



RAND WATER

Tshwane Water Quality Report
12 Month

22 August 2019 to 21 August 2020

Date generated: 28 August 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
Microbiological determinands									
<i>E. coli</i>	(mpn per 100 mL)	Acute health	Non-detect	1,062	99.0%	100%	0	0.00	0
Total Coliforms	(mpn per 100 mL)	Operational	≤ 10	1,062	95.0%	99.81%	0	3.37	10
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	≤ 1000	1,062	95.0%	100%	2	12.80	41
<i>Cryptosporidium spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	196	99.0%	98.98%	0	0.10	0
<i>Giardia spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	196	99.0%	98.47%	0	0.12	0
Somatic Coliphages (2)	(count per 10 mL)	Operational	Non-detect	950	95.0%	99.89%	0	0.03	0
Physical and Aesthetic determinands									
Colour	(mg / L as Pt-Co)	Aesthetic	≤ 15	162	95.0%	100%	5.08	0.45	6.42
Conductivity	(mS / m)	Aesthetic	≤ 170	1,058	95.0%	100%	21.76	2.97	30.66
Total Dissolved Solids	(mg / L)	Aesthetic	≤ 1200	172	95.0%	100%	150.12	17.66	203.09
Turbidity	(NTU)	Operational	≤ 1	1,054	95.0%	99.91%	0.29	0.06	0.48
Turbidity	(NTU)	Aesthetic	≤ 5	1,054	95.0%	100%	0.29	0.06	0.48
pH	(pH units)	Operational	≥ 5 to ≤ 9.7	1,059	95.0%	100%	7.98	0.14	8.40
Chemical Properties: Macro determinands									
Ammonia	(mg / L as N)	Aesthetic	≤ 1.5	1,051	95.0%	100%	0.31	0.15	0.76
Chloride	(mg / L as Cl)	Aesthetic	≤ 300	158	95.0%	100%	11.81	2.11	18.15
Free chlorine	(mg / L as Cl ₂)	Chronic health	≤ 5	1,068	97.0%	100%	0.11	0.14	0.54
Monochloramine	(mg / L as Cl ₂)	Chronic health	≤ 4.1	1,068	97.0%	100%	1.30	0.39	2.46
Fluoride	(mg / L as F)	Chronic health	≤ 1.5	158	97.0%	100%	0.27	0.09	0.55
Nitrate	(mg / L as N)	Acute health	≤ 11	1,029	99.0%	100%	0.57	0.09	0.84
Nitrite	(mg / L as N)	Acute health	≤ 0.9	1,049	99.0%	100%	0.03	0.04	0.14
Combined nitrate plus nitrite (3)	(mg / L as N)	Acute health	≤ 1	1,048	99.0%	100%	0.16	0.20	0.77
Residual disinfectant (4)	(mg / L as Cl ₂)	Operational	≥ 0.1	1,068	95.0%	100%	1.40	0.38	2.54
Sodium	(mg / L as Na)	Aesthetic	≤ 200	186	95.0%	99.46%	12.09	15.91	59.83
Sulphate	(mg / L as SO ₄)	Aesthetic	≤ 250	172	95.0%	100%	18.52	4.87	33.14
Sulphate	(mg / L as SO ₄)	Acute health	≤ 500	172	99.0%	100%	18.52	4.87	33.14
Zinc	(mg / L as Zn)	Aesthetic	≤ 5	186	95.0%	100%	0.02	0.01	0.06
Chemical Properties: Micro determinands									
Aluminium	(µg / L as Al)	Operational	≤ 300	186	95.0%	100%	33.42	15.42	79.68
Antimony	(µg / L as Sb)	Chronic health	≤ 20	146	97.0%	100%	0.60	0.00	0.60
Arsenic	(µg / L as As)	Chronic health	≤ 10	167	97.0%	100%	3.35	3.32	13.30
Barium	(µg / L as Ba)	Chronic health	≤ 700	186	97.0%	100%	44.69	7.36	66.78
Boron	(µg / L as B)	Chronic health	≤ 2400	186	97.0%	100%	9.73	5.94	27.56
Cadmium	(µg / L as Cd)	Chronic health	≤ 3	167	97.0%	100%	1.18	0.26	1.97
Chromium (Total)	(µg / L as Cr)	Chronic health	≤ 50	186	97.0%	100%	5.00	0.00	5.00
Copper	(µg / L as Cu)	Chronic health	≤ 2000	186	97.0%	100%	8.18	1.18	11.71
Cyanide (Recoverable)	(µg / L as CN)	Acute health	≤ 200	162	99.0%	100%	5.07	0.65	7.01
Iron	(µg / L as Fe)	Chronic health	≤ 2000	186	97.0%	100%	19.35	15.14	64.79
Iron	(µg / L as Fe)	Aesthetic	≤ 300	186	95.0%	100%	19.35	15.14	64.79
Lead	(µg / L as Pb)	Chronic health	≤ 10	167	97.0%	100%	4.01	2.81	12.44
Manganese	(µg / L as Mn)	Chronic health	≤ 400	186	97.0%	100%	3.24	1.52	7.80
Manganese	(µg / L as Mn)	Aesthetic	≤ 100	186	95.0%	100%	3.24	1.52	7.80
Mercury	(µg / L as Hg)	Chronic health	≤ 6	157	97.0%	100%	1.06	0.34	2.08
Nickel	(µg / L as Ni)	Chronic health	≤ 70	186	97.0%	100%	5.02	0.24	5.74
Selenium	(µg / L as Se)	Chronic health	≤ 40	167	97.0%	100%	5.32	1.88	10.97
Uranium	(µg / L as U)	Chronic health	≤ 30	146	97.0%	100%	0.50	0.04	0.62
Organic determinands									
Total Organic Carbon	(mg / L)	Chronic health	≤ 10	162	97.0%	100%	3.80	0.60	5.62
Phenols as C ₆ H ₅ OH	(µg / L)	Aesthetic	≤ 10	115	95.0%	100%	3.00	0.03	3.09
Chloroform - CHCl ₃	(µg / L)	Chronic health	≤ 300	161	97.0%	100%	37.57	10.99	70.54
Bromoform - CHBr ₃	(µg / L)	Chronic health	≤ 100	161	97.0%	100%	10.00	0.00	10.00
Dibromochloromethane - CHBr ₂ Cl	(µg / L)	Chronic health	≤ 100	161	97.0%	100%	10.00	0.00	10.00
Bromodichloromethane - CHBrCl ₂	(µg / L)	Chronic health	≤ 60	161	97.0%	100%	15.71	2.69	23.78
Combined trihalomethanes (5)	(µg / L)	Chronic health	≤ 1	158	97.0%	100%	0.41	0.08	0.66
Total Microcystin (2)	(µg / L)	Chronic health	≤ 1	195	97.0%	100%	0.31	0.00	0.31
For monitoring/reporting purposes only									
Calcium (6)	(mg / L as Ca)	Aesthetic	≤ 150	186	not applicable	100%	18.11	3.62	28.97
Hardness (7)	(mg / L as CaCO ₃)	Operational	≥ 20 to ≤ 200	186	not applicable	99.46%	70.84	14.54	114.45
Magnesium (6)	(mg / L as Mg)	Aesthetic	≤ 70	186	not applicable	100%	7.37	1.81	12.79
Potassium (6)	(mg / L as K)	Aesthetic	≤ 50	186	not applicable	100%	3.39	0.82	5.84
Rand Water Risk Determinands (RWRD) (6)									
Odour	TON	RWRD	≤ 2	277	not applicable	100%	1.00	0.00	1.00
Taste	FTN	RWRD	≤ 2	277	not applicable	100%	1.00	0.00	1.00

Water quality risk indices

Risks	Required compliances to SANS 241: 2015 standard	Overall Compliances - SANS 241: 2015 standard
Acute health microbiological	99.0%	99.66%
Acute health chemical	99.0%	100%
Chronic health	97.0%	100%
Aesthetic	95.0%	99.98%
Operational	95.0%	99.94%

- Notes
- (1) Specification_SANS 241 date of effect : 1 July 2016
 - (2) Measured at water treatment works exit points
 - (3) (NO₂/0.9 + NO₃/11)
 - (4) Residual disinfectant : Results from the chloraminated system = Sum of Free and Monochloramine
 - (5) (CHCl₃/300 + CHBr₃/100 + CHBr₂Cl/100 + CHBrCl₂/60)
 - (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