

Rand Water

Quarterly Water Quality Status of the Klip River Catchment

01 Oct 2018 - 30 Sep 2019



Sample Points	Sample Point Description	Quarter	Aluminium	Ammonia	Chemical Oxygen Demand	Chloride	Conductivity	Daphnia Toxicity	Dissolved Oxygen	E.coli	Fluoride	Iron	Magnesium	Manganese	Nitrate	pH	Phosphate	Sodium	Sulphate	Suspended Solids
K1	Klip River @ Lido Hotel 26° 19.555'S 27° 59.262'E	1	0.03	4.18		35	57		1.0		0.39	0.11	14	0.19	2.38	7.4	1.05	62	52	
		2	0.05	0.06		36	47		1.6		0.55	0.14	9	0.32	4.00	7.2	0.61	31	75	
		3	0.04	2.93		41	52		1.5		0.63	0.09	12	0.33	3.70	7.4	0.72	44	66	
		4	0.07	4.70		45	57		2.6		0.55	0.20	11	0.41	3.80	7.4	0.81	49	63	
K10	Klip River @ Everite 26° 25.276'S 28° 05.702'E	1	0.05	1.66		44	53		1.9		0.46	0.12	12	0.30	3.94	7.3	0.62	49	68	
		2	0.04	0.18		35	46		1.4		1.09	0.06	11	0.12	3.50	7.2	0.52	32	75	
		3	0.05	7.71		40	52		3.5		0.62	0.11	12	0.26	4.43	7.3	0.85	45	67	
		4	0.05	3.81		44	59		2.9		0.58	0.11	12	0.32	4.23	7.3	0.74	50	67	
K11	Klip River from Roodepoort @ R41 Bridge 26° 10.148'S 27° 50.013'E	1	0.03	6.23		23	37		1.0		0.26	0.12	6	0.07	0.59	7.4	0.29	20	50	
		2	0.22	6.65		30	43		0.5		0.42	0.57	10	0.36	0.50	7.4	0.25	34	53	
		3	0.04	0.16		28	37		1.8		0.23	0.35	7	0.31	1.67	7.5	0.25	34	14	
		4	0.04	5.50		35	52		1.7		0.37	0.32	10	0.53	0.63	7.4	0.42	40	51	
K14	Klip River from Witpoortjie @ R41 Bridge 26° 10.555'S 27° 49.075'E	1	0.03	4.39		21	30		1.5		0.28	0.25	8	0.15	0.50	7.5	0.49	30	40	
		2	0.04	1.30		20	25		1.6		0.27	0.21	7	0.33	0.54	7.5	0.25	24	23	
		3	0.03	8.78		30	42		2.2		0.37	0.39	6	0.31	1.75	7.4	0.63	32	20	
		4	0.03	0.87		16	20		2.1		0.21	0.12	3	0.04	0.50	7.3	0.34	18	13	
K18	Klip River Weir @ Henley-On-Klip 26° 32.965'S 28° 03.868'E	1	0.04	4.16		54	76		0.8	32,485	0.48	0.15	16	0.33	3.61	7.3	0.65	59	145	
		2	0.03	1.39		43	67		1.5	12,292	0.79	0.05	20	0.12	3.34	7.2	0.58	48	165	
		3	0.05	2.95		51	74		2.6	19,335	0.91	0.11	20	0.30	4.23	7.3	0.49	57	157	
		4	0.05	5.44		55	90		2.5	2,149	0.96	0.16	22	0.46	2.93	7.5	0.74	66	186	
K19	Klip River Weir @ Redan Train Bridge 26° 37.203'S 27° 58.831'E	1	0.03	2.79	39	47	71	97	1.9	1,304	0.48	0.07	16	0.18	2.47	7.3	0.98	61	103	44
		2	0.03	1.52	27	42	65	99	1.4	3,986	0.70	0.07	17	0.15	3.27	7.3	0.60	45	146	84
		3	0.07	2.34	36	50	74	100	3.7	4,259	0.88	0.11	20	0.30	3.82	7.4	0.52	54	160	104
		4	0.04	5.17	43	57	87	100	3.6	3,843	0.97	0.13	22	0.44	2.75	7.6	0.89	67	183	39
K21	Klip River Weir @ Zwartkopjes Farm 26° 22.791'S 28° 04.233'E	1	0.06	3.63	55	43	50	98	1.9	11,255	0.45	0.19	14	0.29	4.37	7.2	0.83	62	68	83
		2	0.08	1.14	31	36	47	91	1.5	12,345	0.55	0.16	11	0.26	4.23	7.2	0.61	34	79	131
		3	0.07	2.61	30	44	54	100	3.4	44,623	0.63	0.15	13	0.27	4.39	7.4	0.56	46	71	73
		4	0.05	6.86	46	45	57	90	4.4	3,210	0.64	0.15	12	0.28	3.31	7.5	0.77	50	64	71
K25	Klip River downstream of Rietspruit Confluence 26° 27.225'S 28° 05.124'E	1	0.03	3.59		55	60		2.0	21,003	0.62	0.10	17	0.26	4.30	7.4	0.73	59	135	
		2	0.05	0.11		43	68		1.3	39,730	0.90	0.13	15	0.18	3.15	7.3	0.45	44	168	
		3	1.35	3.87		49	75		2.4	260,821	0.88	0.08	19	0.28	3.83	7.3	0.47	58	155	
		4	0.03	4.93		48	85		3.6	6,676	0.79	0.10	17	0.43	2.88	7.5	0.49	62	145	
K3	Harringtonspruit @ Nancefield Industrial Area 26° 18.603'S 27° 54.741'E	1	0.04	21.83		57	74		0.6		0.56	0.29	15	0.24	2.91	7.6	3.70	66	55	
		2	0.26	7.52		50	59		0.7		0.67	0.51	7	0.14	1.60	7.3	1.33	25	63	
		3	0.03	14.03		50	64		1.2		0.75	0.13	11	0.40	1.18	7.6	1.55	51	70	
		4	0.03	17.43		52	73		2.1		0.56	0.15	12	0.27	0.50	7.5	0.79	60	63	
K4	Klip River @ Olifantsvlei Sewage Works 26° 20.201'S 27° 54.219'E	1	0.03	3.30		47	55		1.5	30,935	0.40	0.06	18	0.41	3.50	7.6	0.37	51	84	
		2	0.26	0.07		32	46		1.7	6,880	0.60	0.11	8	0.24	2.00	7.5	0.25	19	78	
		3	0.03	6.80		44	57		1.5	53,790	0.58	0.08	11	0.34	2.53	7.5	0.57	48	63	
		4	0.03	2.40		45	55		3.9	5,114	0.49	0.12	11	0.36	2.87	7.5	0.29	49	73	
K5	Klipspruit @ Klintown 26° 17.402'S 27° 53.137'E	1	0.03	10.03		39	51		0.6		0.29	0.23	12	0.09	4.92	7.4	0.57	42	54	
		2	0.26	3.07		25	45		0.5		0.54	0.52	8	0.22	0.73	7.2	0.25	15	93	
		3	0.04	8.77		32	54		0.9		0.58	0.36	13	0.48	0.70	7.4	0.25	35	87	
		4	0.03	6.50		33	52		3.9		0.44	0.30	13	0.66	0.57	7.5	0.36	32	80	
K6	Klip River @ Soweto N12 Highway 26° 17.678'S 27° 50.209'E	1	0.03	4.12		30	50		1.2		0.31	0.17	16	0.56	1.79	7.4	0.44	35	79	
		2	0.03	0.58		25	40		1.3		0.45	0.12	12	0.18	2.22	7.4	0.31	37	60	
		3	0.03	1.48		34	51		2.2		0.54	0.09	16	0.24	3.32	7.5	0.32	38	72	
		4	0.03	2.34		34	56		1.9		0.47	0.13	17	0.47	2.06	7.7	0.35	41	68	
E17	Elsburgspruit @ Heidelberg Road 26° 16.570'S 28° 12.115'E	1	0.03	0.60		62	188		0.8	31,138	1.54	0.21	59	0.59	1.28	6.9	0.25	83	1,125	
		2	0.03	0.87		60	239		1.3	42,616	3.25	0.12	81	0.86	1.70	7.2	0.25	98	1,282	
		3	0.03	0.65		59	239		1.1	899	3.53	0.21	85	0.53	1.02	7.1	0.25	99	636	
		4	0.03	5.18		71	285		2.3	1,202	4.92	0.13	182	2.26	0.92	7.2	0.63	218	1,464	
E2	Stream @ Witwatersrand Gold Mine 26° 11.713'S 28° 11.405'E	1	0.09	2.02		40	105		0.5		1.02	1.04	29	0.68	1.21	7.1	0.25	61	345	
		2	0.03	0.17		18	30		2.5		0.33	0.21	9	0.18	0.93	7.4	0.33	14	25	
		3	0.13	2.47		31	114		2.3		1.80	0.30	52	0.26	0.94	7.2	0.27	61	577	
		4	0.03	2.36		23	31		4.4		0.38	0.31	9	0.09	0.92	7.5	0.25	16	20	

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E7	Elsburgspruit @ Elsburg Town 26° 14.972'S 28° 12.260'E	1	0.03	3.50		71	250		0.9		1.37	0.14	77	0.61	1.07	6.7	0.25	93	1,653	
		2	0.16	1.94		51	233		2.0		2.13	0.69	74	1.13	1.73	6.1	0.25	87	1,170	
		3	0.05	1.53		63	280		2.3		4.27	0.13	116	1.05	2.63	6.7	48.50	293	457	
		4	0.03	1.27		71	302		3.5		5.00	0.21	135	1.33	1.53	6.7	0.25	153	1,291	
E8	Stream @ Elspark 26° 15.701'S 28° 13.312'E	1	0.03	0.71		131	252		1.5		1.37	0.06	96	0.89	0.50	7.4	0.25	110	1,597	
		2	0.04	1.11		33	70		1.3		0.80	0.07	21	0.40	0.54	7.5	0.25	40	222	
		3	0.03	0.29		54	122		2.3		1.57	0.15	71	0.49	0.58	7.3	0.25	59	182	
		4	0.03	0.77		117	227		3.9		3.33	0.04	148	4.34	0.50	7.1	0.25	137	1,185	
N4	Natsalspruit from Simmer and Jack Mine 26° 14.325'S 28° 07.412'E	1	0.05	0.22		109	98		1.9		0.53	0.86	38	2.95	0.70	6.0	0.25	27	498	
		2	0.03	0.54		49	61		0.8		0.65	0.38	24	0.26	1.18	6.0	0.25	43	215	
		3	0.36	0.38		84	94		3.3		0.92	1.17	32	0.49	2.27	5.7	0.25	30	307	
		4	0.03	1.52		91	92		4.6		0.97	0.21	35	4.78	6.33	6.7	0.37	46	242	
N7	Natsalspruit @ Alrode 26° 17.903'S 28° 08.646'E	1	0.03	1.82		27	43		1.1	12,422	0.42	0.30	12	0.74	0.70	6.9	0.25	18	95	
		2	0.03	1.40		30	48		1.2	47,578	0.56	0.25	13	0.27	1.31	7.1	0.63	23	109	
		3	0.03	2.22		30	59		2.7	21,078	0.58	0.14	14	0.65	1.08	7.3	0.25	21	107	
		4	0.03	6.70		36	53		2.6	91,128	0.62	0.28	16	1.81	0.81	7.4	0.27	32	86	
N8	Natsalspruit @ Heidelberg Road 26° 25.570'S 28° 09.895'E	1	0.04	1.61	25	67	107	100	2.7	22,096	0.84	0.30	28	0.51	3.93	7.4	0.28	68	385	28
		2	0.04	0.71	16	45	89	100	1.7	25,577	0.98	0.19	23	0.29	2.71	7.5	0.31	48	298	24
		3	0.03	1.32	18	58	114	100	4.2	2,668	1.58	0.17	31	0.33	4.22	7.6	0.25	61	415	20
		4	0.04	4.03	27	61	136	100	4.5	42,199	1.85	0.21	40	0.56	2.32	7.6	0.39	81	515	19
R1	Rietspruit from Sallies 26° 18.289'S 28° 20.145'E	1	0.43	6.20		168	388		2.7		4.03	0.01	105	6.57	3.90	4.9	0.25	201	2,167	
		2	0.20	0.58		104	265		1.4		3.33	0.04	67	0.31	3.17	5.2	0.63	52	1,383	
		3	0.09	0.05		65	129		3.6		1.91	0.12	20	0.37	1.08	7.0	0.25	49	601	
		4	0.03	0.02		73	145		3.6		3.15	0.03	42	0.11	0.50	7.4	0.25	97	655	
R2	Withokspruit Tributary 26° 19.418'S 28° 20.325'E	1	0.25	3.87		53	116		1.0		0.86	0.21	32	0.17	2.20	6.7	0.25	315	349	
		2	0.04	0.04		26	43		1.6		0.47	0.13	9	0.20	1.42	7.8	0.25	26	36	
		3	0.12	0.38		39	79		1.5		1.10	0.17	36	0.30	1.03	7.5	0.25	53	252	
		4	0.07	0.55		53	57		4.4		0.59	0.31	15	0.89	2.23	7.9	0.26	43	29	
R3	Tributary @ Carnival City 26° 15.569'S 28° 19.239'E	1	0.07	0.09		14	30		1.7		0.47	0.20	7	0.08	0.77	7.5	0.25	14	35	
		2	0.03	0.02		35	52		1.8		0.71	0.14	15	0.05	0.50	7.9	0.25	35	76	
		3	0.11	0.04		26	45		3.7		0.61	0.16	11	0.03	0.58	7.8	0.25	27	57	
		4	0.04	0.04		16	28		5.0		0.43	0.20	9	0.08	0.54	7.7	0.25	17	28	
R4	Rietspruit @ Vosloorus 26° 22.327'S 28° 14.682'E	1	0.15	0.40		122	172		1.1		1.88	0.39	70	0.44	0.50	7.1	0.25	93	737	
		2	0.03	0.03		72	143		2.1		1.63	0.02	41	0.25	0.50	7.9	0.25	89	520	
		3	0.03	0.04		79	133		4.4		1.57	0.02	50	0.07	0.87	7.8	0.25	78	495	
		4	0.03	7.75		115	163		6.8		2.60	0.03	70	0.10	0.54	8.0	0.93	203	623	
R5	Rietspruit @ Hardmans Farm 26° 25.757'S 28° 10.856'E	1	0.04	1.32		74	115		1.4	126,277	0.58	0.07	48	0.46	1.34	7.7	0.28	64	341	
		2	0.10	0.33		52	94		1.2	84,398	1.14	0.09	31	0.12	1.07	7.6	0.25	61	381	
		3	0.04	0.20		68	115		3.6	24,830	1.28	0.06	43	0.08	1.23	7.9	0.25	66	373	
		4	0.04	1.34		78	121		4.1	125,525	1.07	0.06	54	0.28	1.26	7.9	0.27	65	341	
R6	Rietspruit Weir below Waterval Sewage Works 26° 27.044'S 28° 05.355'E	1	0.04	0.57	23	62	109	100	1.4	11,306	0.83	0.13	27	0.44	3.99	7.5	0.26	69	337	45
		2	0.09	0.19	22	48	85	100	2.2	18,883	1.11	0.12	24	0.17	2.88	7.7	0.26	45	320	67
		3	0.08	1.21	20	58	115	100	4.7	2,790	1.31	0.19	31	0.22	4.26	7.6	0.34	58	413	19
		4	0.03	2.87	24	63	132	100	3.4	3,837	1.81	0.11	41	0.60	2.69	7.6	0.39	76	494	17

Key

N4	Natsalspruit from Simmer and Jack Mine 26° 14.325'S 28° 07.412'E	1	0.05	0.22	- 1 Oct to 31 Dec 2018
		2	0.03	0.54	- 1 Jan to 31 Mar 2019
		3	0.36	0.38	- 1 Apr to 30 Jun 2019
		4	0.03	1.52	- 1 Jul to 30 Sep 2019

Water Quality Guidelines

	- Ideal
	- Acceptable
	- Tolerable
	- Unacceptable
	- Not analysed

Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
Physical					
Conductivity	mS/m	< 80	80 - 100	100 - 150	> 150
Dissolved Oxygen (O ₂)	mg/l O ₂		> 6.0	5.0 - 6.0	< 5.0
pH	pH units	6.0 - 9.0			< 6.0; > 9.0
Suspended Solids	mg/l	< 20	20 - 30	30 - 55	> 55
Organic					
Chemical Oxygen Demand (COD)	mg/l	< 15	15 - 30	30 - 40	> 40
Macro Elements					
Aluminium (Al)	mg/l		< 0.3	0.3 - 0.5	> 0.5
Ammonia (NH ₄)	mg/l	< 0.5	0.5 - 1.5	1.5 - 4.0	> 4.0
Chloride (Cl)	mg/l	< 50	50 - 75	75 - 100	> 100
Fluoride (F)	mg/l	< 0.19	0.19 - 0.70	0.70 - 1.00	> 1.00
Iron (Fe)	mg/l	< 0.5	0.5 - 1.0	1.0 - 1.5	> 1.5
Magnesium (Mg)	mg/l	< 8	8 - 30	30 - 70	> 70
Manganese (Mn)	mg/l	< 1	1 - 2	2 - 4	> 4
Nitrate (NO ₃)	mg/l	< 2	2 - 4	4 - 7	> 7
Phosphate (PO ₄)	mg/l	< 0.2	0.2 - 0.5	0.5 - 1.0	> 1.0
Sodium (Na)	mg/l	< 50	50 - 80	80 - 100	> 100
Sulphate (SO ₄)	mg/l	< 200	200 - 350	350 - 500	> 500
Bacteriological					
<i>E. coli</i>	counts/100ml	< 130	130 - 200	200 - 400	> 400
Faecal coliforms	counts/100ml	< 1,000	1,000 - 5,000	5,000 - 10,000	> 10,000
Biological					
<i>Daphnia</i>	% survival	> 95	95 - 90	90 - 80	< 80