

Sample Points	Sample Point Description	Ammonia	Chloride	Fluoride	In-Alkalinity	Nitrate	Phosphate	Sulphate	Chemical Oxygen Demand	Conductivity	pH	E. coli
WAB	Bossiespruit @ Secunda 26°32'44.49"S 29° 7'46.66"E	0.59	56	0.67	173	12.00	0.28	237	24	96	8.11	
		0.12	23	0.38	120	2.80	<0.05	96	31	56	7.70	
		2.19	28	0.50	120	21.00	0.16	205	55	82	7.10	
		0.26	29	0.58	120	6.20	0.18	219	27	75	7.60	
WAE	Waterval River @ Elandslaagte 26°51'30.04"S 28°53'23.52"E	<0.24	34	0.45	157	1.60	1.20	68	34	56	8.26	
		0.20	55	0.37	190	0.98	0.84	87	32	74	8.20	
		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	
WAR	Waterval River @ Roodebank 26°37'44.10"S 29° 1'32.31"E	1.84	50	0.38	173	4.60	1.49	88	32	64	7.90	
		4.00	57	0.37	155	1.80	1.90	84	41	73	7.20	
		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	
WAT	Trichardspruit @ Secunda 26°33'9.73"S 29° 4'58.31"E	1.10	45	0.54	177	2.90	0.30	108	27	73	8.00	
		0.48	43	0.40	155	2.80	0.14	100	26	69	7.40	
		0.51	28	0.44	135	4.20	0.17	100	28	60	7.20	
		0.32	37	0.49	125	2.10	0.14	105	26	61	7.50	
WAW	Winkelhaakspruit @ Secunda 26°31'12.14"S 29° 4'17.79"E	0.81	50	0.34	180	4.70	2.00	61	25	69	8.10	
		1.10	68	0.22	120	8.90	4.10	52	39	69	7.30	
		2.80	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	
S-EVAN_W	Evander Sewage Works 26°29'32.97"S 29° 6'54.97"E	2.90	51	0.23	78	11.00	4.00	38	41	60	7.25	
		0.91	49	0.22	52	19.00	5.50	42	94	64	7.20	
		2.30	48	0.33	130	7.20	2.50	50	36	57	7.40	10410
		2.20	57	0.32	185	5.70	1.40	55	47	70	7.40	1590
S-SEC_LOC	Embalenhle Sewage Works 26°33'21.66"S 29° 4'16.66"E	<0.24	39	0.21	235	0.68	2.90	55	365	78	8.10	
		28.00	55	0.19	200	3.20	8.40	53	105	77	7.40	
		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	88	59	82	7.40	82780
S-SEC_SEW	Secunda Sewage Works* 26°32'21.04"S 29° 8'42.00"E	0.35	48	0.30	192	3.80	3.14	72	25	69	8.31	
		3.00	51	0.34	130	2.90	0.56	75	45	62	7.20	
		0.48	46	0.32	125	5.80	0.74	77	30	58	7.30	9
		15.00	46	0.49	160	2.20	1.40	87	26	68	7.30	6

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	2.90	0.23	11.00	4.00	41	60	7.25	
		0.91	0.22	19.00	5.50	94	64	7.20	
		2.30	0.33	7.20	2.50	36	57	7.40	10410
		2.20	0.32	5.70	1.40	47	70	7.40	1590
S-SEC_LOC	Embalenhle Sewage Works 26°33'21.66"S 29° 4'16.66"E	<0.24	0.21	0.68	2.90	365	78	8.10	
		28.00	0.19	3.20	8.40	105	77	7.40	
		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
S-SEC_SEW	Secunda Sewage Works 26°32'21.04"S 29° 8'42.00"E	0.35	0.30	3.80	3.14	25	69	8.31	
		3.00	0.34	2.90	0.56	45	62	7.20	
		0.48	0.32	5.80	0.74	30	58	7.30	9
		15.00	0.49	2.20	1.40	26	68	7.30	6

Key

WAB	Bossiespruit @ Secunda	0.59	-	1 Apr 10 - 30 Jun 10
		0.12	-	1 Jul 2010 - 30 Sep 2010
		2.1	-	1 Oct 10 - 31 Dec 10
		0.28	-	1 Jan 11 - 31 Mar 11

Water Quality Guidelines

Blue	-	Ideal
Green	-	Acceptable
Yellow	-	Tolerable
Red	-	Unacceptable
Grey	-	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
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					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	> 120

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			
Faecal coliforms	counts/100ml	<1000	>=1000

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

Variable	Limit
pH	5.5 - 9.5
Electrical	≤70 mS/m
Conductivity	≤25 mg/l
Suspended Solids	≤75 mg/l
Chemical Oxygen Demand	≤6 mg/l
Ammonia as N	≤15 mg/l
Nitrate / Nitrite as Nitrogen	≤10 mg/l
Orthophosphate as P	≤1 mg/l
Fluoride	≤1 mg/l
Faecal coliform units (E.C.U.)	0 per 100ml