

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	0.10	<10	0.08	120	0.78	0.05	15	12	23	7.5		
		0.10	<10	0.10	89	0.27	0.05	20	11	26	7.8		
		0.25	13	0.29	79	0.11	0.10	21	19	29	7.4		
		0.25	<10	0.22	36	<0.10	0.10	27	25	17	6.8		
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	0.10	<10	0.08	38	0.11	0.05	9	<10	11	7		
		6.80	19	0.18	70	1.70	1.50	23	<10	18	8.5		
		0.25	<10	0.12	60	0.15	0.10	8	12	22	7.1		
		0.25	<10	0.14	42	<0.10	0.17	6	13	12	7		
VRA	Rietspruit below Amersfoort 26°54'47.20"S 29°52'19.22"E	0.19	11	0.17	155	0.28	0.08	32	11	41	7.8		
		0.10	19	0.20	200	0.89	0.07	53	14	51	8.5		
		0.25	17	0.28	155	0.11	0.10	31	30	44	7.8		
		0.25	<10	0.30	105	0.27	0.17	23	23	29	7.6		
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	17.00	40	0.24	195	0.21	2.60	90	53	82	7.1		
		14.00	36	0.21	235	1.70	2.40	47	86	75	7.3		
		18.00	44	0.27	225	0.47	2.00	42	57	67	7.4		
		13.00	39	0.28	185	0.24	1.60	110	31	72	7.3		
VKR	Tweefontein @ Riverside 26°37'21.17"S 29°50'16.24"E	8.30	32	0.53	150	2.00	1.00	70	30	69	7.1		
		21.00	43	0.29	230	1.50	3.80	46	44	75	7.5		
		4.20	17	0.36	135	0.31	0.50	32	44	45	7.3		
		1.40	17	0.36	150	0.87	0.32	44	35	46	7.3		
VK	Brummerspruit before Vaal River 26°46'51.26"S 29°48'23.51"E	0.10	21	0.18	130	1.10	0.05	53	24	44	7.5		
		0.10	27	0.18	165	2.50	0.24	40	26	57	8.2		
		3.80	25	0.33	130	0.66	0.83	55	37	48	7.3		
		0.25	<10	0.35	115	0.20	0.33	28	33	33	7.3		
VAS	Vaal River above Standerton 26°51'18.56"S 29°41'51.61"E	0.10	<10	0.12	82	0.16	0.05	23	12	27	7.4		
		0.10	14	0.15	120	0.25	0.12	31	13	35	8.6		
		0.53	19	0.32	140	0.38	0.10	32	31	44	7.9		
		0.25	<10	0.26	88	<0.10	0.10	21	23	25	7.5		
VGK	Geelklipspruit below Amersfoort 26°57'53.51"S 29°40'19.12"E	0.10	15	0.16	145	0.10	0.05	63	15	37	7.9		
		0.10	19	0.18	240	0.22	0.05	73	17	62	8.6		
		0.25	28	0.28	250	<0.10	0.10	58	22	74	8.4		
		0.25	18	0.30	160	<0.10	0.10	98	28	54	8.0		
VBB	Blesbokspruit below Bethal 26°34'2.11"S 29°26'41.21"E	4.30	45	0.49	190	3.20	1.40	45	45	63	7.3		
		10.00	46	0.28	265	1.90	3.30	38	83	79	7.7		
		2.50	34	0.34	150	0.76	2.20	44	54	53	7.2		
		1.50	13	0.34	160	0.31	0.33	27	44	52	7.4		
VBS	Blesbokspruit @ Skaapkraal 26°38'17.35"S 29°27'6.24"E	0.25	35	0.42	170	1.70	0.39	53	42	53	7.7		
		0.15	58	0.45	165	2.40	0.80	35	52	72	9.4		
		0.20	38	0.49	190	0.41	0.99	46	53	59	8.1		
		0.25	26	0.41	155	0.44	0.35	41	41	49	7.9		
VB	Blesbokspruit @ Vaal River Confluence 26°49'57.05"S 29°30'32.95"E	0.43	19	0.35	160	0.60	0.16	57	34	47	7.4		
		0.15	56	0.54	165	0.20	0.07	65	35	75	8		
		0.20	31	0.45	180	0.15	0.29	42	43	54	7.6		
		0.25	11	0.39	140	0.31	0.15	31	35	40	7.6		
ND-LEEU	Leeuspruit @ New Denmark Colliery 26°51'16.79"S 29°19'31.56"E	0.10	23	0.29	105	0.49	0.07	52	34	37	7.2		
		0.10	34	0.54	200	<0.10	0.05	73	21	64	8.2		
		0.20	15	0.43	92	1.70	0.11	49	34	37	7.5		
		0.25	11	0.44	110	0.36	0.10	29	54	34	7.6		
VS	Vaal River @ Standerton 26°56'51.37"S 29°15'32.09"E	0.16	<10	0.28	89	0.36	0.05	28	17	27	7.4		
		0.10	10	0.28	89	0.12	0.05	33	18	27	7.7		
		0.20	<10	0.26	87	0.33	0.08	30	18	30	7.4		
		0.20	<10	0.29	61	0.24	0.08	19	30	20	7.1		
S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	14.00	68	0.36	170	3.40	5.20	63	69	75	7.6	9,980	
		12.00	48	0.24	195	0.37	3.40	26	115	68	7.3	135,880	
		13.00	41	0.19	200	1.10	5.50	52	84	73	7.3	1,217,700	
		14.00	55	0.34	270	1.10	4.00	68	60	96	7.70	1,700,000	
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	13.00	53	0.23	195	0.68	3.10	125	180	80	7.4	794,930	
		9.30	36	0.17	165	1.70	2.80	38	190	55	7.4	682,000	
		13.00	46	0.22	155	2.50	2.60	63	105	73	7.3	191,340	
		17.00	35	0.27	180	0.29	2.20	110	135	81	7.2	274,250	
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	0.10	56	0.36	120	8.80	1.20	66	20	62	7.5	20	
		0.15	88	0.27	90	12.00	0.84	81	32	67	8.8	2	
		0.29	67	0.22	120	2.20	0.90	63	28	60	8.9	7	
		11.00	23	0.32	135	1.50	1.70	42	46	51	7.3	6,090	
S-MAJUBA	Majuba Power Station Sewage Works 27°5'23.45"S 29°46'11.44"E	12.00	45	0.20	125	1.70	1.20	75	31	59	7.3	1,890	
		16.00	40	0.22	170	2.10	1.60	42	46	60	7.6	8,880	
		16.00	59	0.20	120	11.00	2.20	52	52	80	7.7	135	
		2.80	84	0.38	155	0.54	0.40	61	39	59	8.0	22	
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	2.70	78	0.31	145	5.70	1.00	64	81	72	7.5	1,320	
		3.50	115	0.38	130	6.40	1.30	71	55	84	7.3	185	
		0.40	60	0.35	97	7.20	0.34	61	46	59	7.4	3,380	
		0.60	78	0.31	91	7.20	0.68	49	40	67	7.5	0	

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	14.00	68	0.36	170	3.40	5.20	63	69	75	7.6	9,980
		12.00	48	0.24	195	0.37	3.40	26	115	68	7.3	135,880
		13.00	41	0.19	200	1.10	5.50	52	84	73	7.3	1,217,700
		14.00	55	0.34	270	1.10	4.00	68	60	96	7.7	1,700,000
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	13.00	53	0.23	195	0.68	3.10	125	180	80	7.4	794,930
		9.30	36	0.17	165	1.70	2.80	38	190	55	7.4	682,000
		13.00	46	0.22	155	2.50	2.60	63	105	73	7.3	191,340
		17.00	35	0.27	180	0.29	2.20	110	135	81	7.2	274,250
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	0.10	56	0.36	120	8.80	1.20	66	20	62	7.5	20
		0.15	88	0.27	90	12.00	0.84	81	32	67	8.8	2
		0.29	67	0.22	120	2.20	0.90	63	28	60	8.9	7
		11.00	23	0.32	135	1.50	1.70	42	46	51	7.3	6,090
S-MAJUBA	Majuba Power Station Sewage Works 27° 5'23.45"S 29°46'11.44"E	12.00	45	0.20	125	1.70	1.20	75	31	59	7.3	1,890
		16.00	40	0.22	170	2.10	1.60	42	46	60	7.6	8,880
		16.00	59	0.20	120	11.00	2.20	52	52	80	7.7	135
		2.80	84	0.38	155	0.54	0.40	61	39	59	8.0	22
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	2.70	78	0.31	145	<0.10	1.00	64	81	72	7.5	1,320
		3.50	115	0.38	130	6.4	1.30	71	55	84	7.3	185
		0.40	60	0.35	97	7.20	0.34	61	46	59	7.4	3,380
		0.60	78	0.31	91	7.20	0.68	49	40	67	7.5	0

**Key**

VE	Vaal River above Standerton	0.12	-	1 Apr 13 - 30 Jun 13
		0.12	-	1 July 13 - 30 Sept 13
		0.12	-	1 Oct 13 - 31 Dec 13
		0.12	-	1 Jan 14 - 31 Mar 14

**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			