

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

21 July 2017 to 20 July 2018 Date generated: 03 August 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	356	99.2%	1	15.04	0
Total Coliforms	(mpn per 100 mL)	Operational	95.0%	10	356	98.9%	1	15.25	12
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	95.0%	≤1000	356	100.0%	3	10.58	63
<i>Cryptosporidium spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	185	100.0%	0	0.00	0
<i>Giardia spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	185	100.0%	0	0.00	0
Somatic Coliphages (5)	(count per 10 mL)	Operational	95.0%	0	800	100.0%	0	0.00	0
<b>Physical and Aesthetic determinands</b>									
Colour	(mg / L as Pt-Co)	Aesthetic	95.0%	≤15	23	100.0%	5.26	0.69	7.56
Conductivity	(mS / m)	Aesthetic	95.0%	≤170	356	100.0%	19.71	1.79	23.45
Total Dissolved Solids	(mg / L)	Aesthetic	95.0%	≤1200	23	100.0%	142.39	10.21	165.00
Turbidity	(NTU)	Operational	95.0%	≤1	353	99.7%	0.33	0.13	0.49
Turbidity	(NTU)	Aesthetic	95.0%	≤5	353	100.0%	0.33	0.13	0.49
pH	(pH units)	Operational	95.0%	≥ 5 to ≤ 9.7	356	100.0%	7.87	0.11	8.13
<b>Chemical Properties</b>									
<b>Macro determinands</b>									
Ammonia	(mg / L as N)	Aesthetic	95.0%	≤1.5	356	100.0%	0.25	0.11	0.42
Chloride	(mg / L as Cl)	Aesthetic	95.0%	≤300	23	100.0%	11.42	1.02	13.78
Free chlorine (2)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤5	353	100.0%	0.13	0.23	1.30
Monochloramine (3)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤4.1	349	100.0%	0.91	0.37	1.56
Fluoride	(mg / L as F)	Chronic health	97.0%	≤1.5	23	100.0%	0.19	0.01	0.23
Nitrate	(mg / L as N)	Acute health	99.0%	≤11	354	100.0%	0.44	0.02	0.50
Nitrite	(mg / L as N)	Acute health	99.0%	≤0.9	356	99.7%	0.08	0.11	0.49
Combined nitrate plus nitrite (7)	(mg / L as N)	Acute health	99.0%	≤1	354	99.7%	0.13	0.13	0.59
Residual disinfectant (4)	(mg / L)	Operational	95.0%	≥0.1 Sum of Free and Monochloramine	353	99.7%	1.03	0.36	1.69
Sodium	(mg / L as Na)	Aesthetic	95.0%	≤200	23	100.0%	8.87	1.65	12.56
Sulphate	(mg / L as SO <sub>4</sub> )	Aesthetic	95.0%	≤250	23	100.0%	13.96	1.15	16.56
Sulphate	(mg / L as SO <sub>4</sub> )	Acute health	99.0%	≤500	23	100.0%	13.96	1.15	16.56
Zinc	(mg / L as Zn)	Aesthetic	95.0%	≤5	23	100.0%	0.02	0.01	0.06
<b>Micro determinands</b>									
Aluminium	(µg / L as Al)	Operational	95.0%	≤300	23	100.0%	28.43	10.52	65.52
Antimony	(µg / L as Sb)	Chronic health	97.0%	≤20	23	100.0%	0.51	0.03	0.60
Arsenic	(µg / L as As)	Chronic health	97.0%	≤10	20	100.0%	1.00	1.05	3.67
Barium	(µg / L as Ba)	Chronic health	97.0%	≤700	23	100.0%	36.39	10.67	54.90
Boron	(µg / L as B)	Chronic health	97.0%	≤2400	23	100.0%	25.00	0.00	25.00
Cadmium	(µg / L as Cd)	Chronic health	97.0%	≤3	23	100.0%	2.50	0.00	2.50
Chromium (Total)	(µg / L as Cr)	Chronic health	97.0%	≤50	23	100.0%	15.00	0.00	15.00
Copper	(µg / L as Cu)	Chronic health	97.0%	≤2000	23	100.0%	13.48	8.83	42.46
Cyanide (Recoverable)	(µg / L as CN)	Acute health	99.0%	≤200	23	100.0%	8.34	6.29	20.00
Iron	(µg / L as Fe)	Chronic health	97.0%	≤2000	23	100.0%	14.50	7.92	30.78
Iron	(µg / L as Fe)	Aesthetic	95.0%	≤300	23	100.0%	14.50	7.92	30.78
Lead	(µg / L as Pb)	Chronic health	97.0%	≤10	23	100.0%	0.41	0.54	2.30
Manganese	(µg / L as Mn)	Chronic health	97.0%	≤400	23	100.0%	10.00	0.00	10.00
Manganese	(µg / L as Mn)	Aesthetic	95.0%	≤100	23	100.0%	10.00	0.00	10.00
Mercury	(µg / L as Hg)	Chronic health	97.0%	≤6	23	100.0%	0.80	0.00	0.80
Nickel	(µg / L as Ni)	Chronic health	97.0%	≤70	23	100.0%	10.00	0.00	10.00
Selenium	(µg / L as Se)	Chronic health	97.0%	≤40	20	100.0%	1.02	1.18	4.20
Uranium	(µg / L as U)	Chronic health	97.0%	≤30	23	100.0%	0.24	0.08	0.49
<b>Organic determinands</b>									
Total Organic Carbon	(mg / L)	Chronic health	97.0%	≤10	23	100.0%	3.77	0.24	4.20
Phenols as C <sub>6</sub> H <sub>5</sub> OH	(µg / L)	Aesthetic	95.0%	≤10	23	100.0%	5.00	0.00	5.00
Chloroform - CHCl <sub>3</sub>	(µg / L)	Chronic health	97.0%	≤300	27	100.0%	38.63	8.93	62.96
Bromoform - CHBr <sub>3</sub>	(µg / L)	Chronic health	97.0%	≤100	27	100.0%	0.50	0.00	0.50
Dibromochloromethane - CHBr <sub>2</sub> Cl	(µg / L)	Chronic health	97.0%	≤100	27	100.0%	1.45	0.73	2.84
Bromodichloromethane - CHBrCl <sub>2</sub>	(µg / L)	Chronic health	97.0%	≤60	27	100.0%	12.63	2.99	19.00
Combined trihalomethanes (8)	(µg / L)	Chronic health	97.0%	≤1	27	100.0%	0.36	0.08	0.56
Total Microcystin (5)	(µg / L)	Chronic health	97.0%	≤1	189	100.0%	0.31	0.00	0.31
<b>For monitoring/reporting purposes only (6)</b>									
Calcium	(mg / L as Ca)	Aesthetic	not applicable	≤150	23	100.0%	17.74	3.65	23.78
Hardness	(mg / L as CaCO <sub>3</sub> )	Operational	not applicable	≥ 20 to ≤ 200	23	100.0%	66.43	14.72	90.34
Magnesium	(mg / L as Mg)	Aesthetic	not applicable	≤70	23	100.0%	6.40	1.68	9.03
Potassium	(mg / L as K)	Aesthetic	not applicable	≤50	23	100.0%	3.63	0.34	4.28
<b>Rand Water Risk Determinands (RWRD)</b>									
Odour	TON	RWRD	95.0%	≤2	137	100.0%	1.00	0.00	1.00
Taste	FTN	RWRD	95.0%	≤2	137	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%	99.59%
Acute health chemical	99.00%	99.82%
Chronic health	97.00%	100.00%
Aesthetic	95.00%	100.00%
Operational	95.00%	99.77%

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