

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	0.18	9	0.23	58	0.33	0.14	33	19	23	7.2	
		<0.5	10	0.24	93	0.71	<0.2	10	18	22	7.5	
		0.23	23	0.26	115	0.17	0.35	31	19	28	7.8	
C-WITPUNTSRUIT	Witpuntspruit @ N2 near Camden 26°35'36.24"S 30° 05'46.84"E	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	3.3	
		1.60	16	1.53	<5	0.52	0.36	863	<10	330	3.0	
C-VAAL-DS_WITPT	Vaal River Downstream of Witpuntspruit 26°42'07.39"S 30° 04'58.08"E	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	
		<0.2	20	0.47	185	1.40	2.30	40	28	55	8.3	
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											
VRA	Rietspruit below Amersfoort 26°54'47.20"S 29°52'19.22"E	<0.5	7	0.30	49	0.16	<0.2	18	12	14	7.5	
		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	8.1	
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	0.21	10	0.27	59	0.80	<0.1	30	15	19	7.3	
		<0.5	23	0.31	131	1.68	<0.2	17	12	36	7.6	
		11.00	34	0.32	175	0.12	1.40	72	48	66	7.3	
VKR	Tweefontein @ Riverside 26°37'21.17"S 29°50'16.24"E	17.67	32	0.28	170	0.35	2.03	80	50	59	7.2	
		14.37	48	0.54	200	6.35	2.13	149	72	70	7.5	
		24.00	41	0.58	212	1.82	2.83	71	68	69	7.5	
VK	Brummerspruit before Vaal River 26°46'51.26"S 29°48'23.51"E	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	
		6.45	36	0.44	187	53.00	1.90	77	44	72	7.4	
VAS	Vaal River above Standerton 26°51'18.56"S 29°41'51.61"E	20.33	37	0.67	180	0.29	2.93	53	63	64	7.4	
		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	7.4	
VGK	Geelklipspruit below Amersfoort 26°57'53.51"S 29°40'19.12"E	0.48	27	0.35	155	7.57	0.81	41	25	56	7.8	
		5.17	33	0.54	197	2.28	1.77	44	40	62	7.4	
		<0.5	19	0.27	138	1.36	<0.2	47	22	40	7.8	
VBB	Blesbokspruit below Bethal 26°34'2.11"S 29°26'41.21"E	<0.2	13	0.33	89	1.09	<0.1	29	28	28	7.6	
		<0.5	9	0.41	63	0.97	0.28	23	13	17	7.3	
		0.68	34	0.34	150	0.66	0.71	42	40	50	7.4	
VBS	Blesbokspruit @ Skaapkraal 26°38'17.35"S 29°27'6.24"E	4.00	35	0.46	188	6.55	0.92	44	48	54	8.0	
		9.10	36	0.37	188	10.17	1.44	41	44	71	7.6	
		7.65	60	0.50	183	3.42	1.80	57	36	68	7.5	
VB	Blesbokspruit @ Vaal River Confluence 26°49'57.05"S 29°30'32.95"E	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	
		0.56	60	0.38	207	2.95	0.73	64	65	70	8.6	
ND-LEEU	Leesuspruit @ New Denmark Colliery 26°51'16.79"S 29°19'31.56"E	0.39	70	0.55	72	0.16	0.84	55	18	22	7.7	
		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	
VS	Vaal River @ Standerton 26°56'51.37"S 29°15'32.09"E	<0.2	58	0.42	228	0.99	<0.2	68	42	72	8.1	
		<0.2	78	0.62	130	<0.10	0.17	58	26	68	7.8	
		0.25	16	0.30	98	2.30	0.10	68	28	30	7.8	
S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	<0.1	23	0.33	123	0.21	0.55	66	20	43	7.9	
		<0.1	39	0.24	119	<0.1	<0.2	73	29	53	7.8	
		0.25	11	0.26	74	0.46	0.16	36	20	26	7.5	
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	<0.5	11	0.37	78	0.47	<0.2	33	18	25	7.8	
		<0.2	16	0.28	81	0.26	<0.1	29	20	28	7.8	
		<0.5	11	0.31	114	2.85	0.67	27	23	39	7.1	
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	10.53	47	0.29	207	0.49	1.10	61	28	71	7.5	598,973
		3.00	46	0.28	118	7.87	0.98	63	29	56	7.3	818,033
		22.00	43	0.25	213	10.50	1.53	50	53	77	7.5	668,100
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	11.95	52	0.43	154	4.54	2.33	54	49	65	7.53	590163
		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	542,800
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	21.00	47	0.35	186	37.12	4.37	74	157	61	7.7	563633
		26.20	48	0.33	223	<0.10	4.00	72	126	77	7.0	2521793
		0.25	67	0.21	105	2.80	0.64	69	17	49	7.7	18,720
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	20.00	56	0.28	101	11.18	0.27	75	57	62	7.4	0
		12.00	83	0.18	53	5.83	0.63	75	108	67	7.2	289,462
		<0.2	87	0.36	20	10.70	0.92	78	23	66	6.9	0
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	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
		1.07	104	0.28	130	14.33	1.33	79	76	93	7.5	2997
		15.00	86	0.46	120	10.90	2.40	58	57	73	7.6	22230

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	10.53	47	0.29	207	0.49	1.10	61	28	71	7.5	598,973
		3.00	46	0.28	118	7.87	0.98	63	29	56	7.3	818,033
		22.00	43	0.25	213	10.50	1.53	50	53	77	7.5	668,100
		11.95	52	0.43	154	4.54	2.33	54	49	65	7.5	590163
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	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	542,800
		21.00	47	0.35	186	37.12	4.37	74	157	61	7.7	563633
		26.20	48	0.33	223	<0.10	4.00	72	126	77	7.0	2521793
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	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
		12.00	83	0.18	53	5.83	0.63	75	108	67	7.2	289,462
		<0.2	87	0.36	20	10.70	0.92	78	23	66	6.9	0
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	4.20	35	0.18	190	0.18	1.00	49	48	76	7.3	547,500
		3.00	76	0.28	121	11.4	0.72	91	39	89	7.7	177
		1.07	104	0.28	130	14.33	1.33	79	76	93	7.5	2997
		15.00	86	0.46	120	10.90	2.40	58	57	73	7.6	22230

Key

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