



RAND WATER

**Emsfuleni Water Quality Report**  
1 Month

23 October 2020 to 20 November 2020

Date generated: 04 December 2020

							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	91	99.0%	100%	0	0.00	0
Total Coliforms	(mpn per 100 mL)	Operational	≤ 10	91	95.0%	100%	0	0.31	1
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	≤ 1000	91	95.0%	97.80%	67	442.15	1393
<i>Cryptosporidium spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	17	99.0%	100%	0	0.00	0
<i>Giardia spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	17	99.0%	100%	0	0.00	0
Somatic Coliphages (2)	(count per 10 mL)	Operational	Non-detect	68	95.0%	100%	0	0.00	0
<b>Physical and Aesthetic determinands</b>									
Colour	(mg / L as Pt-Co)	Aesthetic	≤ 15	5	95.0%	100%	6.60	1.52	11.15
Conductivity	(mS / m)	Aesthetic	≤ 170	66	95.0%	100%	21.29	2.81	29.72
Total Dissolved Solids	(mg / L)	Aesthetic	≤ 1200	5	95.0%	100%	144.00	13.87	185.62
Turbidity	(NTU)	Operational	≤ 1	66	95.0%	100%	0.28	0.09	0.53
Turbidity	(NTU)	Aesthetic	≤ 5	66	95.0%	100%	0.28	0.09	0.53
pH	(pH units)	Operational	≥ 5 to ≤ 9.7	66	95.0%	100%	8.11	0.25	8.85
<b>Chemical Properties: Macro determinands</b>									
Ammonia	(mg / L as N)	Aesthetic	≤ 1.5	66	95.0%	100%	0.11	0.05	0.26
Chloride	(mg / L as Cl)	Aesthetic	≤ 300	2	95.0%	100%	10.00	1.41	14.24
Free chlorine	(mg / L as Cl <sub>2</sub> )	Chronic health	≤ 5	91	97.0%	100%	1.21	0.49	2.69
Monochloramine	(mg / L as Cl <sub>2</sub> )	Chronic health	≤ 4.1	n/a	97.0%	n/a	n/a	n/a	n/a
Fluoride	(mg / L as F)	Chronic health	≤ 1.5	2	97.0%	100%	0.27	0.10	0.57
Nitrate	(mg / L as N)	Acute health	≤ 11	63	99.0%	100%	0.53	0.07	0.75
Nitrite	(mg / L as N)	Acute health	≤ 0.9	63	99.0%	100%	0.15	0.22	0.82
Combined nitrate plus nitrite (3)	(mg / L as N)	Acute health	≤ 1	66	99.0%	100%	0.23	0.26	1.02
Residual disinfectant (4)	(mg / L as Cl <sub>2</sub> )	Operational	≥ 0.2	91	95.0%	95.60%	1.21	0.49	2.69
Sodium	(mg / L as Na)	Aesthetic	≤ 200	4	95.0%	100%	8.35	0.93	11.15
Sulphate	(mg / L as SO <sub>4</sub> )	Aesthetic	≤ 250	5	95.0%	100%	16.00	2.35	23.04
Sulphate	(mg / L as SO <sub>4</sub> )	Acute health	≤ 500	5	99.0%	100%	16.00	2.35	23.04
Zinc	(mg / L as Zn)	Aesthetic	≤ 5	4	95.0%	100%	0.02	0.00	0.03
<b>Chemical Properties: Micro determinands</b>									
Aluminium	(µg / L as Al)	Operational	≤ 300	4	95.0%	100%	51.25	2.50	58.75
Antimony	(µg / L as Sb)	Chronic health	≤ 20	2	97.0%	100%	0.62	0.03	0.70
Arsenic	(µg / L as As)	Chronic health	≤ 10	2	97.0%	100%	4.40	5.09	19.67
Barium	(µg / L as Ba)	Chronic health	≤ 700	4	97.0%	100%	33.25	5.91	50.98
Boron	(µg / L as B)	Chronic health	≤ 2400	4	97.0%	100%	8.40	6.06	26.59
Cadmium	(µg / L as Cd)	Chronic health	≤ 3	2	97.0%	100%	1.25	0.35	2.31
Chromium (Total)	(µg / L as Cr)	Chronic health	≤ 50	4	97.0%	100%	3.88	2.25	10.63
Copper	(µg / L as Cu)	Chronic health	≤ 2000	4	97.0%	100%	6.50	3.00	15.50
Cyanide (Recoverable)	(µg / L as CN)	Acute health	≤ 200	5	99.0%	100%	5.00	0.00	5.00
Iron	(µg / L as Fe)	Chronic health	≤ 2000	4	97.0%	100%	38.75	41.19	162.33
Iron	(µg / L as Fe)	Aesthetic	≤ 300	4	95.0%	100%	38.75	41.19	162.33
Lead	(µg / L as Pb)	Chronic health	≤ 10	2	97.0%	100%	5.00	4.24	17.73
Manganese	(µg / L as Mn)	Chronic health	≤ 400	4	97.0%	100%	3.08	0.94	5.90
Manganese	(µg / L as Mn)	Aesthetic	≤ 100	4	95.0%	100%	3.08	0.94	5.90
Mercury	(µg / L as Hg)	Chronic health	≤ 6	2	97.0%	100%	1.15	0.49	2.63
Nickel	(µg / L as Ni)	Chronic health	≤ 70	4	97.0%	100%	4.50	1.00	7.50
Selenium	(µg / L as Se)	Chronic health	≤ 40	2	97.0%	100%	6.00	2.83	14.49
Uranium	(µg / L as U)	Chronic health	≤ 30	2	97.0%	100%	1.50	1.41	5.74
<b>Organic determinands</b>									
Total Organic Carbon	(mg / L)	Chronic health	≤ 10	2	97.0%	100%	2.75	0.07	2.96
Phenols as C <sub>6</sub> H <sub>5</sub> OH	(µg / L)	Aesthetic	≤ 10	2	95.0%	100%	3.00	0.00	3.00
Chloroform - CHCl <sub>3</sub>	(µg / L)	Chronic health	≤ 300	9	97.0%	100%	19.89	9.98	49.83
Bromoform - CHBr <sub>3</sub>	(µg / L)	Chronic health	≤ 100	9	97.0%	100%	10.00	0.00	10.00
Dibromochloromethane - CHBr <sub>2</sub> Cl	(µg / L)	Chronic health	≤ 100	9	97.0%	100%	10.00	0.00	10.00
Bromodichloromethane - CHBrCl <sub>2</sub>	(µg / L)	Chronic health	≤ 60	9	97.0%	100%	11.00	1.80	16.41
Combined trihalomethanes (5)	(µg / L)	Chronic health	≤ 1	9	97.0%	100%	0.25	0.09	0.53
Total Microcystin (2)	(µg / L)	Chronic health	≤ 1	8	97.0%	100%	0.31	0.00	0.31
<b>For monitoring/reporting purposes only</b>									
Calcium (6)	(mg / L as Ca)	Aesthetic	≤ 150	4	not applicable	100%	16.50	2.08	22.75
Hardness (7)	(mg / L as CaCO <sub>3</sub> )	Operational	≥ 20 to ≤ 200	4	not applicable	100%	63.00	7.39	85.18
Magnesium (6)	(mg / L as Mg)	Aesthetic	≤ 70	4	not applicable	100%	6.10	0.50	7.59
Potassium (6)	(mg / L as K)	Aesthetic	≤ 50	4	not applicable	100%	2.85	0.13	3.24
<b>Rand Water Risk Determinands (RWRD) (6)</b>									
Odour	TON	RWRD	≤ 2	6	not applicable	100%	1.00	0.00	1.00
Taste	FTN	RWRD	≤ 2	6	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%	98.74%

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 chlorinated system = Free available chlorine  
 (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\*\*\*\*