



**SOUTH WEST IRRIGATION MANAGEMENT  
COOPERATIVE**

**2022 – 2023 Annual Water Quality Report**

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## 1 Abbreviations and Definitions

ADWG	Australian Drinking Water Guidelines	The Australian Drinking Water Guidelines provide guidance to water regulators and suppliers on monitoring and managing drinking water quality
Bq/L	Becquerels per litre	The unit of activity of radioactivity per unit volume
DoH	Department of Health	The Department of health oversees the compliance of the Western Australian health system
DWER	Department of Water and Environmental Regulation	Department of Water and Environmental Regulation manages and regulates the state's environment and water resources
DWQMP	Drinking Water Quality Management Plan	Describes how the production, distribution and monitoring of drinking water is managed by Harvey Water
DWSPP	Drinking Water Source Protection Plan	Outlines Harvey Water's plan to ensure the protection of water quality in the immediate area of the bore and the aquifer that is used for supply of drinking water in the Kemerton Industrial Area
ERA	Economic Regulation Authority	The ERA is Western Australia's independent economic regulator responsible for ensuring the delivery of water, electricity, gas and rail services in Western Australia in the long term interest of consumers
KIA	Kemerton Industrial Area	Kemerton Industrial Area is a site for strategic and heavy industry located approximately 17 kilometres north of Bunbury in Western Australia
mg/L	Milligrams per litre	Mass of a chemical per unit volume of water
ML	Megalitre	A unit of volume in the metric system, equal to 1,000,000 litres
MoU	Memorandum of Understanding	An agreement between the DoH and Harvey Water with respect to the supply and delivery of drinking water
NATA	National Association of Testing Authorities	Australia's leading national accreditation body, recognised by government to assess organisations against a number of international standards for laboratories, inspection bodies, proficiency testing scheme providers and reference material producers.
NTU	Nephelometric Turbidity Unit	A measure of turbidity

PFAS	Per – and polyfluoroalkyl substances	A group of over 4,000 synthetic chemicals that are used for a variety of household and industrial purposes
pH	pH	A figure expressing the acidity or alkalinity of a solution
TDS	Total Dissolved Solids	A measure of the dissolved combined content of all inorganic and organic substances present
TSS	Total Suspended Solids	The dry weight of suspended particles, that are not dissolved, in a sample of water that can be trapped by a filter.
	Thermophilic <i>Naegleria</i>	Thermophilic <i>Naegleria</i> refers to a group of amoebae which includes <i>Naegleria fowleri</i> , the organism that causes the waterborne disease primary amoebic meningoencephalitis. <i>Naegleria fowleri</i> is an environmental pathogen which naturally lives in fresh warm water.
µg/L	Micrograms per Litre	A unit of concentration of water or wastewater constituent

## 2 Water Provider Information

If you have any concerns, comments or would like more information relating to the water quality provided by Harvey Water, please do not hesitate in contacting Harvey Water by any of the below forms of contact.

Harvey Water Contact Details	
Name of Company	South West Irrigation Management Co-Operative, Trading as Harvey Water
Company Address	1 Turnbull Street, Harvey, WA, 6220
Company Phone	(08) 9721 0100
Company Email	<a href="mailto:admin@harveywater.com.au">admin@harveywater.com.au</a>
Chief Executive Officer	Bruce Hathway
DoH Liaison Officers	Cameron Norris and Aled Lewis

### 2.1 System Information

#### 2.1.1 Supply Details

Harvey Water's main water supply is of non-potable water for farming, irrigation and industrial services through water from dams in the south west, but this report relates to Harvey Water's supply of drinking water to the Kemerton Industrial Area through the water treatment in the Kemerton Industrial Area. For information about Harvey Water's supply of non-potable water, or their drinking water supply, please visit the Harvey Water website [www.harveywater.com.au](http://www.harveywater.com.au).

#### 2.1.2 Catchment Details

Harvey Water has installed a bore into the Leederville aquifer to supply water for treatment to the Kemerton Industrial Area. Water from the bore is treated through a water treatment plant designed to bring the water into compliance with the Department of Water and Environmental Regulation (DWER), the Department of Health (DoH) and the Australian Drinking Water Guidelines (ADWG).

The bore area is situated on the Swan Coastal Plain, which is formed of shoreline and coastal dune deposits extending from the Darling Scarp to the Indian Ocean.

Raw groundwater is pumped to the water treatment plant where it is treated through a system of filters and chemical dosing. Water is initially passed through a multimedia filter to remove large particulates from the source water. After the multimedia filtration, water is chlorinated with sodium hypochlorite. The chlorinated water is then passed through a media filter that utilises catalytic filtration media for the removal of iron and manganese.

#### 2.1.3 Distribution System

Chlorination and pH adjustments are undertaken in order to maintain a final free chlorine concentration of between 0.5 – 2.0 milligrams per litre and a pH between 6.5 – 8.5 as per

ADWG. Treated drinking water is stored in a 200 kilolitre storage tank on site prior to supply to the end user. To manage pH levels in the drinking water system, Harvey Water uses sulfuric acid.

#### **2.1.4 Sampling Schedule and Procedure**

Drinking water sampling is carried out in accordance with the ADWG and Harvey Water's Drinking Water Quality Management Plan (DWQMP). Free chlorine residual, pH and turbidity are analysed continuously within the drinking water treatment plant. Weekly samples of drinking water are analysed in a NATA registered laboratory for pH, electrical conductivity, total dissolved solids, total suspended solids, alkalinity, chloride, coliforms, *E. coli* and amoeba. Further to this, monthly samples are analysed for metals (calcium, magnesium, sodium, iron, cadmium, copper, manganese and lead), hardness, sulfate and nitrate. Annual analysis further expands on the weekly and monthly analysis to include a full suite of metals analysis as well as organic compounds and radiological tests.

## **2.2 Drinking Water Quality Management Plan**

Harvey Water has implemented a Drinking Water Quality Management Plan (DWQMP) to ensure the optimum operation and management of the drinking water supply to the Kemerton Industrial Area. The DWQMP is an integral part of the Memorandum of Understanding (MoU) between Harvey Water and the Department of Health (DoH). The DWQMP and MoU are also supported by the Australian Drinking Water Guidelines (ADWG).

A copy of the MoU is available on the Harvey Water website [https://www.harveywater.com.au/uploads/1/2/0/6/120624466/swimco\\_harvey\\_doh\\_mou\\_text\\_jun2022.pdf](https://www.harveywater.com.au/uploads/1/2/0/6/120624466/swimco_harvey_doh_mou_text_jun2022.pdf).

The current ADWG can be accessed via the following link: <https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines>.

The Harvey Water DWQMP was developed to manage and ensure that Harvey Water's water treatment plant is operating efficiently and to ensure compliance with ADWG and early detection of faults. It outlines the following:

- General background information of the system, including location, duty of care, catchment details, pipe route and water treatment processes. Monitoring plan including operational checks, sampling procedures and record keeping.
- Work Health and Safety procedures.
- Risk Assessment of the drinking water system, including the bore, pipeline and water treatment plant.
- Non-Conformance procedures.

The MoU between Harvey Water and the DoH commenced in June 2022 and is used to establish and maintain a strong co-operative relationship between Harvey Water and the DoH with a commitment from both parties with respect to managing the drinking water quality and protecting public health. The MoU operates within licensing framework that has been developed by the Economic Regulation Authority (ERA) in accordance with the Water Services Act 2012.

Harvey Water recognises and supports the ongoing work of the [Advisory Committee for the Purity of Water](#) (ACPOW).

## **2.3 Drinking Water Source Protection Plan**

In addition to the Drinking Water Quality Management Plan, Harvey Water has developed a Drinking Water Source Protection Plan (DWSPP). This plan identifies existing and potential threats to the groundwater source in the immediate vicinity of the Harvey Water production bore. The plan is a result of consultation with key stakeholders including landowners, local government authorities and State Government, DoH and DWER. It provides additional information on the source of water used for drinking water supply by Harvey Water for the Kemerton Industrial Area and the operation for the provision of safe drinking water supply through protection and management of the drinking water source.

In relation to compliance with the provisions of the Groundwater Licence, Harvey water monitors the level of groundwater in the vicinity of the abstraction bore as well as groundwater chemistry levels. In the 2022 to 2023 reporting period, a total of 34,700 kL of groundwater was abstracted from the supply bore in the Kemerton Industrial Area.

## **2.4 Drinking Water Quality Policy**

### **2.4.1 Purpose**

Harvey Water is committed to providing sustainable, high quality drinking water that consistently meets or exceeds customer expectations, the Australian Drinking Water Guidelines and all regulatory requirements.

### **2.4.2 Scope**

This policy covers all drinking water supplied by Harvey Water.

### **2.4.3 Policy Statement**

Harvey Water will:

- Endorse and embrace the Australian Drinking Water Guidelines.
- Maintain a Memorandum of Understanding with the Department of Health and fulfil all requirements as required by the Harvey Water operating licence.
- Maintain and implement a Drinking Water Quality Management System consistent with the ADWG framework.
- Use a risk-based approach in which potential threats to water quality are identified and controlled.
- Monitor drinking water through a prescribed testing regime, using NATA accredited laboratories to test water quality.
- Ensure relevant staff training is provided.
- Operate and maintain our treatment plant and infrastructure following best practice principles.
- Provide timely and relevant updates on water quality.
- Maintain appropriate contingency planning and incident response capabilities.
- Promote confidence in the water supply and its management
- Welcome customer feedback on water quality and promptly address any concerns identified.
- Ensure our own water extraction is sustainable.

## **2.5 Mock Incident Scenario**

As part of Harvey Water's Drinking Water Quality Management Plan and the MoU with the Department of Health, Harvey Water are required to undertake mock incident scenario's in relation to failure of the drinking water system.

### **2.5.1 Scenario**

In April 2023, Harvey Water and the Department of Health ran a mock scenario of a Low Water Alert in the drinking Water Tank. The proposed cause of the lack of water had been decided to be due to an overdraw from the solar power battery due to the backup generator not activating. Power at the Kemerton Industrial Area site is assumed to be working as normal, including the Harvey Water drinking water treatment plant. The scenario assumes that this has happened on a Sunday morning, out of normal work hours,

### **2.5.2 Learnings**

Harvey Water staff members have a good understanding of the internal and external structure for reporting incidents that affected the drinking water quality or supply. Further information was needed regarding the testing the end user laboratory can undertake in an emergency, as after an incident that has the potential to affect drinking water quality, the Department of Health require two consecutive clear microbiological tests before the water supply can return to normal operations.



### 3 Performance Summary

The performance of the Harvey Water drinking water system for the year July 2022 to June 2023 is summarised in Table 3-1 below.

**Table 3-1 – Annual Performance**

<b>Water Quality Meeting the Drinking Water Guidelines July 2022 – June 2023</b>			
<b>Parameters</b>	<b>No. of Analyses</b>	<b>No. of Analyses Complying with ADWG</b>	<b>No. of exceedances of ADWG</b>
<b>Microbial Quality</b>			
<i>E. Coli</i>	49	49	0
Thermophilic <i>Naegleria</i>	47	47	0
<b>Chemical and Physical Quality</b>			
Health Related	283	283	0
Aesthetic	191	146	45
<b>Radiological Quality</b>			
Gross Alpha activity	1	1	0
Gross Beta activity	1	1	0
<b>Trihalomethanes</b>			
THM's	2	2	0
<b>PFAS Testing</b>			
PFAS	1	1	0

## 4 Microbial Performance

During the July 2022 to June 2023 annual reporting period, there were no reported exceedances for the microbial parameters when compared against the ADWG in the drinking water system as summarised in Section **Error! Reference source not found.** below.

### 4.1 Microbial – Compliance Summary

Harvey Water Distribution System July 2022 - June 2023				
Microbial Characteristic	MOU Compliance Criteria	No. of Analyses	No. of Complying Analyses	% Compliance
<b>Bacterial</b>				
<i>E. Coli</i>	Non-detect	49	49	100
<b>Amoeba</b>				
Thermophilic <i>Naegleria</i>	Non-detect	47	47	100

### 4.2 Microbial – Exception Notification

During the reporting period of July 2022 to June 2023, there were no reported exceedances of microbial characteristics.

## 5 Chemical – Health Related Performance

During the July 2022 to June 2023 annual reporting period, there were zero reported exceedances for the chemical health criteria in accordance with the ADWG.

### 5.1 Chemical: Health Related – Compliance Summary

Harvey Water Distribution System July 2022 – June 2023					
Health Characteristic	ADWG Guideline value (mg/L)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance	Max Value of Analysis (mg/L)
Antimony	0.003	1	1	100	<0.001
Cadmium	0.002	11	11	100	<0.0001
Chlorine (Inhouse testing free residual)	5	223	223	100	2.3
Copper	2	11	11	100	<0.001
Lead	0.01	11	11	100	0.0015
Manganese	0.5	11	11	100	0.072
Molybdenum	0.05	1	1	100	<0.001
Nickel	0.02	1	1	100	<0.001
Nitrate	50	11	11	100	3.2
Trihalomethanes	0.25	1	1	100	0.137
PFAS	0.07 µg/L	1	1	100	<0.01 µg/L

### 5.2 Chemical: Health Related – Exception Notifications

There were no chemical health related exception notifications during the reporting period.

## 6 Chemical – Aesthetic Performance

During the July 2022 to June 2023 annual reporting period, there were three analytes that exceeded the chemical aesthetic parameters in the drinking water distribution system. The details of these are outlined in section 6.2.

### 6.1 Chemical – Aesthetic

Harvey Water Distribution System July 2022 – June 2023					
Aesthetic characteristic	ADWG guideline value (mg/L unless stated)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance	Max Value of Analysis (mg/L unless stated)
pH	6.5 – 8.5	37	36	97.3	(7.2) 8.6
TDS	600	38	3	8	880
Turbidity	5 NTU	37	37	100	3.5 NTU
Aluminium	0.2	1	1	100	<0.01
Sodium	180	11	11	100	130
Hardness	200	11	1	9	240
Chloride	250	35	35	100	250
Sulfate	250	10	10	100	72
Iron	0.3	11	11	100	0.17
Zinc	3	1	1	100	0.0023

## 6.2 Chemical – Aesthetic – Incident Specific Information

Three analytes exceeded the aesthetic guidelines with these exceedances discussed below:

- pH – during this period, the pH in the drinking water exceeded the maximum ADWG Aesthetic level with a value of 8.6. An issue with the acid dosing control system was identified, which was subsequently rectified. Harvey Water will continue to monitor the pH of the drinking water to ensure correct operation of the acid dosing system for pH control.
- Total Dissolved Solids (TDS) – during this period, the TDS level in the drinking water system ranged from 530 – 880 milligrams per litre. It is noted water with TDS in the range of 600 – 900 milligrams per litre is considered to have fair palatability, rather than good palatability for water with TDS < 600 milligrams per litre. As the water in this system falls within the fair range, the water quality will continue to be monitored to ensure the quality does not deteriorate further.

Hardness - Hardness is another parameter that exceeded the aesthetic guideline in accordance with the ADWG. The main issue of concern with hardness is the formation of scaling in pipework. The optimum hardness of drinking water is in the range of 60 – 200 mg/L as CaCO<sub>3</sub>. The maximum hardness level in this water source recorded during this reporting period was 240 milligrams per litre. According to the ADWG, water with hardness in the range of 200 – 500 milligrams per litre as CaCO<sub>3</sub> will have increasing scaling problems. Harvey Water will continue to monitor the level of hardness in the drinking water supply to ensure scaling does not pose an issue to the ongoing supply of water to the end user.

## 7 Radiological Performance

### 7.1 Radiological – Compliance Summary

During the July 2022 to June 2023 annual reporting period, there were zero reported exceedances of radiological criteria in accordance with the ADWG.

<b>Harvey Water Distribution System July 2022 – June 2023</b>					
<b>Radiological Characteristic</b>	<b>ADWG Screening value (Bq/L)</b>	<b>No. of Analyses</b>	<b>No. of Analyses Complying with ADWG</b>	<b>% Compliance</b>	<b>Max Value of Analysis (Bq/L)</b>
Gross Alpha activity	0.5	1	1	100	0.15
Gross Beta activity (excluding K-40)	0.5	1	1	100	0.204

## **8 Acknowledgements**

Harvey Water acknowledges the valuable assistance of the Department of Health WA throughout the first full year of operation of the drinking water treatment and distribution system in the Kemerton Industrial Area.

## **9 Enquiries**

Any request for further information regarding the Harvey Water drinking water supply in the Kemerton Industrial Area can be directed to Harvey Water via telephone at (08) 9729 0100, or via email [admin@harveywater.com.au](mailto:admin@harveywater.com.au).