

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	0.25	<10	0.37	79	0.31	0.24	18	11	21	7.8	
		0.18	13	0.26	90	0.45	0.08	22	17	27	7.7	
		0.18	9	0.23	58	0.33	0.14	33	19	23	7.2066667	
		<0.5	10	0.24	93	0.71	<0.2	10	18	22	7.5	
C-WITPUNTSRUIT	Witpuntspruit @ N2 near Camden 26°35'36.24"S 30° 05'46.84"E	2.30	17	0.64	<5.0	0.61	0.10	260	9	290	3.1	
		0.25	<10	0.64	<5.0	0.88	0.10	47	5	120	3.9	
		1.30	16	1.20	<0.5	0.59	<0.2	597	<10	235	3.25	
C-VAAL-DS-WITPT	Vaal River Downstream of Witpuntspruit 26°42'07.39"S 30° 04'58.08"E	0.15	18	0.61	120	0.84	0.08	140	20	58	7.9	
		0.15	11	0.36	70	<0.10	0.12	80	18	33	8	
		<0.5	15	0.36	110	0.26	<0.2	44	18	33	7.9	
ZD	Zaaihoek Dam 27°09'47.0"S 29°52'42.8"E											
VKV	Klein Vaal River @ Goedehoop 26°49'12.19"S 30° 8'12.00"E	0.25	<10	0.08	67	0.17	0.19	7	5	16	7.8	
		<0.092	<10	0.08	85	0.36	0.05	<5.0	13	19	7.9	
VRA	Rietspruit below Amersfoort 26°54'47.20"S 29°52'19.22"E	0.25	19	0.15	220	0.58	0.19	50	12	52	8.4	
		0.18	16	0.24	125	0.77	0.08	35	30	37	7.8	
		0.25	28	0.32	140	1.70	0.10	100	22	38	8.2	
		<0.5	17	0.31	168	0.41	<0.2	41	18	42	8.07	
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	23.00	37	0.18	190	0.95	2.30	185	86	82	7.3	
		4.30	19	0.36	87	0.89	0.48	67	115	40	7	
		11.00	34	0.32	175	0.12	1.40	72	48	66	7.3	
		17.67	32	0.28	170	0.35	2.03	80	50	59	7.23	
VKR	Tweefontein @ Riverside 26°37'21.17"S 29°50'16.24"E	7.70	29	0.26	200	3.70	1.10	120	32	66	7.7	
		7.30	36	0.31	210	0.96	2.80	54	63	73	7.4	
		1.83	19	0.35	170	1.30	0.10	46	38	65	7.4	
		7.40	31	0.32	152	7.93	0.99	81	38	57	7.2	
VK	Brummerspruit before Vaal River 26°46'51.26"S 29°48'23.51"E	0.25	26	0.22	195	4.20	0.33	100	22	62	8.1	
		0.15	30	0.34	220	2.20	0.96	72	31	70	7.8	
		6.18	30	0.38	150	2.00	1.10	90	32	56	7.7	
		1.25	31	0.30	138	5.57	0.35	78	30	51	7.36	
VAS	Vaal River above Standerton 26°51'18.56"S 29°41'51.61"E	0.25	19	0.23	170	1.10	0.19	80	15	47	8.5	
		0.25	14	0.26	110	1.40	0.16	35	32	36	7.6	
		<0.5	19	0.27	138	1.36	<0.2	47	22	40	7.79	
VGK	Geelklipspruit below Amersfoort 26°57'53.51"S 29°40'19.12"E	0.25	21	0.20	235	<0.10	0.19	76	16	60	8.5	
		<0.092	29	0.33	235	0.63	0.05	83	20	61	8.5	
VBB	Blesbokspruit below Bethal 26°34'2.11"S 29°26'41.21"E	5.00	57	0.40	225	1.10	2.40	49	54	76	7.8	
		0.68	34	0.34	150	0.66	0.71	42	40	50	7.4	
		0.68	34	0.34	150	0.66	0.71	42	40	50	7.4	
		4.00	35	0.46	188	6.55	0.92	44	48	54	7.98	
VBS	Blesbokspruit @ Skaapkraal 26°38'17.35"S 29°27'6.24"E	4.10	50	0.35	280	0.39	1.60	53	49	79	8.2	
		0.90	42	0.48	190	0.57	1.20	43	51	58	8	
		0.25	25	0.28	170	0.17	0.38	38	36	54	8.0	
		<0.1	45	0.42	187	0.77	0.30	50	38	58	8.7	
VB	Blesbokspruit @ Vaal River Confluence 26°49'57.05"S 29°30'32.95"E	1.40	50	0.32	250	0.81	0.73	79	27	75	8.3	
		0.25	34	0.39	185	0.60	0.82	46	45	57	7.8	
		0.25	15	0.35	165	0.51	0.10	42	31	44	7.9	
		<0.5	41	0.46	207	0.51	0.25	51	30	59	7.9	
ND-LEEU	Leeuspruit @ New Denmark Colliery 26°51'16.79"S 29°19'31.56"E	10.00	42	0.35	225	0.25	1.60	73	21	62	8.3	
		0.25	19	0.34	115	0.41	0.10	53	35	40	7.5	
		0.25	16	0.30	98	2.30	0.10	68	28	30	7.8	
		<0.1	23	0.33	123	0.21	0.55	66	20	43	7.9	
VS	Vaal River @ Standerton 26°56'51.37"S 29°15'32.09"E	0.25	<10	0.23	60	0.49	0.13	24	16	21	7.4	
		0.17	<10	0.33	68	0.43	0.68	32	19	23	7.6	
		0.25	11	0.26	74	0.46	0.16	36	20	26	7.5	
		<0.5	11	0.37	78	0.47	<0.2	33	18	25	7.1	
S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	2.90	53	0.24	160	4.40	0.95	71	44	69	7.6	249,400
		7.40	49	0.14	205	2.30	1.60	58	53	74	7.6	118,050
		10.53	47	0.29	207	0.49	1.10	61	28	71	7.5	598973
		3.00	46	0.28	118	7.87	0.98	63	29	56	7.26	818033.33
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	20.00	28	0.23	230	0.75	2.90	155	165	100	7.0	439,170
		10.00	36	0.12	175	0.28	2.30	105	270	72	7.1	605,670
		16.00	47	0.13	190	1.70	2.80	84	225	77	7.2	258,730
		26.67	46	0.24	197	1.29	3.30	73	232	72	7.2	542800
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	0.83	72	0.17	67	3.70	3.20	65	25	54	7.2	16,280
		0.35	87	0.19	66	3.30	0.12	70	16	56	7.1	70,670
		0.25	67	0.21	105	2.80	0.64	69	17	49	7.7	18,720
		20.00	56	0.28	101	11.18	0.27	75	57	62	7.4	0
S-MAJUBA	Majuba Power Station Sewage Works 27° 5'23.45"S 29°46'11.44"E	28.00	23	0.22	66	5.00	2.50	72	29	52	7.2	0
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	1.90	95	0.29	98	11.00	1.40	61	56	70	7.6	250
		<0.092	115	0.78	68	2.00	1.10	115	31	81	7.8	6
		4.20	35	0.18	190	3.00	1.00	49	48	76	7.3	547,500
		3.00	76	0.28	121	11.40	0.72	91	39	89	7.7	177

Sample Points	Sample Point Description	Ammonia	Chloride	Fluoride	M-Alkalinity	Nitrate	Phosphate	Sulphate	Chemical Oxygen Demand	Conductivity	pH	E. coli	
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	2.90	53	0.24	160	4.40	0.95	71	44	69	7.6	249,400	
		7.40	49	0.14	205	2.30	1.60	58	53	74	7.6	118,050	
		10.53	47	0.29	207	0.49	1.10	61	28	71	7.5	598973	
		3.00	46	0.28	118	7.87	0.98	63	29	56	7.3	818033	
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°17'30.43"E	20.00	28	0.23	230	0.75	2.90	155	165	100	7.0	439,170	
		10.00	36	0.12	175	0.28	2.30	105	270	72	7.1	605,670	
		16.00	47	0.13	190	1.70	2.80	84	225	77	7.2	258,730	
		26.67	46	0.24	197	1.29	3.30	73	232	72	7.2	542800	
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	0.83	72	0.17	67	3.70	3.20	65	25	54	7.2	16,280	
		0.35	87	0.19	66	3.30	0.12	70	16	56	7.1	70,670	
		0.25	67	0.21	105	2.80	0.64	69	17	49	7.7	18,720	
		20.00	56	0.28	101	11.18	0.27	75	57	62	7.4	0	
S-MAJUBA	Majuba Power Station Sewage Works 27° 5'23.45"S 29°46'11.44"E	28.00	23	0.22	66	5.00	2.50	72	29	52	7.2	0	
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	1.90	95	0.29	98	0.29	1.40	61	56	70	7.6	250	
		<0.092	115	0.78	68	2	1.10	115	31	81	7.8	6	
		4.20	35	0.18	190	3.00	1.00	49	48	76	7.3	547,500	
		3.00	76	0.28	121	11.40	0.72	91	39	89	7.7	177	

Key

VE	Vaal River above Standerton	0.12	-	1 July 14 - 30 Sept 14
		0.12	-	1 Oct 14 - 31 Dec 14
		0.12	-	1 Jan 15 - 31 Mar 15
		0.12	-	1 Apr 15 - 30 Jun 15

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