

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

23 January 2018 to 22 January 2019 Date generated: 11 February 2019

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	358	98.6%	1	15.01	46
Total Coliforms	(mpn per 100 mL)	Operational	95.0%	10	358	98.3%	2	21.29	66
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	95.0%	≤1000	358	100.0%	2	7.25	23
<i>Cryptosporidium spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	191	100.0%	0	0.00	0
<i>Giardia spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	191	100.0%	0	0.00	0
Somatic Coliphages (5)	(count per 10 mL)	Operational	95.0%	0	841	100.0%	0	0.00	0
<b>Physical and Aesthetic determinands</b>									
Colour	(mg / L as Pt-Co)	Aesthetic	95.0%	≤15	24	100.0%	5.33	0.76	7.62
Conductivity	(mS / m)	Aesthetic	95.0%	≤170	358	100.0%	20.77	1.63	25.67
Total Dissolved Solids	(mg / L)	Aesthetic	95.0%	≤1200	24	100.0%	147.71	8.21	172.33
Turbidity	(NTU)	Operational	95.0%	≤1	356	99.7%	0.32	0.11	0.64
Turbidity	(NTU)	Aesthetic	95.0%	≤5	356	100.0%	0.32	0.11	0.64
pH	(pH units)	Operational	95.0%	≥ 5 to ≤ 9.7	358	100.0%	7.96	0.13	8.35
<b>Chemical Properties</b>									
<b>Macro determinands</b>									
Ammonia	(mg / L as N)	Aesthetic	95.0%	≤1.5	358	100.0%	0.26	0.12	0.63
Chloride	(mg / L as Cl)	Aesthetic	95.0%	≤300	26	100.0%	11.50	0.81	13.94
Free chlorine (2)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤5	358	100.0%	0.09	0.15	0.54
Monochloramine (3)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤4.1	358	100.0%	1.01	0.38	2.14
Fluoride	(mg / L as F)	Chronic health	97.0%	≤1.5	26	100.0%	0.20	0.03	0.31
Nitrate	(mg / L as N)	Acute health	99.0%	≤11	358	100.0%	0.46	0.03	0.56
Nitrite	(mg / L as N)	Acute health	99.0%	≤0.9	358	100.0%	0.06	0.05	0.21
Combined nitrate plus nitrite (7)	(mg / L as N)	Acute health	99.0%	≤1	358	100.0%	0.11	0.05	0.27
Residual disinfectant (4)	(mg / L)	Operational	95.0%	≥0.1 Sum of Free and Monochloramine	358	99.7%	1.10	0.38	2.24
Sodium	(mg / L as Na)	Aesthetic	95.0%	≤200	24	100.0%	9.63	1.16	13.12
Sulphate	(mg / L as SO <sub>4</sub> )	Aesthetic	95.0%	≤250	26	100.0%	14.46	0.86	17.04
Sulphate	(mg / L as SO <sub>4</sub> )	Acute health	99.0%	≤500	26	100.0%	14.46	0.86	17.04
Zinc	(mg / L as Zn)	Aesthetic	95.0%	≤5	24	100.0%	0.06	0.20	0.66
<b>Micro determinands</b>									
Aluminium	(µg / L as Al)	Operational	95.0%	≤300	24	100.0%	28.50	10.83	61.00
Antimony	(µg / L as Sb)	Chronic health	97.0%	≤20	210	100.0%	0.58	0.40	1.78
Arsenic	(µg / L as As)	Chronic health	97.0%	≤10	21	100.0%	2.77	3.15	12.23
Barium	(µg / L as Ba)	Chronic health	97.0%	≤700	24	100.0%	43.17	6.36	62.24
Boron	(µg / L as B)	Chronic health	97.0%	≤2400	24	100.0%	16.73	9.66	45.69
Cadmium	(µg / L as Cd)	Chronic health	97.0%	≤3	24	100.0%	1.92	0.67	3.93
Chromium (Total)	(µg / L as Cr)	Chronic health	97.0%	≤50	24	100.0%	10.42	5.09	25.69
Copper	(µg / L as Cu)	Chronic health	97.0%	≤2000	24	100.0%	11.60	7.23	33.28
Cyanide (Recoverable)	(µg / L as CN)	Acute health	99.0%	≤200	24	100.0%	15.67	6.89	36.34
Iron	(µg / L as Fe)	Chronic health	97.0%	≤2000	24	100.0%	14.92	5.88	32.56
Iron	(µg / L as Fe)	Aesthetic	95.0%	≤300	24	100.0%	14.92	5.88	32.56
Lead	(µg / L as Pb)	Chronic health	97.0%	≤10	24	100.0%	2.54	3.01	11.57
Manganese	(µg / L as Mn)	Chronic health	97.0%	≤400	24	100.0%	6.79	3.56	17.48
Manganese	(µg / L as Mn)	Aesthetic	95.0%	≤100	24	100.0%	6.79	3.56	17.48
Mercury	(µg / L as Hg)	Chronic health	97.0%	≤6	210	100.0%	0.79	0.08	1.03
Nickel	(µg / L as Ni)	Chronic health	97.0%	≤70	24	100.0%	7.71	2.54	15.34
Selenium	(µg / L as Se)	Chronic health	97.0%	≤40	21	100.0%	3.43	3.00	12.41
Uranium	(µg / L as U)	Chronic health	97.0%	≤30	210	100.0%	0.39	0.32	1.34
<b>Organic determinands</b>									
Total Organic Carbon	(mg / L)	Chronic health	97.0%	≤10	24	100.0%	3.95	0.48	5.38
Phenols as C <sub>6</sub> H <sub>5</sub> OH	(µg / L)	Aesthetic	95.0%	≤10	24	100.0%	4.08	1.02	7.14
Chloroform - CHCl <sub>3</sub>	(µg / L)	Chronic health	97.0%	≤300	27	100.0%	34.19	6.77	54.48
Bromoform - CHBr <sub>3</sub>	(µg / L)	Chronic health	97.0%	≤100	27	100.0%	4.72	4.81	19.15
Dibromochloromethane - CHBr <sub>2</sub> Cl	(µg / L)	Chronic health	97.0%	≤100	27	100.0%	5.44	4.19	18.01
Bromodichloromethane - CHBrCl <sub>2</sub>	(µg / L)	Chronic health	97.0%	≤60	27	100.0%	12.52	2.43	19.81
Combined trihalomethanes (8)	(µg / L)	Chronic health	97.0%	≤1	27	100.0%	0.42	0.09	0.68
Total Microcystin (5)	(µg / L)	Chronic health	97.0%	≤1	195	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	24	100.0%	18.33	3.32	28.28976014
Hardness	(mg / L as CaCO <sub>3</sub> )	Operational	not applicable	≥ 20 to ≤ 200	24	100.0%	69.75	12.41	106.97
Magnesium	(mg / L as Mg)	Aesthetic	not applicable	≤70	24	100.0%	6.93	1.24	10.66
Potassium	(mg / L as K)	Aesthetic	not applicable	≤50	24	100.0%	3.42	0.47	4.83
<b>Rand Water Risk Determinands (RWRD)</b>									
Odour	TON	RWRD	95.0%	≤2	139	100.0%	1.00	0.00	1.00
Taste	FTN	RWRD	95.0%	≤2	139	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%	99.32%
Acute health chemical	99.00%	100.00%
Chronic health	97.00%	100.00%
Aesthetic	95.00%	100.00%
Operational	95.00%	99.70%

- 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)