

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

23 January 2017 to 22 January 2018 Date generated: 01 February 2018

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	155	100.0%	0	0.82	4
<i>Cryptosporidium spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	179	100.0%	0	0.00	0
<i>Giardia spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	179	100.0%	0	0.00	0
Somatic Coliphages (5)	(count per 10 mL)	Operational	95.0%	0	878	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%	19.27	2.66	28.22
Total Dissolved Solids	(mg / L)	Aesthetic	95.0%	≤1200	12	100.0%	135.00	7.69	149.45
Turbidity	(NTU)	Operational	95.0%	≤1	155	100.0%	0.28	0.10	0.47
Turbidity	(NTU)	Aesthetic	95.0%	≤5	155	100.0%	0.28	0.10	0.47
pH	(pH units)	Operational	95.0%	≥ 5 to ≤ 9.7	155	100.0%	7.88	0.14	8.19
<b>Chemical Properties</b>									
<b>Macro determinands</b>									
Ammonia	(mg / L as N)	Aesthetic	95.0%	≤1.5	155	100.0%	0.25	0.08	0.40
Chloride	(mg / L as Cl)	Aesthetic	95.0%	≤300	12	100.0%	10.12	1.14	12.78
Free chlorine (2)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤5	155	100.0%	0.09	0.15	0.92
Monochloramine (3)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤4.1	155	100.0%	1.02	0.30	1.52
Fluoride	(mg / L as F)	Chronic health	97.0%	≤1.5	12	100.0%	0.20	0.07	0.40
Nitrate	(mg / L as N)	Acute health	99.0%	≤11	155	100.0%	0.53	0.12	0.88
Nitrite	(mg / L as N)	Acute health	99.0%	≤0.9	155	100.0%	0.09	0.09	0.46
Combined nitrate plus nitrite (7)	(mg / L as N)	Acute health	99.0%	≤1	155	100.0%	0.15	0.10	0.55
Residual disinfectant (4)	(mg / L)	Operational	95.0%	≥0.1 Sum of Free and Monochloramine	155	100.0%	1.11	0.26	1.56
Sodium	(mg / L as Na)	Aesthetic	95.0%	≤200	15	100.0%	8.07	0.74	9.26
Sulphate	(mg / L as SO <sub>4</sub> )	Aesthetic	95.0%	≤250	12	100.0%	12.75	0.97	14.00
Sulphate	(mg / L as SO <sub>4</sub> )	Acute health	99.0%	≤500	12	100.0%	12.75	0.97	14.00
Zinc	(mg / L as Zn)	Aesthetic	95.0%	≤5	15	100.0%	0.02	0.00	0.03
<b>Micro determinands</b>									
Aluminium	(µg / L as Al)	Operational	95.0%	≤300	15	100.0%	37.27	11.20	58.16
Antimony	(µg / L as Sb)	Chronic health	97.0%	≤20	11	100.0%	0.50	0.00	0.50
Arsenic	(µg / L as As)	Chronic health	97.0%	≤10	12	100.0%	0.97	0.53	2.18
Barium	(µg / L as Ba)	Chronic health	97.0%	≤700	14	100.0%	32.71	3.93	38.87
Boron	(µg / L as B)	Chronic health	97.0%	≤2400	15	100.0%	32.27	27.06	115.86
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	15	100.0%	15.00	0.00	15.00
Copper	(µg / L as Cu)	Chronic health	97.0%	≤2000	15	100.0%	16.33	24.53	91.70
Cyanide (Recoverable)	(µg / L as CN)	Acute health	99.0%	≤200	11	100.0%	5.15	0.48	6.44
Iron	(µg / L as Fe)	Chronic health	97.0%	≤2000	15	100.0%	13.38	12.24	48.52
Iron	(µg / L as Fe)	Aesthetic	95.0%	≤300	15	100.0%	13.38	12.24	48.52
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	15	100.0%	10.33	1.29	14.30
Manganese	(µg / L as Mn)	Aesthetic	95.0%	≤100	15	100.0%	10.33	1.29	14.30
Mercury	(µg / L as Hg)	Chronic health	97.0%	≤6	11	100.0%	0.80	0.00	0.80
Nickel	(µg / L as Ni)	Chronic health	97.0%	≤70	15	100.0%	10.00	0.00	10.00
Selenium	(µg / L as Se)	Chronic health	97.0%	≤40	12	100.0%	0.59	0.17	0.97
Uranium	(µg / L as U)	Chronic health	97.0%	≤30	11	100.0%	0.26	0.20	0.80
<b>Organic determinands</b>									
Total Organic Carbon	(mg / L)	Chronic health	97.0%	≤10	12	100.0%	3.84	0.69	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%	48.75	6.30	60.34
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%	1.32	0.84	2.97
Bromodichloromethane - CHBrCl <sub>2</sub>	(µg / L)	Chronic health	97.0%	≤60	12	100.0%	13.83	1.19	16.00
Combined trihalomethanes (8)	(µg / L)	Chronic health	97.0%	≤1	12	100.0%	0.41	0.04	0.47
Total Microcystin (5)	(µg / L)	Chronic health	97.0%	≤1	179	100.0%	0.33	0.02	0.36
<b>For monitoring/reporting purposes only (6)</b>									
Calcium	(mg / L as Ca)	Aesthetic	not applicable	≤150	15	100.0%	17.53	3.31	22.86
Hardness	(mg / L as CaCO <sub>3</sub> )	Operational	not applicable	≥ 20 to ≤ 200	15	100.0%	63.73	9.27	77.72
Magnesium	(mg / L as Mg)	Aesthetic	not applicable	≤70	15	100.0%	5.75	0.48	6.69
Potassium	(mg / L as K)	Aesthetic	not applicable	≤50	15	100.0%	3.61	0.51	4.29
<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)