



BUSSELTON WATER

Report to the Department of Health

for the period

1 January to 31 March 2020

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



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1.0 Water Provider Information

Water Provider Contact Details										
Name of Company	Busselton Water	Busselton Water								
Company Address	1 Fairbairn Road, Busse	elton WA	6280							
Company Phone	08 9781 0500	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 Ma	anager O _l	perations							

1.1 System Information

Busselton Water operates one large interconnected water supply system with four bore sites consisting of eight 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 26,000 customers 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 21.5 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.

		Escherio (E. C	chia coli Coli)		Ther	nophilic <i>Nae</i>	gleria	Naegleria Fowleri ¹			
Period	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	
Jan-20	20	0	est <1	100%	20	0	100%	0	-	100%	
Feb-20	20	0	est <1	100%	20	0	100%	0	-	100%	
Mar-20	25	0	est <1	100%	25	0	100%	0	-	100%	
Total for First Quarter 2020	65	0	-	-	65	0	-	0	-	-	
First Quarter 2020 Performance		100%		-	100%		-	100%		-	
Required Compliance:		100	0%			95%		100%			

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

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.

			chia coli Coli)		Therr	mophilic <i>Nae</i>	gleria	Naegleria Fowleri ¹			
Period	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	
Jan-20	28	0	est <1	100%	28	0	100%	0	-	100%	
Feb-20	28 0 est <1		est <1	100%	28	0	100%	0	-	100%	
Mar-20	35	0	est <1	100%	35	0	100%	0	-	100%	
Total for First Quarter 2020	91	0	-	-	91	0	-	0	-	-	
First Quarter 2020 Performance		100%		-	100%		-	100%		-	
Required Compliance:		100	0%		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	Microbiologic al Characteristic	MoU Alert Level	Remedial Action	DoH Notified	Close Out Date							
Busselton	>26,000	01/01/2020 to 31/03/2020	Nil											

3.2 Microbiological - Incident Specific Information

		Microbiolo	dents	
Locality	Date of Incident	Details of Incident	MoU Alert Level	Remedial Action
Busselton	16/03/2020	On 23 March 2020, abnormal drinking water quality laboratory results were received for the sample taken on 16 March 2020 from the assessable sampling point "Hawker Approach, Yalyalup WA 6280". The abnormal results were a high Heterotrophic Plant Count (HPC) and the presence of Total Coliforms. <i>E-coli</i> and Thermotolerant coliforms were reported as below the detection limit. Residual chlorine was in the normal range.	1	 The event was reported to the Department of Health duty officer by email and telephone on 23 March 2020. The likely cause of the event was identified as a water main break in Causeway Road that occurred about 7:30 am on Sunday 15 March 2020. The damaged main had been isolated for repair until 2:30 pm on that Sunday. Isolation of the main had caused Yalyalup to be supplied at low pressure during repair. Minor ingress of groundwater through the broken Causeway Road pipe during initial closure of isolation valves was judged as possible. Resampling of water quality in Yalyalup demonstrated no presence of HPC or Total Coliforms. Turbidity measurements at Hawker Approach and other locations were found to be in their normal acceptable range before and after the event. The laboratory was asked to confirm the validity of no <i>E,Coli</i> or Thermotolerant coliforms being measured in the presence of high HPC in the Hawker Approach sample. The laboratory confirmed validity of the results. Customer dirty water complaints for the Yalyalup area were reviewed. No such complaints were received.

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	>26,000	01/01/2020 to 31/03/2020			NIL								

4.2 Chemical – Health Related - Chart

	Unit	ADWG Limit (mg/L)	Lab Limit of Reporting (mg/L)		Raw Water (Bores)		Distribution Water				
Туре				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	0.28	100%	
Beryllium	mg/L	0.06	0.01	NR			4	4	ND	100%	
Boron	mg/L	4.0	0.05	NR			4	4	0.16	100%	

			Lab Limit		Raw Water (Bores)			Distributi	on Water	
Туре	Unit	ADWG Limit (mg/L)	of Reporting (mg/L)	Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value	Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value mg/L	Compliance (%)
Bromate	mg/L	0.02	0.005	NR			NR			
Bromide	mg/L	-	0.05	NR			NR			
Bromodichloromethane	mg/L	0.25*	0.001	NR			3	3	ND	100%
Bromoform	mg/L	0.25*	0.001	NR			3	3	0.003	100%
Cadmium	mg/L	0.002	0.002	NR			4	4	ND	100%
Chlorine (Total)	mg/L	5		NR			28	28	0.67	100%
Chloroform	mg/L	0.25*	0.001	NR			3	3	0.006	100%
Copper	mg/L	2.0	0.01	NR			4	4	0.008	100%
Dibromochloromethane	mg/L	0.25*	0.001	NR			3	3	0.001	100%
Fluoride	mg/L	1.5	0.1	NR			21	21	0.6	100%
Lanthanum	mg/L	0.002	0.001	NR			NR			
Lead	mg/L	0.01	0.01	NR			4	4	ND	100%
Manganese (Soluble)	mg/L	0.1	0.01	22	22	0.07	21	21	ND	100%
Manganese (Total)	mg/L	0.1	0.01	22	22	0.08	21	21	ND	100%
Mercury	mg/L	0.001	0.0002	NR			4	4	ND	100%
Molybdenum	mg/L	0.05	0.01	NR			4	4	ND	100%
Nickel	mg/L	0.02	0.01	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			

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			Lab Limit		Raw Water (Bores)		Distribution Water				
Туре	Unit	ADWG Limit (mg/L)	of Reporting (mg/L)	Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value	Number Assessed	Number Complying with ADWG Limit	Maximum Individual Value mg/L	Compliance (%)	
Selenium	mg/L	0.01	0.001	NR			4	4	ND	100%	
Silver	mg/L	0.1	0.01	NR			4	4	ND	100%	
Total Trihalomethanes	mg/L	0.25*	0.001	NR			3	3	0.010	100%	
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	Becquerel 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
pН	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

			Lab Limit		Raw Water (Bores)			Distributi	ion Water	
Туре	Unit	ADWG Limit (mg/L)	of Reporting (mg/L)	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	150	4	4	110	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	150	4	4	110	100%
Aluminium (Soluble)	mg/L	0.2	0.1	8	8	ND	4	4	ND	100%
Aluminium (Total)	mg/L	0.2	0.1	8	8	ND	4	4	ND	100%
Ammonia	mg/L	0.5	0.005	NR			4	4	ND	100%
Calcium	mg/L	-	0.2	NR			4	4	27	100%
Chloride	mg/L	250	5	8	8	110	NR			
Colour True	HU	15	5	22	22	ND	21	21	ND	100%
Electrical Conductivity	uS/cm	-	10	22	22	810	21	21	680	100%
Filterable Reactive Phosphorus	mg/L	-	0.01	8	8	0.02	NR			
Filterable Reactive Phosphorus as PO4	mg/L	-	0.05	8	8	0.06	NR			
Hardness (as CaCO3)	mg/L	200	5	8	8	140	4	4	110	100%
Iron (Soluble)	mg/L	0.3	0.01	22	21	3.3	21	21	ND	100%
Iron (Total)	mg/L	0.3	0.01	22	6	5.8	21	21	0.04	100%
Magnesium	mg/L	-	0.1	NR			4	4	14	100%
pH	рН	6.5-8.5		23	23	8.0	28	28	7.8	100%

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Туре		ADWG Limit (mg/L)	Lab Limit of Reporting (mg/L)		Raw Water (Bores)		Distribution Water			
	Unit			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	500	5	22	22	390	NR			
Silica	mg/L	80	0.1	7	7	14	NR			
Sodium	mg/L	180	0.1	7	7	87	NR			
Sulphate	mg/L	250	1	7	7	17	NR			
Total Hardness by Calculation	mg/L	200	5	7	7	140	4	4	110	100%
Turbidity	NTU	5	NR	22	22	2.29	28	28	0.20	100%
Zinc	mg/L	-	0.01	NR			4	4	ND	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	Becquerel 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						
рН	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	>26,000	01/01/2020 to 31/03/2020			NIL				

6.2 Radiological Performance

Radiological Performance is tested annually in April.

7.0 Planned Sample Summary (Quarter Ending 31 March 2020)

Locality	Microbiological		Physical and Chemical			Radiological			Fluoride			
	Planned	Taken	% Taken	Planned	Taken	% Taken	Planned	Taken	% Taken	Planned	Taken	% Taken
Busselton	156	156	100%	652	652	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		Nil								

8.0 General Notes / Other News

Nil.