



**RAND WATER**  
**Thembisile Water Quality Report**  
**12 Month**

22 August 2019 to 21 August 2020

Date generated: 14 September 2020

							Descriptive Statistics		
Determinands	Measurement Units	Risks	SANS 241:2015 standard limits (1)	No of results	Required compliances to SANS 241:2015 spec(%)	Achieved compliances to SANS 241:2015 spec(%)	Mean	Standard Deviation	Mean + 3 Std deviations
<b>Microbiological determinands</b>									
<i>E. coli</i>	(mpn per 100 mL)	Acute health	Non-detect	156	99.0%	100%	0	0.00	0
Total Coliforms	(mpn per 100 mL)	Operational	≤ 10	156	95.0%	100%	0	0.00	0
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	≤ 1000	156	95.0%	100%	2	11.94	37
<i>Cryptosporidium spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	196	99.0%	98.98%	0	0.10	0
<i>Giardia spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	196	99.0%	98.47%	0	0.12	0
Somatic Coliphages (2)	(count per 10 mL)	Operational	Non-detect	949	95.0%	99.89%	0	0.03	0
<b>Physical and Aesthetic determinands</b>									
Colour	(mg / L as Pt-Co)	Aesthetic	≤ 15	12	95.0%	100%	5.08	0.29	5.95
Conductivity	(mS / m)	Aesthetic	≤ 170	156	95.0%	100%	22.04	5.24	37.75
Total Dissolved Solids	(mg / L)	Aesthetic	≤ 1200	12	95.0%	100%	173.33	89.35	441.38
Turbidity	(NTU)	Operational	≤ 1	156	95.0%	100%	0.29	0.05	0.45
Turbidity	(NTU)	Aesthetic	≤ 5	156	95.0%	100%	0.29	0.05	0.45
pH	(pH units)	Operational	≥ 5 to ≤ 9.7	155	95.0%	100%	7.96	0.15	8.41
<b>Chemical Properties: Macro determinands</b>									
Ammonia	(mg / L as N)	Aesthetic	≤ 1.5	157	95.0%	100%	0.26	0.14	0.67
Chloride	(mg / L as Cl)	Aesthetic	≤ 300	12	95.0%	100%	12.47	2.11	18.80
Free chlorine	(mg / L as Cl <sub>2</sub> )	Chronic health	≤ 5	156	97.0%	100%	0.10	0.08	0.35
Monochloramine	(mg / L as Cl <sub>2</sub> )	Chronic health	≤ 4.1	156	97.0%	100%	1.08	0.32	2.05
Fluoride	(mg / L as F)	Chronic health	≤ 1.5	12	97.0%	100%	0.31	0.09	0.60
Nitrate	(mg / L as N)	Acute health	≤ 11	155	99.0%	100%	0.58	0.10	0.87
Nitrite	(mg / L as N)	Acute health	≤ 0.9	156	99.0%	100%	0.07	0.06	0.24
Combined nitrate plus nitrite (3)	(mg / L as N)	Acute health	≤ 1	156	99.0%	100%	0.18	0.18	0.74
Residual disinfectant (4)	(mg / L as Cl <sub>2</sub> )	Operational	≥ 0.1	156	95.0%	100%	1.18	0.31	2.10
Sodium	(mg / L as Na)	Aesthetic	≤ 200	24	95.0%	100%	10.15	1.49	14.61
Sulphate	(mg / L as SO <sub>4</sub> )	Aesthetic	≤ 250	13	95.0%	100%	18.46	4.96	33.34
Sulphate	(mg / L as SO <sub>4</sub> )	Acute health	≤ 500	13	99.0%	100%	18.46	4.96	33.34
Zinc	(mg / L as Zn)	Aesthetic	≤ 5	24	95.0%	100%	0.02	0.00	0.02
<b>Chemical Properties: Micro determinands</b>									
Aluminium	(µg / L as Al)	Operational	≤ 300	24	95.0%	100%	34.50	14.57	78.22
Antimony	(µg / L as Sb)	Chronic health	≤ 20	11	97.0%	100%	0.60	0.00	0.60
Arsenic	(µg / L as As)	Chronic health	≤ 10	16	97.0%	100%	4.47	3.66	15.44
Barium	(µg / L as Ba)	Chronic health	≤ 700	24	97.0%	100%	44.79	4.93	59.59
Boron	(µg / L as B)	Chronic health	≤ 2400	24	97.0%	100%	8.81	2.71	16.93
Cadmium	(µg / L as Cd)	Chronic health	≤ 3	16	97.0%	100%	1.25	0.26	2.02
Chromium (Total)	(µg / L as Cr)	Chronic health	≤ 50	24	97.0%	100%	5.00	0.00	5.00
Copper	(µg / L as Cu)	Chronic health	≤ 2000	24	97.0%	100%	8.02	0.10	8.33
Cyanide (Recoverable)	(µg / L as CN)	Acute health	≤ 200	12	99.0%	100%	5.00	0.00	5.00
Iron	(µg / L as Fe)	Chronic health	≤ 2000	24	97.0%	100%	18.03	16.18	66.58
Iron	(µg / L as Fe)	Aesthetic	≤ 300	24	95.0%	100%	18.03	16.18	66.58
Lead	(µg / L as Pb)	Chronic health	≤ 10	16	97.0%	100%	5.12	3.01	14.15
Manganese	(µg / L as Mn)	Chronic health	≤ 400	24	97.0%	100%	3.36	1.08	6.60
Manganese	(µg / L as Mn)	Aesthetic	≤ 100	24	95.0%	100%	3.36	1.08	6.60
Mercury	(µg / L as Hg)	Chronic health	≤ 6	15	97.0%	100%	1.17	0.36	2.26
Nickel	(µg / L as Ni)	Chronic health	≤ 70	24	97.0%	100%	5.00	0.00	5.00
Selenium	(µg / L as Se)	Chronic health	≤ 40	16	97.0%	100%	6.00	2.07	12.20
Uranium	(µg / L as U)	Chronic health	≤ 30	11	97.0%	100%	0.50	0.00	0.50
<b>Organic determinands</b>									
Total Organic Carbon	(mg / L)	Chronic health	≤ 10	12	97.0%	100%	3.83	0.52	5.40
Phenols as C <sub>6</sub> H <sub>5</sub> OH	(µg / L)	Aesthetic	≤ 10	12	95.0%	100%	3.00	0.00	3.00
Chloroform - CHCl <sub>3</sub>	(µg / L)	Chronic health	≤ 300	12	97.0%	100%	35.83	9.36	63.91
Bromoform - CHBr <sub>3</sub>	(µg / L)	Chronic health	≤ 100	12	97.0%	100%	10.00	0.00	10.00
Dibromochloromethane - CHBr <sub>2</sub> Cl	(µg / L)	Chronic health	≤ 100	12	97.0%	100%	10.00	0.00	10.00
Bromodichloromethane - CHBrCl <sub>2</sub>	(µg / L)	Chronic health	≤ 60	12	97.0%	100%	15.33	2.53	22.94
Combined trihalomethanes (5)	(µg / L)	Chronic health	≤ 1	12	97.0%	100%	0.40	0.07	0.62
Total Microcystin (2)	(µg / L)	Chronic health	≤ 1	195	97.0%	100%	0.31	0.00	0.31
<b>For monitoring/reporting purposes only</b>									
Calcium (6)	(mg / L as Ca)	Aesthetic	≤ 150	24	not applicable	100%	17.79	1.61	22.64
Hardness (7)	(mg / L as CaCO <sub>3</sub> )	Operational	≥ 20 to ≤ 200	24	not applicable	100%	69.71	6.19	88.28
Magnesium (6)	(mg / L as Mg)	Aesthetic	≤ 70	24	not applicable	100%	7.30	0.97	10.22
Potassium (6)	(mg / L as K)	Aesthetic	≤ 50	24	not applicable	100%	3.26	0.46	4.65
<b>Rand Water Risk Determinands (RWRD) (6)</b>									
Odour	TON	RWRD	≤ 2	46	not applicable	100%	1.00	0.00	1.00
Taste	FTN	RWRD	≤ 2	46	not applicable	100%	1.00	0.00	1.00

Water quality risk indices

Risks	Required compliances to SANS 241: 2015 standard	Overall Compliances - SANS 241: 2015 standard
Acute health microbiological	99.0%	99.09%
Acute health chemical	99.0%	100%
Chronic health	97.0%	100%
Aesthetic	95.0%	100%
Operational	95.0%	99.94%

- Notes  
(1) Specification\_SANS 241 date of effect : 1 July 2016  
(2) Measured at water treatment works exit points  
(3) (NO<sub>2</sub>/0.9 + NO<sub>3</sub>/11)  
(4) Residual disinfectant : Results from the chloraminated system = Sum of Free and Monochloramine  
(5) (CHCl<sub>3</sub>/300 + CHBr<sub>3</sub>/100 + CHBr<sub>2</sub>Cl/100 + CHBrCl<sub>2</sub>/60)  
(6) Customer request: Results not included in the risk indices compliance calculations and limits based on SANS 241:2006  
(7) Customer request: Results not included in the risk indices compliance calculations and limits based on RW Internal Spec