



BUSSELTON WATER

BUSSELTON WATER
Report to the Department of Health
for the period

1 July to 30 September 2020

Busselton Water
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Submitted to:
The Advisory Committee for the Purity of Water
Busselton Water's Website
CEO, Busselton Water (Mr Chris Elliott)

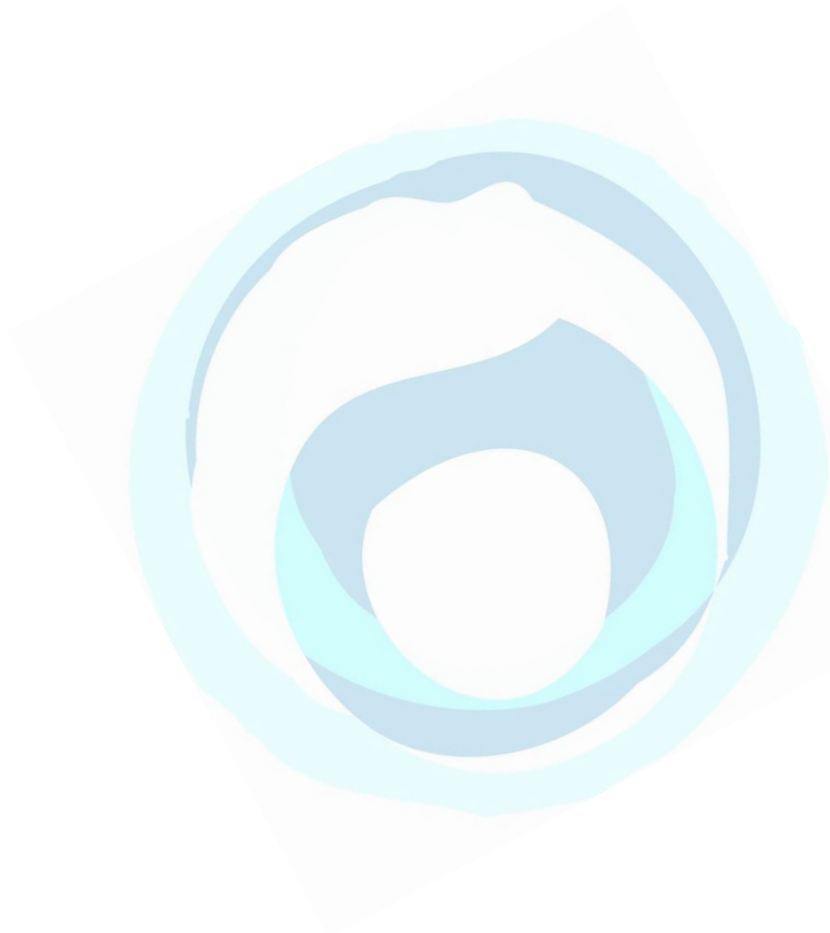


Table of Contents

1.0	WATER PROVIDER INFORMATION	2
1.1	System Information	2
2.0	PERFORMANCE SUMMARY	3
2.1	Treated Water – Microbiological Water Quality	3
2.2	Distributed Water - Microbiological Water Quality	4
3.0	MICROBIAL PERFORMANCE	5
3.1	Microbiological - Exception Notifications	5
3.2	Microbiological - Incident Specific Information	5
4.0	CHEMICAL – HEALTH RELATED PERFORMANCE	6
4.1	Chemical – Health Related – Exception Notifications	6
4.2	Chemical – Health Related - Chart	6
5.0	PHYSICAL AND CHEMICAL – AESTHETIC PERFORMANCE	9
5.1	Physical and Chemical - Aesthetic – Chart	9
6.0	RADIOLOGICAL PERFORMANCE	11
6.1	Radiological – Exception Notifications	11
6.2	Radiological Performance	11
7.0	PLANNED SAMPLE SUMMARY (QUARTER ENDING 30 SEPTEMBER 2020)	12
7.1	Planned Sample Exceptions	12
8.0	GENERAL NOTES / OTHER NEWS	12

1.0 Water Provider Information

Water Provider Contact Details			
Name of Company	Busselton Water		
Company Address	1 Fairbairn Road, Busselton WA 6280		
Company Phone	08 9781 0500	Fax	08 9754 1075
Company Email	admin@busseltonwater.wa.gov.au		
Chief Executive Officer	Chris Elliott		
DoH Liaison Officer	Chris Vigus, General Manager Operations		

1.1 System Information

Busselton Water operates one large interconnected water supply system with five bore sites consisting of none production bores, supplying three water treatment plants. Busselton Water operates its distribution system as one locality ("Busselton") and has strategically-placed sampling points throughout the distribution system.

Busselton Water's water supply is sourced from bores constructed in the Leederville and Yarragadee aquifers. The raw groundwater has turbidity and total iron concentrations above the drinking water guideline limits but these are readily removed by oxidation, aeration and filtration, and then disinfected at Busselton Water's treatment plants before distribution into the reticulation network. Significant focus and planning for growth is being applied to the establishment of an inland borefield that avoids the impacts of saltwater intrusion.

Busselton Water supplies drinking water to more than 28,000 people within the Busselton townsite and close environs such as Port Geographe, Siesta Park, Vasse and Wonnerup. As a sought-after tourist destination this figure can rise significantly during weekends and holiday periods. The average daily system demand for the reporting period was 9.55 ML/day.

2.0 Performance Summary

2.1 Treated Water – Microbiological Water Quality

Microbiological water quality analyses for treated water samples are collected downstream of the chlorinators at the water treatment plants. Compliance limits are summarised in the following table.

Samples were tested for thermotolerant coliforms, *E. coli* and Thermophilic *Naegleria* during the period. No microbial activity in relation to these parameters was detected during the period at any of the sample locations. Busselton Water remains fully compliant with the Australian Drinking Water Guidelines (ADWG) and the Memorandum of Understanding with the Department of Health in respect to *E. coli* and *N. fowleri*¹.

Period	<i>Escherichia coli</i> (<i>E. Coli</i>)				Thermophilic <i>Naegleria</i>			<i>Naegleria Fowleri</i> ¹		
	No. of Samples	No. of Non-conforming Samples	Maximum Individual Value	Rolling 12 Months Compliance	No. of Samples	Detected	Rolling 12 Months Compliance	No. of Samples	Detected	Rolling 12 Months Compliance
Jul-20	17	0	est <1	100%	17	0	100%	0	-	100%
Aug-20	24	0	est <1	100%	24	0	100%	0	-	100%
Sep-20	20	0	est <1	100%	20	0	100%	0	-	100%
Total for Third Quarter 2020	61	0	-	-	61	0	-	0	-	-
Third Quarter 2020 Performance	100%			-	100%		-	100%		-
Required Compliance:	100%				95%			100%		

Note 1: Tests for *Naegleria Fowleri* only required if Thermophilic *Naegleria* is detected.

Note 2: Storage Tank 1 at Plant 2 was offline for maintenance during July and August 2020. Sampling at this location was not undertaken on 20 July, 27 July and 3 August 2020.

Note 3: The Storage Tank at Plant 1 was offline on 27 July 2020, and sampling was not undertaken at this location on that date.

2.2 Distributed Water - Microbiological Water Quality

Microbiological water quality analyses for the seven locations within the distribution system are sampled weekly and are summarised in the following table.

Samples were tested for thermotolerant coliforms, *E. coli* and Thermophilic *Naegleria* during the period. No microbial activity in relation to these parameters was detected during the three months at any of the sample locations. Busselton Water remains fully compliant with the Australian Drinking Water Guidelines (ADWG) and the Memorandum of Understanding with the Department of Health in respect to *E. coli* and *N. fowleri*¹.

Period	<i>Escherichia coli</i> (<i>E. Coli</i>)				Thermophilic <i>Naegleria</i>			<i>Naegleria Fowleri</i> ¹		
	No. of Samples	No. of Non-conforming Samples	Maximum Individual Value	Rolling 12 Months Compliance	No. of Samples	Detected	Rolling 12 Months Compliance	No. of Samples	Detected	Rolling 12 Months Compliance
Jul-20	28	0	est <1	100%	28	0	100%	0	-	100%
Aug-20	35	0	est <1	100%	35	0	100%	0	-	100%
Sep-20	28	0	est <1	100%	28	0	100%	0	-	100%
Total for Third Quarter 2020	91	0	-	-	91	0	-	0	-	-
Third Quarter 2020 Performance	100%			-	100%		-	100%		-
Required Compliance:	100%				95%			100%		

Note 1: Tests for *Naegleria Fowleri* only required if Thermophilic *Naegleria* is detected.

3.0 Microbial Performance

3.1 Microbiological - Exception Notifications

Microbiological Water Quality Exceptions							
Locality	Population Served	Date	Microbiological Characteristic	MoU Alert Level	Remedial Action	DoH Notified	Close Out Date
Busselton	>28,000	01/07/2020 to 30/09/2020			Nil		

3.2 Microbiological - Incident Specific Information

Microbiological Incidents				
Locality	Date of Incident	Details of Incident	MoU Alert Level	Remedial Action
Busselton		Nil		

4.0 Chemical – Health Related Performance

The results of water samples collected from the operating production bores (raw water) and at the assessable distribution sampling points (distribution water) during the period are summarised in Table 4.2 for health-related guidelines. They show that the water supply is fully compliant with the health-related Australian Drinking Water Guidelines, the operating licence issued by the ERA and the protocols of Busselton Water’s Memorandum of Understanding with the Department of Health.

4.1 Chemical – Health Related – Exception Notifications

Health-Related Chemical Water Quality Exceptions							
Locality	Population served	Date	Health Related Chemical Characteristic	MoU Alert Level	Remedial Action	DoH Notified	Close Out Date
Busselton	>28,000	01/07/2020 to 30/09/2020			NIL		

4.2 Chemical – Health Related - Chart

Type	Unit	ADWG Limit (mg/L)	Lab Limit of Reporting (mg/L)	Raw Water (Bores)			Distribution Water			
				Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value	Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value mg/L	Compliance (%)
Antimony	mg/L	0.003	0.001	NR			4	4	ND	100%
Arsenic	mg/L	0.01	0.001	NR			4	4	ND	100%
Barium	mg/L	2.0	0.01	NR			4	4	0.31	100%
Beryllium	mg/L	0.06	0.01	NR			4	4	ND	100%
Boron	mg/L	4.0	0.05	NR			4	4	0.26	100%

Type	Unit	ADWG Limit (mg/L)	Lab Limit of Reporting (mg/L)	Raw Water (Bores)			Distribution Water			
				Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value	Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value mg/L	Compliance (%)
Bromodichloromethane	mg/L	0.25*	0.001	NR			3	3	ND	100%
Bromoform	mg/L	0.25*	0.001	NR			3	3	0.006	100%
Cadmium	mg/L	0.002	0.0001	NR			4	4	ND	100%
Chlorine (Total)	mg/L	5		NR			91	91	0.75	100%
Chloroform	mg/L	0.25*	0.001	NR			3	3	ND	100%
Copper	mg/L	2.0	0.001	NR			4	4	0.027	100%
Dibromochloromethane	mg/L	0.25*	0.001	NR			3	3	0.003	100%
Fluoride	mg/L	1.5	0.1	NR			21	21	0.6	100%
Lead	mg/L	0.01	0.001	NR			4	4	ND	100%
Manganese (Soluble)	mg/L	0.1	0.01	22	20	0.20	21	21	ND	100%
Manganese (Total)	mg/L	0.1	0.01	22	19	0.23	21	21	ND	100%
Mercury	mg/L	0.001	0.0001	NR			4	4	ND	100%
Molybdenum	mg/L	0.05	0.001	NR			4	4	ND	100%
Nickel	mg/L	0.02	0.001	NR			4	4	ND	100%
Nitrate	mg/L	50	0.05	8	8	ND	NR			
Nitrite	mg/L	3	0.05	8	8	ND	NR			
Selenium	mg/L	0.01	0.001	NR			4	4	ND	100%
Silver	mg/L	0.1	0.001	NR			4	4	ND	100%
Total Trihalomethanes	mg/L	0.25*	0.001	NR			3	3	0.009	100%

Type	Unit	ADWG Limit (mg/L)	Lab Limit of Reporting (mg/L)	Raw Water (Bores)			Distribution Water			
				Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value	Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value mg/L	Compliance (%)
Uranium	mg/L	0.017	0.001	NR			4	4	ND	100%

Note 1 Chlorine Total is a Busselton Water in-house test. All others are NATA accredited test results. The operating target for residual chlorine in the reticulation system is 0.4 – 0.6 mg/L. Total chlorine levels will be higher than residual levels.

Note 2 * The concentration of trihalomethanes, either individually or in total, in drinking water should not exceed 0.25 mg/L

Note 3 Busselton Water does not add fluoride to the water. The naturally occurring fluoride levels vary from bore to bore. The maximum value shown is not indicative of the level throughout the Busselton water supply. Fluoride levels in the drinking water vary with location and time and can be between 0.03 and 0.6 mg/L.

ADWG	Australian Drinking Water Guidelines
Bq/L	Becquerels per litre
CFU	colony forming units
HU	Hazen Units
mg/L	milligrams per litre
NA	Not Applicable
ND	Not Detected
NR	Not Required
NTU	Nephelometric Turbidity Units
pH	Acidity/basicity
uS/cm	Micro siemens per centimetre

5.0 Physical and Chemical – Aesthetic Performance

The results of water samples collected from the operating production bores (i.e. raw water) and at the assessable distribution sampling points (i.e. distribution water) during the period are summarised in Table 5.1 for aesthetic related guidelines. The treatment process reduces colour and iron content to below those levels specified in the Australian Drinking Water Guidelines (ADWG).

5.1 Physical and Chemical - Aesthetic – Chart

Type	Unit	ADWG Limit (mg/L)	Lab Limit of Reporting (mg/L)	Raw Water (Bores)			Distribution Water			
				Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value	Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value (mg/L)	Compliance (%)
Alkalinity (Bicarbonate)	mg/L	-	5	8	8	170	4	4	140	100%
Alkalinity (Carbonate)	mg/L	-	5	8	8	ND	4	4	ND	100%
Alkalinity (Hydroxide)	mg/L	-	5	8	8	ND	4	4	ND	100%
Alkalinity (Total)	mg/L	-	5	8	8	170	4	4	140	100%
Aluminium (Soluble)	mg/L	0.2	0.1	8	8	ND	4	4	0.02	100%
Aluminium (Total)	mg/L	0.2	0.1	8	8	0.01	4	4	0.02	100%
Ammonia	mg/L	0.5	0.005	NR			4	4	ND	100%
Calcium	mg/L	-	0.1	NR			4	4	38	100%
Chloride	mg/L	250	5	8	8	150	NR			
Colour True	HU	15	5	22	22	ND	21	21	ND	100%
Electrical Conductivity	uS/cm	-	10	22	22	790	21	21	670	100%
Filterable Reactive Phosphorus	mg/L	-	0.01	8	8	0.28	NR			
Filterable Reactive Phosphorus as PO4	mg/L	-	0.05	8	8	0.86	NR			
Hardness (as CaCO3)	mg/L	200	5	8	8	180	4	4	160	100%
Iron (Soluble)	mg/L	0.3	0.01	22	21	0.31	21	21	ND	100%
Iron (Total)	mg/L	0.3	0.01	22	6	7.9	21	21	0.01	100%
Magnesium	mg/L	-	0.1	NR			4	4	19	100%
pH	pH	6.5-8.5		24	24	7.7	91	91	8.3	100%

Type	Unit	ADWG Limit (mg/L)	Lab Limit of Reporting (mg/L)	Raw Water (Bores)			Distribution Water			
				Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value	Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value (mg/L)	Compliance (%)
Salinity (as Total Dissolved Solids)	mg/L	600	5	22	22	470	NR			
Silica	mg/L	80	0.1	8	8	14	NR			
Sodium	mg/L	180	0.1	8	8	130	NR			
Sulphate	mg/L	250	1	8	8	21	NR			
Total Hardness by Calculation	mg/L	200	5	8	8	180	4	4	160	100%
Turbidity	NTU	5	0	24	24	1.41	91	91	0.30	100%
Zinc	mg/L	-	0.01	NR			4	4	0.007	100%

Note 1: pH and Turbidity are Busselton Water in-house tests. All others are NATA accredited test results.

ADWG	Australian Drinking Water Guidelines
Bq/L	Becquerels per litre
CFU	colony forming units
HU	Hazen Units
mg/L	milligrams per litre
NA	Not Applicable
ND	Not Detected
NR	Not Required
NTU	Nephelometric Turbidity Units
pH	Acidity/basicity
uS/cm	Micro siemens per centimetre

6.0 Radiological Performance

6.1 Radiological – Exception Notifications

Radiological Water Quality Exceptions							
Locality	Population served	Date	Radiological Characteristic	MoU Alert Level	Remedial Action	DoH Notified	Close Out Date
Busselton	>28,000	01/07/2020 to 30/09/2020			NIL		

6.2 Radiological Performance

Radiological Performance is tested annually in April.

7.0 Planned Sample Summary (Quarter Ending 30 September 2020)

Locality	Microbiological			Physical and Chemical			Radiological			Fluoride		
	Planned	Taken	% Taken	Planned	Taken	% Taken	Planned	Taken	% Taken	Planned	Taken	% Taken
Busselton	156	152	97.4%	864	864	100%	Nil	Nil	N/A	21	21	100%

Note 1 Chemical testing totals shown in Table 7.0 relate to scheduled NATA and in-house sampling undertaken in accordance with Busselton Water's Water Quality Monitoring Program, which has been endorsed by the Department of Health.

7.1 Planned Sample Exceptions

Planned Sample Exceptions			
Locality	Characteristic (Microbiological/ Physical and Chemical/ Radiological)	Number of Samples	Reason for missed sample
Busselton	Microbiological	4	The Storage Tank at Plant 1 and Storage Tank 1 at Plant 2 were offline during July and August for maintenance.

8.0 General Notes / Other News

Nil.