

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	0.25	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		
		0.20	<10	0.19	46	0.29	0.08	25	16	16	7.2		
		0.25	<10	0.37	79	0.31	0.24	18	11	21	7.8		
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	0.25	<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		
		0.20	<10	0.15	57	<0.10	0.08	9	<10	14	7.5		
		0.25	<10	0.08	67	0.17	0.19	7	5	16	7.8		
VRA	Rietspruit below Amersfoort 26°54'47.20"S 29°52'19.22"E	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		
		0.20	13	0.21	185	0.14	0.08	47	<10	46	8.2		
		0.25	19	0.15	220	0.58	0.19	50	12	52	8.4		
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	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		
		10.00	39	0.30	165	0.27	1.50	175	57	79	7.4		
		23.00	37	0.18	190	0.95	2.30	185	86	82	7.3		
VKR	Tweefontein @ Riverside 26°37'21.17"S 29°50'16.24"E	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		
		1.70	23	0.29	175	1.80	0.32	96	25	60	7.5		
		7.70	29	0.26	200	3.70	1.10	120	32	66	7.7		
VK	Brummerspruit before Vaal River 26°46'51.26"S 29°48'23.51"E	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		
		0.20	20	0.26	180	1.80	0.12	77	21	52	7.9		
		0.25	26	0.22	195	4.20	0.33	100	22	62	8.1		
VAS	Vaal River above Standerton 26°51'18.56"S 29°41'51.61"E	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		
		0.20	13	0.20	125	0.29	0.08	58	13	35	8		
		0.25	19	0.23	170	1.10	0.19	60	15	47	8.5		
VGK	Geelklipspruit below Amersfoort 26°57'53.51"S 29°40'19.12"E	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		
		3.20	14	0.27	220	0.30	0.38	100	10	57	8.3		
		0.25	21	0.20	235	<0.10	0.19	76	16	60	8.5		
VBB	Blesbokspruit below Bethal 26°34'2.11"S 29°26'41.21"E	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		
		10.00	54	0.36	230	0.48	2.50	52	52	72	7.4		
		0.25	42	0.49	200	6.20	0.10	54	88	69	7.7		
VBS	Blesbokspruit @ Skaapkraal 26°38'17.35"S 29°27'6.24"E	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		
		0.20	56	0.30	240	0.14	0.79	60	38	74	8.8		
		4.10	50	0.35	280	0.39	1.60	53	49	79	8.2		
VB	Blesbokspruit @ Vaal River Confluence 26°49'57.05"S 29°30'32.95"E	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		
		0.20	34	0.33	225	<0.10	0.12	70	24	68	7.7		
		1.40	50	0.32	250	0.81	0.73	79	27	75	8.3		
ND-LEEU	Leespruit @ New Denmark Colliery 26°51'16.79"S 29°19'31.56"E	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		
		0.20	30	0.28	155	1.10	0.11	50	29	48	7.7		
		10.00	42	0.35	225	0.25	1.60	73	21	62	8.3		
VS	Vaal River @ Standerton 26°56'51.37"S 29°15'32.09"E	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	7.4		
		0.25	<10	0.24	55	0.38	0.10	23	26	18	7.4		
		0.25	<10	0.23	60	0.49	0.13	24	16	21	7.1		
S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	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	
		6.20	61	0.28	175	3.60	3.50	80	40	71	7.4	235,250	
		2.90	53	0.24	160	4.40	0.95	71	44	69	7.60	249,400	
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	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	
		3.30	52	0.27	36	18.00	2.70	270	70	86	6.5	87,780	
		20.00	28	0.23	230	0.75	2.90	155	165	100	7.0	439,170	
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	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	
		0.20	54	0.20	86	4.70	1.10	61	23	57	7.1	8,070	
		0.83	72	0.17	67	3.70	3.20	65	25	54	7.2	16,280	
S-MAJUBA	Majuba Power Station Sewage Works 27° 5'23.45"S 29°46'11.44"E	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	
		2.60	39	0.33	47	10.00	0.16	73	41	48	7.0	13	
		28.00	23	0.22	66	5.00	2.50	72	29	52	7.2	0	
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	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	
		0.74	83	0.25	75	6.90	0.90	43	47	63	7.3	5	
		1.90	95	0.29	98	11.00	1.40	61	56	70	7.6	250	

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	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
		6.20	61	0.28	175	3.60	3.50	80	40	71	7.4	235,250
		2.90	53	0.24	160	4.40	0.95	71	44	69	7.6	249,400
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	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
		3.30	52	0.27	36	18.00	2.70	270	70	86	6.5	87,780
		20.00	28	0.23	230	0.75	2.90	155	165	100	7.0	439,170
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	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
		0.20	54	0.20	86	4.70	1.10	61	23	57	7.1	8,070
		0.83	72	0.17	67	3.70	3.20	65	25	54	7.2	16,280
S-MAJUBA	Majuba Power Station Sewage Works 27° 5'23.45"S 29°46'11.44"E	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
		2.60	39	0.33	47	10.00	0.16	73	41	48	7.0	13
		28.00	23	0.22	66	5.00	2.50	72	29	52	7.2	0
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	0.40	60	0.35	97	<0.10	0.34	61	46	59	7.4	3,380
		0.60	78	0.31	91	7.2	0.68	49	40	67	7.5	0
		0.74	83	0.25	75	6.90	0.90	43	47	63	7.3	5
		1.90	95	0.29	98	11.00	1.40	61	56	70	7.6	250

Key

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