

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	0.20	10	0.23	31	0.10	0.10	14	22	14	6.9	
		<0.092	14	0.15	44	0.10	0.20	16	19	18	7.2	
		<0.05	15	0.28	75	1.10	<0.2	27	12	25	7.4	
		<0.092	18	0.55	100	0.44	0.20	14	26	27	7.2	
C-WITPUNTSRUIT	Witpuntspruit @ N2 near Camden 26°35'36.24"S 30° 05'46.84"E	0.55	15	0.57	5	0.48	0.20	440	13	170	3.1	
		1.06	20	1.06	88	<0.1	<0.2	1810	<10	231	4.2	
		0.70	25	1.00	5	0.44	0.20	<5.0	16	180	3.5	
C-VAAL-DS_WITPT	Vaal River Downstream of Witpuntspruit 26°42'07.39"S 30° 04'58.08"E	0.20	<10	0.18	41	0.10	0.10	30	14	78	6.0	
		<0.092	18	0.29	46	0.10	0.20	44	11	24	7.3	
		0.05	19	0.48	91	1.20	<0.2	76	21	39	7.8	
		<0.092	30	0.54	140	0.44	0.20	110	24	54	7.9	
VKV	Klein Vaal River @ Goedehoop 26°49'12.19"S 30° 8'12.00"E	0.20	<10	0.22	54	0.10	0.10	11	12	16	7.3	
		<0.092	<10	0.19	38	0.92	0.20	20	32	16	6.8	
		0.20	14	0.23	105	0.11	0.10	28	27	31	7.7	
VRA	Rietspruit below Amersfoort 26°54'47.20"S 29°52'19.22"E	<0.092	22	0.26	170	0.34	0.20	39	25	46	8.0	
		0.05	35	0.26	220	0.38	<0.2	56	20	62	8.3	
		<0.092	36	0.30	160	0.44	0.20	42	25	49	7.5	
		6.80	40	0.26	120	0.22	0.24	125	34	59	7.5	
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	8.80	35	0.28	125	0.10	0.40	130	38	61	7.1	
		21.67	36	0.47	212	0.19	1.69	92	69	74	7.2	
		11.00	23	0.25	175	0.44	0.57	54	45	62	7.0	
		0.27	29	0.29	135	1.10	0.10	74	30	50	7.3	
VKR	Tweefontein @ Riverside 26°37'21.17"S 29°50'16.24"E	1.60	26	0.27	160	2.00	0.20	82	31	54	7.3	
		15.83	37	0.33	248	6.71	2.40	72	42	77	7.5	
		11.00	32	0.31	180	0.44	0.51	72	53	54	7.3	
		0.20	25	0.28	135	0.57	0.10	53	25	45	7.3	
VK	Brummerspruit before Vaal River 26°46'51.26"S 29°48'23.51"E	0.82	27	0.26	135	3.40	0.20	97	26	52	7.5	
		1.60	32	0.42	200	4.80	0.43	69	31	62	8.4	
		18.00	36	0.30	140	0.44	1.30	66	37	44	7.1	
		0.20	14	0.25	83	0.16	0.10	34	14	29	7.5	
VAS	Vaal River above Standerton 26°51'18.56"S 29°41'51.61"E	<0.092	16	0.19	110	0.76	0.20	48	16	36	7.9	
		0.07	20	0.33	148	0.99	<0.2	50	15	44	8.6	
		3.30	24	0.26	54	1.40	0.24	43	32	96	5.5	
		0.2	22	0.38	150	0.10	0.10	94	36	54	7.9	
VGK	Geelkipspruit below Amersfoort 26°57'53.51"S 29°40'19.12"E	<0.092	110	0.32	94	0.44	0.20	440	34	66	7.5	
		0.20	16	0.37	91	0.40	0.78	21	34	36	7.4	
		1.80	42	0.25	175	0.62	0.55	47	34	58	7.4	
		9.00	63	0.40	248	0.19	2.10	54	52	75	7.7	
VBB	Blesbokspruit below Bethal 26°34'2.11"S 29°26'41.21"E	11.00	58	0.27	180	1.40	2.00	130	38	57	7.4	
		0.20	11	0.26	89	0.24	0.25	22	28	28	7.4	
		0.12	44	0.30	160	0.46	0.23	50	35	50	8.5	
		<0.05	63	0.30	240	1.45	0.69	52	41	71	9.5	
VBS	Blesbokspruit @ Skaapkraal 26°38'17.35"S 29°27'6.24"E	0.90	68	0.34	220	0.52	1.70	53	35	69	7.6	
		0.20	17	0.26	91	0.12	0.12	26	31	28	7.2	
		0.12	34	0.34	170	0.10	0.15	54	26	49	7.8	
		<0.05	51	0.29	240	0.20	<0.2	70	23	68	8.1	
VB	Blesbokspruit @ Vaal River Confluence 26°49'57.05"S 29°30'32.95"E	0.2	62	0.39	230	0.44	0.33	60	31	69	7.9	
		0.20	14	0.19	71	0.28	0.10	30	27	26	7.3	
		0.12	20	0.28	86	0.10	0.15	62	22	34	7.6	
		<0.05	21	0.32	117	0.32	<0.2	53	21	42	8.2	
ND-LEEU	Leeuspruit @ New Denmark Colliery 26°51'16.79"S 29°19'31.56"E	0.2	40	0.29	120	0.44	<0.2	95	29	50	7.5	
		0.2	11	0.40	91	0.37	0.10	25	23	42	7.5	
		0.15	<10	0.19	100	0.22	0.20	26	32	35	7.5	
		0.07	11	0.31	69	0.25	<0.2	33	18	28	7.6	
VS	Vaal River @ Standerton 26°56'51.37"S 29°15'32.09"E	0.14	37	0.28	110	0.73	<0.2	45	21	33	7.1	
		23.00	75	0.27	230	0.42	2.00	78	45	79	7.5	2,948,100
		2.10	52	0.22	140	5.10	0.63	58	36	61	7.8	1,310
		5.05	21	25.62	130	3.70	2.75	53	35	59	7.2	204595
S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	6.70	50	0.28	135	2.40	1.20	49	29	56	7.00	470,800
		24.00	65	0.20	225	0.10	1.30	95	175	82	7.1	1,678,830
		25.00	25	0.18	255	0.28	3.40	44	165	79	7.1	1,334,600
		33.00	46	0.39	273	0.24	1.36	93	1025	89	6.7	4029567
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	20.00	49	0.24	270	0.44	2.20	76	230	84	6.8	1,973,200
		0.20	73	0.18	81	13.00	0.10	58	22	59	7.5	27,200
		0.12	58	0.20	58	16.00	0.16	64	28	54	7.2	225
		0.28	65	0.34	55	13.67	0.16	68	21	60	7.0	4
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	0.44	54	0.19	110	3.50	0.29	74	27	54	6.9	97
		0.39	72	0.25	120	4.40	1.60	52	41	71	7.5	7,110
		10.00	70	0.42	150	2.00	2.50	46	39	68	7.4	5,440
		0.12	63	0.25	90	16.00	1.65	65	36	73	7.7	265
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	<0.2	91	0.19	107	13.67	1.57	93	46	71	7.1	69

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	23.00	42	0.27	230	0.42	2.00	78	45	79	7.5	2,948,100
		2.10	75	0.22	140	5.10	0.63	58	36	61	7.8	1,310
		5.05	52	25.62	130	3.70	2.75	53	35	59	7.2	204595
		6.70	21	0.28	135	2.40	1.20	49	29	56	7.0	470,800
		24.00	48	0.20	225	0.10	1.30	95	175	82	7.1	1,678,830
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	25.00	65	0.18	255	0.28	3.40	44	165	79	7.1	1,334,600
		33.00	25	0.39	273	0.24	1.36	93	1025	89	6.7	4029567
		20.00	46	0.24	270	0.44	2.20	76	230	84	6.8	1,973,200
		0.20	56	0.18	81	13.00	0.10	58	22	59	7.5	27,200
		0.12	73	0.20	58	16.00	0.16	64	28	54	7.2	225
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	0.28	58	0.34	55	13.67	0.16	68	21	60	7.0	4
		0.44	65	0.19	110	3.50	0.29	74	27	54	6.9	97
		0.39	85	0.25	120	0.25	1.60	52	41	71	7.5	7,110
		10.00	72	0.42	150	2	2.50	46	39	68	7.4	5,440
		0.12	70	0.25	90	16.00	1.65	65	36	73	7.7	265
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	<0.2	83	0.19	107	13.67	1.57	93	46	71	7.1	69

Key

VE	Vaal River above Standerton	0.12	-	1 Jan 17 - 31 Mar 17
		0.12	-	1 Apr 17 - 30 Jun 17
		0.12	-	1 July 17 - 30 Sept 17
		0.12	-	1 Oct 17 - 31 Dec 17

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