



RAND WATER

Quarterly Water Quality Status of the Grootdraai Dam Catchment

1 Jan 2012 - 31 Dec 2012

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	0.12	<10	0.18	50	0.76	0.05	8.00	20	17	6.6	
		0.12	<10	0.19	63	0.16	<0.05	7.00	27	17	7.3	
		0.11	11.00	0.18	78	1.10	<0.05	20.00	19	26	7	
		0.12	18.00	0.25	67	0.12	<0.05	48.00	21	33	7.1	
ZD	Zaaihoek Dam 27°09'47.0"S 29°52'42.8"E											
		0.12	<10	0.16	46	<0.10	<0.05	10.00	<10	12	6.7	
		0.12	<10	0.12	76	0.16	<0.05	9.50	<10	15	7.2	
VKV	Klein Vaal River @ Goedehoop 26°49'12.19"S 30° 8'12.00"E											
		0.12	<10	0.15	48	0.21	<0.05	6.70	<10	14	7.2	
		0.12	<10	0.14	40	0.20	<0.05	12.00	19	13	6.7	
VRA	Rietspruit below Amersfoort 26°54'47.20"S 29°52'19.22"E	0.12	<10	0.25	93	1.10	<0.05	19.00	19	22	6.8	
		0.12	14.00	0.28	175	0.12	<0.05	37.00	13	43	8.1	
		1.50	11.00	0.23	105	0.70	0.26	27.00	19	29	7.2	
		0.12	<10	0.19	89	0.35	0.05	28.00	17	32	7.3	
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	10.00	40.00	0.49	115	1.10	1.90	100.00	45	61	6.9	
		20.00	56.00	0.56	210	1.40	4.60	115.00	51	85	7.6	
		12.00	55.00	0.28	185	1.10	2.80	125.00	56	78	7.5	
		10.00	48.00	0.34	150	3.10	1.90	215.00	38	87	7.2	
VKR	Tweefontein @ Riverside 26°37'21.17"S 29°50'16.24"E	3.80	26.00	0.56	77	2.10	0.44	72.00	34	46	7	
		7.1	48.00	0.39	160	3.60	1.70	97.00	29	70	7.5	
		5.00	52.00	0.38	145	4.70	2.30	115.00	42	63	7.3	
		4.20	31.00	0.35	135	0.79	1.70	120.00	32	65	7.2	
VK	Brummerspruit before Vaal River 26°46'51.26"S 29°48'23.51"E	1.00	23.00	0.30	94	1.60	0.23	74.00	29	44	6.8	
		0.75	44.00	0.38	155	2.00	0.19	98.00	29	63	7.7	
		0.81	36.00	0.56	140	4.10	0.84	71.00	35	56	7.5	
		2.30	35.00	0.35	110	0.24	1.10	100.00	45	56	7.1	
VAS	Vaal River above Standerton 26°51'18.56"S 29°41'51.61"E	0.12	<10	0.54	52	0.97	<0.05	21.00	25	20	6.5	
		0.12	12.00	0.16	96	<0.10	0.08	30.00	10	30	7.6	
		0.12	<10	0.18	53	0.79	<0.05	20.00	15	18	6.8	
		0.12	12.00	0.64	79	0.42	<0.05	94.00	19	33	7.2	
VGK	Geelklipspruit below Amersfoort 26°57'53.51"S 29°40'19.12"E	0.12	12.00	0.26	155	0.85	0.10	39.00	20	41	7.5	
		0.12	16.00	0.25	220	0.35	0.13	40.00	11	52	8.4	
		0.12	20.00	0.29	215	0.13	0.11	64.00	16	45	8.1	
		0.12	11.00	0.28	185	0.16	0.09	58.00	27	63	7.6	
VBB	Blesbokspruit below Bethal 26°34'2.11"S 29°26'41.21"E	0.56	30.00	0.36	160	1.40	1.20	29.00	55	46	7	
		8.6	59.00	0.34	235	4.00	3.00	30.00	50	72	7.9	
		11.00	57.00	0.54	420	3.00	5.80	26.00	97	70	7.5	
		5.70	41.00	0.56	185	1.20	1.90	45.00	46	63	7.4	
VBS	Blesbokspruit @ Skaapkraal 26°38'17.35"S 29°27'6.24"E	0.12	21.00	0.96	145	<0.10	0.22	44.00	47	36	6.8	
		0.12	60.00	0.34	240	<0.10	0.91	52.00	42	70	8.9	
		4.40	54.00	0.43	245	1.50	22.00	35.00	45	62	9.1	
		0.81	23.00	0.44	120	1.10	1.80	33.00	67	42	7.1	
VB	Blesbokspruit @ Vaal River Confluence 26°49'57.05"S 29°30'32.95"E	0.12	15.00	0.70	150	<0.10	0.28	44.00	34	36	6.9	
		0.12	53.00	0.35	290	0.62	0.20	53.00	38	68	7.8	
		4.10	54.00	0.47	325	0.71	6.10	53.00	31	68	7.8	
		0.67	17.00	0.39	110	0.78	1.40	38.00	85	38	7.2	
ND-LEEUE	Leeuspruit @ New Denmark Colliery 26°51'16.79"S 29°19'31.56"E	0.12	20.00	1.10	145	<0.10	<0.05	36.00	32	37	6.9	
		0.12	18.00	0.26	135	0.16	<0.05	40.00	26	52	7.5	
		0.12	31.00	0.36	130	0.24	1.70	56.00	24	48	7.4	
		0.12	20.00	0.40	98	0.14	0.18	38.00	52	40	7.3	
VS	Vaal River @ Standerton 26°56'51.37"S 29°15'32.09"E	0.25	<10	0.56	85	0.88	<0.05	23.00	32	26	6.4	
		0.12	<10	0.26	105	0.11	<0.05	27.00	16	37	7.9	
		0.12	<10	0.27	120	0.12	0.06	28.00	17	22	6.0	
		0.12	12.00	0.34	91	0.12	0.08	30.00	20	32	7.1	
S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	7.50	40.00	0.20	170	2.40	3.30	34.00	42	60	7.2	200
		8.30	46.00	0.26	160	2.00	2.00	37.00	44	58	7.8	66
		12.00	34.00	0.20	455	0.23	3.00	13.00	170	60	7.3	951
		2.40	29.00	0.28	86	7.80	0.73	145.00	110	66	7.2	105
S-FSW	Ermelo Sewage Works 26°30'42.84"S	5.40	57.00	0.43	110	4.30	1.70	130.00	165	65	7.0	43
		49	67.00	0.32	520	0.58	33.00	86.00	205	120	7.1	50

Sample Points	Sample Point Description	Ammonia	Chloride	Fluoride	M-Alkalinity	Nitrate	Phosphate	Sulphate	Chemical Oxygen Demand	Conductivity	pH	E. coli
S-ESW	26°30'42.04"S 29°57'51.11"E	0.10	59.00	0.27	87	7.10	0.87	115.00	68	71	6.9	9560
		3.30	56.00	0.22	77	8.50	1.40	145.00	60	71	6.9	7720
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	12.00	83.00	0.87	130	0.32	1.80	32.00	25	59	7.1	94
		8.2	48.00	0.26	120	0.27	1.80	48.00	34	60	7.4	170
		5.50	66.00	0.35	145	2.20	3.10	61.00	46	56	7.6	3800
		3.40	71.00	0.30	125	1.80	0.99	65.00	39	65	7.6	215
S-MAJUBA	Majuba Power Station Sewage Works 27° 5'23.45"S 29°46'11.44"E	3.30	37.00	0.29	73	12.00	1.30	75.00	45	53	7.2	38
		4.0	36.00	0.24	65	16.00	1.40	23.00	74	51	7.0	1500
		0.32	37.00	0.21	22	11.00	0.66	45.00	28	42	6.4	67
		2.40	29.00	0.28	86	7.80	0.73	145.00	110	66	7.2	105
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	3.20	90.00	0.80	180	12.00	1.80	34.00	36	70	7.1	1
		6.0	66.00	0.23	130	7.60	1.80	60.00	49	68	7.6	9
		4.00	76.00	0.29	120	5.20	11.00	42.00	58	62	7.6	910
		3.20	56.00	0.42	145	4.80	1.30	66.00	46	65	7.5	630





**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	7.50	38	0.20	195.00	2.40	3.30	20.00	42	60	7.2	200
		8.30	40	0.26	170	2.00	2.00	34.00	44	58	7.8	66
		12.00	46	0.20	160	0.23	3.00	37.00	170	60	7.3	951
		2.40	34	0.28	455	7.80	0.73	13	110	66	7.2	105
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	5.40	70	0.43	210	4.30	1.70	86.00	165	65	7.0	43
		49	57	0.32	110	0.58	33.00	130	205	120	7.1	50
		0.10	67	0.27	520	7.10	0.87	86	68	71	6.9	9560
		3.30	59	0.22	87	8.50	1.40	115	60	71	6.9	7720
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	12.00	71	0.87	120	0.32	1.80	60	25	59	7.1	94
		8.2	83	0.26	130	0.27	1.80	32	34	60	7.4	170
		5.50	48	0.35	120	2.20	3.10	48	46	56	7.6	3800
		3.40	66	0.30	145	1.80	0.99	61	39	65	7.6	215
S-MAJUBA	Majuba Power Station Sewage Works 27° 5'23.45"S 29°46'11.44"E	3.30	23	0.29	54	12.00	1.30	41	45	53	7.2	38
		4.0	37	0.24	73	16.00	1.40	75	74	51	7.0	1500
		0.32	36	0.21	65	11.00	0.66	23	28	42	6.4	67
		2.40	37	0.28	22	7.80	0.73	45	110	66	7.2	105
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	3.20	100	0.80	120	<0.10	1.80	43	36	70	7.1	1
		6.0	90	0.23	180	7.6	1.80	34.00	49	68	7.6	9
		4.00	66	0.29	130	5.20	11.00	60.00	58	62	7.6	910
		3.20	76	0.42	120	4.80	1.30	42.00	46	65	7.5	630

**Key**

VE	Vaal River above Standerton	0.12	-	1 Jan 12 - 31 Mar 12
		0.12	-	1 Apr 12 - 30 Jun 12
		0.12	-	1 July 12 - 30 Sept 12
		0.12	-	1 Oct 12 - 31 Dec 12

**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)	mg/l	<10	>10

Sample Points	Sample Point Description	Ammonia	Chloride	Fluoride	M-Alkalinity	Nitrate	Phosphate	Sulphate	Chemical Oxygen Demand	Conductivity	pH	E. coli
<b>Bacteriological</b>												
	<i>Faecal coliform</i>	counts/100ml	<1000	>=1000								
** After removal of algae												