

Rand Water

Quarterly Water Quality Status of the Waterval River Catchment

01 Apr 2017 - 31 Mar 2018



Sample Points	Sample Point Description	Ammonia	Chemical Oxygen Demand	Chloride	Conductivity	Fluoride	M-Alkalinity	Nitrate	pH	Phosphate	Sulphate
WAW	Winkelhaakspruit @ Secunda 26° 31.204'S 29° 4.298'E	9.00	48	60	65	0.33	185	0.57	7.2	1.30	52
		17.50	57	60	71	0.28	193	0.16	7.5	2.85	50
		14.00	37	60	97	0.30	330	1.00	7.4	1.70	54
		2.22	42	59	68	0.30	173	1.41	7.3	1.33	56
WAT	Kleinspruit @ Secunda 26° 33.162'S 29° 4.972'E	1.10	28	39	64	0.39	165	2.10	7.5	0.21	97
		1.95	26	43	64	0.32	153	3.60	7.2	0.39	92
		3.60	37	64	65	0.46	325	2.40	7.3	0.85	93
		0.33	35	26	61	0.44	175	1.70	7.5	0.22	82
WAR	Waterval River @ Roodebank 26° 37.675'S 29° 1.472'E	8.70	35	65	66	0.46	175	0.22	7.4	1.40	58
		11.10	40	66	44	0.40	129	0.19	6.8	2.10	70
		12.00	23	74	71	0.43	340	2.10	7.3	1.40	91
		1.31	32	64	63	0.36	158	0.70	7.4	0.61	63
WAE	Waterval River @ Elandslaagte 26° 51.499'S 28° 53.396'E	0.12	28	54	56	0.43	170	0.71	8.0	0.20	69
		0.08	29	69	58	0.45	175	1.30	7.8	0.43	80
		0.75	28	74	61	0.44	180	1.10	7.4	1.20	46
		0.20	28	29	40	0.31	113	0.81	7.6	0.19	36
WATERVAL_VAAL	Waterval near confluence with Vaal River 26° 57.579'S 28° 44.689'E	<0.092	28	51	57	0.34	150	0.37	8.1	0.20	57
		<0.05	25	55	73	0.40	178	0.14	7.6	<0.2	72
		0.12	30	84	62	0.48	370	0.79	7.7	<0.2	72
		0.06	28	59	53	0.34	122	0.93	7.8	<0.2	46

Key

WAE	Waterval River @ Elandslaagte 26° 51.499'S 28° 53.396'E	0.12	- 1 Apr to 30 Jun 2017
		0.08	- 1 Jul to 30 Sep 2017
		0.75	- 1 Oct to 31 Dec 2017
		0.20	- 1 Jan to 31 Mar 2018

Water Quality Guidelines

	- Ideal
	- Acceptable
	- Tolerable
	- Unacceptable



Sample Points	Sample Point Description	Ammonia	Chemical Oxygen Demand	Chloride	Conductivity	E.coli	Fluoride	M-Alkalinity	Nitrate	pH	Phosphate	Sulphate
S-EVAN_W	Evander Sewage Works 26° 29.633'S 29° 6.950'E	14.00	40	61	66	1,769,750	0.52	150	1.60	7.2	2.00	46
		20.67	82	49	66	1,337,633	0.55	205	1.65	7.3	2.63	43
		11.00	51	49	66	1,215,200	0.24	135	9.10	6.8	3.20	44
		7.50	45	45	55	1,426,350	0.32	135	4.90	7.1	1.55	44
S-SEC_LOC	Embalenhle Sewage Works 26° 33.414'S 29° 4.292'E	38.00	74	62	100	814,600	0.34	315	0.11	7.4	4.80	68
		29.00	109	55	92	173,290	0.26	278	0.52	7.8	5.80	73
		26.00	61	66	91	906,500	0.30	265	1.10	7.3	4.80	73
		17.67	69	58	81	32,900	0.47	220	<0.44	7.3	4.73	79
S-SEC_SEW	Secunda Sewage Works 26° 32.262'S 29° 8.520'E	1.40	46	60	64	1	0.46	145	2.60	7.4	0.20	72
		4.65	35	66	70	4,530	0.44	150	2.65	7.3	2.10	86
		3.20	47	62	66	810	0.28	170	3.40	7.1	1.70	66
		0.87	34	50	64	15	0.38	158	2.49	7.4	0.59	70

Key

S-SEC_SEW	Secunda Sewage Works 26° 32.262'S 29° 8.520'E	1.40	- 1 Apr to 30 Jun 2017
		4.65	- 1 Jul to 30 Sep 2017
		3.20	- 1 Oct to 31 Dec 2017
		0.87	- 1 Jan to 31 Mar 2018

Water Quality Guidelines

Blue	- Ideal
Green	- Acceptable
Yellow	- Tolerable
Red	- Unacceptable

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

Sample Points	Sample Point Description	Ammonia	Chemical Oxygen Demand	Chloride	Conductivity	Faecal coliforms	Fluoride	M-Alkalinity	Nitrate	pH	Phosphate	Sulphate
S-EVAN_W	Evander Sewage Works 26° 29.633'S 29° 6.950'E	14.00	40	61	66	1,769,750	0.52	150	1.60	7.2	2.00	46
		20.67	82	49	66	1,337,633	0.55	205	1.65	7.3	2.63	43
		11.00	51	49	66	1,215,200	0.24	135	9.10	6.8	3.20	44
		7.50	45	45	55	1,426,350	0.32	135	4.90	7.1	1.55	44
S-SEC_LOC	Embalenhle Sewage Works 26° 33.414'S 29° 4.292'E	38.00	74	62	100	814,600	0.34	315	0.11	7.4	4.80	68
		29.00	109	55	92	173,290	0.26	278	0.52	7.8	5.80	73
		26.00	61	66	91	906,500	0.30	265	1.10	7.3	4.80	73
		17.67	69	58	81	32,900	0.47	220	<0.44	7.3	4.73	79

Key

S-EVAN_W	Evander Sewage Works 26° 29.633'S 29° 6.950'E	14.00	- 1 Apr to 30 Jun 2017
		20.67	- 1 Jul to 30 Sep 2017
		11.00	- 1 Oct to 31 Dec 2017
		7.50	- 1 Jan to 31 Mar 2018

Water Quality Guidelines

Green	- Acceptable
Red	- Unacceptable

Applicable Water Quality Standards for final effluent discharge from Secunda Sewage Works (as per DWS licence)

Sample Points	Sample Point Description	Ammonia	Chemical Oxygen Demand	Chloride	Conductivity	Faecal coliforms	Fluoride	M-Alkalinity	Nitrate	pH	Phosphate	Sulphate
S-SEC_SEW	Secunda Sewage Works 26° 32.262'S 29° 8.520'E	1.40	46	60	64	1	0.46	145	2.60	7.4	0.20	72
		4.65	35	66	70	4,530	0.44	150	2.65	7.3	2.10	86
		3.20	47	62	66	810	0.28	170	3.40	7.1	1.70	66
		0.87	34	50	64	15	0.38	158	2.49	7.4	0.59	70

Key

S-SEC_SEW	Secunda Sewage Works 26° 32.262'S 29° 8.520'E	1.40	- 1 Apr to 30 Jun 2017
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		3.20	- 1 Oct to 31 Dec 2017
		0.87	- 1 Jan to 31 Mar 2018

Water Quality Guidelines

Green	- Acceptable
Red	- Unacceptable

In-stream Water Quality Guidelines for the Waterval Catchment

Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
Physical					
Conductivity	mS/m	< 10	10 - 30	30 - 45	> 45
pH	pH units	6.5 - 8.5			< 6.5; > 8.5
Organic					
Chemical Oxygen Demand (COD)	mg/l	< 10	10 - 15	15 - 20	> 20
Macro Elements					
Ammonia (NH ₄)	mg/l	< 0.2	0.2 - 0.5	0.5 - 1.0	> 1.0
Chloride (Cl)	mg/l	< 25	25 - 50	50 - 75	> 75
Fluoride (F)	mg/l	< 0.05	0.05 - 0.20	0.2 - 0.4	> 0.4
Alkalinity	CaCO ₃ mg/l	< 40	40 - 75	75 - 120	> 120
Nitrate (NO ₃)	mg/l	< 0.1	0.1 - 0.2	0.2 - 0.3	> 0.3
Phosphate (PO ₄)	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.50
Sulphate (SO ₄)	mg/l	< 20	20 - 45	45 - 70	> 70
Bacteriological					
<i>E.coli</i>	counts/100ml	< 10	10 - 60	60 - 120	> 120
<i>Faecal coliforms</i>	counts/100ml		< 126	126 - 1,000	> 1,000

* Applicable Water Quality Standards for final effluent discharge from Sewage Works (as per DWS licence)

Variables	Measured as	Acceptable Management Target	Unacceptable
Physical			
Conductivity	mS/m	<= 70	> 70
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	<= 6	> 6
Fluoride (F)	mg/l	<= 1	> 1
Nitrate (NO ₃)	mg/l	<= 15	> 15
Phosphate (PO ₄)	mg/l	<= 10	> 10
Bacteriological			
<i>Faecal coliforms</i>	counts/100ml	0	> 0

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			
<i>Faecal coliforms</i>	counts/100ml	< 1000	>= 1000

**After removal of algae