

Water quality objectives to protect the aquatic ecosystem environmental values for Mid GAB groundwater aquifer zones in the Queensland Murray-Darling Basin.

Zone	Percentile	Notes: 1. The ANZECC Guidelines (ANZECC/ARMCANZ, 2000) recommend that the highest level of protection should be provided to underground aquatic ecosystems, given their high conservation value. The management intent is to maintain the existing water quality distribution (20th, 50th and 80th percentiles). 2. ID: Insufficient data.																											
		Na		Ca		Mg		HCO ₃		Cl		SO ₄		NO ₃		Electrical Conductivity (µS/cm)	Hardness (mg/L)	pH	Alkalinity (mg/L)	SiO ₂ (mg/L)	F (mg/L)	Fe (mg/L)	Mn (mg/L)	Zn (mg/L)	Cu (mg/L)	SAR (meq/L)	Total Nitrogen mg/L	Total Phosphorous mg/L	
		mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%														
s6. Mid GAB																													
1. Northern Maranoa Bungils	20th	210	67	6	2	1	0	0	3	125	34	46.5	6	0.00	0	0	20	7.2	88.0	13.0	0.15	0.000	0.000	0.000	0.000	9.42	0.000	0.000	
	50th	443	89	28	7	5	2	0	18	443	52	120.1	19	0.50	0	0	122	7.9	191.0	16.0	0.30	0.010	0.010	0.015	0.010	19.57	0.109	0.000	
	80th	1153	97	205	21	58	12	277	49	1344	75	806.5	38	2.32	0	2050	790	8.4	301.8	20.0	0.80	0.100	0.030	0.050	0.020	32.23	0.504	0.023	
2. Central Mooga and Orallo Outcrops	20th	199	74	3	1	0	0	0	26	102	30	20.0	5	0.00	0	0	10	7.6	237.0	11.0	0.11	0.000	0.000	ID	ID	8.99	0.000	0.000	
	50th	356	93	13	4	4	2	316	46	220	41	75.7	11	0.50	0	1065	55	8.2	334.0	15.5	0.30	0.020	0.010	ID	ID	22.41	0.109	0.016	
	80th	588	99	51	14	21	11	454	64	660	55	228.0	19	2.00	0	2145	213	8.6	454.0	21.1	0.70	0.465	0.060	ID	ID	49.29	0.435	0.033	
3. Eastern Cretaceous Outcrop	20th	162	82	4	1	1	0	105	6	85	32	0.5	0	0.05	0	771	14	7.3	100.0	13.7	0.10	0.000	0.000	0.005	0.010	12.49	0.021	0.000	
	50th	395	93	10	3	4	2	293	30	337	64	8.0	1	0.50	0	1650	47	8.0	263.0	17.0	0.39	0.070	0.010	0.010	0.015	28.30	0.109	0.000	
	80th	1167	98	74	9	22	7	644	66	1780	89	95.1	6	1.89	0	3870	267	8.5	571.0	33.3	0.65	0.809	0.182	0.110	0.015	49.27	0.285	0.065	
4. Hooray Northern	20th	76	48	19	17	6	9	0	15	74	34	29.4	9	0.00	0	0	84	7.3	88.0	21.1	0.10	0.000	0.009	ID	ID	2.85	0.000	ID	

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		Na		Ca		Mg		HCO ₃		Cl		SO ₄		NO ₃		Electrical Conductivity (µS/cm)	Hardness (mg/L)	pH	Alkalinity (mg/L)	SiO ₂ (mg/L)	F (mg/L)	Fe (mg/L)	Mn (mg/L)	Zn (mg/L)	Cu (mg/L)	SAR (meq/L)	Total Nitrogen mg/L	Total Phosphorous mg/L	
		mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%														
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Outcrop	50th	115	57	42	25	15	16	169	33	156	46	66.0	17	0.00	0	710	185	7.6	168.0	28.5	0.20	0.020	0.010	ID	ID	3.87	0.000	ID	
	80th	263	68	135	34	42	21	251	48	334	56	359.2	32	0.50	0	1650	526	8.1	217.5	34.3	0.40	0.075	0.041	ID	ID	4.83	0.109	ID	
5. Lower Balonne Gubberamunda	20th	255	98	2	0	0	0	415	57	88	19	0.0	0	0.00	0	1063	5	8.0	351.8	21.0	0.44	0.000	0.000	0.000	0.014	35.76	0.000	0.000	
	50th	341	99	2	1	0	0	561	71	130	28	5.0	1	0.25	0	1360	8	8.4	496.0	26.0	0.80	0.010	0.010	0.005	0.015	51.80	0.054	0.000	
	80th	510	99	4	1	1	1	863	80	260	37	28.8	4	1.00	0	2016	15	8.6	761.1	29.0	1.50	0.213	0.010	0.010	0.020	72.97	0.217	0.000	
6. North Wallumbilla Bungil and Mooga	20th	479	87	5	1	1	0	0	4	353	47	9.2	0	0.00	0	0	20	7.3	142.8	13.0	0.20	0.000	0.000	ID	ID	28.41	0.000	0.000	
	50th	872	96	24	3	6	1	195	13	1170	75	117.0	8	0.50	0	2420	94	8.1	287.0	15.0	0.40	0.025	0.010	ID	ID	42.64	0.109	0.016	
	80th	1865	99	113	7	42	5	443	43	2665	85	583.9	17	3.41	0	6454	437	8.5	462.5	16.0	0.70	0.575	0.040	ID	ID	61.76	0.741	0.163	
7. Northern Central Hooray	20th	238	77	3	1	0	0	1	10	150	39	54.0	9	0.00	0	626	10	7.5	117.0	14.5	0.20	0.000	0.000	0.005	0.000	12.83	0.000	0.000	
	50th	325	96	12	4	2	1	210	33	251	52	101.5	15	0.50	0	1300	41	8.0	208.0	19.0	0.30	0.010	0.010	0.010	0.010	25.20	0.109	0.000	
	80th	540	98	57	14	15	6	321	43	699	73	212.6	22	2.63	0	2355	198	8.5	293.0	23.5	0.66	0.100	0.030	0.059	0.020	39.26	0.543	0.000	

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		Na		Ca		Mg		HCO ₃		Cl		SO ₄		NO ₃		Electrical Conductivity (µS/cm)	Hardness (mg/L)	pH	Alkalinity (mg/L)	SiO ₂ (mg/L)	F (mg/L)	Fe (mg/L)	Mn (mg/L)	Zn (mg/L)	Cu (mg/L)	SAR (meq/L)	Total Nitrogen mg/L	Total Phosphorous mg/L	
		mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%														
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8. Northern Surat Thickest Bungil and Mooga	20th	355	98	1	0	0	0	520	56	120	17	0.0	0	0.00	0	1400	5	8.1	495.5	14.0	0.47	0.000	0.000	0.000	0.000	42.74	0.000	0.000	
	50th	444	99	2	1	1	0	763	74	154	25	1.0	0	0.50	0	1720	11	8.4	680.0	17.0	1.25	0.050	0.005	0.005	0.015	65.35	0.109	0.000	
	80th	521	99	4	1	1	1	989	82	252	42	24.3	3	0.50	0	2026	16	8.7	874.5	20.0	2.23	0.190	0.010	0.010	0.021	83.91	0.109	0.049	
9. Northern Central Outcrop Area	20th	45	48	11	7	1	1	0	13	46	27	16.6	7	0.00	0	0	39	7.2	67.8	14.0	0.10	0.000	0.001	ID	ID	2.27	0.000	ID	
	50th	225	70	47	22	7	6	73	28	180	45	100.0	20	0.50	0	437	156	7.7	150.0	18.5	0.12	0.010	0.010	ID	ID	6.33	0.109	ID	
	80th	470	91	81	31	18	19	295	59	511	59	238.5	32	1.13	0	1739	278	8.0	283.5	29.9	0.30	0.060	0.282	ID	ID	19.28	0.246	ID	
10. South Saline Gubberamunda	20th	216	90	3	2	0	0	156	6	86	28	0.0	0	0.00	0	891	9	7.6	148.3	15.0	0.26	0.000	0.000	0.000	0.003	27.06	0.000	ID	
	50th	619	95	20	3	6	2	305	18	847	82	0.0	0	0.00	0	2400	77	8.1	255.0	19.0	0.44	0.010	0.010	0.010	0.015	30.29	0.000	ID	
	80th	1108	98	64	6	20	3	486	72	1758	94	4.0	0	2.17	0	5258	260	8.4	411.9	24.0	0.60	0.030	0.050	0.020	0.020	35.80	0.472	ID	
11. Southeast Kumbarilla	20th	315	98	2	0	0	0	459	60	72	13	0.0	0	0.00	0	1173	6	8.0	506.0	13.0	0.55	0.005	0.000	0.000	0.000	38.10	0.000	0.000	
	50th	417	99	3	1	1	0	720	80	120	19	2.0	0	0.50	0	1600	10	8.4	660.0	15.0	1.50	0.020	0.010	0.005	0.015	56.30	0.109	0.000	

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		mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%														
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	80th	530	99	4	1	2	1	969	86	260	39	9.1	1	1.30	0	2050	19	8.6	864.6	19.0	3.20	0.130	0.010	0.017	0.015	71.65	0.283	0.033	
12. Southern Hooray Thinning Area	20th	183	95	2	1	0	0	323	65	59	18	0.0	0	0.00	0	725	6	8.0	290.0	18.0	0.50	0.000	0.000	0.000	0.000	21.58	0.000	0.000	
	50th	214	98	4	2	1	1	417	77	70	22	0.0	0	0.00	0	862	12	8.3	362.0	21.0	0.60	0.020	0.010	0.005	0.010	28.81	0.000	0.000	
	80th	275	99	7	3	2	2	490	81	153	34	2.0	0	0.71	0	1030	27	8.5	420.9	23.0	1.57	0.060	0.015	0.010	0.015	35.69	0.154	0.000	
13. Surat Thicker Mooga Saline Area	20th	427	98	3	1	0	0	399	28	250	40	0.0	0	0.00	0	1872	9	8.2	333.5	16.0	1.00	0.004	0.000	ID	ID	51.50	0.000	ID	
	50th	506	99	4	1	0	0	543	43	439	56	3.2	0	0.50	0	2308	11	8.4	491.5	18.0	1.80	0.020	0.010	ID	ID	62.58	0.109	ID	
	80th	572	99	6	1	1	0	675	56	530	59	97.2	7	1.07	0	2565	19	8.6	578.1	21.0	2.08	0.251	0.023	ID	ID	71.23	0.233	ID	
14. Western Hooray	20th	171	96	2	1	0	0	313	65	55	16	0.0	0	0.00	0	710	7	8.0	273.7	20.0	0.49	0.000	0.000	0.000	0.000	23.25	0.000	0.000	
	50th	223	98	3	2	0	0	430	75	74	24	1.0	0	0.00	0	917	10	8.3	372.0	23.0	0.60	0.010	0.010	0.005	0.010	29.59	0.000	0.000	
	80th	291	99	5	2	1	1	555	83	135	33	8.1	2	1.10	0	1200	18	8.6	473.3	26.0	1.05	0.050	0.010	0.010	0.015	37.21	0.239	0.000	

References:

McNeil, V.H., Raymond, M.A.A., Bennett, L. & McGregor, G.B. (2018), *Regional groundwater chemistry zones: Queensland Murray-Darling Basin*, Department of Environment and Science, Queensland Government.