



Quarterly Water Quality Status of the Grootdraai Dam Catchment

1 July 2012 - 30 June 2013

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	0.11	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	
		0.11	<10	0.13	50	0.13	0.07	34.00	23	18	7	
		0.10	<10	0.08	120	0.78	0.05	15.00	12	23	7.5	
ZD	Zaaihoek Dam 27°09'47.0"S 29°52'42.8"E	0.12	<10	0.12	76	0.16	<0.05	9.50	<10	15	7.2	
		0.12	<10	0.16	46	<0.10	<0.05	10.00	<10	12	6.7	
VKV	Klein Vaal River @ Goedehoop 26°49'12.19"S 30° 8'12.00"E	0.12	<10	0.14	40	0.20	<0.05	12.00	19	13	6.7	
		0.12	<10	0.15	43	0.14	0.11	15.00	15	17	6.9	
		0.11	<10	0.16	36	0.31	0.05	32.00	24	11	6.9	
		0.10	<10	0.08	38	0.11	0.05	8.80	<10	11	7	
VRA	Rietspruit below Amersfoort 26°54'47.20"S 29°52'19.22"E	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	
		0.11	<10	0.28	87	0.29	0.07	28.00	19	27	7.3	
		0.19	11.00	0.17	155	0.28	0.08	32.00	11	41	7.8	
VKK	Brummerspruit below Ermelo 26°30'49.51"S 29°54'27.37"E	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	
		3.60	31.00	0.42	81	1.30	0.93	105.00	35	57	6.9	
		17.00	40.00	0.24	195	0.21	2.60	90.00	53	82	7.1	
VKR	Tweefontein @ Riverside 26°37'21.17"S 29°50'16.24"E	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	
		0.11	<10	0.32	105	0.33	0.29	31.00	27	38	7.3	
		8.30	32.00	0.53	150	2.00	1.00	70.00	30	69	7.1	
VK	Brummerspruit before Vaal River 26°46'51.26"S 29°48'23.51"E	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	
		0.11	<10	0.35	99	0.39	0.23	50.00	34	37	7.3	
		0.10	21.00	0.18	130	1.10	0.05	53.00	24	44	7.5	
VAS	Vaal River above Standerton 26°51'18.56"S 29°41'51.61"E	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	
		0.11	<10	0.24	63	0.18	0.11	28.00	21	22	7.1	
		0.10	<10	0.12	82	0.16	0.05	23.00	12	27	7.4	
VGK	Geelkipspruit below Amersfoort 26°57'53.51"S 29°40'19.12"E	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	
		0.11	12.00	0.40	150	0.21	0.08	53.00	25	44	7.9	
		0.10	15.00	0.16	145	0.10	0.05	63.00	15	37	7.9	
VBB	Blesbokspruit below Bethal 26°34'2.11"S 29°26'41.21"E	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	
		3.00	24.00	0.41	145	1.40	1.00	32.00	35	44	7.3	
		4.30	45.00	0.49	190	3.20	1.40	45.00	45	63	7.3	
VBS	Blesbokspruit @ Skaapkraal 26°38'17.35"S 29°27'6.24"E	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	
		3.10	24.00	0.33	140	0.68	0.61	39.00	34	46	7.4	
		0.25	35.00	0.42	170	1.70	0.39	53.00	42	53	7.7	
VB	Blesbokspruit @ Vaal River Confluence 26°49'57.05"S 29°30'32.95"E	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	
		2.60	14.00	0.28	115	0.21	0.55	35.00	33	37	7.3	
		0.43	19.00	0.35	160	0.60	0.16	57.00	34	47	7.4	
ND-LEEU	Leeuspruit @ New Denmark Colliery 26°51'16.79"S 29°19'31.56"E	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	
		3.30	11.00	0.29	105	0.34	0.73	28.00	30	35	7.3	
		0.10	23.00	0.29	105	0.49	0.07	52.00	34	37	7.2	
VS	Vaal River @ Standerton 26°56'51.37"S 29°15'32.09"E	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	
		0.18	<10	0.28	81	0.60	<0.05	36.00	20	26	7.3	
		0.16	<10	0.28	89	0.36	0.05	28.00	17	27	7.1	
S-BETHAL	Bethal Sewage Works 26°29'8.05"S 29°27'15.88"E	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
		9.90	91.00	0.18	110	5.40	5.40	67.00	71	78	7.2	52
		14.00	68.00	0.36	170	3.40	5.20	63.00	69.00	75.00	7.60	9 980
S-ESW	Ermelo Sewage Works 26°30'42.84"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
		2.50	47.00	0.24	95	2.00	2.10	130.00	67	72	7.1	65840
		13.00	53.00	0.23	195	0.68	3.10	125.00	180	80	7.4	794,930
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	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
		13.00	63.00	0.26	110	7.70	2.30	57.00	38	64	7.5	52
		0.10	56.00	0.36	120	8.80	1.20	66.00	20	62	7.5	20
S-MAJUBA	Majuba Power Station Sewage Works 27° 5'23.45"S 29°46'11.44"E	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
		11.00	34.00	0.22	140	2.90	3.50	150.00	49	77	7.3	83
		12.00	45.00	0.20	125	1.70	1.20	75.00	31	59	7.3	1 890
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	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
		1.90	77.00	0.22	125	7.00	1.50	52.00	49	73	7.3	58
		2.70	78.00	0.31	145	5.70	1.00	64.00	81	72	7.5	1,320

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	12.00	34	0.20	455	0.23	3.00	13	170	60	7.3	951
		2.40	29	0.28	86	7.80	0.73	145	110	66	7.2	105
		9.90	91	0.18	110	5.40	5.40	67	71	78	7.2	52
		14.00	68	0.36	170	3.40	5.20	63	69	75	7.6	9,980
S-ESW	Ermelo Sewage Works 26°30'42.84"S 29°57'51.11"E	0.10	59	0.27	87	7.10	0.87	115	68	71	6.9	9560
		3.30	56	0.22	77	8.50	1.40	145	60	71	6.9	7720
		2.50	47	0.24	95	2.00	2.10	130	67	72	7.1	65840
		13.00	53	0.23	195	0.68	3.10	125	180	80	7.4	794,930
S-TUTU	Tutukani Sewage Works 26°47'36.70"S 29°17'30.43"E	5.50	66	0.35	145	2.20	3.10	61	46	56	7.6	3800
		3.40	71	0.30	125	1.80	0.99	65	39	65	7.6	215
		13.00	63	0.26	110	7.70	2.30	57	38	64	7.5	52
		0.10	56	0.36	120	8.80	1.20	66	20	62	7.5	20
S-MAJUBA	Majuba Power Station Sewage Works 27° 5'23.45"S 29°46'11.44"E	0.32	37	0.21	22	11.00	0.66	45	28	42	6.4	67
		2.40	29	0.28	86	7.80	0.73	145	110	66	7.2	105
		11.00	34	0.22	140	2.90	3.50	150	49	77	7.3	83
		12.00	45	0.20	125	1.70	1.20	75	31	59	7.3	1,890
S-ND-SOUTH	New Denmark Colliery - South Shaft 26°44'41.51"S 29°18'31.70"E	4.00	76	0.29	120	<0.10	11.00	42	58	62	7.6	910
		3.20	56	0.42	145	4.8	1.30	66	46	65	7.5	630
		1.90	77	0.22	125	7.00	1.50	52	49	73	7.3	58
		2.70	78	0.31	145	5.70	1.00	64	81	72	7.5	1,320

**Key**

VE	Vaal River above Standerton	0.12	-	1 July 12 - 30 Sept 12
		0.12	-	1 Oct 12 - 31 Dec 12
		0.12	-	1 Jan 13 - 31 Mar 13
		0.12	-	1 Apr 13 - 30 Jun 13

**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 coliform:	counts/100ml	<1000	>=1000
** After removal of algae			