



Quarterly Water Quality Status of the Waterval River Catchment

1 October 2010 - 30 September 2011

In-stream Water Quality Guidelines

Sample Points	Sample Point Description	Ammonia	Chloride	Fluoride	M-Alkalinity	Nitrate	Phosphate	Sulphate	Chemical Oxygen Demand	Conductivity	pH	E.coli
WAW	Winkelhaakspruit @ Secunda 26°31'12.14"S 29° 4'17.79"E	2.93	62	0.31	150	1.60	3.10	52	45	64	7.20	
		0.12	37	0.36	145	2.10	1.20	36	34	57	7.70	
		0.81	50	0.34	205	4.73	2.00	61	25	72	7.80	
		15.00	75	0.24	205	4.20	3.90	43	42	79	7.90	
WAB	Bossiespruit @ Secunda 26°32'44.49"S 29° 7'46.66"E	2.10	28	0.50	120	21.00	0.16	205	55	62	7.10	
		0.28	29	0.58	120	6.20	0.16	210	27	75	7.60	
		0.59	56	0.67	110	12.03	0.28	237	25	49	8.10	
		0.35	29	0.43	110	1.50	<0.05	120	25	52	8.50	
WAT	Trichardspruit @ Secunda 26°33'9.73"S 29° 4'58.31"E	0.51	28	0.44	138	4.20	0.17	100	26	60	7.20	
		0.32	37	0.49	125	2.10	0.14	105	26	61	7.50	
		1.10	45	0.54	145	2.92	0.30	108	27	62	7.80	
		0.62	35	0.41	140	1.10	0.24	90	29	55	8.10	
WAR	Waterval River @ Roodebank 26°37'44.10"S 29° 1'32.31"E	2.30	31	0.49	125	6.10	1.10	100	24	63	6.90	
		0.25	32	0.63	115	2.10	0.32	110	30	50	7.50	
		1.84	43	0.41	165	4.35	1.38	103	32	64	7.70	
		7.10	44	0.33	185	0.89	1.80	82	33	65	7.70	
WAE	Waterval River @ Elandslaagte 26°51'30.04"S 28°53'23.52"E	0.22	35	0.47	130	2.50	0.71	83	35	56	7.30	
		0.12	22	0.43	105	0.46	0.12	56	32	42	7.40	
		0.12	34	0.42	175	1.56	0.20	88	34	61	8.70	
		0.35	49	0.30	190	1.20	0.91	98	34	65	8.80	
S-EVAN_W	Evander Sewage Works 26°29'32.97"S 29° 6'54.97"E	2.30	48	0.33	130	7.20	2.50	50	36	57	7.40	10410
		2.20	57	0.32	165	5.70	1.40	55	47	70	7.40	1590
		2.90	61	0.23	190	10.80	4.00	38	41	58	7.80	3170
		18.00	63	0.19	205	1.30	4.20	51	58	35	7.50	815400
S-SEC_LOC	Embalenhie Sewage Works 26°33'21.66"S 29° 4'16.66"E	18.00	51	0.21	180	3.60	6.10	66	105	69	7.10	17420
		1.90	56	0.23	185	6.20	2.20	98	59	82	7.40	82780
		19.00	39	0.21	220	0.68	6.10	55	365	79	7.60	74930
		30.00	56	0.16	240	2.60	6.90	71	200	84	7.90	1053320
S-SEC_SEW	Secunda Sewage Works* 26°32'21.04"S 29° 8'42.00"E	0.48	46	0.32	125	5.80	0.74	77	30	58	7.30	17420
		15.00	46	0.49	160	2.20	1.40	97	26	68	7.30	82780
		3.00	48	0.30	120	3.83	3.14	72	25	58	7.40	19
		1.30	51	0.29	125	1.90	0.30	75	41	60	7.30	51780

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

Sample Points	Sample Point Description	Ammonia	Fluoride	Nitrate	Phosphate	Chemical Oxygen Demand	Conductivity	pH	E.coli
S-EVAN_W	Evander Sewage Works 26°29'32.97"S 29° 6'54.97"E	2.30	0.33	7.20	2.50	36	57	7.40	10410
		2.20	0.32	10.80	4.00	47	70	7.40	1590
		18.00	0.19	1.30	4.20	38	35	7.50	815400
S-SEC_LOC	Embalenhie Sewage Works 26°33'21.66"S 29° 4'16.66"E	18.00	0.21	3.60	6.10	105	69	7.10	17420
		1.90	0.23	6.20	2.20	59	82	7.40	82780
		19.00	0.21	0.68	6.10	365	79	7.60	74930
		30.00	0.16	2.60	6.90	200	84	7.90	1053320

\* Applicable Water Quality Standards for final effluent discharge from Secunda Sewage Works (as per DW A licence)

S-SEC_SEW	Secunda Sewage Works* 26°32'21.04"S 29° 8'42.00"E	0.48	0.32	5.80	0.74	30	58	7.30	17420
		15.00	0.49	2.20	1.40	26	68	7.30	82780
		3.00	0.30	3.83	3.14	25	58	7.40	19
		1.30	0.29	1.90	0.30	41	60	7.30	51780

Key

WAB	Bossiespruit @ Secunda	0.59	-	1 Oct 10 - 31 Dec 10
		0.12	-	1 Jan 11 - 31 Mar 11
		2.1	-	1 Apr 11 - 30 Jun 11
		0.28	-	1 July 11 - 30 Sept 11

Water Quality Guidelines

	-	Ideal
	-	Acceptable
	-	Tolerable
	-	Unacceptable
	-	No sample or result available

In-stream Water Quality Guidelines for the Waterval Catchment

Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
<b>Physical</b>					
Conductivity	mS/m	< 10	10 - 30	30 - 45	> 45
pH	pH units	6.5 - 8.5			< 6.5; > 8.5
<b>Organic</b>					
Chemical Oxygen Demand (COD)	mg/l	< 10	10 - 15	15 - 20	> 20
<b>Macro Elements</b>					
Ammonia (NH <sub>4</sub> )	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 <sub>3</sub> mg/l	< 40	40 - 75	75 - 120	> 120
Nitrate (NO <sub>3</sub> )	mg/l	< 0.1	0.1 - 0.2	0.2 - 0.3	> 0.3
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 - 45	45 - 70	> 70
<b>Bacteriological</b>					
Faecal coliforms	counts/100ml	< 10	10 - 60	60 - 120	> 120

\* Applicable Water Quality Standards for final effluent discharge from Secunda Sewage Works (as per DW A licence)

Variable	Limit
pH	5.5 - 9.5
Electrical Conductivity	≤ 70 mS/m
Chemical Oxygen Demand	≤ 75 mg/l
Ammonia as N	≤ 8 mg/l
Nitrate / Nitrite as Nitrogen	≤ 15 mg/l
Orthophosphate as P	≤ 10 mg/l
Fluoride	≤ 1 mg/l
Faecal coliform units (FCU)	0 per 100ml

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 coliforms	counts/100ml	< 1000	≥ 1000

\*\* After removal of algae