

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	0.27	11	0.33	69	0.47	<0.1	18	22	21	7.3	
		<0.2	9	0.31	60	0.80	0.22	34	22	21	7.2	
		<0.2	12	0.29	123	<0.1	0.21	17	15	33	7.9	
C-WITPUNSPRUIT	Witpuntspruit @ N2 near Camden 26°35'36.24"S 30° 05'46.84"E	0.21	8	0.29	28	0.34	<0.1	17	19	18	6.9	
		0.78	12	0.25	<5	0.54	<0.1	182	<10	223	3.0	
		0.35	26	0.66	88	0.72	<0.2	62	24	82	5.9	
		0.68	19	0.79	<5	0.17	<0.1	403	13	292	3.0	
C-VAAL-DS_WITPT	Vaal River Downstream of Witpuntspruit 26°42'07.39"S 30° 04'58.08"E	<0.2	7	0.39	<5	0.51	<0.1	343	10	65	3.7	
		0.39	11	0.58	78	0.68	<0.1	50	21	30	7.6	
		0.32	22	0.61	116	0.12	0.14	75	14	43	8.4	
VKV	Klein Vaal River @ Goedehoop 26°49'12.19"S 30° 8'12.00"E	<0.2	8	0.46	31	<0.1	<0.1	143	13	41	7.1	
		<0.2	24	0.29	49	1.66	<0.2	102	22	17	7.3	
VRA	Rietspruit below Amersfoort 26°54'47.20"S 29°52'19.22"E	<0.2	4	0.18	42	0.69	<0.1	12	20	18	7.1	
		<0.2	21	0.35	65	1.22	0.20	89	18	20	7.4	
		0.39	18	0.44	121	1.63	0.14	43	18	36	8.4	
		16.00	14	0.20	143	2.05	0.23	22	13	45	7.7	
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	13.00	12	0.33	110	0.79	3.50	36	19	33	7.8	
		11.50	23	0.42	129	0.65	1.26	55	43	50	7.3	
		16.53	37	0.42	200	0.51	1.73	96	80	70	7.4	
		35.50	36	0.31	210	4.00	2.52	60	82	69	8.0	
VKR	Tweefontein @ Riverside 26°37'21.17"S 29°50'16.24"E	14.23	32	0.38	143	1.59	1.66	85	40	59	7.2	
		<0.2	13	0.42	127	1.68	0.28	38	28	54	7.1	
		8.40	37	0.30	200	1.85	0.88	90	32	69	7.4	
		20.33	45	0.36	230	1.34	1.84	75	35	77	7.5	
VK	Brummerspruit before Vaal River 26°46'51.26"S 29°48'23.51"E	15.60	29	0.38	198	1.10	2.22	57	33	59	7.5	
		5.17	33	0.54	197	2.28	1.77	44	40	62	7.4	
		0.15	13	0.37	95	0.93	0.14	52	26	36	7.3	
		0.32	32	0.45	170	4.00	0.08	71	22	55	7.7	
VAS	Vaal River above Standerton 26°51'18.56"S 29°41'51.61"E	1.78	25	0.39	161	1.55	0.54	40	35	49	7.7	
		<0.2	9	0.36	28	0.36	<0.2	37	23	26	7.2	
		0.40	15	0.41	114	0.59	0.10	32	22	34	7.8	
		0.35	9	0.22	134	0.26	0.24	24	19	40	8.3	
VGK	Geelklipspruit below Amersfoort 26°57'53.51"S 29°40'19.12"E	<0.2	9	0.30	88	0.90	<0.1	34	16	32	7.4	
												No Flow
VBB	Blesbokspruit below Bethal 26°34'2.11"S 29°26'41.21"E											No Flow
		<0.2	7	0.24	113	0.89	<0.1	47	25	35	7.6	
		0.86	19	0.40	133	1.93	1.15	35	30	57	7.3	
		12.23	48	0.35	223	0.55	1.87	40	50	66	8.4	
VBS	Blesbokspruit @ Skaapkraal 26°38'17.35"S 29°27'6.24"E	20.00	43	0.41	230	<0.1	1.90	38	22	71	7.5	
		3.20	33	0.29	185	1.30	1.42	54	50	60	7.8	
		<0.2	29	0.59	91	0.50	0.40	43	53	34	7.8	
		0.23	42	0.27	193	0.39	0.74	33	63	59	9.2	
VB	Blesbokspruit @ Vaal River Confluence 26°49'57.05"S 29°30'32.95"E	0.99	57	0.30	232	1.58	1.17	49	38	71	7.8	
		0.27	37	0.57	149	0.55	0.92	49	31	51	7.8	
		0.26	17	0.58	113	0.57	0.14	44	28	40	7.6	
		0.63	41	0.28	200	0.49	0.18	81	27	60	7.8	
ND-LEEU	Leeuspruit @ New Denmark Colliery 26°51'16.79"S 29°19'31.56"E	<0.2	54	0.38	208	<0.1	0.21	52	25	64	8.1	
		0.68	30	0.49	163	0.63	0.28	50	25	49	7.8	
		<0.2	23	0.70	88	0.88	<0.2	70	22	41	7.4	
		<0.2	91	0.55	153	1.20	<0.1	285	26	98	8.2	
VS	Vaal River @ Standerton 26°56'51.37"S 29°15'32.09"E	<0.2	32	0.48	123	<0.1	<0.1	99	25	67	7.7	
		<0.2	11	0.35	93	1.90	0.10	38	29	30	7.8	
		0.64	10	0.31	88	0.24	0.16	34	27	27	7.8	
		<0.1	31	0.22	84	0.86	0.34	70	17	27	7.8	
S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	0.26	27	0.46	86	0.56	0.27	43	20	30	7.1	
		<0.2	42	0.21	71	6.20	4.87	44	59	41	7.6	41103
		0.30	50	0.27	125	2.17	0.65	55	26	53	7.5	37904
		11.32	42	0.34	200	7.30	0.59	50	41	69	7.6	726
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	20.00	35	0.26	183	0.58	3.58	41	38	63	7.17	161303
		14.67	28	0.22	150	7.10	2.57	69	61	64	7.0	527770
		33.00	46	0.26	258	1.80	3.13	88	81	88	7.2	1032800
		35.67	48	0.37	255	<0.1	4.47	80	122	85	7.0	1812900
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	33.33	45	0.27	233	<0.1	4.30	67	423	81	7.2	1192933
		<0.2	61	0.38	101	8.27	0.34	78	23	68	7.6	2
		<0.2	39	36.00	93	9.05	0.56	71	22	59	7.4	3587
		10.62	56	0.25	74	14.00	1.15	85	28	59	7.3	17
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	1.48	45	0.39	97	8.80	0.60	80	18	57	7.5	37687
		1.90	69	0.42	150	7.00	1.15	92	60	75	7.8	12741
		2.10	52	37.00	120	10.35	1.30	64	51	78	7.3	56285
		2.00	85	0.28	113	10.35	1.30	69	39	76	7.5	549
											13077	

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	<0.2	42	0.21	71	6.20	4.87	44	59	41	7.6	41103
		0.30	50	0.27	125	2.17	0.65	55	26	53	7.5	37904
		11.32	42	0.34	200	7.30	0.59	50	41	69	7.6	726
		20.00	35	0.26	183	0.58	3.58	41	38	63	7.2	161303
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	14.67	28	0.22	150	7.10	2.57	69	61	64	7.0	527770
		33.00	46	0.26	258	1.80	3.13	88	81	88	7.2	1032800
		35.67	48	0.37	255	<0.1	4.47	80	122	85	7.0	1812900
		39.33	45	0.27	233	<0.1	4.30	67	423	81	7.2	1192933
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	<0.2	61	0.38	101	8.27	0.34	78	23	68	7.6	2
		<0.2	39	36.00	93	9.05	0.56	71	22	59	7.4	3587
		10.62	56	0.25	74	14.00	1.15	85	28	59	7.3	17
		1.48	45	0.39	97	8.80	0.60	80	18	57	7.5	37687
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	1.90	69	0.42	150	0.42	1.15	92	60	75	7.8	12741
		2.10	52	37.00	120	10.35	1.30	64	51	78	7.3	56285
		2.00	85	0.28	113	10.35	1.30	69	39	76	7.5	549
		2.10	64	0.39	110	6.64	1.22	90	27	67	7.7	13077

Key

VE	Vaal River above Standerton	0.12	-	1 Jan 16 - 31 Mar 16
		0.12	-	1 Apr 15 - 30 Jun 15
		0.12	-	1 July 16 - 30 Sept 16
		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