



**RAND WATER**  
**Madibeng Water Quality Report**  
**1 Month**

23 December 2020 to 22 January 2021

Date generated: 08 February 2021

							Descriptive Statistics		
Determinands	Measurement Units	Risks	SANS 241:2015 standard limits (1)	No of results	Required compliances to SANS 241:2015 spec(%)	Achieved compliances to SANS 241:2015 spec(%)	Mean	Standard Deviation	Mean + 3 Std deviations
<b>Microbiological determinands</b>									
<i>E. coli</i>	(mpn per 100 mL)	Acute health	Non-detect	31	99.0%	100%	0	0.00	0
Total Coliforms	(mpn per 100 mL)	Operational	≤ 10	31	95.0%	100%	0	0.00	0
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	≤ 1000	31	95.0%	100%	1	1.51	5
<i>Cryptosporidium spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	25	99.0%	100%	0	0.00	0
<i>Giardia spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	25	99.0%	100%	0	0.00	0
Somatic Coliphages (2)	(count per 10 mL)	Operational	Non-detect	64	95.0%	100%	0	0.00	0
<b>Physical and Aesthetic determinands</b>									
Colour	(mg / L as Pt-Co)	Aesthetic	≤ 15	4	95.0%	100%	7.00	0.82	9.45
Conductivity	(mS / m)	Aesthetic	≤ 170	31	95.0%	100%	22.68	3.43	32.96
Total Dissolved Solids	(mg / L)	Aesthetic	≤ 1200	4	95.0%	100%	145.00	4.08	157.25
Turbidity	(NTU)	Operational	≤ 1	31	95.0%	100%	0.32	0.07	0.53
Turbidity	(NTU)	Aesthetic	≤ 5	31	95.0%	100%	0.32	0.07	0.53
pH	(pH units)	Operational	≥ 5 to ≤ 9.7	31	95.0%	100%	7.84	0.14	8.27
<b>Chemical Properties: Macro determinands</b>									
Ammonia	(mg / L as N)	Aesthetic	≤ 1.5	31	95.0%	100%	0.28	0.17	0.78
Chloride	(mg / L as Cl)	Aesthetic	≤ 300	4	95.0%	100%	13.50	1.29	17.37
Free chlorine	(mg / L as Cl <sub>2</sub> )	Chronic health	≤ 5	31	97.0%	100%	0.07	0.02	0.14
Monochloramine	(mg / L as Cl <sub>2</sub> )	Chronic health	≤ 4.1	31	97.0%	100%	0.80	0.41	2.05
Fluoride	(mg / L as F)	Chronic health	≤ 1.5	4	97.0%	100%	0.33	0.02	0.40
Nitrate	(mg / L as N)	Acute health	≤ 11	31	99.0%	100%	0.50	0.01	0.52
Nitrite	(mg / L as N)	Acute health	≤ 0.9	31	99.0%	100%	0.10	0.08	0.34
Combined nitrate plus nitrite (3)	(mg / L as N)	Acute health	≤ 1	31	99.0%	100%	0.16	0.09	0.42
Residual disinfectant (4)	(mg / L as Cl <sub>2</sub> )	Operational	≥ 0.1	31	95.0%	100%	0.86	0.42	2.12
Sodium	(mg / L as Na)	Aesthetic	≤ 200	4	95.0%	100%	9.38	0.21	9.99
Sulphate	(mg / L as SO <sub>4</sub> )	Aesthetic	≤ 250	4	95.0%	100%	15.50	0.58	17.23
Sulphate	(mg / L as SO <sub>4</sub> )	Acute health	≤ 500	4	99.0%	100%	15.50	0.58	17.23
Zinc	(mg / L as Zn)	Aesthetic	≤ 5	4	95.0%	100%	0.00	0.00	0.01
<b>Chemical Properties: Micro determinands</b>									
Aluminium	(µg / L as Al)	Operational	≤ 300	3	95.0%	100%	24.00	6.00	42.00
Antimony	(µg / L as Sb)	Chronic health	≤ 20	4	97.0%	100%	0.60	0.00	0.60
Arsenic	(µg / L as As)	Chronic health	≤ 10	4	97.0%	100%	0.80	0.00	0.80
Barium	(µg / L as Ba)	Chronic health	≤ 700	4	97.0%	100%	39.75	2.22	46.40
Boron	(µg / L as B)	Chronic health	≤ 2400	4	97.0%	100%	9.13	4.79	23.51
Cadmium	(µg / L as Cd)	Chronic health	≤ 3	4	97.0%	100%	1.00	0.00	1.00
Chromium (Total)	(µg / L as Cr)	Chronic health	≤ 50	4	97.0%	100%	0.50	0.00	0.50
Copper	(µg / L as Cu)	Chronic health	≤ 2000	4	97.0%	100%	6.13	2.32	13.07
Cyanide (Recoverable)	(µg / L as CN)	Acute health	≤ 200	1	99.0%	100%	5.00	n/a	5.00
Iron	(µg / L as Fe)	Chronic health	≤ 2000	4	97.0%	100%	100.00	0.00	100.00
Iron	(µg / L as Fe)	Aesthetic	≤ 300	4	95.0%	100%	100.00	0.00	100.00
Lead	(µg / L as Pb)	Chronic health	≤ 10	4	97.0%	100%	2.00	0.00	2.00
Manganese	(µg / L as Mn)	Chronic health	≤ 400	4	97.0%	100%	2.63	0.93	5.40
Manganese	(µg / L as Mn)	Aesthetic	≤ 100	4	95.0%	100%	2.63	0.93	5.40
Mercury	(µg / L as Hg)	Chronic health	≤ 6	4	97.0%	100%	0.80	0.00	0.80
Nickel	(µg / L as Ni)	Chronic health	≤ 70	4	97.0%	100%	3.00	0.00	3.00
Selenium	(µg / L as Se)	Chronic health	≤ 40	4	97.0%	100%	4.00	0.00	4.00
Uranium	(µg / L as U)	Chronic health	≤ 30	4	97.0%	100%	0.50	0.00	0.50
<b>Organic determinands</b>									
Total Organic Carbon	(mg / L)	Chronic health	≤ 10	4	97.0%	100%	3.45	0.21	4.07
Phenols as C <sub>6</sub> H <sub>5</sub> OH	(µg / L)	Aesthetic	≤ 10	4	95.0%	100%	3.00	0.00	3.00
Chloroform - CHCl <sub>3</sub>	(µg / L)	Chronic health	≤ 300	5	97.0%	100%	52.60	15.19	98.18
Bromoform - CHBr <sub>3</sub>	(µg / L)	Chronic health	≤ 100	5	97.0%	100%	10.00	0.00	10.00
Dibromochloromethane - CHBr <sub>2</sub> Cl	(µg / L)	Chronic health	≤ 100	5	97.0%	100%	10.00	0.00	10.00
Bromodichloromethane - CHBrCl <sub>2</sub>	(µg / L)	Chronic health	≤ 60	5	97.0%	100%	12.60	2.30	19.51
Combined trihalomethanes (5)	(µg / L)	Chronic health	≤ 1	5	97.0%	100%	0.39	0.06	0.58
Total Microcystin (2)	(µg / L)	Chronic health	≤ 1	no data	97.0%	no data	.	no data	.
<b>For monitoring/reporting purposes only</b>									
Calcium (6)	(mg / L as Ca)	Aesthetic	≤ 150	4	not applicable	100%	17.00	0.82	19.45
Hardness (7)	(mg / L as CaCO <sub>3</sub> )	Operational	≥ 20 to ≤ 200	4	not applicable	100%	68.50	2.65	76.44
Magnesium (6)	(mg / L as Mg)	Aesthetic	≤ 70	4	not applicable	100%	6.20	0.20	6.80
Potassium (6)	(mg / L as K)	Aesthetic	≤ 50	4	not applicable	100%	3.10	0.14	3.52
<b>Rand Water Risk Determinands (RWRD) (6)</b>									
Odour	TON	RWRD	≤ 2	14	not applicable	100%	1.00	0.00	1.00
Taste	FTN	RWRD	≤ 2	14	not applicable	100%	1.00	0.00	1.00

Risks	Required compliances to SANS 241: 2015 standard	Overall Compliances - SANS 241: 2015 standard
Acute health microbiological	99.0%	100%
Acute health chemical	99.0%	100%
Chronic health	97.0%	100%
Aesthetic	95.0%	100%
Operational	95.0%	100%

Notes  
(1) Specification SANS 241 date of effect : 1 July 2016  
(2) Measured at water treatment works exit points  
(3) (NO<sub>2</sub>/0.9 + NO<sub>3</sub>/11)  
(4) Residual disinfectant : Results from the chloraminated system = Sum of Free and Monochloramine  
(5) (CHCl<sub>3</sub>/300 + CHBr<sub>3</sub>/100 + CHBr<sub>2</sub>Cl/100 + CHBrCl<sub>2</sub>/60)  
(6) Customer request: Results not included in the risk indices compliance calculations and limits based on SANS 241:2006  
(7) Customer request: Results not included in the risk indices compliance calculations and limits based on RW Internal Spec  
\*\*\*\* Determinands with no data are due to instrument breakdown\*\*\*\*