United Water

METROPOLITAN ADELAIDE WATER SUPPLY
Five Year Statistics for Customer Taps by Water Treatment Plant System

Data for the Period 1/7/99 - 30/6/04

	1996 NHMRC Guideline Value		ANSTEY HILL SYSTEM			BAROSSA SYSTEM			HAPPY VALLEY SYSTEM			HOPE VALLEY SYSTEM			LITTLE PARA SYSTEM			MYPONGA SYSTEM		
Parameter	Health	Aesthetic	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average
PHYSICAL CHARACTERISTICS																				
Total Hardness as $CaCO_3$ (mg/L)		200	68	161	122	133	176	151	89	190	138	92	216	147	110	177	141	89	127	109
Non Carbonate Hardness (mg/L) as $CaCO_3$			35	107	67	73	124	95	45	101	79	48	124	75	53	82	68	43	78	59
pH		6.5 - 8.5	7.0	8.2	7.4	6.9	8.6	7.2	6.9	8.3	7.3	7.0	7.8	7.3	7.0	8.0	7.4	7.0	8.3	7.4
Temperature (°C)			10.0	33.0	19.7	10.0	32.0	19.7	0.0	33.0	19.4	11.0	33.0	19.7	11.0	32.0	19.9	12.0	32.0	19.3
Conductivity (uS/cm@25°C)			398	829	637	658	831	763	569	904	681	503	900	671	553	861	676	627	768	691
Total Dissolved Solids - Calculated (mg/L)		500	218	456	350	362	457	419	313	497	374	276	495	369	304	473	371	344	422	380
True Colour @ 456nm (Hazen Units)		15	< 1	7	2	< 1	6	2	< 1	9	2	< 1	6	2	< 1	6	1	< 1	8	2
Turbidity (NTU)		5	0.06	1.76	0.27	0.06	1.33	0.22	0.07	4.36	0.28	0.06	1.28	0.26	0.07	2.32	0.24	0.08	4.68	0.42
Alkalinity as $CaCO_3$ (mg/L)			25	110	54	46	69	56	42	96	60	33	113	72	50	105	73	43	62	50
Langelier Index			-1.8	-0.5	-1.0	-1.4	0.4	-1.1	-1.5	-0.5	-1.0	-1.3	-0.3	-0.9	-3.6	-0.3	-0.9	-1.4	0.1	-1.0
Free Carbon Dioxide (mg/L)			2	10	4	2	11	7	2	13	6	2	17	7	2	11	57	0	7	4
Free Chlorine Residual (mg/L)	5.0	0.6	< 0.1	1.6	0.4	< 0.1	1.8	0.3	< 0.1	4.9	0.4	< 0.1	2.5	0.4	< 0.1	1.2	0.3	< 0.1	1.2	0.3
Dissolved Organic Carbon (mg/L)*			1.6	6.3	3.7	3.5	6.7	5.2	2.1	5.7	4.2	0.0	6.4	4.2	2.3	5.2	3.9	3.7	7.0	4.8
NUTRIENTS																				
Phosphorus - Total (mg/L)			< 0.005	0.044	0.008	< 0.005	0.022	0.008	< 0.005	0.070	0.009	< 0.005	0.054	0.009	< 0.005	0.034	0.009	< 0.005	0.023	0.009
Phosphorus - Soluble (mg/L)			< 0.005	0.011	0.005	< 0.005	0.010	0.005	< 0.005	0.011	0.005	< 0.005	0.017	0.005	< 0.005	0.009	0.005	< 0.005	0.013	0.005
Nitrate as Nitrogen (mg/L)	11.3		0.011	0.408	0.116	0.005	0.454	0.079	0.001	0.478	0.176	0.000	0.442	0.162	0.000	0.339	0.132	0.000	0.325	0.112
Nitrite as Nitrogen (mg/L)	0.9		< 0.005	0.011	0.005	< 0.005	0.009	0.005	< 0.005	0.015	0.005	< 0.005	0.014	0.005	< 0.005	0.011	0.005	< 0.005	0.008	0.005
Total Kjeldahl Nitrogen (mg/L)			0.10	0.43	0.24	< 0.05	0.60	0.31	0.05	1.01	0.27	0.10	0.48	0.26	0.09	0.38	0.23	0.22	0.42	0.31
Ammonia as N (mg/L)		0.41	< 0.005	0.015	0.006	< 0.005	0.016	0.007	< 0.005	0.024	0.006	< 0.005	0.032	0.007	< 0.005	0.018	0.006	< 0.005	0.031	0.009
ANIONS & CATIONS																				
Bicarbonate (mg/L)			30	134	66	56	83	68	51	118	73	40	138	88	61	128	89	53	76	61
Calcium (mg/L)			15	34	27	26	39	30	17	36	27	18	45	30	22	36	28	17	34	22
Chloride (mg/L)		250	77	180	123	136	176	160	99	190	135	75	181	125	107	159	129	121	168	144
Fluoride (mg/L)	1.5		0.30	1.04	0.89	0.76	1.05	0.90	0.71	1.00	0.88	0.10	1.05	0.87	0.69	1.03	0.91	0.74	1.07	0.86
Magnesium (mg/L)			8	20	14	13	21	18	11	25	17	11	26	18	13	22	17	9	16	13
Potassium (mg/L)			2.3	8.4	4.8	4.0	5.7	4.7	4.0	6.8	5.2	2.6	6.5	5.0	3.7	7.2	5.1	5.6	7.8	6.5
Sodium (mg/L)		180	47	100	74	76	98	88	56	110	77	43	105	72	64	96	75	78	102	89
Silica as SiO_2 (mg/L)			2	16	6	5	9	6	3	12	7	2	10	5	3	12	7	1	8	6
Sulphate (mg/L)	500	250	39	70	59	56	85	67	53	70	60	47	89	60	42	64	53	52	66	59
HEAVY METALS																				
Aluminium - Acid Soluble (mg/L)		0.2	0.019	0.168	0.057	< 0.005	0.117	0.041	0.011	0.132	0.041	< 0.005	0.183	0.048	0.012	0.129	0.050	0.015	0.085	0.032
Antimony (mg/L)	0		< 0.0005	0.008	0.001	< 0.0005	0.003	0.001	< 0.0005	0.003	0.001	< 0.0005	0.003	0.001	< 0.0005	0.003	0.001	< 0.0005	0.003	0.001
Arsenic (mg/L)	0.01		< 0.001	0.006	0.001	< 0.001	0.003	0.001	< 0.001	0.006	0.001	< 0.001	0.003	0.001	< 0.001	0.003	0.001	< 0.001	0.002	0.001
Barium (mg/L)	0.7		0.025	0.067	0.046	0.023	0.057	0.038	0.019	0.054	0.035	0.030	0.057	0.039	0.016	0.052	0.040	< 0.0005	0.026	0.021
Boron (mg/L)	0.3		0.034	0.107	0.056	< 0.040	0.150	0.049	0.037	0.087	0.047	< 0.040	0.107	0.050	< 0.040	0.122	0.055	0.020	0.110	0.045
Cadmium (mg/L)	0		< 0.0002	0.0012	0.0004	< 0.0002	0.0007	0.0004	< 0.0002	0.0008	0.0004	< 0.0002	0.0009	0.0004	< 0.0002	0.0008	0.0004	< 0.0002	0.0006	0.0004
Chromium (mg/L)	0.05		0.003	0.030	0.011	< 0.003	0.030	0.009	< 0.003	0.030	0.012	< 0.003	0.030	0.010	< 0.003	0.030	0.010	< 0.003	0.030	0.009
Copper (mg/L)	2	1	0.003	0.094	0.020	< 0.003	0.219	0.046	0.003	0.220	0.065	0.005	0.074	0.027	0.006	0.135	0.028	< 0.001	0.206	0.076
Iron (Total) (mg/L)		0.3	< 0.005	0.062	0.017	< 0.005	0.048	0.016	< 0.005	0.228	0.020	< 0.005	0.134	0.017	< 0.005	0.194	0.015	< 0.005	0.249	0.022
Lead (mg/L)	0.01		< 0.0005	0.0026	0.0008	< 0.0005	0.0037	0.0010	< 0.0005	0.0040	0.0011	< 0.0005	0.0083	0.0010	< 0.0005	0.0024	0.0008	< 0.0005	0.0025	0.0008
Manganese (mg/L)	0.5	0.1	< 0.0005	0.010	0.004	< 0.0005	0.013	0.004	< 0.0005	0.041	0.005	< 0.0005	0.018	0.004	< 0.0005	0.030	0.004	< 0.0005	0.1560	0.0108
Mercury (mg/L)	0		< 0.0003	0.0004	0.0005	< 0.0003	0.0005	0.0005	< 0.0003	0.0005	0.0005	< 0.0003	0.0005	0.0005	< 0.0003	0.0005	0.0005	< 0.0003	0.0005	0.0005
Molybdenum (mg/L)	0.05		< 0.0005	0.002	0.001	< 0.0005	0.0020	0.001	< 0.0005	0.003	0.001	< 0.0005	0.002	0.001	< 0.0005	0.002	0.001	< 0.0005	0.002	0.001
Nickel (mg/L)	0.02		< 0.0005	0.0027	0.0010	< 0.0005	0.0054	0.0010	< 0.0005	0.0024	0.0010	< 0.0005	0.0024	0.0009	< 0.0005	0.0110	0.0010	< 0.0005	0.0016	0.0008
Selenium (mg/L)	0.01		< 0.002	0.003	0.003	< 0.002	0.004	0.003	< 0.002	0.005	0.003	< 0.002	0.003	0.003	< 0.002	0.004	0.003	< 0.002	0.003	0.003
Silver (mg/L)	0.1		< 0.0002	0.0020	0.0011	< 0.0002	0.0020	0.0012	< 0.0002	0.0032	0.0011	< 0.0002	0.0023	0.0012	< 0.0002	0.0020	0.0012	< 0.0002	0.0030	0.0012
Zinc (mg/L)		3	< 0.003	0.048	0.011	< 0.003	0.079	0.015	< 0.003	0.160	0.021	< 0.003	0.053	0.012	< 0.003	0.049	0.010	< 0.003	0.047	0.009

***Measured in Water Treatment Plant Product Water**

Note: A conservative approach has been used to calculate the average values tabulated above. Where the lower limit of detection for any parameter is preceded by a"<" sign, the absolute number has been used to calculate the average rather than using a zero value.

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METROPOLITAN ADELAIDE WATER SUPPLY

Five Year Statistics for Customer Taps by Water Treatment Plant System

Data for the Period 1/7/99 - 30/6/04

Water Hardness Expression	Units of Measure	ANSTEY HILL SYSTEM			BAROSSA SYSTEM			HAPPY VALLEY SYSTEM			HOPE VALLEY SYSTEM			LITTLE PARA HILL SYSTEM			MYPONGA SYSTEM		
		Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average
Total Hardness as $CaCO_3$	(mg/L)	68	161	122	133	176	151	89	190	138	92	216	147	110	177	141	89	127	109
Total Hardness as $CaCO_3$	(mmol/L)	0.68	1.61	1.22	1.33	1.76	1.51	0.89	1.90	1.38	0.92	2.16	1.47	1.10	1.77	1.41	0.89	1.27	1.09
German Degrees	(°dH)	3.8	9.0	6.9	7.4	9.9	8.5	5.0	10.7	7.8	5.2	12.1	8.2	6.2	10.0	7.9	5.0	7.1	6.1
Clark or English Degrees		4.8	11.2	8.5	9.3	12.3	10.6	6.2	13.3	9.7	6.4	15.1	10.3	7.7	12.4	9.8	6.2	8.9	7.6
Grains per Gallon U.K.		4.8	11.2	8.5	9.3	12.3	10.6	6.2	13.3	9.7	6.4	15.1	10.3	7.7	12.4	9.8	6.2	8.9	7.6
Grains per Gallon U.S.		4.0	9.4	7.1	7.7	10.3	8.8	5.2	11.1	8.1	5.4	12.6	8.6	6.5	10.4	8.2	5.2	7.4	6.4
French Degrees		6.8	16.1	12.2	13.3	17.6	15.1	8.9	19.0	13.8	9.2	21.6	14.7	11.0	17.7	14.1	8.9	12.7	10.9

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METROPOLITAN ADELAIDE WATER SUPPLY

Five Year Statistics for Customer Taps by Water Treatment Plant System

Parameter	*Anstey Hill*	*Barossa*	*Happy Valley*	*Hope Valley*	*Little Para*	*Myponga*
1st July 1999 to 30th June 2004	Number of Samples	Number of Samples	Number of Samples	Number of Samples	Number of Samples	Number of Samples
Hardness as $CaCO_3$ mg/L	62	56	134	60	58	54
Non Carbonate Hardness mg/L as $CaCO_3$	61	56	134	60	57	54
pH	249	239	609	244	244	156
Temperature °C	2433	1409	6494	1590	1112	582
Conductivity uS/cm@25°C	63	58	136	61	59	54
Total Dissolved Solids mg/L	63	58	136	61	59	54
True Colour @ 456nm HU	262	249	654	262	243	164
Turbidity NTU	263	249	657	262	249	164
Alkalinity as $CaCO_3$ mg/L	63	58	136	61	59	54
Langelier Index	61	56	129	58	54	51
Free Carbon Dioxide mg/L	61	56	134	59	58	54
Free Chlorine Resid mg/L	2433	1406	6495	1586	1112	582
Dissolved Organic Carbon* (mg/L)	140	139	138	112	136	139
Phosphorus Total mg/L	62	56	137	61	59	54
Phosphorus - Soluble mg/L	62	56	137	61	58	54
Nitrate as Nitrogen mg/L	62	56	135	61	59	54
Nitrite as Nitrogen mg/L	62	56	137	61	59	54
TKN mg/L	62	56	137	61	59	54
Ammonia as Nitrogen mg/L	63	56	137	61	59	54
Bicarbonate mg/L	63	58	137	61	59	54
Calcium mg/L	63	58	136	61	59	54
Chloride mg/L	64	56	137	61	59	54
Fluoride mg/L	63	56	137	60	59	54
Magnesium mg/L	65	64	138	63	63	54
Potassium mg/L	65	57	138	62	60	55
Sodium mg/L	63	56	136	61	59	54
Silica mg/L	63	56	137	61	59	54
Sulphate mg/L	63	56	136	61	59	54
Aluminium - Acid Soluble mg/L	259	238	617	254	236	152
Antimony mg/L	62	56	137	60	55	50
Arsenic mg/L	62	57	137	60	55	50
Barium mg/L	63	57	138	60	55	50
Boron mg/L	64	56	137	60	55	50
Cadmium mg/L	63	57	137	60	55	50
Chromium mg/L	63	56	138	60	55	50
Copper mg/L	63	57	138	60	56	50
Iron mg/L	124	109	295	123	121	77
Lead mg/L	63	57	135	60	55	50
Manganese mg/L	124	110	304	125	123	77
Mercury mg/L	55	54	114	54	51	46
Molybdenum mg/L	63	57	137	60	55	50
Nickel mg/L	63	57	137	60	55	50
Selenium mg/L	51	54	114	52	51	46
Silver mg/L	64	55	136	61	57	54
Zinc mg/L	63	57	138	60	54	50

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METROPOLITAN ADELAIDE WATER SUPPLY

Five Year Statistics for Customer Taps by Water Treatment Plant System

Parameter	*Australian Drinking Water Health Guideline*		*Anstey Hill*	*Barossa*	*Happy Valley*	*Hope Valley*	*Little Para*	*Myponga*
1st July 1999 to 30th June 2004	*Health*	*Aesthetic*	Compliance*	Compliance*	Compliance*	Compliance*	Compliance*	Compliance*
Hardness as $CaCO_3$ mg/L		200	100.0%	100.0%	100.0%	98.3%	100.0%	100.0%
Non Carbonate Hardness mg/L as $CaCO_3$								
pH		6.5 - 8.5	100.0%	99.2%	100.0%	100.0%	100.0%	100.0%
Temperature °C								
Conductivity uS/cm@25°C								
Total Dissolved Solids mg/L		500	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
True Colour @ 456nm HU		15	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Turbidity NTU		5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Alkalinity as $CaCO_3$ mg/L								
Langelier Index								
Free Carbon Dioxide mg/L								
Free Chlorine Resid mg/L	5	0.6	81.8%	93.0%	78.8%	85.4%	88.8%	90.2%
Dissolved Organic Carbon* (mg/L)								
Phosphorus Total mg/L								
Phosphorus - Soluble mg/L								
Nitrate as Nitrogen mg/L	11.3		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Nitrite as Nitrogen mg/L	0.9		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
TKN mg/L								
Ammonia as Nitrogen mg/L		0.41	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Bicarbonate mg/L								
Calcium mg/L								
Chloride mg/L		250	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Fluoride mg/L	1.5		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Magnesium mg/L								
Potassium mg/L								
Sodium mg/L		180	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Silica mg/L								
Sulphate mg/L	500	250	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Aluminium - Acid Soluble mg/L		0.2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Antimony mg/L	0		98.4%	100.0%	100.0%	100.0%	100.0%	100.0%
Arsenic mg/L	0.01		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Barium mg/L	0.7		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Boron mg/L	0.3		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cadmium mg/L	0		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chromium mg/L	0.05		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Copper mg/L	2	1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Iron mg/L		0.3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Lead mg/L	0.01		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Manganese mg/L	0.5	0.1	100.0%	100.0%	100.0%	100.0%	100.0%	98.7%
Mercury mg/L	0		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Molybdenum mg/L	0.05		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Nickel mg/L	0.02		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Selenium mg/L	0.01		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Silver mg/L	0.1		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Zinc mg/L		3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*Compliance against the Health Guideline unless only an Aesthetic Guideline is listed for the parameter except for Free Chlorine where the Aesthetic performance has been reported..