

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	0.23	23	0.26	115	0.17	0.35	31	19	28	7.8		
		<0.2	9	0.31	60	0.80	0.22	34	22	21	7.2		
		0.27	11	0.33	69	0.47	<0.1	18	22	21	7.3		
C-WITPUNTSRUIT	Witpuntspruit @ N2 near Camden 26°35'36.24"S 30° 05'46.84"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		
		0.78	12	0.25	<5	0.54	<0.1	182	<10	223	3.0		
C-VAAL-DS_WITPT	Vaal River Downstream of Witpuntspruit 26°42'07.39"S 30° 04'58.08"E	<0.2	20	0.47	185	1.40	2.30	40	28	55	8.3		
		<0.2	9	0.35	29	0.45	<0.2	88	22	29	7.2		
		0.39	11	0.58	78	0.68	<0.1	50	21	30	7.6		
VKV	Klein Vaal River @ Goedeheop 26°49'12.19"S 30° 8'12.00"E	<0.5	7	0.30	49	0.16	<0.2	18	12	14	7.5		
		<0.2	24	0.29	49	1.66	<0.2	102	22	17	7.3		
		0.21	10	0.27	59	0.80	<0.1	30	15	19	7.3		
VRA	Rietspruit below Amersfoort 26°54'47.20"S 29°52'19.22"E	<0.5	23	0.31	131	1.68	<0.2	17	12	38	7.6		
		<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		
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		
		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		
VKR	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		
		<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		
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		
		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	<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		
		<0.2	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		
VGK	Geelklipspruit below Amersfoort 26°57'53.51"S 29°40'19.12"E											No Flow	
												No Flow	
													No Flow
													No Flow
VBB	Blesbokspruit below Bethal 26°34'2.11"S 29°26'41.21"E	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		
		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	0.56	60	0.38	207	2.95	0.73	64	65	70	8.6		
		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		
		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	<0.2	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		
		0.26	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	Leesuspruit @ New Denmark Colliery 26°51'16.79"S 29°19'31.56"E	<0.1	39	0.24	119	<0.1	<0.2	73	29	53	7.8		
		<0.2	23	0.70	88	0.88	<0.2	70	22	41	7.4		
		<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	7.8		
		0.64	10	0.31	88	0.24	0.16	34	27	27	7.1		
		22.00	43	0.25	213	10.50	1.53	50	53	77	7.5	688	
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	7.6	41103	
		0.30	50	0.27	125	2.17	0.65	55	26	53	7.54	37904	
		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	
		33.00	46	0.26	258	1.80	3.13	88	81	88	7.2	1032800	
		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	
		<0.2	39	36.00	93	9.05	0.56	71	22	59	7.4	3587	
		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	
		2.10	52	37.00	120	10.35	1.30	64	51	78	7.3	56285	

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	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
		0.30	50	0.27	125	2.17	0.65	55	26	53	7.5	37904
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"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
		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
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	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
		<0.2	39	36.00	93	9.05	0.56	71	22	59	7.4	3587
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	1.07	104	0.28	130	0.28	1.33	79	76	93	7.5	2997
		15.00	86	0.46	120	10.9	2.40	58	57	73	7.6	22230
		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

**Key**

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