

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	<0.5	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	<0.2	9	0.31	60	0.80	0.22	34	22	21	7.2	
		1.30	16	1.20	<0.5	0.59	<0.2	597	<10	235	3.3	
C-VAAL-DS_WITPT	Vaal River Downstream of Witpuntspruit 26°42'07.39"S 30° 04'58.08"E	1.60	16	1.53	<5	0.52	0.36	863	<10	330	3.0	
		0.35	26	0.66	88	0.72	<0.2	62	24	82	5.9	
ZD	Zaaihoek Dam 27°09'47.0"S 29°52'42.8"E	<0.5	15	0.36	110	0.26	<0.2	44	18	33	7.92	
		<0.2	20	0.47	185	1.40	2.30	40	28	55	8.3	
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	<0.2	9	0.35	29	0.45	<0.2	88	22	29	7.2	
VVKV	Klein Vaal River @ Goedehoop 26°49'12.19"S 30° 8'12.00"E											
		<0.5	7	0.30	49	0.16	<0.2	18	12	14	7.525	
VRA	Rietspruit below Amersfoort 26°54'47.20"S 29°52'19.22"E	<0.2	24	0.29	49	1.66	<0.2	102	22	17	7.3	
		<0.5	17	0.31	168	0.41	<0.2	41	18	42	8.1	
VKK	Brummerspruit before 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	
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	<0.2	21	0.35	65	1.22	0.2	89	18	20	7.4	
		17.67	32	0.28	170	0.35	2.03	80	50	59	7.2	
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	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	
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	11.50	23	0.42	129	0.65	1.26	55	43	50	7.3	
		7.40	31	0.32	152	7.93	0.99	81	38	57	7.2	
VKKR	Tweefontein @ Riverside 26°37'21.17"S 29°50'16.24"E	6.45	36	0.44	187	53.00	1.90	77	44	72	7.4	
		20.33	37	0.67	180	0.29	2.93	53	63	64	7.4	
VK	Brummerspruit before Vaal River 26°46'51.26"S 29°48'23.51"E	<0.2	13	0.42	127	1.68	0.28	38	28	54	7.1	
		1.25	31	0.30	138	5.57	0.35	78	30	51	7.4	
VK	Brummerspruit before Vaal River 26°46'51.26"S 29°48'23.51"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	
VAS	Vaal River above Standerton 26°51'18.56"S 29°41'51.61"E	<0.5	19	0.27	138	1.36	<0.2	47	22	40	7.8	
		<0.2	13	0.33	89	1.09	<0.1	29	28	28	7.6	
VAS	Vaal River above Standerton 26°51'18.56"S 29°41'51.61"E	<0.5	9	0.41	63	0.97	0.28	23	13	17	7.3	
		<0.2	9	0.36	28	0.36	<0.2	37	23	26	7.2	
VGK	Geelklipspruit below Amersfoort 26°57'53.51"S 29°40'19.12"E											
VBB	Blesbokspruit below Bethal 26°34'2.11"S 29°26'41.21"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	
VBB	Blesbokspruit below Bethal 26°34'2.11"S 29°26'41.21"E	7.65	60	0.50	183	3.42	1.80	57	36	68	7.5	
		0.86	19	0.40	133	1.93	1.15	35	30	57	7.3	
VBS	Blesbokspruit @ Skaapkraal 26°38'17.35"S 29°27'6.24"E	<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	
VBS	Blesbokspruit @ Skaapkraal 26°38'17.35"S 29°27'6.24"E	0.39	70	0.55	72	0.16	0.84	55	18	22	7.7	
		<0.2	29	0.59	91	0.50	0.40	43	53	34	7.8	
VB	Blesbokspruit @ Vaal River Confluence 26°49'57.05"S 29°30'32.95"E	<0.5	41	0.46	207	0.51	0.25	51	30	59	7.9	
		<0.2	58	0.42	228	0.99	<0.2	68	42	72	8.1	
VB	Blesbokspruit @ Vaal River Confluence 26°49'57.05"S 29°30'32.95"E	<0.2	78	0.62	130	<0.10	0.17	58	26	68	7.8	
		0.26	17	0.58	113	0.57	0.14	44	28	40	7.6	
ND-LEEU	Leeuspruit @ New Denmark Colliery 26°51'16.79"S 29°19'31.56"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	
ND-LEEU	Leeuspruit @ New Denmark Colliery 26°51'16.79"S 29°19'31.56"E	<0.2	23	0.70	88	0.88	<0.2	70	22	41	7.4	
VS	Vaal River @ Standerton 26°56'51.37"S 29°15'32.09"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	
VS	Vaal River @ Standerton 26°56'51.37"S 29°15'32.09"E	<0.5	11	0.31	114	2.85	0.67	27	23	39	8.0	
		<0.2	11	0.35	93	1.90	0.10	38	29	30	7.1	
S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	3.00	46	0.28	118	7.87	0.98	63	29	56	7.3	818
		22.00	43	0.25	213	10.50	1.53	50	53	77	7.5	668
S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	11.95	52	0.43	154	4.54	2.33	54	49	65	7.5	590163
		<0.2	42	0.21	71	6.20	4.87	44	59	41	7.56	41103
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	26.67	46	0.24	197	1.29	3.30	73	232	72	7.2	542800
		21.00	47	0.35	186	37.12	4.37	74	157	61	7.7	563633
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	26.20	48	0.33	223	<0.10	4.00	72	126	77	7.0	2521793
		14.67	28	0.22	150	7.10	2.57	69	61	64	7.0	527770
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"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	289462
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	<0.2	87	0.36	20	10.70	0.92	78	23	66	6.9	0
		<0.2	61	0.38	101	8.27	0.34	78	23	68	7.6	2
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	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
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	15.00	86	0.46	120	10.90	2.40	58	57	73	7.6	22230
		1.90	69	0.42	150	7.00	1.15	92	60	75	7.8	12741

Sample Points	Sample Point Description	Ammonia	Chloride	Fluoride	M-Alkalinity	Nitrate	Phosphate	Sulphate	Chemical Oxygen Demand	Conductivity	pH	E. coli
<b>Sewage Works Compliance (where applicable) to General Standard (GN 1191 Oct 1999)</b>												
S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	3.00	46	0.28	118	7.87	0.98	63	29	56	7.3	818
		22.00	43	0.25	213	10.50	1.53	50	53	77	7.5	668
		11.95	52	0.43	154	4.54	2.33	54	49	65	7.5	590163
		<0.2	42	0.21	71	6.20	4.87	44	59	41	7.6	41103
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°17'30.43"E	26.67	46	0.24	197	1.29	3.30	73	232	72	7.2	542800
		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
		14.67	28	0.22	150	7.10	2.57	69	61	64	7.0	527770
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"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	289462
		<0.2	87	0.36	20	10.70	0.92	78	23	66	6.9	0
		<0.2	61	0.38	101	8.27	0.34	78	23	68	7.6	2
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	3.00	76	0.28	121	0.28	0.72	91	39	89	7.7	177
		1.07	104	0.28	130	14.333333	1.33	79	76	93	7.5	2997
		15.00	86	0.46	120	10.90	2.40	58	57	73	7.6	22230
		1.90	69	0.42	150	7.00	1.15	92	60	75	7.8	12741

**Key**

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

**Water Quality Guidelines**

	-	Ideal
	-	Acceptable
	-	Tolerable
	-	Unacceptable

Sewage Works Compliance to General Standard (GN 1191 Oct 1999)			
Variables	Measured as	Acceptable Management Target	Unacceptable
<b>Physical</b>			
Conductivity	mS/m	<150	>=150
pH	pH units	5.5 - 9.5	< 5.5; >9.5
<b>Organic</b>			
Chemical Oxygen Demand (COD)**	mg/l	<75	>=75
<b>Macro Elements</b>			
Ammonia (NH <sub>4</sub> )	mg/l	<3	>=3
Fluoride (F)	mg/l	<1	>=1
Nitrate (NO <sub>3</sub> )	mg/l	<15	>=15
Phosphate (PO <sub>4</sub> )	mg/l	<10	>10
<b>Bacteriological</b>			
Faecal coliforms	counts/100ml	<1000	>=1000

\*\* After removal of algae