SOUTH WEST IRRIGATION MANAGEMENT COOPERATIVE

Report to the Department of Health for the Period 01 October 2023 to 31 December 2023

Rev	Date	Details	Prepared By
			Name
1	5/01/2024	Approved for Issue	JC
2			
3			
4			

Contents

1 Water Provider Information

Water Provider 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	admin@harveywater.com.au
Chief Executive Officer	Bruce Hathway
CEO Email	admin@harveywater.com.au
DoH Liaison Officers	Cameron Norris and Aled Lewis
DoH Liaison Officer Email	cnorris@harveywater.com.au and alewis@harveywater.com.au

1.1 System Information (Annual Report Only)

1.1.1 Catchment Details

Harvey Water has installed a bore into the Leederville aquifer to supply water for treatment to the Albemarle Lithium processing plant in theKemerton Industrial Area. Water from the bore is treated through a Water Treatment Plant (WTP) designed to bring in accordance with the Department of Water and Environmental Regulations (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. Lakes and swamp occur in the low-lying interdunal depressions. The coastal plain is drained by the Wellesley River and a number of drains which discharge into it. Benger Swamp and Mialla Lagoon are prominent wetlands which occupuy large shallow depressions in the coastal plain close to the Darling Scarp. The Wellesley River, the only major watercourse in the vicinity of the site, runs ina south-westerly direction, 2km to the east of the bore area. This is one of the major river systems in the area that flows into the Brunswick River, which ultimately merges with the Collie River prior to discharging into the Leschenault Inlet.

Raw water is pumped to the WTP where it is treated through a system of filters and chemical dosing. Water is initially passed through a 100% glass multimedia filter to remove large particualtes from the source water. After the multimedia filtration, water is chlorinated using sodium hypochlorite. Chlorinated water is then passed through a DMI media filter which utilises catalytic filtration media for the removal of iron and manganese.

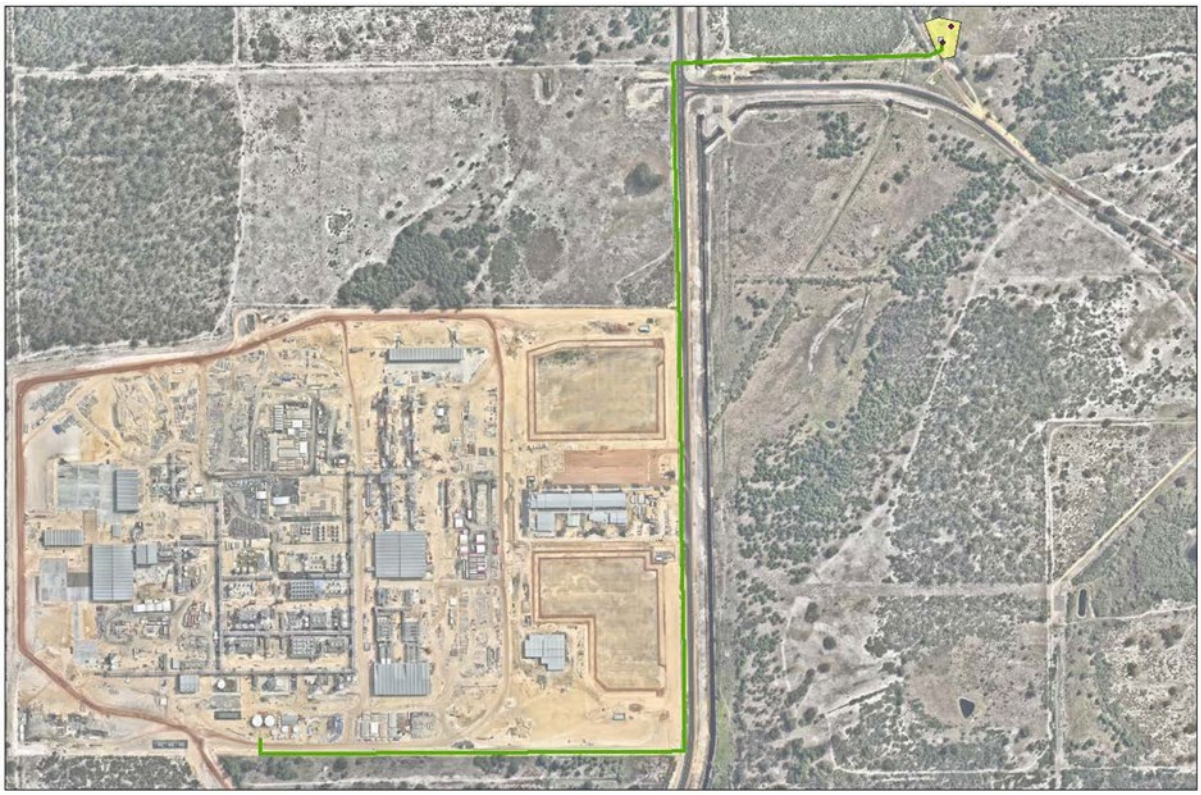

Figure 1 – Location of Bore and WTP

1.1.2 Distribution System

Chlorination and pH adjustments are undertaken in order to maintain a final free chlorine concentration of between 0.5 – 2.0 mg/L and a pH between 6.5 – 8.5 as per ADWG. Treated potable water is stored in a 200kL storage tank on site prior to pumped distribution around the Albemarle site.

1.1.3 Sampling Schedule & Procedure

Drinking water sampling is carried out in accordance with the Australian Drinking Water Guidelines (ADWG) and the Harvey Water sampling procedure. Free chlorine residual, pH and turbidity are analysed continuously within the potable water treatment plant. Weekly samples of drinkingwater 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, sulphate 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.

Further monitoring or adjustments to the sampling schedule can be made in response to the following:

- Post any incident
- Issues identified during a risk assessment
- Availability of any new information or new industry best practices
- Recommentations from regulatory authorities.

2 Performance Summary

Water Quality Meeting the Drinking Water Guidelines October - December 2023			
Parameters	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**No. of exceedances of ADWG**
Microbial Quality			
E. Coli	12	12	0
Thermophilic *Naegleria*	12	12	0
Chemical and Physical Quality			
Health Related	79	79	0
Aesthetic	63	50	13
Radiological Quality			
Gross Alpha activity	1	1	0
Gross Beta activity	1	1	0

3 Microbial Performance

During the October to December 2023 reporting period, there were no reported exceedences of microbial paramaters when compared against the ADWG in the potable water system.

3.1 Microbial – Compliance Summary

Harvey Water Distribution System October – December 2023				
Microbial Characteristic	**MOU Compliance Criteria**	**No. of Analyses**	**No. of Complying Analyses**	**% Compliance**
Bacterial				
E. Coli	Non-detect	12	12	100
Amoeba				
Thermophilic *Naegleria*	Non-detect	12	12	100

3.2 Microbial – Exception Notifications

During the reporting period of October to December 2023, there were no reported exceedances of microbial characteristics.

4 Chemical – Health Related Performance

During the October to December 2023 reporting period there were zero reported exceedances of the chemical health parameters in accordance with the ADWG.

4.1 Chemical: Health Related – Compliance Summary

Harvey Water Distribution System October – December 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	3	3	100	<0.0001
Chlorine (In house testing free residual)	5	60	60	100	1.39
Copper	2	3	3	100	<0.001
Lead	0.01	3	3	100	<0.001
Manganese	0.5	3	3	100	0.013
Molybdenum	0.05	1	1	100	<0.001
Nickel	0.02	1	1	100	<0.001
Nitrate	50	3	3	100	0.46
Trihalomethanes	0.25	1	1	100	0.075

4.2 Chemical: Health Related – Exception Notifications

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

5 Chemical – Aesthetic Performance

During the October to December 2023 reporting period, there were three analytes that exceeded the chemical aesthetic parameters in the potable water distribution system. The details of these are outlined in section 5.2.

5.1 Chemical – Aesthetic

Harvey Water Distribution System October – December 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	12	11	91.7	(7.8) 8.8
TDS	600	12	3	25	650
Turbidity	5 NTU	12	12	100	0.68 NTU
Aluminium	0.2	1	1	100	<0.01
Sodium	180	3	3	100	130
Hardness	200	3	0	0	250
Chloride	250	12	12	100	230
Sulphate	250	3	3	100	39
Iron	0.3	3	3	100	0.14
Zinc	3	1	1	100	0.0019

5.2 Chemical – Aesthetic – Incident Specific Information

Two analytes exceeded the aesthetic guidelines in a total of 13 samples analysed. These exceedances are discussed below:

- pH – during this period, the pH exceeded the maximum ADWG range on one occasion, with a maximum value of 8.8 pH units. This was due to an air lock on the sulphuric acid dosing pump which prevented accurate dosing of sulphuric acid into the potable water treatment system to maintain the required pH setpoint. The air lock in the dosing pump has now been rectified. Harvey Water operators will continue to monitor the dosing pumps to ensure correct operation to prevent similar issues arising in the future.

- Total Dissolved Solids (TDS) – during this period, the TDS level in the potable water system ranged from 550 – 690 mg/L. It is noted water with TDS in the range of 600 – 900 mg/L is considered to have fair palatability, rather than good palatability for water with

TDS < 600mg/L. 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 potable water is in the range of 60 – 200 mg/L as $CaCO_3$. The maximum hardness level in this water source recorded during this reporting period was 250 mg/L. According to the ADWG, water with hardness in the range of 200 – 500 mg/L as $CaCO_3$ will have increasing scaling problems. Harvey Water will continue to monitor the level of hardness in the potable supply to ensure scaling does not pose an issue to the ongoing supply of drinking water to Albemarle.

6 Radiological Performance

6.1 Radiological – Compliance Summary

During the October to December 2023 reporting period, there were no analytes that exceeded the radiological criteriain the potable water distribution system.

Harvey Water Distribution System October – December 2023					
Radiological Characteristic	ADWG Compliance Criteria (Bq/L)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance	Max Value of Analysis (mg/L unless stated)
Gross Alpha Activity	0.5	1	1	100	0.206
Gross Beta Activity	0.5	1	1	100	0.222

7 Planned Sample Summary

7.1 Planned Sample Compliance Summary

Planned Samples October – December 2023								
Microbial			Chemical			Radiological		
Planned	Taken	% Taken	Planned	Taken	% Taken	Planned	Taken	% Taken
12	12	100	12	12	100	1	1	100

Note that 12 samples were planned for this quarter rather than the usual 13 due to the shutdown of laboratory services between the Christmas and New Year period.

7.2 Planned Sample Exception Notifications

During the October to December 2023 reporting period, there were no missing samples.