

**Thembe Municipality Water Quality Report - 12 Month**

24 October 2016 to 23 October 2017

Date generated: 02 November 2017

Determinand	Measurement units	Risk	Required compliance to SANS 241: 2015 standard (%)	SANS 241: 2015 standard limits (1)	No of results	Achieved Compliance to SANS 241: 2015 Spec(%)	Descriptive statistics		
							Mean	Standard Deviation	Mean + 3 standard deviations
<b>Microbiological determinands</b>									
<i>E. coli</i>	(mpn per 100 mL)	Acute health	99.0%	0	155	100.0%	0	0.00	0
Total Coliforms	(mpn per 100 mL)	Operational	95.0%	10	155	100.0%	0	0.08	0
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	95.0%	≤1000	146	100.0%	0	0.79	4
<i>Cryptosporidium spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	181	100.0%	0	0.00	0
<i>Giardia spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	181	100.0%	0	0.00	0
Somatic Coliphages (5)	(count per 10 mL)	Operational	95.0%	0	887	100.0%	0	0.00	0
<b>Physical and Aesthetic determinands</b>									
Colour	(mg / L as Pt-Co)	Aesthetic	95.0%	≤15	12	100.0%	5.00	0.00	5.00
Conductivity	(mS / m)	Aesthetic	95.0%	≤170	155	100.0%	18.84	2.89	28.22
Total Dissolved Solids	(mg / L)	Aesthetic	95.0%	≤1200	155	100.0%	133.44	16.83	188.13
Turbidity	(NTU)	Operational	95.0%	≤1	155	100.0%	0.28	0.10	0.46
Turbidity	(NTU)	Aesthetic	95.0%	≤5	155	100.0%	0.28	0.10	0.46
pH	(pH units)	Operational	95.0%	≥ 5 to ≤ 9.7	155	100.0%	7.94	0.16	8.38
<b>Chemical Properties</b>									
<b>Macro determinands</b>									
Ammonia	(mg / L as N)	Aesthetic	95.0%	≤1.5	155	100.0%	0.28	0.08	0.44
Chloride	(mg / L as Cl)	Aesthetic	95.0%	≤300	12	100.0%	9.47	1.54	12.78
Free chlorine (2)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤5	155	100.0%	0.09	0.17	1.02
Monochloramine (3)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤4.1	155	100.0%	1.16	0.32	1.66
Fluoride	(mg / L as F)	Chronic health	97.0%	≤1.5	12	100.0%	0.21	0.08	0.41
Nitrate	(mg / L as N)	Acute health	99.0%	≤11	155	100.0%	0.53	0.15	0.88
Nitrite	(mg / L as N)	Acute health	99.0%	≤0.9	155	100.0%	0.05	0.04	0.19
Combined nitrate plus nitrite (7)	(mg / L as N)	Acute health	99.0%	≤1	155	100.0%	0.11	0.05	0.28
Residual disinfectant (4)	(mg / L)	Operational	95.0%	≥0.1 Sum of Free and Monochloramine	155	100.0%	1.25	0.27	1.75
Sodium	(mg / L as Na)	Aesthetic	95.0%	≤200	12	100.0%	7.56	1.05	8.99
Sulphate	(mg / L as SO <sub>4</sub> )	Aesthetic	95.0%	≤250	12	100.0%	11.83	1.93	14.00
Sulphate	(mg / L as SO <sub>4</sub> )	Acute health	99.0%	≤500	12	100.0%	11.83	1.93	14.00
Zinc	(mg / L as Zn)	Aesthetic	95.0%	≤5	12	100.0%	0.02	0.01	0.03
<b>Micro determinands</b>									
Aluminium	(µg / L as Al)	Operational	95.0%	≤300	12	100.0%	36.58	12.12	58.34
Antimony	(µg / L as Sb)	Chronic health	97.0%	≤20	12	100.0%	0.50	0.00	0.50
Arsenic	(µg / L as As)	Chronic health	97.0%	≤10	12	100.0%	0.87	0.55	2.18
Barium	(µg / L as Ba)	Chronic health	97.0%	≤700	11	100.0%	31.64	3.47	37.60
Boron	(µg / L as B)	Chronic health	97.0%	≤2400	12	100.0%	34.08	30.23	118.89
Cadmium	(µg / L as Cd)	Chronic health	97.0%	≤3	12	100.0%	2.50	0.00	2.50
Chromium (Total)	(µg / L as Cr)	Chronic health	97.0%	≤50	12	100.0%	15.00	0.00	15.00
Copper	(µg / L as Cu)	Chronic health	97.0%	≤2000	12	100.0%	17.92	27.42	94.55
Cyanide (Recoverable)	(µg / L as CN)	Acute health	99.0%	≤200	12	100.0%	5.00	0.00	5.00
Iron	(µg / L as Fe)	Chronic health	97.0%	≤2000	12	100.0%	15.78	13.02	49.81
Iron	(µg / L as Fe)	Aesthetic	95.0%	≤300	12	100.0%	15.78	13.02	49.81
Lead	(µg / L as Pb)	Chronic health	97.0%	≤10	12	100.0%	0.22	0.04	0.31
Manganese	(µg / L as Mn)	Chronic health	97.0%	≤400	12	100.0%	10.42	1.44	14.45
Manganese	(µg / L as Mn)	Aesthetic	95.0%	≤100	12	100.0%	10.42	1.44	14.45
Mercury	(µg / L as Hg)	Chronic health	97.0%	≤6	12	100.0%	0.80	0.00	0.80
Nickel	(µg / L as Ni)	Chronic health	97.0%	≤70	12	100.0%	10.00	0.00	10.00
Selenium	(µg / L as Se)	Chronic health	97.0%	≤40	12	100.0%	0.64	0.22	1.09
Uranium	(µg / L as U)	Chronic health	97.0%	≤30	12	100.0%	0.26	0.19	0.79
<b>Organic determinands</b>									
Total Organic Carbon	(mg / L)	Chronic health	97.0%	≤10	12	100.0%	3.58	0.92	5.27
Phenols as C <sub>6</sub> H <sub>5</sub> OH	(µg / L)	Aesthetic	95.0%	≤10	12	100.0%	5.00	0.00	5.00
Chloroform - CHCl <sub>3</sub>	(µg / L)	Chronic health	97.0%	≤300	12	100.0%	45.08	9.16	60.12
Bromoform - CHBr <sub>3</sub>	(µg / L)	Chronic health	97.0%	≤100	12	100.0%	0.50	0.00	0.50
Dibromochloromethane - CHBr <sub>2</sub> Cl	(µg / L)	Chronic health	97.0%	≤100	12	100.0%	1.66	1.11	3.53
Bromodichloromethane - CHBrCl <sub>2</sub>	(µg / L)	Chronic health	97.0%	≤60	12	100.0%	13.17	1.59	15.78
Combined trihalomethanes (8)	(µg / L)	Chronic health	97.0%	≤1	12	100.0%	0.39	0.05	0.47
Total Microcystin (5)	(µg / L)	Chronic health	97.0%	≤1	181	100.0%	0.35	0.02	0.36
<b>For monitoring/reporting purposes only (6)</b>									
Calcium	(mg / L as Ca)	Aesthetic	not applicable	≤150	12	100.0%	17.50	2.58	22.67
Hardness	(mg / L as CaCO <sub>3</sub> )	Operational	not applicable	≥ 20 to ≤ 200	12	100.0%	62.98	7.04	76.80
Magnesium	(mg / L as Mg)	Aesthetic	not applicable	≤70	12	100.0%	5.56	0.50	6.53
Potassium	(mg / L as K)	Aesthetic	not applicable	≤50	12	100.0%	2.98	0.88	4.16
<b>Rand Water Risk Determinands (RWRD)</b>									
Odour	TON	RWRD	95.0%	≤2	48	100.0%	1.00	0.00	1.00
Taste	FTN	RWRD	95.0%	≤2	48	100.0%	1.00	0.00	1.00

Risk	Required compliance to SANS 241: 2015 standard	Overall Compliance-SANS 241
Acute health microbiological	99.00%	100.00%
Acute health chemical	99.00%	100.00%
Chronic health	97.00%	100.00%
Aesthetic	95.00%	100.00%
Operational	95.00%	100.00%

- Notes:**
- (1) Specification date of effect : 1 July 2016
  - (2) Free chlorine : Results from chloraminated system
  - (3) Monochloramine : Results are from the chloraminated systems
  - (4) Residual disinfectant : Results from chloraminated system
  - (5) Measured at water treatment works exit points
  - (6) Customer request: Results not included in the risk indices compliance calculations
  - (7) (NO<sub>2</sub>/0.9 + NO<sub>3</sub>/11)
  - (8) (CHCl<sub>3</sub>/300 + CHBr<sub>3</sub>/100 + CHBr<sub>2</sub>Cl/100 + CHBrCl<sub>2</sub>/60)