

**Tshwane Metro Water Quality Report - 12 Month**

October 2016 to September 2017 Date generated: 03 October 2017

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	943	100.0%	0	0.00	0
Total Coliforms	(mpn per 100 mL)	Operational	95.0%	10	943	99.7%	0	9.37	0
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	95.0%	≤1000	928	99.9%	7	59.80	88
<i>Cryptosporidium spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	183	100.0%	0	0.00	0
<i>Giardia spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	183	100.0%	0	0.00	0
Somatic Coliphages (5)	(count per 10 mL)	Operational	95.0%	0	775	100.0%	0	0.00	0
<b>Physical and Aesthetic determinands</b>									
Colour	(mg / L as Pt-Co)	Aesthetic	95.0%	≤15	63	100.0%	5.00	0.00	5.00
Conductivity	(mS / m)	Aesthetic	95.0%	≤170	943	100.0%	18.18	1.84	22.00
Total Dissolved Solids	(mg / L)	Aesthetic	95.0%	≤1200	943	100.0%	129.62	10.70	151.87
Turbidity	(NTU)	Operational	95.0%	≤1	924	99.8%	0.28	0.17	0.48
Turbidity	(NTU)	Aesthetic	95.0%	≤5	924	100.0%	0.28	0.17	0.48
pH	(pH units)	Operational	95.0%	≥ 5 to ≤ 9.7	943	100.0%	7.96	0.17	8.39
<b>Chemical Properties</b>									
<b>Macro determinands</b>									
Ammonia	(mg / L as N)	Aesthetic	95.0%	≤1.5	935	100.0%	0.29	0.11	0.47
Chloride	(mg / L as Cl)	Aesthetic	95.0%	≤300	64	100.0%	9.41	1.75	13.00
Free chlorine (2)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤5	943	100.0%	0.13	0.17	0.89
Monochloramine (3)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤4.1	943	100.0%	1.27	0.34	1.82
Fluoride	(mg / L as F)	Chronic health	97.0%	≤1.5	64	100.0%	0.18	0.05	0.35
Nitrate	(mg / L as N)	Acute health	99.0%	≤11	926	100.0%	0.53	0.16	0.94
Nitrite	(mg / L as N)	Acute health	99.0%	≤0.9	935	100.0%	0.04	0.05	0.31
Combined nitrate plus nitrite (7)	(mg / L as N)	Acute health	99.0%	≤1	926	100.0%	0.10	0.06	0.40
Residual disinfectant (4)	(mg / L)	Operational	95.0%	≥0.1 Sum of Free and Monochloramine	943	100.0%	1.40	0.30	1.90
Sodium	(mg / L as Na)	Aesthetic	95.0%	≤200	63	100.0%	7.54	0.89	9.38
Sulphate	(mg / L as SO <sub>4</sub> )	Aesthetic	95.0%	≤250	64	100.0%	11.55	1.59	14.00
Sulphate	(mg / L as SO <sub>4</sub> )	Acute health	99.0%	≤500	64	100.0%	11.55	1.59	14.00
Zinc	(mg / L as Zn)	Aesthetic	95.0%	≤5	63	100.0%	0.01	0.00	0.02
<b>Micro determinands</b>									
Aluminium	(µg / L as Al)	Operational	95.0%	≤300	63	100.0%	30.46	12.66	78.34
Antimony	(µg / L as Sb)	Chronic health	97.0%	≤20	59	100.0%	0.51	0.04	0.63
Arsenic	(µg / L as As)	Chronic health	97.0%	≤10	59	100.0%	0.79	0.58	2.64
Barium	(µg / L as Ba)	Chronic health	97.0%	≤700	62	100.0%	32.34	4.53	38.78
Boron	(µg / L as B)	Chronic health	97.0%	≤2400	63	100.0%	25.22	1.76	30.32
Cadmium	(µg / L as Cd)	Chronic health	97.0%	≤3	59	100.0%	2.50	0.00	2.50
Chromium (Total)	(µg / L as Cr)	Chronic health	97.0%	≤50	63	100.0%	15.00	0.00	15.00
Copper	(µg / L as Cu)	Chronic health	97.0%	≤2000	63	100.0%	10.03	0.25	10.76
Cyanide (Recoverable)	(µg / L as CN)	Acute health	99.0%	≤200	63	100.0%	5.00	0.00	5.00
Iron	(µg / L as Fe)	Chronic health	97.0%	≤2000	63	100.0%	18.33	10.43	47.84
Iron	(µg / L as Fe)	Aesthetic	95.0%	≤300	63	100.0%	18.33	10.43	47.84
Lead	(µg / L as Pb)	Chronic health	97.0%	≤10	59	100.0%	0.29	0.43	2.13
Manganese	(µg / L as Mn)	Chronic health	97.0%	≤400	63	100.0%	10.00	0.00	10.00
Manganese	(µg / L as Mn)	Aesthetic	95.0%	≤100	63	100.0%	10.00	0.00	10.00
Mercury	(µg / L as Hg)	Chronic health	97.0%	≤6	59	100.0%	0.80	0.00	0.80
Nickel	(µg / L as Ni)	Chronic health	97.0%	≤70	63	100.0%	10.00	0.00	10.00
Selenium	(µg / L as Se)	Chronic health	97.0%	≤40	59	100.0%	0.64	0.34	1.86
Uranium	(µg / L as U)	Chronic health	97.0%	≤30	59	100.0%	0.23	0.22	1.01
<b>Organic determinands</b>									
Total Organic Carbon	(mg / L)	Chronic health	97.0%	≤10	63	100.0%	3.44	1.21	7.13
Phenols as C <sub>6</sub> H <sub>5</sub> OH	(µg / L)	Aesthetic	95.0%	≤10	63	100.0%	4.65	1.04	5.00
Chloroform - CHCl <sub>3</sub>	(µg / L)	Chronic health	97.0%	≤300	63	100.0%	38.97	12.10	55.38
Bromoform - CHBr <sub>3</sub>	(µg / L)	Chronic health	97.0%	≤100	63	100.0%	0.50	0.00	0.50
Dibromochloromethane - CHBr <sub>2</sub> Cl	(µg / L)	Chronic health	97.0%	≤100	63	100.0%	1.83	1.19	4.48
Bromodichloromethane - CHBrCl <sub>2</sub>	(µg / L)	Chronic health	97.0%	≤60	63	100.0%	12.21	2.50	16.00
Combined trihalomethanes (8)	(µg / L)	Chronic health	97.0%	≤1	63	100.0%	0.36	0.08	0.46
Total Microcystin (5)	(µg / L)	Chronic health	97.0%	≤1	183	100.0%	0.35	0.02	0.36
<b>For monitoring/reporting purposes only (6)</b>									
Calcium	(mg / L as Ca)	Aesthetic	not applicable	≤150	63	100.0%	17.05	1.84	21
Hardness	(mg / L as CaCO <sub>3</sub> )	Operational	not applicable	≥ 20 to ≤ 200	63	100.0%	61.58	5.40	72.00
Magnesium	(mg / L as Mg)	Aesthetic	not applicable	≤70	63	100.0%	5.48	0.44	6.24
Potassium	(mg / L as K)	Aesthetic	not applicable	≤50	63	100.0%	2.84	0.90	4.14
<b>Rand Water Risk Determinands (RWRD)</b>									
Odour	TON	RWRD	95.0%	≤2	191	100.0%	1.00	0.00	1.00
Taste	FTN	RWRD	95.0%	≤2	191	100.0%	1.00	0.00	1.00

Water quality risk indices		
Risk	Required compliance to SANS 241: 2015 standard	Overall Compliance-SANS 241
Acute health microbiological	99.00%	100.00%
Acute health chemical	99.00%	100.00%
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)