

Sample Points	Sample Point Description	Ammonia	Chloride	Fluoride	M-Alkalinity	Nitrate	Phosphate	Sulphate	Chemical Oxygen Demand	Conductivity	pH	E. coli
VE	Vaal River @ Ermelo 26°21'46.17"S 30° 6'31.15"E	0.12	12.00	0.13	65	<0.10	<0.05	21.00	19	23	7.1	
		0.12	<10	0.14	87	0.15	<0.05	14.00	15	22	7.2	
		0.12	<10	0.18	50	0.76	0.05	8.00	20	17	6.6	
		0.12	<10	0.19	63	0.16	<0.05	7.00	27	17	7.3	
ZD	Zaaihoek Dam 27°09'47.0"S 29°52'42.8"E	0.12	11.00	0.23	170	<0.10	<0.05	30.00	17	39	8.3	
		0.12	<10	0.25	41	<0.10	<0.05	18.00	<10	17	7.4	
VKV	Klein Vaal River @ Goedehoop 26°49'12.19"S 30° 8'12.00"E	0.12	<10	0.06	64	0.10	<0.05	7.60	11	17	7.2	
		0.12	<10	0.14	61	<0.10	0.06	11.00	<10	21	7.2	
		0.12	<10	0.10	34	0.97	<0.05	5.90	16	10	6.7	
		0.12	<10	0.15	48	0.21	<0.05	6.70	<10	14	7.2	
VRA	Rietspruit below Amersfoort 26°54'47.20"S 29°54'27.37"E	0.12	22.00	0.20	215	0.15	<0.05	49.00	24	54	8.7	
		0.12	19.00	0.25	89	0.23	0.07	46.00	20	44	7.8	
		0.12	<10	0.25	93	1.10	<0.05	19.00	19	22	6.8	
		0.12	14.00	0.28	175	0.12	<0.05	37.00	13	43	8.1	
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	18.00	37.00	0.21	170	0.74	2.10	120.00	72	69	7.2	
		10.00	41.00	0.29	155	<0.10	2.00	120.00	56	84	7.4	
		10.00	40.00	0.49	115	1.10	1.90	100.00	45	61	6.9	
		20.00	56.00	0.56	210	1.40	4.60	115.00	51	85	7.6	
VKR	Tweefontein @ Riverside 26°37'21.17"S 29°50'16.24"E	8.60	30.00	0.17	180	1.20	1.60	92.00	44	64	7.4	
		14.00	26.00	0.32	120	<0.10	2.60	60.00	35	60	6.9	
		3.80	26.00	0.56	77	2.10	0.44	72.00	34	46	7	
		7.1	48.00	0.39	160	3.60	1.70	97.00	29	70	7.5	
VK	Brummerspruit before Vaal River 26°46'51.26"S 29°48'23.51"E	0.12	25.00	0.22	165	3.60	0.58	69.00	22	55	8.2	
		9.20	25.00	0.28	110	1.10	2.50	57.00	34	52	7.5	
		1.00	23.00	0.30	94	1.60	0.23	74.00	29	44	6.8	
		0.75	44.00	0.38	155	2.00	0.19	98.00	29	63	7.7	
VAS	Vaal River above Standerton 26°51'18.56"S 29°41'51.61"E	0.12	23.00	0.19	155	0.65	<0.05	72.00	19	50	8.8	
		0.12	17.00	0.21	85	0.25	0.05	27.00	22	38	7.4	
		0.12	<10	0.54	52	0.97	<0.05	21.00	25	20	6.5	
		0.12	12.00	0.16	96	<0.10	0.08	30.00	10	30	7.6	
VGK	Geelklipspruit below Amersfoort 26°57'53.51"S 29°40'19.12"E	0.12	25.00	0.21	250	<0.10	<0.05	75.00	20	64	8.5	
		0.12	23.00	0.28	140	<0.10	0.26	65.00	23	62	8.4	
		0.12	12.00	0.26	155	0.85	0.10	39.00	20	41	7.5	
		0.12	16.00	0.25	220	0.35	0.13	40.00	11	52	8.4	
VBB	Blesbokspruit below Bethal 26°34'2.11"S 29°26'41.21"E	6.00	58.00	0.36	220	5.10	1.80	54.00	47	74	7.9	
		6.60	44.00	0.46	210	4.10	2.80	54.00	55	70	7.6	
		0.56	30.00	0.36	160	1.40	1.20	29.00	55	46	7	
		8.6	59.00	0.34	235	4.00	3.00	30.00	50	72	7.9	
VBS	Blesbokspruit @ Skaapkraal 26°38'17.35"S 29°27'6.24"E	0.12	58.00	0.43	225	2.00	0.87	68.00	42	72	9	
		1.60	65.00	0.61	215	0.60	2.00	35.00	59	74	7.8	
		0.12	21.00	0.96	145	<0.10	0.22	44.00	47	36	6.8	
		0.12	60.00	0.34	240	<0.10	0.91	52.00	42	70	8.9	
VB	Blesbokspruit @ Vaal River Confluence 26°49'57.05"S 29°30'32.95"E	0.12	44.00	0.37	235	0.24	<0.05	86.00	33	70	8.4	
		0.12	66.00	0.82	170	<0.10	1.00	45.00	30	63	7.5	
		0.12	15.00	0.70	150	<0.10	0.28	44.00	34	36	6.9	
		0.12	53.00	0.35	290	0.62	0.20	53.00	38	68	7.8	
ND-LEEU	Leeuspruit @ New Denmark Colliery 26°51'16.79"S 29°19'31.56"E	0.12	33.00	0.34	230	0.14	<0.05	84.00	24	65	8.5	
		0.12	20.00	1.10	145	<0.10	<0.05	36.00	32	37	6.9	
		0.12	18.00	0.26	135	0.16	<0.05	40.00	26	52	7.5	
VS	Vaal River @ Standerton 26°56'51.37"S 29°15'32.09"E	0.12	<10	0.19	74	0.12	<0.05	22.00	19	23	7.9	
		0.23	11.00	0.24	80	0.16	0.07	27.00	21	28	7.1	
		0.25	<10	0.56	85	0.88	<0.05	23.00	32	26	6.4	
		0.12	<10	0.26	105	0.11	<0.05	27.00	16	37	7.9	

Sample Points	Sample Point Description	Ammonia	Chloride	Fluoride	M-Alkalinity	Nitrate	Phosphate	Sulphate	Chemical Oxygen Demand	Conductivity	pH	E. coli
S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	13.00	52.00	0.37	180	1.00	3.30	46.00	70	62	7.6	28
		5.40	38.00	0.28	195	1.90	0.87	20.00	38	64	7.3	4
		7.50	40.00	0.20	170	2.40	3.30	34.00	42	60	7.2	200
		8.30	46.00	0.26	160	2.00	2.00	37.00	44	58	7.8	66
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	23.00	51.00	0.16	195	1.90	3.70	140.00	210	84	7.2	1673
		29.00	70.00	0.34	210	0.31	3.40	86.00	72	100	7.1	263
		5.40	57.00	0.43	110	4.30	1.70	130.00	165	65	7	43
		49	67.00	0.32	520	0.58	33.00	86.00	205	120	7.1	50
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	2.20	100.00	0.18	93	1.80	0.31	60.00	28	52	7.2	95
		2.30	71.00	0.22	120	1.30	1.50	60.00	31	61	7.4	26
		12.00	83.00	0.87	130	0.32	1.80	32.00	25	59	7.1	94
		8.2	48.00	0.26	120	0.27	1.80	48.00	34	60	7.4	170
S-MAJUBA	Majuba Power Station Sewage Works 27° 5'23.45"S 29°46'11.44"E	3.50	28.00	0.12	97	4.00	0.51	120.00	67	54	7.9	210
		0.86	23.00	0.21	54	13.00	0.59	41.00	40	46	7.1	3
		3.30	37.00	0.29	73	12.00	1.30	75.00	45	53	7.2	38
		4.0	36.00	0.24	65	16.00	1.40	23.00	74	51	7	1500
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	1.70	48.00	0.15	125	<0.10	1.20	47.00	41	68	7.6	125
		1.50	100.00	0.27	120	9.10	1.60	43.00	30	72	7.8	6
		3.20	90.00	0.80	180	12.00	1.80	34.00	36	70	7.1	1
		6.0	66.00	0.23	130	7.60	1.80	60.00	49	68	7.6	9

Sewage Works Compliance (where applicable) to General Standard (GN 1191 Oct 1999)

S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	13.00	22	0.37	210.00	1.00	3.30	16.45	70	62	7.60	28
		5.40	52	0.28	180	1.90	0.87	46.00	38	64	7.30	4
		7.50	38	0.20	195	2.40	3.30	20.00	42	60	7.20	200
		8.30	40	0.26	170	2.80	2.00	34	44	58	7.80	66
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	23.00	53	0.16	195	1.90	3.70	67.00	210	84	7.20	1673
		29.00	51	0.34	195	0.31	3.40	140	72	100	7.10	263
		5.40	70	0.43	210	4.30	1.70	86	165	65	7.00	43
		49.00	57	0.32	110	0.58	33.00	130	205	120	7.10	50
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	2.20	95	0.18	130	1.80	0.31	41	28	52	7.20	95
		2.30	100	0.22	93	1.30	1.50	60	31	61	7.40	26
		12.00	71	0.87	120	0.32	1.80	60	25	59	7.10	94
		82.00	83	0.26	130	0.27	1.80	32	34	60	7.40	170
S-MAJUBA	Majuba Power Station Sewage Works 27° 5'23.45"S 29°46'11.44"E	3.50		0.12		4.00	0.51	56	67	54	7.90	210
		0.86	28	0.21	97	13.00	0.59	120	40	46	7.10	3
		3.30	23	0.29	54	12.00	1.30	41	45	53	7.20	38
		4.00	37	0.24	73	16.00	1.40	75	74	51	7.00	1500
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	1.70	81	0.15	110	<0.10	1.20	40	41	68	7.60	125
		1.50	48	0.27	125	9.1	1.60	47.00	30	72	7.80	6
		3.20	100	0.80	120	12.00	1.80	43.00	36	70	7.10	1
		6.00	90	0.23	180	7.60	1.80	34.00	49	68	7.60	9

Key

VE	Vaal River above Standerton	0.12	-	1 July 11 - 30 Sept 11
		0.12	-	1 Oct 11 - 31 Dec 31
		0.12	-	1 Jan 12 - 31 Mar 12
		0.12	-	1 Apr 12 - 30 Jun 12

Water Quality Guidelines

	-	Ideal
	-	Acceptable
	-	Tolerable
	-	Unacceptable

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