

**Quarterly Water Quality Status of the Grootdraai Dam Catchment**

**01 October 2019 - 30 September 2020**

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	0.23	31	15	33	0.45	87	0.69	6.8	<0.25	23	
		2	0.07	31	10	17	0.26	39	<0.5	7.2	<0.25	28	
		3											
		4	0.06	15	15	25	<0.2	85	<0.5	7.9	<0.25	18	
WITPUNTSPRUIT	Witpuntspruit @ N2 near Camden 26° 35.604'S 30° 5.781'E	1	0.28	25	11	45	0.86	9	0.70	5.2	<0.25	197	
		2	0.39	26	18	105	0.73	33	<0.5	4.9	<0.25	415	
		3											
		4	0.09	<10	13	95	0.44	<5	3.30	3.8	<0.25	498	
VAAL-DS_WITPT	Vaal River Downstream of Witpuntspruit 26° 42.123'S 30° 4.968'E	1	0.14	45	20	30	0.76	57	0.58	7.2	<0.25	76	
		2	0.04	29	11	19	0.28	44	<0.5	7.5	<0.25	31	
		3											
		4	0.33	15	20	41	0.40	100	<0.5	8.1	<0.25	75	
VKV	Klein Vaal River @ Goedehoop 26° 49.209'S 30° 8.199'E	1	0.08	15	9	15	0.30	42	0.85	7.1	<0.25	18	
		2	0.94	19	7	15	0.27	56	<0.5	7.4	<0.25	9	
		3											
		4											
VRA	Rietspruit below Amersfoort 26° 54.785'S 29° 52.320'E	1	0.20	45	13	42	0.51	101	0.68	7.8	<0.25	25	
		2	0.08	28	10	26	0.30	99	<0.5	7.7	<0.25	24	
		3											
		4	0.19	19	17	35	0.20	120	1.10	8.0	<0.25	26	
VKK	Brummerspruit below Ermelo 26° 30.835'S 29° 54.448'E	1	28.67	40	37	58	0.85	134	0.77	7.4	1.13	112	
		2	0.94	47	28	61	0.43	151	0.54	7.5	<0.25	102	
		3											
		4	16.00	74	46	73	0.22	193	<0.50	7.6	1.50	89	
VKR	Tweefontein @ Riverside 26° 37.363'S 29° 50.267'E	1	13.59	46	33	37	0.89	93	0.90	7.3	1.59	76	
		2	5.12	32	27	52	0.39	148	3.00	7.5	0.72	74	
		3											
		4	7.25	40	37	64	0.23	158	8.85	7.4	1.00	69	
VK	Brummerspruit before Vaal River 26° 46.853'S 29° 48.402'E	1	6.14	52	39	50	1.33	145	2.53	7.3	2.05	42	
		2	5.71	61	28	46	0.38	152	<0.25	8.2	1.50	69	
		3	0.06	33	32	58	0.54	105	4.57	6.6	<0.25	79	
		4	0.09	31	38	60	0.24	165	6.23	8.0	0.38	72	
VAS	Vaal River above Standerton 26° 51.311'S 29° 41.860'E	1	0.13	23	9	27	0.43	79	0.72	7.1	<0.25	23	
		2	0.13	28	12	25	0.28	80	<0.5	7.6	<0.25	32	
		3											
		4	0.04	18	13	28	<0.20	86	0.67	7.8	<0.25	29	
VGK	Geeklipspruit below Amersfoort 26° 57.893'S 29° 40.318'E	1	0.18	35	8	26	0.63	67	2.00	7.3	<0.25	54	
		2	0.06	33	10	29	0.36	99	<0.5	7.6	<0.25	42	
		3											
		4											
VBB	Blesbokspruit below Bethal 26° 31.866'S 29° 25.371'E	1	11.53	32	69	81	1.43	252	1.90	7.8	3.27	60	
		2	0.06	50	36	50	0.42	152	3.15	8.4	1.10	41	
		3											
		4	7.40	48	50	76	0.57	245	0.85	8.3	1.55	59	
VBS	Blesbokspruit @ Skaapkraal 26° 39.223'S 29° 27.056'E	1	0.06	41	73	71	0.85	265	0.59	8.1	1.04	42	
		2	0.08	49	19	37	0.36	133	<0.5	8.0	<0.25	30	
		3											
		4	0.36	45	60	76	0.49	233	4.60	8.1	1.01	65	

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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	40	54	65	0.81	217	0.53	8.1	<0.25	49	
		2	0.07	44	16	39	0.34	141	<0.50	7.8	0.31	36	
		3											
		4	0.07	40	56	75	0.48	243	<0.50	8.2	<0.25	78	
ND-LEEU	Leeuspruit @ New Denmark Colliery 26° 51.277'S 29° 19.524'E	1	0.04	16	24	43	0.60	115	<0.50	7.9	<0.25	67	
		2	0.03	19	32	49	0.75	87	<0.50	7.8	0.53	127	
		3	0.07	32	12	27	0.28	76	<0.50	7.7	<0.25	40	
		4	0.67	46	212	262	2.86	133	<0.50	7.8	1.90	918	
VS	Vaal River @ Standerton 26° 56.509'S 29° 15.835'E	1	0.04	25	17	33	0.49	102	<0.50	7.7	<0.25	46	
		2	0.09	22	12	26	0.34	61	0.78	8.2	<0.25	40	
		3											
		4	0.07	27	21	30	0.34	143	<0.50	8.4	<0.25	44	

**Key**

VS	Vaal River @ Standerton 26° 56.509'S 29° 15.835'E	1	0.04	- 1 Oct to 31 Dec 2019
		2	0.09	- 1 Jan to 31 Mar 2020
		3		- 1 Apr to 30 Jun 2020
		4	0.07	- 1 Jul to 30 Sept 2020

**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	0.00	0	0	0	0	0.00	0	0.00	0.0	0.00	0
		2	2.27	168.00	49	80.00	85534.33	0.42	200.00	0.50	7.81	3.80	68.33
		3	0.00	0	0	0	0	0.00	0	0.00	0.0	0.00	0
		4	107.33	131	54	67	106 565	0.58	0	2.90	7.8	<0.25	77
S-ESW	Ermelo Sewage Works 26° 30.679'S 29° 57.863'E	1	0.00	0	0	0	0	0.00	0	0.00	0.0	0.00	0
		2	25.00	99	53	86	71 267	1.04	212	1.23	7.3	1.88	104
		3	19.34	197	50	82	1 025 533	0.41	225	<0.5	7.2	5.80	98
		4	107.50	118	32	59	1 986	<0.20	0	6.75	7.2	<0.25	67
S-TUTU	Tutukani Sewage Works 26° 47.621'S 29° 17.514'E	1	0.00	0	0	0	0	0.00	0	0.00	0.0	0.00	0
		2	2.84	36.50	38	52.50	39700.00	0.27	127.00	1.45	7.56	0.26	60.50
		3	0.00	0	0	0	0	0.00	0	0.00	0.0	0.00	0
		4	163.33	43	50	59	29 419	0.37	12	0.70	7.7	11.00	80
S-ND-SOUTH	New Denmark Colliery - South Shaft 26° 44.611'S 29° 18.272'E	1	0.00	0	0	0	0	0.00	0	0.00	0.0	0.00	0
		2	16.20	68.00	51	76.00	1110250.00	0.24	152.50	<0.5	7.26	2.50	42.00
		3	0.00	0	0	0	0	0.00	0	0.00	0.0	0.00	0
		4	76.00	96	92	77	15	44.00	2	0.54	7.4	0.38	115

**Key**

S-BETHAL	Bethal Sewage Works 26° 29.182'S 29° 27.056'E	1		- 1 Oct to 31 Dec 2019
		2	2.27	- 1 Jan to 31 Mar 2020
		3		- 1 Apr to 30 Jun 2020
		4	107.33	- 1 Jul to 30 Sept 2020

**Water Quality Guidelines**

<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	- Acceptable
<span style="background-color: #FF0000; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	- Unacceptable

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

<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, VS)			
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, Witpuntspruit, Vaal ds_witpunt)			
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