2	✓
Camballin	13	0	0	✓	13	0	✓	2	0.25	0.25	0.25	0	(1)	2	✓
Cape Lambert	13	0	0	✓	13	0	✓	2	0.50	0.65	0.58	2	✓	2	✓
Derby	51	0	0	✓	51	0	✓	52	0.50	0.70	0.61	1	✓	2	✓
Fitzroy Crossing	11	0	0	✓	11	0	✓	2	0.25	0.25	0.25	0	(1)	2	✓
Halls Creek	44	0	0	✓	44	0	✓	2	0.45	0.55	0.50	0	(1)	3	✓
Hedland	88	0	0	✓	77	0	✓	4	0.40	0.50	0.44	2	✓	4	✓
Karratha	87	0	0	✓	76	0	✓	52	0.35	0.75	0.58	2	✓	2	✓
Kununurra	62	0	0	✓	51	0	✓	2	0.40	0.45	0.43	2	✓	2	✓
Marble Bar	12	0	0	✓	12	0	✓	2	0.65	0.70	0.68	0	(1)	2	✓
Newman	63	0	0	✓	52	0	✓	2	0.15	0.25	0.20	2	✓	2	✓
Nullagine	13	0	0	✓	13	0	✓	2	0.35	0.45	0.40	1	✓	2	✓
Onslow	50	0	0	✓	26	0	✓	2	0.65	0.80	0.73	1	✓	3	✓
Point Samson	13	0	0	✓	13	0	✓	1	0.40	0.40	0.40	2	✓	2	✓
Roebourne	50	0	0	✓	37	0	✓	2	0.50	0.65	0.58	0	(1)	2	✓
Wickham	51	0	0	✓	39	0	✓	2	0.60	0.65	0.63	2	✓	2	✓
Wyndham	51	0	0	✓	51	0	✓	2	<0.1	<0.1	<0.1	0	(1)	3	✓

(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	4.8	4.8	4.8	✓	1	✓	0	(1)	2	<0.001	0.002	<0.001	✓	0	(1)
Burrup LNG	2	0.1	1.6	0.9	✓	1	✓	1	✓	2	<0.001	0.003	0.002	✓	0	(1)
Burrup Supply	2	0.1	1.6	0.8	✓	1	✓	1	✓	2	<0.001	0.002	<0.001	✓	0	(1)
Camballin	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	1	✓
Cape Lambert	2	<0.05	1.3	0.7	✓	1	✓	0	(1)	3	0.064	0.110	0.080	✓	2	✓
Derby	2	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	<0.001	0.002	<0.001	✓	0	(1)
Fitzroy Crossing	2	0.8	1	0.9	✓	1	✓	0	(1)	2	<0.001	0.001	<0.001	✓	0	(1)
Halls Creek	2	0.9	0.9	0.9	✓	1	✓	0	(1)	2	<0.001	0.002	<0.001	✓	2	✓
Hedland	4	0.8	0.9	0.9	✓	2	✓	2	✓	4	<0.001	0.004	0.002	✓	0	(1)
Karratha	2	<0.05	1.5	0.8	✓	1	✓	0	(1)	5	0.005	0.120	0.038	✓	2	✓
Kununurra	3	<0.05	<0.05	<0.05	✓	1	✓	0	(1)	2	0.010	0.037	0.024	✓	3	✓
Marble Bar	3	1.1	1.4	1.3	✓	1	✓	0	(1)	2	0.006	0.012	0.009	✓	0	(1)
Newman	2	0.1	0.4	0.3	✓	1	✓	1	✓	2	<0.001	0.001	<0.001	✓	0	(1)
Nullagine	2	0.7	0.7	0.7	✓	1	✓	0	(1)	2	<0.001	<0.001	<0.001	✓	2	✓
Onslow	3	0.3	0.4	0.3	✓	1	✓	0	(1)	1	<0.001	<0.001	<0.001	✓	0	(1)
Point Samson	1	1.4	1.4	1.4	✓	1	✓	0	(1)	4	<0.001	0.089	0.047	✓	2	✓
Roebourne	2	0.1	1.6	0.9	✓	1	✓	0	(1)	3	<0.001	0.110	0.063	✓	2	✓
Wickham	2	<0.05	1.5	0.8	✓	1	✓	1	✓	2	0.022	0.066	0.044	✓	2	✓
Wyndham	2	0.1	0.1	0.1	✓	1	✓	0	(1)	4	0.068	0.085	0.078	✓	0	(1)

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

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Table 28 Aesthetic (Non-health related) Variables

North 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	
Broome	2	78	87	83	(1)	2	<0.008	<0.008	<0.008	✓	2	125	130	128	✓	2	65	70	68	✓
Burrup LNG	2	72	300	186	(1)	2	0.010	0.018	0.014	✓	2	55	140	98	✓	2	140	380	260	(3)
Burrup Supply	2	68	310	189	(1)	2	0.010	0.018	0.014	✓	2	50	145	98	✓	2	140	380	260	(3)
Camballin	2	56	58	57	(1)	2	<0.008	<0.008	<0.008	✓	2	41	43	42	✓	2	44	45	45	✓
Cape Lambert	2	71	270	171	(1)	2	0.012	0.016	0.014	✓	2	60	110	85	✓	2	140	320	230	(3)
Derby	2	140	160	150	(1)	2	<0.008	<0.008	<0.008	✓	2	85	90	88	✓	2	13	20	17	✓
Fitzroy Crossing	2	180	180	180	(1)	2	0.010	0.014	0.012	✓	2	39	39	39	✓	2	150	160	155	✓
Halls Creek	2	380	430	405	(1)	2	<0.008	<0.008	<0.008	✓	2	90	115	103	✓	2	260	320	290	(2)
Hedland	4	170	190	183	(1)	4	0.008	0.012	0.010	✓	4	140	200	168	✓	4	210	250	225	(2)
Karratha	2	54	280	167	(1)	2	0.010	0.012	0.011	✓	2	47	140	94	✓	2	110	350	230	(3)
Kununurra	3	220	220	220	(1)	3	<0.008	<0.008	<0.008	✓	3	18	18	18	✓	3	160	170	163	✓
Marble Bar	4	350	400	375	(1)	3	<0.008	<0.008	<0.008	✓	4	215	255	231	✓	3	300	350	318	(2)
Newman	2	110	110	110	(1)	2	<0.008	<0.008	<0.008	✓	2	41	90	66	✓	2	120	160	140	✓
Nullagine	2	160	170	165	(1)	2	<0.008	<0.008	<0.008	✓	2	70	80	75	✓	2	150	160	155	✓
Onslow	3	150	170	157	(1)	3	<0.008	<0.008	<0.008	✓	3	65	85	73	✓	3	170	180	177	✓
Point Samson	1	210	210	210	(1)	1	0.010	0.010	0.010	✓	1	80	80	80	✓	1	230	230	230	(3)
Roebourne	2	64	250	157	(1)	2	0.014	0.025	0.020	✓	2	55	110	83	✓	2	140	320	230	(3)
Wickham	2	59	310	185	(1)	2	0.012	0.025	0.019	✓	2	49	160	105	✓	2	110	410	260	(3)
Wyndham	2	47	53	50	(1)	2	0.020	0.030	0.025	✓	2	33	34	34	✓	2	40	40	40	✓

(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	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	
Broome	2	<0.003	0.006	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	8.08	8.20	8.14	✓	2	85	90	88	(1)
Burrup LNG	2	0.006	0.015	0.011	✓	2	<0.002	<0.002	<0.002	✓	2	8.07	8.15	8.11	✓	2	17	60	39	✓
Burrup Supply	2	0.004	0.015	0.010	✓	2	<0.002	<0.002	<0.002	✓	2	8.07	8.11	8.09	✓	2	17	60	39	✓
Camballin	2	0.010	0.020	0.015	✓	2	<0.002	<0.002	<0.002	✓	2	7.24	7.31	7.28	✓	2	24	26	25	✓
Cape Lambert	2	0.004	0.010	0.007	✓	2	<0.002	<0.002	<0.002	✓	2	8.08	8.12	8.10	✓	2	11	55	33	✓
Derby	2	0.006	0.015	0.011	✓	2	<0.002	<0.002	<0.002	✓	2	7.84	7.92	7.88	✓	2	16	16	16	✓
Fitzroy Crossing	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.54	7.87	7.71	✓	2	22	23	23	✓
Halls Creek	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.87	7.97	7.92	✓	2	37	39	38	✓
Hedland	4	<0.003	<0.003	<0.003	✓	4	<0.002	<0.002	<0.002	✓	4	7.72	8.13	7.93	✓	4	47	50	48	✓
Karratha	2	<0.003	<0.003	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.85	7.98	7.92	✓	2	11	60	36	✓
Kununurra	3	<0.003	<0.003	<0.003	✓	3	<0.002	0.006	<0.002	✓	3	7.69	7.83	7.74	✓	3	55	55	55	✓
Marble Bar	3	<0.003	0.004	<0.003	✓	3	<0.002	<0.002	<0.002	✓	3	7.65	7.92	7.77	✓	4	41	46	44	✓
Newman	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.05	7.51	7.28	✓	2	11	18	15	✓
Nullagine	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.33	7.51	7.42	✓	2	30	32	31	✓
Onslow	3	<0.003	<0.003	<0.003	✓	3	<0.002	<0.002	<0.002	✓	3	8.09	8.10	8.09	✓	3	70	75	73	✓
Point Samson	1	0.004	0.004	0.004	✓	1	<0.002	<0.002	<0.002	✓	1	8.25	8.25	8.25	✓	1	55	55	55	✓
Roebourne	2	<0.003	0.004	<0.003	✓	2	<0.002	<0.002	<0.002	✓	2	7.81	8.22	8.02	✓	2	11	60	36	✓
Wickham	2	0.004	0.008	0.006	✓	2	<0.002	<0.002	<0.002	✓	2	7.85	7.88	7.87	✓	2	12	60	36	✓
Wyndham	2	0.004	0.004	0.004	✓	2	<0.002	<0.002	<0.002	✓	2	8.10	8.21	8.16	✓	2	8.3	8.5	8.4	✓

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

Table 30 Aesthetic (Non-health related) Variables

North 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	
Broome	2	91	98	95	✓	2	453	477	465	✓	2	<1	<1	<1	✓	2	0.1	0.2	0.2	✓
Burrup LNG	2	44	79	62	✓	2	342	848	595	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Burrup Supply	2	44	78	61	✓	2	336	861	599	✓	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Camballin	2	38	38	38	✓	2	235	239	237	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Cape Lambert	2	47	62	55	✓	2	344	717	531	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Derby	2	105	120	113	✓	2	404	437	421	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Fitzroy Crossing	2	31	31	31	✓	2	379	379	379	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Halls Creek	2	125	140	133	✓	2	889	919	904	(2)	2	<1	<1	<1	✓	2	<0.1	0.2	<0.1	✓
Hedland	4	76	110	92	✓	4	567	711	638	(2)	4	<1	<1	<1	✓	4	<0.1	<0.1	<0.1	✓
Karratha	2	39	73	56	✓	2	287	807	547	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Kununurra	3	33	34	33	✓	3	430	441	435	✓	3	<1	<1	<1	✓	3	<0.1	0.2	<0.1	✓
Marble Bar	4	175	220	199	(1)	3	1061	1214	1125	(2)	3	<1	<1	<1	✓	3	0.1	0.2	0.2	✓
Newman	2	32	68	50	✓	2	281	420	351	✓	2	<1	<1	<1	✓	2	<0.1	<0.1	<0.1	✓
Nullagine	2	63	65	64	✓	2	466	480	473	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Onslow	3	25	32	28	✓	3	427	474	443	✓	3	<1	<1	<1	✓	3	<0.1	0.1	<0.1	✓
Point Samson	1	46	46	46	✓	1	556	556	556	✓	1	<1	<1	<1	✓	1	0.1	0.1	0.1	✓
Roebourne	2	44	60	52	✓	2	323	704	514	✓	2	<1	<1	<1	✓	2	<0.1	0.1	<0.1	✓
Wickham	2	38	91	65	✓	2	292	920	606	(3)	2	<1	<1	<1	✓	2	0.2	0.2	0.2	✓
Wyndham	2	21	23	22	✓	2	140	150	145	✓	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. (3) Elevated TDS is a characteristic of the source supplying this locality for part of the year (Millstream).