

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

23 March 2017 to 22 March 2018 Date generated: 03 April 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	365	100.0%	0	0.00	0
Total Coliforms	(mpn per 100 mL)	Operational	95.0%	10	365	99.7%	0	0.98	1
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	95.0%	≤1000	365	100.0%	3	8.64	22
<i>Cryptosporidium spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	182	100.0%	0	0.00	0
<i>Giardia spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	182	100.0%	0	0.00	0
Somatic Coliphages (5)	(count per 10 mL)	Operational	95.0%	0	786	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%	5.09	0.29	6.00
Conductivity	(mS / m)	Aesthetic	95.0%	≤170	364	100.0%	19.08	1.43	22.00
Total Dissolved Solids	(mg / L)	Aesthetic	95.0%	≤1200	23	100.0%	136.30	5.88	148.90
Turbidity	(NTU)	Operational	95.0%	≤1	363	99.7%	0.31	0.13	0.49
Turbidity	(NTU)	Aesthetic	95.0%	≤5	363	100.0%	0.31	0.13	0.49
pH	(pH units)	Operational	95.0%	≥ 5 to ≤ 9.7	364	100.0%	7.85	0.12	8.14
<b>Chemical Properties</b>									
<b>Macro determinands</b>									
Ammonia	(mg / L as N)	Aesthetic	95.0%	≤1.5	364	100.0%	0.24	0.12	0.45
Chloride	(mg / L as Cl)	Aesthetic	95.0%	≤300	27	100.0%	10.70	1.16	12.74
Free chlorine (2)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤5	362	100.0%	0.14	0.23	1.30
Monochloramine (3)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤4.1	362	100.0%	0.85	0.40	1.59
Fluoride	(mg / L as F)	Chronic health	97.0%	≤1.5	27	100.0%	0.20	0.06	0.40
Nitrate	(mg / L as N)	Acute health	99.0%	≤11	360	100.0%	0.49	0.08	0.77
Nitrite	(mg / L as N)	Acute health	99.0%	≤0.9	364	99.7%	0.09	0.12	0.48
Combined nitrate plus nitrite (7)	(mg / L as N)	Acute health	99.0%	≤1	359	99.7%	0.15	0.13	0.58
Residual disinfectant (4)	(mg / L)	Operational	95.0%	≥0.1 Sum of Free and Monochloramine	362	99.7%	0.99	0.38	1.68
Sodium	(mg / L as Na)	Aesthetic	95.0%	≤200	23	100.0%	7.96	1.24	12.14
Sulphate	(mg / L as SO <sub>4</sub> )	Aesthetic	95.0%	≤250	27	100.0%	13.26	1.23	16.74
Sulphate	(mg / L as SO <sub>4</sub> )	Acute health	99.0%	≤500	27	100.0%	13.26	1.23	16.74
Zinc	(mg / L as Zn)	Aesthetic	95.0%	≤5	23	100.0%	0.02	0.00	0.02
<b>Micro determinands</b>									
Aluminium	(µg / L as Al)	Operational	95.0%	≤300	23	100.0%	29.00	10.67	65.52
Antimony	(µg / L as Sb)	Chronic health	97.0%	≤20	23	100.0%	0.50	0.00	0.50
Arsenic	(µg / L as As)	Chronic health	97.0%	≤10	23	100.0%	0.89	0.83	3.36
Barium	(µg / L as Ba)	Chronic health	97.0%	≤700	23	100.0%	29.83	6.86	51.38
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%	14.26	10.12	42.68
Cyanide (Recoverable)	(µg / L as CN)	Acute health	99.0%	≤200	23	100.0%	5.03	0.13	5.47
Iron	(µg / L as Fe)	Chronic health	97.0%	≤2000	23	100.0%	17.41	9.53	34.12
Iron	(µg / L as Fe)	Aesthetic	95.0%	≤300	23	100.0%	17.41	9.53	34.12
Lead	(µg / L as Pb)	Chronic health	97.0%	≤10	23	100.0%	0.21	0.02	0.26
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	23	100.0%	1.02	1.11	4.20
Uranium	(µg / L as U)	Chronic health	97.0%	≤30	23	100.0%	0.20	0.00	0.20
<b>Organic determinands</b>									
Total Organic Carbon	(mg / L)	Chronic health	97.0%	≤10	23	100.0%	4.04	1.04	7.50
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%	41.85	8.41	62.44
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%	1.01	0.47	2.07
Bromodichloromethane - CHBrCl <sub>2</sub>	(µg / L)	Chronic health	97.0%	≤60	27	100.0%	12.11	2.63	18.22
Combined trihalomethanes (8)	(µg / L)	Chronic health	97.0%	≤1	27	100.0%	0.36	0.07	0.53
Total Microcystin (5)	(µg / L)	Chronic health	97.0%	≤1	184	100.0%	0.32	0.02	0.36
<b>For monitoring/reporting purposes only (6)</b>									
Calcium	(mg / L as Ca)	Aesthetic	not applicable	≤150	23	100.0%	16.61	2.54	22.9
Hardness	(mg / L as CaCO <sub>3</sub> )	Operational	not applicable	≥ 20 to ≤ 200	23	100.0%	60.22	9.46	86.38
Magnesium	(mg / L as Mg)	Aesthetic	not applicable	≤70	23	100.0%	5.42	1.00	8.53
Potassium	(mg / L as K)	Aesthetic	not applicable	≤50	23	100.0%	3.59	0.34	4.28
<b>Rand Water Risk Determinands (RWRD)</b>									
Odour	TON	RWRD	95.0%	≤2	145	100.0%	1.00	0.00	1.00
Taste	FTN	RWRD	95.0%	≤2	145	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%	99.82%
Chronic health	97.00%	100.00%
Aesthetic	95.00%	100.00%
Operational	95.00%	99.89%

- 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)