

# Rand Water

## Quarterly Water Quality Status of the Grootdraai Dam Catchment

1 Apr 2018 - 31 Mar 2019



RAND WATER

Sample Points	Sample Point Description	Quarter	Ammonia	Chemical Oxygen Demand	Chloride	Conductivity	Fluoride	M-Alkalinity	Nitrate	pH	Phosphate	Sulphate
VE	Vaal River @ Ermelo 26° 38.891'S 30° 9.072'E	1	<0.05	20	12	25	<0.19	35	<0.44	7.2	<0.2	23
		2	<0.05	13	14	38	<0.19	90	<0.44	7.2	<0.2	24
		3	0.02	44	85	87	0.68	290	<0.5	8.2	1.42	60
		4	0.08	19	12	18	0.26	45	<0.5	7.1	<0.25	17
WITPUNTSPRUIT	Witpuntspruit @ N2 near Camden 26° 35.604'S 30° 5.781'E	1	0.25	18	21	161	0.60	<5	<0.44	3.3	<0.2	895
		2	0.39	33	29	203	0.97	<5	0.88	3.1	<0.2	1 633
		3	1.30	10	20	135	1.37	<5	0.59	3.4	0.50	690
		4	0.29	<10	17	85	0.91	<5	<0.5	3.7	<0.25	383
VAAL-DS_WITPT	Vaal River Downstream of Witpuntspruit 26° 42.123'S 30° 4.968'E	1	<0.05	16	13	22	<0.19	87	<0.44	7.5	<0.2	39
		2	<0.05	12	19	36	0.30	89	<0.44	8.1	<0.2	62
		3	0.02	14	22	33	0.33	70	<0.5	7.8	<0.25	62
		4	0.09	19	12	25	0.42	45	<0.5	7.4	<0.25	55
VKV	Klein Vaal River @ Goedeheop 26° 49.209'S 30° 8.199'E	1										
		2										
		3	0.03	<10	5	17	0.30	56	<0.5	7.7	<0.25	33
		4	0.43	<10	20	16	0.43	58	0.64	7.5	0.42	27
VRA	Rietspruit below Amersfoort 26° 54.785'S 29° 52.320'E	1	0.84	18	14	37	<0.19	124	0.61	7.7	<0.2	33
		2	0.07	25	20	63	0.19	162	0.96	8.1	<0.2	45
		3	0.01	14	8	16	0.22	53	0.58	7.5	<0.25	17
		4	0.11	14	9	19	0.29	61	0.80	7.3	<0.25	19
VKK	Brummerspruit below Ermelo 26° 30.835'S 29° 54.448'E	1	19.67	43	38	69	0.21	182	<0.44	7.2	1.70	96
		2	21.67	46	40	58	0.23	160	<0.44	7.3	1.69	100
		3	12.50	56	37	58	0.67	160	<0.50	7.3	1.13	81
		4	20.50	50	35	60	0.67	183	3.30	7.3	2.00	67
VKR	Tweefontein @ Riverside 26° 37.363'S 29° 50.267'E	1	7.60	30	32	63	0.22	200	0.98	7.3	0.71	70
		2	10.43	32	37	75	0.24	200	0.87	7.3	0.99	96
		3	8.44	41	35	60	0.48	152	2.87	7.1	1.44	76
		4	7.45	29	32	54	0.70	155	5.17	7.1	1.27	55
VK	Brummerspruit before Vaal River 26° 46.853'S 29° 48.402'E	1	0.75	24	26	52	0.22	175	3.33	7.6	0.24	62
		2	0.15	30	34	62	0.24	187	5.00	7.6	0.50	74
		3	0.68	32	36	42	0.46	115	4.68	7.5	0.89	68
		4	0.20	29	18	35	0.53	115	1.32	7.4	0.26	38
VAS	Vaal River above Standerton 26° 51.311'S 29° 41.860'E	1	<0.05	16	15	30	<0.19	123	0.97	8.0	<0.2	36
		2	<0.05	15	22	43	0.20	150	1.60	8.2	<0.2	49
		3	0.02	14	11	21	0.26	64	0.54	7.6	<0.25	60
		4	0.11	23	9	19	0.35	54	<0.5	7.3	<0.25	30
VGK	Geelklipspruit below Amersfoort 26° 57.893'S 29° 40.318'E	1										
		2										
		3	0.07	33	19	45	0.32	198	0.56	8.3	<0.25	23
		4	0.18	21	12	37	0.48	140	<0.5	7.8	<0.25	47
VBB	Blesbokspruit below Bethal 26° 31.866'S 29° 25.371'E	1	<0.05	30	42	47	0.24	145	0.91	7.6	0.90	45
		2	15.50	45	49	80	0.24	167	<0.44	7.5	2.55	43
		3	9.57	87	57	80	0.47	250	1.27	7.5	2.56	65
		4	1.14	48	31	42	0.51	128	2.76	7.3	0.91	48
VBS	Blesbokspruit @ Skaapkraal 26° 39.223'S 29° 27.056'E	1	<0.05	23	31	48	0.23	162	1.60	6.7	<0.2	56
		2	0.06	28	68	76	0.30	195	1.35	8.6	0.94	63
		3	0.02	44	85	87	0.68	290	<0.5	8.2	1.42	60
		4	0.10	41	26	41	0.62	135	0.59	7.7	0.70	39

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Sample Points	Sample Point Description	Quarter	Ammonia	Chemical Oxygen Demand	Chloride	Conductivity	Fluoride	M-Alkalinity	Nitrate	pH	Phosphate	Sulphate
VB	Blesbokspruit @ Vaal River Confluence 26° 46.558'S 29° 32.485'E	1	<0.05	21	24	46	0.23	168	<0.44	7.7	<0.2	55
		2	0.02	19	53	69	0.30	222	<0.44	8.4	<0.2	74
		3	0.02	28	69	86	0.72	293	<0.50	8.4	<0.25	76
		4	0.12	35	26	41	0.61	145	<0.50	7.8	0.30	40
ND-LEEU	Leeuspruit @ New Denmark Colliery 26° 51.277'S 29° 19.524'E	1	<0.05	33	17	37	0.22	107	<0.44	7.6	<0.2	46
		2	0.04	18	26	48	0.27	133	<0.44	7.9	<0.2	63
		3	0.03	29	29	57	0.65	118	<0.50	8.1	<0.25	91
		4	0.15	30	35	58	0.77	107	<0.50	7.6	<0.25	120
VS	Vaal River @ Standerton 26° 56.509'S 29° 15.835'E	1	0.10	19	14	32	0.24	89	<0.44	7.8	<0.2	38
		2	0.20	17	15	33	0.26	113	<0.44	7.9	<0.2	41
		3	0.13	19	15	30	0.31	92	<0.50	7.7	<0.25	42
		4	0.04	16	18	31	0.44	95	<0.50	7.8	<0.25	45

### Key

VE	Vaal River @ Ermelo 26° 38.891'S 30° 9.072'E	1	<0.092	- 1 Apr to 30 Jun 2018
		2	<0.05	- 1 Jul to 30 Sept 2018
		3	<0.05	- 1 Oct to 31 Dec 2018
		4	0.02	- 1 Jan to 31 Mar 2019

### Water Quality Guidelines

	- Ideal
	- Acceptable
	- Tolerable
	- Unacceptable

**Sewage Works Compliance (where applicable) to General Standard (GN 1191 Oct 1999)**

Sample Points	Sample Point Description	Quarter	Ammonia	Chemical Oxygen Demand	Chloride	Conductivity	Faecal coliforms	Fluoride	M-Alkalinity	Nitrate	pH	Phosphate	Sulphate
S-BETHAL	Bethal Sewage Works 26° 29.182'S 29° 27.056'E	1	0.39	33	52	62	30 153	0.19	125	5.60	7.5	2.14	64
		2	4.35	58	50	59	12 525	0.21	99	5.47	7.4	4.70	50
		3	28.10	46	61	62	993 168	0.45	153	1.85	7.6	2.85	67
		4	16.17	71	49	79	1 814 900	0.71	253	2.40	7.6	2.78	67
S-ESW	Ermelo Sewage Works 26° 30.679'S 29° 57.863'E	1	22.11	718	50	66	7 997 667	0.19	213	<0.44	7.5	1.37	97
		2	40.33	1059	62	94	10 071 333	0.23	247	<0.44	7.1	3.10	101
		3	33.67	290	45	82	1 279 900	0.55	270	1.43	7.0	3.67	80
		4	44.50	528	50	88	2 223 400	0.84	267	6.56	7.1	4.00	73
S-TUTU	Tutukani Sewage Works 26° 47.621'S 29° 17.514'E	1	0.53	21	54	55	7 160	<0.19	128	4.67	7.6	0.10	77
		2	<0.2	21	59	57	5 108	0.20	105	6.00	7.6	<0.1	85
		3	0.33	18	49	61	2 899	0.30	118	4.95	7.8	<0.25	80
		4	0.86	18	56	55	4 404	0.57	135	16.34	7.8	0.30	79
S-ND-SOUTH	New Denmark Colliery - South Shaft 26° 44.611'S 29° 18.272'E	1	0.23	40	99	82	239	0.19	125	13.67	7.9	0.30	85
		2	5.71	44	108	74	15	0.23	123	15.00	7.7	2.10	76
		3	0.07	45	76	78	417	0.48	155	14.67	7.6	<0.25	80
		4	1.22	30	75	85	1 575	0.65	147	6.33	7.9	1.28	85

**Key**

S-BETHAL	Bethal Sewage Works 26° 29.182'S 29° 27.056'E	1	4.10	- 1 Apr to 30 Jun 2018
		2	0.39	- 1 Jul to 30 Sept 2018
		3	4.35	- 1 Oct to 31 Dec 2018
		4	28.10	- 1 Jan to 31 Mar 2019

**Water Quality Guidelines**

	- Acceptable
	- Unacceptable

## **Sewage Works Compliance to General Standard (GN 1191 Oct 1999)**

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<b>Variables</b>	<b>Measured as</b>	<b>Acceptable Management Target</b>	<b>Unacceptable</b>
<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>			
<i>Faecal coliforms</i>	counts/100ml	< 1,000	>= 1,000

*\*After removal of algae*

Visit  
<http://www.reservoir.co.za/> to  
find the water quality status  
report and forum dates

In-stream Water Quality Guidelines for the Grootdraai Dam Catchment					
MU		Leeuspruit (ND-LEEU)			
Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
<b>Physical</b>					
Conductivity	mS/m	< 15	15 - 30	30 - 50	> 50
pH	pH units	6.4 - 8.5			< 6.4; > 8.5
<b>Organic</b>					
Chemical					
Oxygen Demand (COD)	mg/l	< 10	10 - 20	20 - 35	> 35
<b>Macro Elements</b>					
Ammonia (NH <sub>4</sub> )	mg/l	< 0.02	0.02 - 0.5	0.5 - 1	> 1
Chloride (Cl)	mg/l	< 10	10 - 20	20 - 30	> 30
Alkalinity	CaCO <sub>3</sub> mg/l	< 40	40 - 70	70 - 100	> 100
Fluoride (F)	mg/l	<0.05	0.05 - 0.20	0.2 - 0.4	>0.4
Nitrate (NO <sub>3</sub> )	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.50
Phosphate (PO <sub>4</sub> )	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.50
Sulphate (SO <sub>4</sub> )	mg/l	< 15	15 - 35	35 - 50	> 50
<b>Bacteriological</b>					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	>120

In-stream Water Quality Guidelines for the Grootdraai Dam Catchment					
MU		Brummerspruit (VK, VKR, VKK)			
Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
<b>Physical</b>					
Conductivity	mS/m	< 15	15 - 30	30 - 50	> 50
pH	pH units	6.4 - 8.5			< 6.4; > 8.5
<b>Organic</b>					
Chemical					
Oxygen Demand (COD)	mg/l	< 10	10 - 20	20 - 35	> 35
<b>Macro Elements</b>					
Ammonia (NH <sub>4</sub> )	mg/l	< 0.02	0.02 - 0.5	0.5 - 1	> 1
Chloride (Cl)	mg/l	< 25	25 - 50	50 - 70	>70
Alkalinity	CaCO <sub>3</sub> mg/l	< 40	40 - 80	80 - 120	> 120
Fluoride (F)	mg/l	<0.05	0.05 - 0.20	0.2 - 0.4	>0.4
Nitrate (NO <sub>3</sub> )	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.50
Phosphate (PO <sub>4</sub> )	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.50
Sulphate (SO <sub>4</sub> )	mg/l	< 20	20 - 50	50 - 70	> 70
<b>Bacteriological</b>					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	>120

In-stream Water Quality Guidelines for the Grootdraai Dam Catchment					
MU		Schulpspruit (VKV, VRA, ZD)			
Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
<b>Physical</b>					
Conductivity	mS/m	< 10	10 - 15	15 - 25	> 25
pH	pH units	6.4 - 8.5			< 6.4; > 8.5
<b>Organic</b>					
Chemical					
Oxygen Demand (COD)	mg/l	< 10	10 - 15	15 - 25	> 25
<b>Macro Elements</b>					
Ammonia (NH <sub>4</sub> )	mg/l	< 0.02	0.02 - 0.5	0.5 - 1	> 1
Chloride (Cl)	mg/l	< 10	10 - 15	15 - 20	> 20
Fluoride (F)	mg/l	<0.05	0.05 - 0.20	0.2 - 0.4	>0.4
Alkalinity	CaCO <sub>3</sub> mg/l	< 20	20 - 45	45 - 75	> 75
Nitrate (NO <sub>3</sub> )	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.50
Phosphate (PO <sub>4</sub> )	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.50
Sulphate (SO <sub>4</sub> )	mg/l	< 10	10 - 20	20 - 30	> 30
<b>Bacteriological</b>					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	>120

In-stream Water Quality Guidelines for the Grootdraai Dam Catchment					
MU		Blesbokspruit (VB, VBS, VBB)			
Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
<b>Physical</b>					
Conductivity	mS/m	< 15	15 - 30	30 - 50	> 50
pH	pH units	6.4 - 8.5			< 6.4; > 8.5
<b>Organic</b>					
Chemical					
Oxygen Demand (COD)	mg/l	< 10	10 - 20	20 - 35	> 35
<b>Macro Elements</b>					
Ammonia (NH <sub>4</sub> )	mg/l	< 0.02	0.02 - 0.5	0.5 - 1	> 1
Chloride (Cl)	mg/l	< 25	25 - 50	50 - 70	>70
Alkalinity	CaCO <sub>3</sub> mg/l	< 40	40 - 80	80 - 120	> 120
Fluoride (F)	mg/l	<0.05	0.05 - 0.20	0.2 - 0.4	>0.4
Nitrate (NO <sub>3</sub> )	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.50
Phosphate (PO <sub>4</sub> )	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.50
Sulphate (SO <sub>4</sub> )	mg/l	< 15	15 - 35	35 - 50	> 50
<b>Bacteriological</b>					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	>120

In-stream Water Quality Guidelines for the Grootdraai Dam Catchment					
MU		Vaal Origin (VE)			
Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
<b>Physical</b>					
Conductivity	mS/m	< 10	10 - 15	15 - 25	> 25
pH	pH units	6.4 - 8.5			< 6.4; > 8.5
<b>Organic</b>					
Chemical					
Oxygen Demand (COD)	mg/l	< 10	10 - 20	20 - 35	> 35
<b>Macro Elements</b>					
Ammonia (NH <sub>4</sub> )	mg/l	< 0.02	0.02 - 0.5	0.5 - 1	> 1
Chloride (Cl)	mg/l	< 10	10 - 15	15 - 20	>20
Alkalinity	CaCO <sub>3</sub> mg/l	< 20	20 - 45	45 - 75	> 75
Fluoride (F)	mg/l	<0.05	0.05 - 0.20	0.2 - 0.4	>0.4
Nitrate (NO <sub>3</sub> )	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.50
Phosphate (PO <sub>4</sub> )	mg/l	< 0.05	0.05 - 0.08	0.08 - 1	>1
Sulphate (SO <sub>4</sub> )	mg/l	< 10	10 - 20	20 - 30	> 30
<b>Bacteriological</b>					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	>120

In-stream Water Quality Guidelines for the Grootdraai Dam Catchment					
MU		Majuba (VAS, VGK)			
Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
<b>Physical</b>					
Conductivity	mS/m	< 15	15 - 30	30 - 50	> 50
pH	pH units	6.4 - 8.5			< 6.4; > 8.5
<b>Organic</b>					
Chemical					
Oxygen Demand (COD)	mg/l	< 10	10 - 20	20 - 35	> 35
<b>Macro Elements</b>					
Ammonia (NH <sub>4</sub> )	mg/l	< 0.02	0.02 - 0.5	0.5 - 1	> 1
Chloride (Cl)	mg/l	< 10	10 - 20	20 - 30	> 30
Fluoride (F)	mg/l	<0.05	0.05 - 0.20	0.2 - 0.4	>0.4
Alkalinity	CaCO <sub>3</sub> mg/l	< 40	40 - 70	70 - 100	> 100
Nitrate (NO <sub>3</sub> )	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.50
Phosphate (PO <sub>4</sub> )	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.50
Sulphate (SO <sub>4</sub> )	mg/l	< 15	15 - 35	35 - 50	> 50
<b>Bacteriological</b>					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	>120