



RAND WATER

Quarterly Water Quality Status of the Vaal Dam Reservoir Catchment

1 July 2012 - 30 June 2013

Sample Points	Sample Point Description	Ammonia	Chloride	Fluoride	Alkalinity	Nitrate	Phosphate	Sulphate	Chemical Oxygen Demand	Conductivity	pH	E. coli
VSV	Sandspruit above Volksrust 27°14'26.03"S 29°53'21.78"E	0.12	16	0.17	28	0.41	<0.05	41	14	16	6.40	
		0.12	<10	0.18	84	0.21	<0.05	37	24	51	7.20	
		0.11	<10	0.24	57	0.29	0.050	22	18	36	7.10	
		0.77	16	0.16	66	0.83	0.170	32	<10	22	7.40	
VSS	Sandspruit below Vaal River @ Klipplaatdrift 27°12'30.82"S 29°26'12.83"E	0.12	13	0.33	285	0.17	0.120	40	24	53	8.30	
		0.12	<10	0.31	89	0.20	0.110	31	19	36	7.40	
		0.11	<10	0.28	87	0.12	0.110	22	17	36	7.40	
		0.10	12	0.18	110	0.82	0.050	25	<10	30	7.90	
KB	Klip River @ Barnardskop 27°28'12.33"S 29°36'1.76"E	0.10	<10	0.16	54	<0.10	0.420	14	14	18	6.90	
		0.12	<10	0.16	44	<0.10	0.120	9	19	17	7.00	
		0.11	<10	0.13	42	0.23	0.080	14	13	12	6.90	
		0.10	<10	0.08	34	<0.10	0.050	7	<10	10	6.90	
KW	Klip @ Winkelhaak 27°14'41.55"S 29°23'59.91"E	0.10	<10	0.20	100	1.00	0.590	22	14	26	7.30	
		0.32	12	0.20	90	0.95	0.270	43	20	21	7.00	
		0.11	<10	0.12	49	<0.10	0.070	11	18	14	6.90	
		0.11	<10	0.12	49	<0.10	0.070	11	18	14	6.90	
KD	Klip River @ De Langesdrift 27°10'57.77"S 29°14'5.54"E	0.33	11	0.30	170	0.26	0.100	27	12	41	7.80	
		0.12	<10	0.29	74	0.25	0.150	22	23	26	7.10	
		0.11	<10	0.38	86	0.39	<0.05	19	17	23	7.40	
		0.10	<10	0.19	67	0.93	0.050	14	<10	77	6.90	
KSV	Spruitsonderdrift downstream of Vrede 27°21'8.15"S 29°10'16.87"E	0.10	34	0.28	225	0.42	0.160	44	49	58	8.90	
		0.12	11	0.27	110	0.21	<0.05	47	35	54	7.90	
		0.11	10	0.40	150	0.16	0.110	34	25	38	7.70	
		0.10	10	0.31	205	1.92	0.190	27	16	38	8.10	
VDS	Vaal River downstream of Standerton 27°05'59.97"S 29°1'29.30"E	0.31	15	0.32	165	0.92	0.120	33	24	37	7.50	
		0.25	12	0.28	105	0.39	0.090	33	24	28	7.20	
		0.11	<10	0.30	94	0.23	0.080	21	24	28	7.20	
		0.10	<10	0.17	115	0.17	0.050	17	13	29	7.40	
VGB	Gladdedrift Bridge @ Villiers 26°59'31.24"S 28°43'47.18"E	0.12	17	0.30	185	0.41	0.100	31	19	46	8.00	
		0.12	10	0.30	85	0.58	0.120	27	22	30	7.20	
		0.11	<10	0.29	89	0.47	<0.05	15	19	24	7.00	
		0.10	13	0.35	100	0.53	0.090	39	18	28	7.70	
VV	Vaal @ Villiers 27°1'20.13"S 28°36'0.32"E	0.12	27	0.40	190	0.15	<0.05	47	19	53	8.00	94
		0.12	17	0.34	95	0.13	0.110	45	22	36	7.30	89
		0.11	<10	0.28	87	1.10	0.060	18	20	22	7.20	210
		0.10	<10	0.29	105	0.11	0.050	30	14	30	7.70	14
VD4I	Vaal Dam 4 Integrated - Vaal River upstream of Vaal Marina 26°53'27.99"S 28°15'0.16"E	0.21	15	0.33	120	0.21	<0.05	36	19	32	7.90	7
		0.12	16	0.38	135	0.17	0.070	45	17	42	8.10	6
		0.11	10	0.28	89	0.50	0.100	30	36	30	7.20	11
		0.10	<10	0.30	87	0.20	0.050	31	18	24	7.30	21
WF	Wilge River @ Frankfort 27°16'18.00"S 28°29'28.41"E	0.21	<10	<0.05	42	0.50	0.110	6	<10	11	6.70	88
		0.12	<10	0.22	72	0.35	0.090	17	17	23	7.30	95
		0.11	<10	0.16	69	0.36	0.060	7	15	16	7.00	155
		0.10	<10	0.13	49	0.32	0.050	6	<10	12	7.00	86
VD3I	Vaal Dam 3 Integrated - Wilge River downstream of Oranjeville 26°59'1.64"S 28°13'25.08"E	0.10	<10	0.16	66	0.48	<0.05	25	14	17	7.20	2
		0.10	<10	0.23	60	0.17	0.170	25	<10	26	7.30	12
		0.11	<10	0.16	60	0.18	0.080	24	29	18	7.10	8
		0.11	<10	0.16	60	0.18	0.080	24	29	18	7.10	8
VD2I	Vaal Dam 2 Integrated - Confluence of Vaal & Wilge 26°53'48.81"S 28°11'9.92"E	0.10	<10	0.18	77	<0.10	<0.05	21	28	18	7.20	1
		0.10	<10	0.21	60	0.13	<0.05	31	<10	33	7.50	5
		0.11	<10	0.17	72	0.12	0.060	22	11	22	7.30	3
		0.11	<10	0.17	72	0.12	0.060	22	11	22	7.30	3
VD1I	Vaal Dam 1 Integrated @ RW intake 26°53'0.26"S 28°7'14.35"E	0.10	<10	0.20	78	0.14	<0.05	46	15	21	7.20	30
		0.11	<10	0.20	81	0.10	<0.05	21	<10	32	7.50	98
		0.11	<10	0.16	72	0.20	<0.05	24	<10	22	7.40	10
		0.10	<10	0.20	77	0.22	0.050	22	<10	21	7.20	165
S-ST_NEW	Standerton Sewage Works 26°58'24.60"S 29°13'52.87"E	24.00	45	0.31	405	2.70	4.800	30	245	65	6.80	5295000
		18.00	42	0.38	265	0.43	3.400	50	285	73	7.00	7538870
		29.00	42	0.40	405	<0.10	3.500	34	140	63	7.20	3871000
		36.00	42	0.40	150	<0.10	3.700	23	215	90	7.50	3,652,870

Sewage Works Compliance (where applicable) to General Standard (GN 1191 Oct 1999)												
Sample Points	Sample Point Description	Ammonia	Fluoride	Nitrate	Phosphate	Chemical Oxygen Demand	Conductivity	pH	E. coli			
S-ST_NEW	Standerton Sewage Works 26°58'24.60"S 29°13'52.87"E	24.00	0.31	405	2.7	4.800	30	245	65	6.80	5295000	
		18.00	0.38	265	0.43	3.400	50	285	73	7.00	7538870	
		29.00	0.40	405	<0.10	3.500	34	140	63	7.20	3871000	
		36.00	0.40	150	<0.10	3.700	23	215	90	7.50	3,652,870	

Key

VD1I	Vaal Dam 1 Integrated @ RW intake	0.12	-	1 July 12 - 30 Sept 12
		0.12	-	1 Oct 12 - 31 Dec 12
		0.12	-	1 Jan 13 - 31 Mar 13
		0.12	-	1 Apr 13 - 30 Jun 13

Water Quality Guidelines

	-	Ideal
	-	Acceptable
	-	Tolerable
	-	Unacceptable
	-	No sample or result available

In-stream Water Quality Guidelines for the Vaal Dam Catchment					
Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
Physical					
Conductivity	mS/m	< 10	10 - 30	30 - 45	> 45
pH	pH units	6.5 - 8.5			< 6.5; > 8.5
Organic					
Chemical Oxygen Demand (COD)	mg/l	< 10	10 - 15	15 - 20	> 20
Macro Elements					
Ammonia (NH ₄)	mg/l	< 0.2	0.2 - 0.5	0.5 - 1.0	> 1
Chloride (Cl)	mg/l	< 25	25 - 50	50 - 75	> 75
Fluoride (F)	mg/l	< 0.05	0.05 - 0.20	0.2 - 0.4	> 0.4
Alkalinity	CaCO ₃ mg/l	< 40	40 - 75	75 - 120	> 120
Nitrate (NO ₃)	mg/l	< 0.1	0.1 - 0.2	0.2 - 0.3	> 0.3
Phosphate (PO ₄)	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.5
Sulphate (SO ₄)	mg/l	< 20	20 - 45	45 - 70	> 70
Bacteriological					
Faecal coliforms	counts/100ml	< 10	10 - 60	60 - 120	> 120

Sewage Works Compliance to General Standard (GN 1191 Oct 1999)			
Variables	Measured as	Acceptable Management Target	Unacceptable
Physical			
Conductivity	mS/m	<150	>=150
pH	pH units	5.5 - 9.5	< 5.5; > 9.5
Organic			
Chemical Oxygen Demand (COD)**	mg/l	<75	>=75
Macro Elements			
Ammonia (NH ₄)	mg/l	<3	>=3
Fluoride (F)	mg/l	<1	>=1
Nitrate (NO ₃)	mg/l	<15	>=15
Phosphate (PO ₄)	mg/l	<10	>10
Bacteriological			
Faecal coliforms	counts/100ml	<1000	>=1000

** After removal of algae