

## Tshwane Metro Water Quality Report

January 2011 to December 2011

Date generated : 30 December 2011

Parameter	Units of measure	Specifications (based on SANS241: 2005)		No of results	Achieved compliance levels	
		Required compliance			Class I	Class II
		95% min to Class I	99% min to Class II			
<b>SPECIFICATIONS</b>						
<b>Chemical and Physical properties</b>						
Colour	(mg / l as Pt)	< 20	≤ 50	498	100.0%	100.0%
Conductivity	(mS / m)	< 150	≤ 370	714	100.0%	100.0%
pH	(pH units)	≥ 5 to ≤ 9.5	≥ 4 to ≤ 10	714	100.0%	100.0%
Turbidity	(NTU)	< 1	≤ 5	714	100.0%	100.0%
Total Dissolved Solids	(mg / l)	< 1000	≤ 2400	480	100.0%	100.0%
Taste	(FTN)	< 5	≤ 10	497	100.0%	100.0%
Odour	(TON)	< 5	≤ 10	497	100.0%	100.0%
<b>Organic Determinants</b>						
Total Trihalomethanes	(ug / l)	< 200	≤ 300	490	100.0%	100.0%
Phenols as C6H5OH	(ug / l)	< 10	≤ 70	249	100.0%	100.0%
Dissolved Organic Carbon	(mg / l)	< 10	≤ 20	445	100.0%	100.0%
<b>Micro Elements</b>						
Antimony	(ug / l as Sb)	< 10	≤ 50	433	100.0%	100.0%
Arsenic	(ug / l as As)	< 10	≤ 50	444	100.0%	100.0%
Cadmium	(ug / l as Cd)	< 5	≤ 10	478	100.0%	100.0%
Chromium (Total)	(ug / l as Cr)	< 100	≤ 500	478	100.0%	100.0%
Cobalt	(ug / l as Co)	< 500	≤ 1000	478	100.0%	100.0%
Cyanide (Recoverable)	(ug / l as CN)	< 50	≤ 70	495	100.0%	100.0%
Lead	(ug / l as Pb)	< 20	≤ 50	478	100.0%	100.0%
Mercury	(ug / l as Hg)	< 1	≤ 5	422	99.8%	100.0%
Nickel	(ug / l as Ni)	< 150	≤ 350	478	100.0%	100.0%
Selenium	(ug / l as Se)	< 20	≤ 50	444	100.0%	100.0%
Vanadium	(ug / l as V)	< 200	≤ 500	478	100.0%	100.0%
<b>Macro Elements &amp; Miscellaneous Determinants</b>						
Aluminium	(mg / l as Al)	< 0.3	≤ 0.5	478	100.0%	100.0%
Ammonia	(mg / l as N)	< 1	≤ 2	498	100.0%	100.0%
Calcium	(mg / l as Ca)	< 150	≤ 300	478	100.0%	100.0%
Chloride	(mg / l as Cl)	< 200	≤ 600	498	100.0%	100.0%
Copper	(mg / l as Cu)	< 1	≤ 2	478	100.0%	100.0%
Fluoride	(mg / l as F)	< 1	≤ 1.5	498	100.0%	100.0%
Iron	(mg / l as Fe)	< 0.2	≤ 2	478	99.8%	100.0%
Magnesium	(mg / l as Mg)	< 70	≤ 100	478	100.0%	100.0%
Manganese	(mg / l as Mn)	< 0.1	≤ 1	478	100.0%	100.0%
Nitrate & Nitrite	(mg / l as N)	< 10	≤ 20	498	100.0%	100.0%
Potassium	(mg / l as K)	< 50	≤ 100	478	100.0%	100.0%
Sodium	(mg / l as Na)	< 200	≤ 400	469	100.0%	100.0%
Sulphate	(mg / l as SO4)	< 400	≤ 600	498	100.0%	100.0%
Zinc	(mg / l as Zn)	< 5	≤ 10	478	100.0%	100.0%
<b>Microbiological</b>						
E. Coli	(cfu per 100 ml)	minimum of 95% of the original results shall be non-detected	minimum of 99% of the original and repeat/consecutive results shall be non-detected	714	99.9%	99.9%
<b>Other Determinants as required by supply contract</b>						
Free chlorine and monochloramine	(mg / l)	≥ 0.2 min 95% compliance		714	96.9%	
<b>Notes :</b>						
(1) Specification date of effect : July 2006						
(2) Guideline derived from SANS 241: 2005 operations alert and industry practices						

## Tshwane Metro Water Quality Report

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Parameter	Units of measure	Specification	No of samples	Mean - 3 SD	Mean - 1 SD	Mean	Mean + 1 SD	Mean + 3 SD	Standard Deviation
<b>Chemical and Physical properties</b>									
Colour	(mg / l as Pt)	< 20	498	5.00	5.00	5.12	5.66	6.73	0.54
Conductivity	(mS / m)	< 150	714	14.47	18.82	21.00	23.17	27.53	2.18
pH	(pH units)	≥ 5 to ≤ 9.5	714	6.76	7.25	7.58	7.92	8.59	0.34
Turbidity	(NTU)	< 1	714	0.20	0.25	0.32	0.39	0.53	0.07
Total Dissolved Solids	(mg / l)	< 1000	480	84.00	123.56	144.28	165.01	206.46	20.73
Hardness	(mg / l as CaCO <sub>3</sub> )	> 20 to < 200	478	44.00	57.99	67.38	76.77	95.55	9.39
Taste	(FTN)	< 5	497	1.00	1.00	1.00	1.00	1.00	0.00
Odour	(TON)	< 5	497	1.00	1.00	1.00	1.00	1.00	0.00
<b>Organic Determinants</b>									
Total Trihalomethanes	(ug / l)	< 200	490	34.86	70.56	88.41	106.26	141.95	17.85
Phenols as C <sub>6</sub> H <sub>5</sub> OH	(ug / l)	< 10	249	0.33	1.90	2.76	3.62	4.90	0.86
Dissolved Organic Carbon	(mg / l)	< 10	445	3.22	4.55	5.22	5.89	7.00	0.67
<b>Micro Elements</b>									
Antimony	(ug / l as Sb)	< 10	433	0.49	0.81	0.97	1.13	1.45	0.16
Arsenic	(ug / l as As)	< 10	444	0.17	0.70	0.96	1.23	1.76	0.26
Cadmium	(ug / l as Cd)	< 5	478	1.25	1.25	1.25	1.25	1.25	0.00
Chromium (Total)	(ug / l as Cr)	< 100	478	5.00	5.00	5.19	6.14	8.05	0.95
Cobalt	(ug / l as Co)	< 500	478	7.50	7.50	7.50	7.50	7.50	0.00
Cyanide (Recoverable)	(ug / l as CN)	< 50	495	5.00	5.00	5.32	7.34	11.38	2.02
Lead	(ug / l as Pb)	< 20	478	4.00	4.00	4.00	4.00	4.00	0.00
Mercury	(ug / l as Hg)	< 1	422	0.25	0.33	0.40	0.46	0.59	0.07
Nickel	(ug / l as Ni)	< 150	478	7.50	7.50	7.50	7.50	7.50	0.00
Selenium	(ug / l as Se)	< 20	444	0.61	0.85	0.97	1.00	1.00	0.12
Vanadium	(ug / l as V)	< 200	478	15.00	15.00	15.09	16.28	18.65	1.19
<b>Macro Elements &amp; Miscellaneous Determinants</b>									
Aluminium	(mg / l as Al)	< 0.3	478	0.005	0.010	0.035	0.060	0.110	0.025
Ammonia	(mg / l as N)	< 1	498	0.122	0.122	0.232	0.367	0.630	0.135
Calcium	(mg / l as Ca)	< 150	478	9.600	14.365	17.700	21.035	27.706	3.335
Chloride	(mg / l as Cl)	< 200	498	9.600	11.042	12.429	13.816	16.590	1.387
Copper	(mg / l as Cu)	< 1	478	0.005	0.005	0.017	0.048	0.110	0.031
Fluoride	(mg / l as F)	< 1	498	0.130	0.153	0.185	0.216	0.280	0.032
Iron	(mg / l as Fe)	< 0.2	478	0.003	0.003	0.012	0.028	0.059	0.016
Magnesium	(mg / l as Mg)	< 70	478	3.300	4.616	5.630	6.644	8.671	1.014
Manganese	(mg / l as Mn)	< 0.1	478	0.002	0.002	0.003	0.008	0.017	0.005
Nitrate & Nitrite	(mg / l as N)	< 10	498	0.060	0.299	1.051	1.803	3.307	0.752
Potassium	(mg / l as K)	< 50	478	0.169	1.355	1.949	2.542	3.300	0.593
Sodium	(mg / l as Na)	< 200	469	3.300	6.064	7.697	9.331	12.598	1.634
Sulphate	(mg / l as SO <sub>4</sub> )	< 400	498	11.000	13.043	14.528	16.013	18.000	1.485
Zinc	(mg / l as Zn)	< 5	478	0.004	0.004	0.006	0.011	0.022	0.005
<b>Microbiological</b>									
E. Coli	(cfu per 100 ml)	minimum of 95% of the original results shall be non-detected	714	0.0	0.0	0	0.2	0.7	0.2
<b>Other Determinants as required by supply contract</b>									
Free chlorine and monochloramine	(mg / l)	≥ 0.2 min 95% compliance	714	0.04	0.56	1.01	1.47	1.95	0.45
Notes :									
(1) Specification date of effect : July 2006									
(2) Guideline derived from SANS 241: 2005 operations alert and industry practices									