

**Durban Heights Waterworks Final 1, 503 ML/d, Period 01 July 2010 - 30 June 2011**

DETERMINAND	Units	Raw Water				Final Water				SANS 241:2006 Class II Limit
		Minimum	Average	95 <sup>th</sup> Percentile	Maximum	Minimum	Average	95 <sup>th</sup> Percentile	Maximum	
Free Chlorine	mg/L	-	-	-	-	0.8	1.1	1.2	1.6	0.05 - 0.3 <sup>#</sup>
Total Chlorine	mg/L	-	-	-	-	1.0	1.4	1.6	2.0	1.80 - 2.50 <sup>#</sup>
Colony Count @ 37°C	per mL	-	-	-	-	0	0 <sup>‡</sup>	1	72	5000 <sup>‡</sup>
Coliforms	per 100 mL	40	383 <sup>‡</sup>	3496	>4838	0	0 <sup>‡</sup>	0	74	10 <sup>‡</sup>
<i>E.coli</i>	per 100 mL	0	2 <sup>‡</sup>	12	22	0	0 <sup>‡</sup>	0	0	0
Somatic coliphages	per 10 mL	-	-	-	-	0	0 <sup>‡</sup>	0	0	1 <sup>‡</sup>
Colour	°H	2.2	3.7	5.3	6.7	-	-	-	-	50
Conductivity	mS/m	8.9	12.2	14.8	16.5	10.2	13.5	15.9	17.7	370
Suspended solids	mg/L	<4.0	4.3*	8.8*	10.8	-	-	-	-	-
pH	pH units	7.0	-	8.6	8.8	7.6	-	8.1	8.3	8.0 - 9.2 <sup>#</sup>
Turbidity	NTU	1.2	4.3	8.0	29.2	< 0.2	0.22*	0.35*	0.91	5
Alkalinity	mg/L	31.96	36.28	41.96	44.73	-	-	-	-	-
Fluoride	µg/L	<100	55.8*	102.7*	106.0	-	-	-	-	1500
Iron	mg/L	0.09	0.2	0.3	0.4	<0.02	0.02*	0.06*	0.07	2
Manganese	mg/L	0.01	0.03	0.09	0.10	<0.01	0.01*	0.01*	0.02	1
Total organic carbon	mg/L	1.9	2.6	3.3	3.5	1.8	2.2	2.7	2.8	20 <sup>§</sup>
Total Trihalomethanes	µg/L	-	-	-	-	10.5	39.3	62.9	72.4	300
Phenols	µg/L	-	-	-	-	-	-	-	-	70

Standards have been adopted from the SANS 241: 2006 Drinking Water specification.

\* Statistics for constituents that had some results below the detection limit were calculated using half the detection limit.

‡ Median

§ SANS 241:2006 specifies Dissolved Organic Carbon.

± SANS 241:2006 Operational Alert.

# Umgeni Water's Warning Limits.

**Durban Heights Waterworks Final 2, 503 ML/d, Period 01 July 2010 - 30 June 2011**

DETERMINAND	Units	Raw Water				Final Water				SANS 241:2006 Class II Limit
		Minimum	Average	95 <sup>th</sup> Percentile	Maximum	Minimum	Average	95 <sup>th</sup> Percentile	Maximum	
Free Chlorine	mg/L	-	-	-	-	0.8	1.1	1.2	1.6	0.05 - 0.3 <sup>#</sup>
Total Chlorine	mg/L	-	-	-	-	0.8	1.4	1.6	2.0	1.80 - 2.50 <sup>#</sup>
Colony Count @ 37°C	per mL	-	-	-	-	0	0 <sup>‡</sup>	1	54	5000 <sup>‡</sup>
Coliforms	per 100 mL	-	-	-	-	0	0 <sup>‡</sup>	0	4	10 <sup>‡</sup>
<i>E.coli</i>	per 100 mL	-	-	-	-	0	0 <sup>‡</sup>	0	0	0
Somatic coliphages	per 10 mL	-	-	-	-	0	0 <sup>‡</sup>	0	0	1 <sup>‡</sup>
Conductivity	mS/m	-	-	-	-	10.6	13.6	15.9	23.4	370
pH	pH units	-	-	-	-	7.6	-	8.1	8.3	8.0 - 9.2 <sup>#</sup>
Turbidity	NTU	-	-	-	-	< 0.2	0.1*	0.2*	0.5	5
Iron	mg/L	-	-	-	-	<0.02	0.02*	0.04*	0.07	2
Manganese	mg/L	-	-	-	-	<0.01	0.01*	0.01*	0.01	1
Total organic carbon	mg/L	-	-	-	-	1.8	2.2	2.6	2.7	20 <sup>§</sup>
Total Trihalomethanes	µg/L	-	-	-	-	9.0	36.9	58.1	62.9	300

Standards have been adopted from the SANS 241: 2006 Drinking Water specification.

\* Statistics for constituents that had some results below the detection limit were calculated using half the detection limit.

‡ Median

§ SANS 241:2006 specifies Dissolved Organic Carbon.

± SANS 241:2006 Operational Alert.

# Umgeni Water's Warning Limits.

**Durban Heights Waterworks Final 3, 503 ML/d, Period 01 July 2010 - 30 June 2011**

DETERMINAND	Units	Raw Water				Final Water				SANS 241:2006 Class II Limit
		Minimum	Average	95 <sup>th</sup> Percentile	Maximum	Minimum	Average	95 <sup>th</sup> Percentile	Maximum	
Free Chlorine	mg/L	-	-	-	-	0.8	1.1	1.2	1.2	0.05 - 0.3 <sup>#</sup>
Total Chlorine	mg/L	-	-	-	-	1.0	1.4	1.6	2.0	1.80 - 2.50 <sup>#</sup>
Colony Count @ 37°C	per mL	-	-	-	-	0	0 <sup>‡</sup>	1	> 1000	5000 <sup>‡</sup>
Coliforms	per 100 mL	-	-	-	-	0	0 <sup>‡</sup>	0	4	10 <sup>‡</sup>
<i>E.coli</i>	per 100 mL	-	-	-	-	0	0 <sup>‡</sup>	0	0	0
Somatic coliphages	per 10 mL	-	-	-	-	0	0 <sup>‡</sup>	0	0	1 <sup>‡</sup>
Colour	°H	-	-	-	-	<1.0	0.7*	1.5*	2.0	50
Conductivity	mS/m	-	-	-	-	10.5	13.6	15.8	17.8	370
Dissolved solids	mg/L	-	-	-	-	69.0	91.3	105.6	110.0	2400
Suspended solids	mg/L	-	-	-	-	<4.0	<4.0	<4.0	<4.0	-
pH	pH units	-	-	-	-	7.6	-	8.1	8.2	8.0 - 9.2 <sup>#</sup>
Turbidity	NTU	-	-	-	-	< 0.2	0.1*	0.2*	0.4	5
Alkalinity	mg/L	-	-	-	-	31.5	38.0	42.8	44.2	-
Total Hardness	mg/L	-	-	-	-	36.8	41.2	47.2	47.5	20 - 300 <sup>#</sup>
Ammonia as N	mg/L	-	-	-	-	<0.04	0.03*	0.05*	0.06	2
Calcium	mg/L	-	-	-	-	8.5	9.6	11.4	11.7	300
Chloride	mg/L	-	-	-	-	11.1	16.3	19.4	19.7	600
Fluoride	µg/L	-	-	-	-	<100	54.8	75.7	107	1500
Magnesium	mg/L	-	-	-	-	3.8	4.2	4.6	4.7	100
Nitrate + Nitrite as N	mg/L	-	-	-	-	0.14	0.39	0.51	0.51	20
Potassium	mg/L	-	-	-	-	1.6	1.9	2.2	2.2	100
Sodium	mg/L	-	-	-	-	7.4	11.9	14.2	14.3	400
Sulphate	mg/L	-	-	-	-	3.5	6.3	7.6	7.8	600
Zinc	mg/L	-	-	-	-	<0.03	<0.03	<0.03	<0.03	10
Aluminium	µg/L	-	-	-	-	17.2	80.3	133.8	139.6	500
Antimony	µg/L	-	-	-	-	<2	<2	<2	<2	50
Arsenic	µg/L	-	-	-	-	<2	<2	<2	<2	50
Cadmium	µg/L	-	-	-	-	<1	<1	<1	<1	10
Chromium	µg/L	-	-	-	-	<3	<3	<3	<3	500
Cobalt	µg/L	-	-	-	-	<2	<2	<2	<2	1000
Copper	mg/L	-	-	-	-	<0.05	<0.05	<0.05	<0.05	2
Cyanide (Free)	µg/L	-	-	-	-	<10	<10	<10	<10	-
Cyanide (Recoverable)	µg/L	-	-	-	-	<10	<10	<10	<10	70
Iron	mg/L	-	-	-	-	<0.02	0.02*	0.04*	0.08	2
Lead	µg/L	-	-	-	-	<4	<4	<4	<4	50
Manganese	mg/L	-	-	-	-	<0.01	<0.01	<0.01	<0.01	1
Mercury	µg/L	-	-	-	-	<0.50	<0.50	<0.50	<0.50	5
Nickel	µg/L	-	-	-	-	<3	<3	<3	<3	350
Selenium	µg/L	-	-	-	-	<1	<1	<1	<1	50
Vanadium	µg/L	-	-	-	-	<10	<10	<10	<10	500
Total organic carbon	mg/L	-	-	-	-	1.7	2.2	2.5	2.6	20 <sup>§</sup>
Total Trihalomethanes	µg/L	-	-	-	-	20.4	49.5	68.4	70.0	300
Phenols	µg/L	-	-	-	-	<10	<10	<10	<10	70

Standards have been adopted from the SANS 241: 2006 Drinking Water specification.

\* Statistics for constituents that had some results below the detection limit were calculated using half the detection limit.

‡ Median

§ SANS 241:2006 specifies Dissolved Organic Carbon.

± SANS 241:2006 Operational Alert.

# Umgeni Water's Warning Limits.

**Wiggins Waterworks, 249 ML/d, Period 01 July 2010 - 30 June 2011**

DETERMINAND	Units	Raw Water				Final Water				SANS 241:2006 Class II Limit
		Minimum	Average	95 <sup>th</sup> Percentile	Maximum	Minimum	Average	95 <sup>th</sup> Percentile	Maximum	
Free Chlorine	mg/L	-	-	-	-	0.8	1.1	1.2	1.7	0.05 - 0.3 <sup>#</sup>
Total Chlorine	mg/L	-	-	-	-	1	1.4	1.7	2.5	1.80 - 2.50 <sup>#</sup>
Colony Count @ 37°C	per mL	-	-	-	-	0	0 <sup>‡</sup>	2	152	5000 <sup>‡</sup>
Coliforms	per 100 mL	20	344 <sup>‡</sup>	4838	>4838	0	0 <sup>‡</sup>	0	1	10 <sup>‡</sup>
<i>E.coli</i>	per 100 mL	0	0 <sup>‡</sup>	2	10	0	0 <sup>‡</sup>	0	0	0
Somatic coliphages	per 10 mL	-	-	-	-	0	0 <sup>‡</sup>	0	0	1 <sup>‡</sup>
Colour	°H	2.4	3.6	4.8	5.0	<1	0.8*	1.7*	3.5	50
Conductivity	mS/m	20.2	23.5	25.1	25.2	12.5	24.1	26.3	29.4	370
Dissolved solids	mg/L	-	-	-	-	126.0	146.6	169.9	176.0	2400
Suspended solids	mg/L	<4	2.5*	5.2*	5.6	<4.0	<4.0	<4.0	<4.0	-
pH	pH units	7.3	-	9.0	9.5	7.6	-	8.5	8.8	8.0 - 9.2 <sup>#</sup>
Turbidity	NTU	0.5	1.3	2.8	4.4	0.07	0.33	0.62	1.09	5
Alkalinity	mg/L	52.9	58.9	64.9	65.1	51.7	58.7	67.2	68.5	-
Total Hardness	mg/L	-	-	-	-	55.8	60.8	69.6	74.0	20 - 300 <sup>#</sup>
Ammonia as N	mg/L	-	-	-	-	<0.04	0.02*	0.04*	0.04	2
Calcium	mg/L	-	-	-	-	12.6	14.0	16.7	17.3	300
Chloride	mg/L	-	-	-	-	26.4	29.9	32.9	33.3	600
Fluoride	µg/L	<100	117.3*	150.5*	162.0	< 100	124.1*	158.1*	163.0	1500
Magnesium	mg/L	-	-	-	-	5.6	6.2	7.0	7.4	100
Nitrate + Nitrite as N	mg/L	-	-	-	-	<0.05	0.49*	0.85*	0.85	20
Potassium	mg/L	-	-	-	-	2.6	2.9	3.1	3.2	100
Sodium	mg/L	-	-	-	-	24.7	27.5	30.5	30.6	400
Sulphate	mg/L	-	-	-	-	10.8	13.8	15.7	15.8	600
Zinc	mg/L	-	-	-	-	<0.03	0.02*	0.03*	0.03	10
Aluminium	µg/L	-	-	-	-	37.2	101.2	207.6	230.3	500
Antimony	µg/L	-	-	-	-	<2	<2	<2	<2	50
Arsenic	µg/L	-	-	-	-	<2	<2	<2	<2	50
Cadmium	µg/L	-	-	-	-	<1	<1	<1	<1	10
Chromium	µg/L	-	-	-	-	<3	<3	<3	<3	500
Cobalt	µg/L	-	-	-	-	<2	<2	<2	<2	1000
Copper	mg/L	-	-	-	-	<0.05	<0.05	<0.05	<0.05	2
Cyanide (Free)	µg/L	-	-	-	-	<10	<10	<10	<10	-
Cyanide (Recoverable)	µg/L	-	-	-	-	<10	<10	<10	<10	70
Iron	mg/L	<0.02	0.06*	0.11*	0.17	<0.02	0.02*	0.06*	0.11	2
Lead	µg/L	-	-	-	-	<4	<4	<4	<4	50
Manganese	mg/L	<0.01	0.05*	0.14*	0.15	<0.01	0.01*	0.03*	0.12	1
Mercury	µg/L	<0.5	0.3*	0.4*	0.5	<0.5	<0.5	<0.5	<0.5	5
Nickel	µg/L	-	-	-	-	<3	<3	<3	<3	350
Selenium	µg/L	-	-	-	-	<1	0.6*	0.9*	1.0	50
Vanadium	µg/L	-	-	-	-	<10	<10	<10	<10	500
Total organic carbon	mg/L	2.6	3.1	3.7	3.9	2.2	2.6	3.3	3.9	20 <sup>§</sup>
Total Trihalomethanes	µg/L	-	-	-	-	11.9	32.4	51.8	55.5	300
Phenols	µg/L	-	-	-	-	<10	<10	<10	<10	70

Standards have been adopted from the SANS 241: 2006 Drinking Water specification. Class II limits are shown which are suitable for lifetime consumption.

\* Statistics for constituents that had some results below the detection limit were calculated using half the detection limit.

‡ Median

§ SANS 241:2006 specifies Dissolved Organic Carbon.

± SANS 241:2006 Operational Alert.

# Umgeni Water's Warning Limits.

Midmar Waterworks, 218 ML/d, Period 01 July 2010 - 30 June 2011

DETERMINAND	Units	Raw Water				Final Water				SANS 241:2006 Class II Limit
		Minimum	Average	95 <sup>th</sup> Percentile	Maximum	Minimum	Average	95 <sup>th</sup> Percentile	Maximum	
Free Chlorine	mg/L	-	-	-	-	0.05	0.4	0.5	2.1	0.05 - 0.3 <sup>#</sup>
Total Chlorine	mg/L	-	-	-	-	0.8	2.7	3.5	6.0	1.80 - 2.50 <sup>#</sup>
Colony Count @ 37°C	per mL	-	-	-	-	0	0 <sup>‡</sup>	2	50	5000 <sup>‡</sup>
Coliforms	per 100 mL	4	230 <sup>‡</sup>	4152	>4838	0	0 <sup>‡</sup>	0	2	10 <sup>‡</sup>
<i>E.coli</i>	per 100 mL	0	4 <sup>‡</sup>	44	174	0	0 <sup>‡</sup>	0	0	0
Somatic coliphages	per 10 mL	-	-	-	-	0	0 <sup>‡</sup>	0	0	1 <sup>‡</sup>
Colour	°H	1.1	3.6	7.8	10.6	<1.0	0.9*	1.9*	2.3	50
Conductivity	mS/m	5.8	7.0	7.9	9.2	6.7	8.6	9.3	10.0	370
Dissolved solids	mg/L	40.0	51.9	65.8	66.0	46	59.5	73.5	75	2400
Suspended solids	mg/L	<4	5.3*	13.8*	16.4	<4	<4	<4	<4	-
pH	pH units	7.5	-	8.5	8.6	7.4	-	9.0	9.5	8.0 - 9.2 <sup>#</sup>
Turbidity	NTU	1.3	5.7	13.4	15.1	< 0.2	0.2*	0.3*	0.5	5
Alkalinity	mg/L	22.6	25.4	28.7	28.9	25.5	29.9	33.6	33.7	-
Total Hardness	mg/L	20.9	22.7	23.8	24.0	29.5	32.2	33.9	34.4	20 - 300 <sup>#</sup>
Ammonia as N	mg/L	<0.04	0.05*	0.08*	0.09	0.05	0.37	0.95	1.05	2
Calcium	mg/L	4.1	4.6	4.9	4.9	7.2	8.4	9.2	9.3	300
Chloride	mg/L	2.0	3.7	4.5	4.7	5.4	6.9	8.5	8.6	600
Fluoride	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	1500
Magnesium	mg/L	2.5	2.7	2.9	3.0	2.4	2.7	2.8	2.9	100
Nitrate + Nitrite as N	mg/L	<0.05	0.13*	0.25*	0.28	0.08	0.19	0.27	0.33	20
Potassium	mg/L	1.2	1.3	1.4	1.4	1.2	1.3	1.5	1.5	100
Sodium	mg/L	4.3	4.6	5.0	5.1	4.4	4.6	4.8	4.8	400
Sulphate	mg/L	0.6	1.4	1.7	1.7	1.1	1.6	2.2	2.4	600
Zinc	mg/L	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	10
Aluminium	µg/L	63.6	162.1	283.1	288.5	<10	23.5*	34.4*	35.4	500
Antimony	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	50
Arsenic	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	50
Cadmium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	10
Chromium	µg/L	<3	<3	<3	<3	<3	<3	<3	<3	500
Cobalt	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	1000
Copper	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	2
Cyanide (Free)	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	-
Cyanide (Recoverable)	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	70
Iron	mg/L	0.03	0.29	0.56	0.82	<0.02	0.02*	0.06*	0.10	2
Lead	µg/L	<4	<4	<4	<4	<4	<4	<4	<4	50
Manganese	mg/L	<0.01	0.02*	0.06*	0.07	<0.01	0.01*	0.01*	0.01	1
Mercury	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5
Nickel	µg/L	<3	<3	<3	<3	<3	<3	<3	<3	350
Selenium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	50
Vanadium	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	500
Total organic carbon	mg/L	2.3	2.7	3.0	3.2	1.9	2.4	2.9	3.2	20 <sup>§</sup>
Total Trihalomethanes	µg/L	-	-	-	-	15.7	35.6	51.6	53.5	300
Phenols	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	70

Standards have been adopted from the SANS 241: 2006 Drinking Water specification. Class II limits are shown which are suitable for lifetime consumption.

\* Statistics for constituents that had some results below the detection limit were calculated using half the detection limit.

‡ Median

§ SANS 241:2006 specifies Dissolved Organic Carbon.

± SANS 241:2006 Operational Alert.

# Umgeni Water's Warning Limits.

DV Harris Waterworks, 79 ML/d, Period 01 July 2010 - 30 June 2011

DETERMINAND	Units	Raw Water				Final Water				SANS 241:2006 Class II Limit
		Minimum	Average	95 <sup>th</sup> Percentile	Maximum	Minimum	Average	95 <sup>th</sup> Percentile	Maximum	
Free Chlorine	mg/L	-	-	-	-	0.05	0.4	0.5	3.5	0.05 - 0.3 <sup>#</sup>
Total Chlorine	mg/L	-	-	-	-	0.4	2.8	3.5	4.0	1.80 - 2.50 <sup>#</sup>
Colony Count @ 37°C	per mL	-	-	-	-	0	0 <sup>‡</sup>	2	56	5000 <sup>‡</sup>
Coliforms	per 100 mL	0	84 <sup>‡</sup>	4838	>4838	0	0 <sup>‡</sup>	0	3	10 <sup>‡</sup>
<i>E. coli</i>	per 100 mL	0	2 <sup>‡</sup>	35	62	0	0 <sup>‡</sup>	0	0	0
Somatic coliphages	per 10 mL	-	-	-	-	0	0 <sup>‡</sup>	0	0	1 <sup>‡</sup>
Colour	°H	1.0	3.7	7.5	9.4	<1.0	1.2*	2.6*	2.8	50
Conductivity	mS/m	6.2	6.8	7.6	8.3	7.9	8.9	9.6	12.3	370
Dissolved solids	mg/L	39.2	51.9	64.2	65.2	43.0	56.3	70.5	76.0	2400
Suspended solids	mg/L	<4	3.9*	9.0*	15.2	<4.0	<4.0	<4.0	<4.0	-
pH	pH units	7.0	-	8.8	8.9	8.0	-	9.2	9.6	8.0 - 9.2 <sup>#</sup>
Turbidity	NTU	1.1	4.1	8.6	12.2	< 0.2	0.17*	0.31*	0.5	5
Alkalinity	mg/L	22.7	25.2	27.5	28.6	27.3	31.7	34.8	35.5	-
Total Hardness	mg/L	21.8	23.2	24.9	25.2	29.6	33.3	36.9	38.1	20 - 300 <sup>#</sup>
Ammonia as N	mg/L	<0.04	0.06*	0.11*	0.12	<0.04	0.6*	1.9*	4.9	2
Calcium	mg/L	4.3	4.8	5.1	5.2	7.6	8.9	10.2	10.7	300
Chloride	mg/L	3.4	4.0	4.5	4.5	6.8	7.8	9.1	9.5	600
Fluoride	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	1500
Magnesium	mg/L	2.4	2.7	2.9	3.0	2.5	2.7	2.8	2.8	100
Nitrate + Nitrite as N	mg/L	<0.05	0.17*	0.24*	0.26	<0.05	0.18*	0.26*	0.27	20
Potassium	mg/L	1.1	1.3	1.4	1.4	1.2	1.3	1.5	1.5	100
Sodium	mg/L	3.9	4.6	4.9	5.0	4.3	4.5	4.7	4.7	400
Sulphate	mg/L	1.3	1.7	2.1	2.2	1.3	1.5	1.8	2.0	600
Zinc	mg/L	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	10
Aluminium	µg/L	52.6	169.6	402.1	425.9	25.2	66.7	122.7	160.9	500
Antimony	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	50
Arsenic	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	50
Cadmium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	10
Chromium	µg/L	<3	<3	<3	<3	<3	<3	<3	<3	500
Cobalt	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	1000
Copper	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	2
Cyanide (Free)	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	-
Cyanide (Recoverable)	µg/L	<10	8.3*	14.0*	15.0	<10	<10	<10	<10	70
Iron	mg/L	0.06	0.22	0.45	0.62	<0.02	0.02*	0.06*	0.08	2
Lead	µg/L	<4	<4	<4	<4	<4	<4	<4	<4	50
Manganese	mg/L	<0.01	0.01*	0.05*	0.10	<0.01	0.01*	0.01*	0.01	1
Mercury	µg/L	<0.5	0.3*	0.5*	0.5	<0.5	0.3*	0.5*	0.5	5
Nickel	µg/L	<3	<3	<3	<3	<3	<3	<3	<3	350
Selenium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	50
Vanadium	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	500
Total organic carbon	mg/L	1.95	2.55	2.97	2.98	1.9	2.3	2.7	2.9	20 <sup>§</sup>
Total Trihalomethanes	µg/L	-	-	-	-	8.4	20.7	41.0	49.9	300
Phenols	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	70

Standards have been adopted from the SANS 241: 2006 Drinking Water specification. Class II limits are shown which are suitable for lifetime consumption.

\* Statistics for constituents that had some results below the detection limit were calculated using half the detection limit.

‡ Median

§ SANS 241:2006 specifies Dissolved Organic Carbon.

± SANS 241:2006 Operational Alert.

# Umgeni Water's Warning Limits.

**Hazelmere Waterworks, 41 ML/d, Period 01 July 2010 - 30 June 2011**

DETERMINAND	Units	Raw Water				Final Water				SANS 241:2006 Class II Limit
		Minimum	Average	95 <sup>th</sup> Percentile	Maximum	Minimum	Average	95 <sup>th</sup> Percentile	Maximum	
Free Chlorine	mg/L	-	-	-	-	0.05	0.1	0.3	0.6	0.05 - 0.3 <sup>#</sup>
Total Chlorine	mg/L	-	-	-	-	1.0	1.9	2.8	3.5	1.80 - 2.50 <sup>#</sup>
Colony Count @ 37°C	per mL	-	-	-	-	0	0 <sup>‡</sup>	5	593	5000 <sup>‡</sup>
Coliforms	per 100 mL	0	308 <sup>‡</sup>	4838	>4838	0	0 <sup>‡</sup>	1	517	10 <sup>‡</sup>
<i>E.coli</i>	per 100 mL	0	4 <sup>‡</sup>	30	88	0	0 <sup>‡</sup>	0	5	0
Somatic coliphages	per 10 mL	-	-	-	-	0	0 <sup>‡</sup>	0	0	1 <sup>‡</sup>
Colour	°H	3.4	9.8	15.7	16.5	<1.0	3.3*	5.1*	7.1	50
Conductivity	mS/m	15.4	16.4	17.9	18.0	15.4	18.3	19.8	20.8	370
Dissolved solids	mg/L	-	-	-	-	110.0	126.5	155.0	168.0	2400
Suspended solids	mg/L	<4	12.1*	43.4*	43.6	<4	<4	<4	<4	-
pH	pH units	7.3	-	7.9	8.0	8.0	-	8.9	9.3	8.0 - 9.2 <sup>#</sup>
Turbidity	NTU	1.7	13.5	52.8	114.0	0.2	1.0	2.0	2.6	5
Alkalinity	mg/L	27.2	32.9	36.4	37.1	34.4	43.5	49.8	50.5	-
Total Hardness	mg/L	-	-	-	-	39.2	42.8	47.5	48.1	20 - 300 <sup>#</sup>
Ammonia as N	mg/L	-	-	-	-	0.3	0.4	0.6	0.7	2
Calcium	mg/L	-	-	-	-	7.9	9.1	10.9	11.3	300
Chloride	mg/L	-	-	-	-	14.9	27.9	32.9	34.7	600
Fluoride	µg/L	<100	77.7*	131.3*	134.0	<100	95.0*	124.5*	129.0	1500
Magnesium	mg/L	-	-	-	-	4.6	4.8	5.0	5.1	100
Nitrate + Nitrite as N	mg/L	-	-	-	-	< 0.05	0.19*	0.57*	0.81	20
Potassium	mg/L	-	-	-	-	1.5	1.8	2.2	2.2	100
Sodium	mg/L	-	-	-	-	18.7	20.2	21.6	21.8	400
Sulphate	mg/L	-	-	-	-	3.7	5.8	7.6	7.8	600
Zinc	mg/L	-	-	-	-	<0.03	<0.03	<0.03	<0.03	10
Aluminium	µg/L	-	-	-	-	36.3	124.9	171.1	186.2	500
Antimony	µg/L	-	-	-	-	<2	<2	<2	<2	50
Arsenic	µg/L	-	-	-	-	<2	<2	<2	<2	50
Cadmium	µg/L	-	-	-	-	<1	<1	<1	<1	10
Chromium	µg/L	-	-	-	-	<3	<3	<3	<3	500
Cobalt	µg/L	-	-	-	-	<2	<2	<2	<2	1000
Copper	mg/L	-	-	-	-	<0.05	<0.05	<0.05	<0.05	2
Cyanide (Free)	µg/L	-	-	-	-	<10	<10	<10	<10	-
Cyanide (Recoverable)	µg/L	-	-	-	-	<10	<10	<10	<10	70
Iron	mg/L	0.13	0.88	3.39	3.86	<0.02	0.07*	0.14*	0.44	2
Lead	µg/L	-	-	-	-	<4	<4	<4	<4	50
Manganese	mg/L	<0.01	0.04*	0.11*	0.27	<0.01	0.01*	0.04*	0.05	1
Mercury	µg/L	-	-	-	-	<0.5	<0.5	<0.5	<0.5	5
Nickel	µg/L	-	-	-	-	<3	<3	<3	<3	350
Selenium	µg/L	-	-	-	-	<1	<1	<1	<1	50
Vanadium	µg/L	-	-	-	-	<10	<10	<10	<10	500
Total organic carbon	mg/L	2.3	3.8	5.5	7.5	2.5	3.1	4.2	5.1	20 <sup>§</sup>
Total Trihalomethanes	µg/L	-	-	-	-	8.9	14.6	21.8	24.7	300
Phenols	µg/L	-	-	-	-	<10	<10	<10	<10	70

Standards have been adopted from the SANS 241: 2006 Drinking Water specification. Class II limits are shown which are suitable for lifetime consumption.

\* Statistics for constituents that had some results below the detection limit were calculated using half the detection limit.

‡ Median

§ SANS 241:2006 specifies Dissolved Organic Carbon.

± SANS 241:2006 Operational Alert.

# Umgeni Water's Warning Limits.

**Ixopo Waterworks, 2.5 ML/d, Period 01 July 2010 - 30 June 2011**

DETERMINAND	Units	Raw water				Final Water				SANS 241:2006 Class II Limit
		Minimum	Average	95 <sup>th</sup> Percentile	Maximum	Minimum	Average	95 <sup>th</sup> Percentile	Maximum	
Free Chlorine	mg/L	-	-	-	-	0.05	1.2	2.4	2.5	0.05 - 0.3 <sup>#</sup>
Total Chlorine	mg/L	-	-	-	-	0.1	1.8	3.5	3.5	1.80 - 2.50 <sup>#</sup>
Colony Count @ 37°C	per mL	-	-	-	-	0	1 <sup>‡</sup>	539.5	> 1000	5000 <sup>‡</sup>
Coliforms	per 100 mL	0	50 <sup>‡</sup>	4147	>4838	0	0 <sup>‡</sup>	22.9	185	10 <sup>‡</sup>
<i>E.coli</i>	per 100 mL	0	0 <sup>‡</sup>	0	2	0	0 <sup>‡</sup>	1	1	0
Somatic coliphages	per 10 mL	-	-	-	-	0	0 <sup>‡</sup>	0	0	1 <sup>‡</sup>
Colour	°H	1.7	3.5	4.9	12.9	<1.0	1.3*	2.3*	2.6	50
Conductivity	mS/m	14.6	29.9	33.7	35.4	13.9	18.9	21.9	22.6	370
Dissolved solids	mg/L	-	-	-	-	93	121.2	145.2	156.0	2400
Suspended solids	mg/L	-	-	-	-	<4	<4	<4	<4	-
pH	pH units	6.8	-	8.1	8.4	6.5	-	7.9	8.5	8.0 - 9.2 <sup>#</sup>
Turbidity	NTU	0.2	0.8	2.3	3.0	0.1	0.7	1.0	1.1	5
Alkalinity	mg/L	24.2	125.1	148.6	149.6	14.8	35.3	47.7	49.9	-
Total Hardness	mg/L	112.9	127.2	137.6	139.7	< 43.7	51.8*	63.0*	65.7	20 - 300 <sup>#</sup>
Ammonia as N	mg/L	-	-	-	-	<0.04	0.03*	0.06*	0.08	2
Calcium	mg/L	28.8	32.5	35.2	35.7	7.3	11.9	14.8	15.8	300
Chloride	mg/L	-	-	-	-	14.8	20.3	25.7	26.5	600
Fluoride	µg/L	<100	168.7*	242.8*	289.0	<100	59.0*	107.2*	115.0	1500
Magnesium	mg/L	9.8	11.0	11.9	12.1	5.0	6.1	6.9	7.3	100
Nitrate + Nitrite as N	mg/L	-	-	-	-	< 0.05	0.08*	0.19*	0.25	20
Potassium	mg/L	<1.0	0.8*	1.2*	1.3	3.7	4.2	4.9	5.7	100
Sodium	mg/L	21.0	24.3	26.2	26.5	12.4	15.5	18.7	19.1	400
Sulphate	mg/L	-	-	-	-	12.0	24.8	33.2	36.9	600
Zinc	mg/L	-	-	-	-	<0.03	<0.03	<0.03	<0.03	10
Aluminium	µg/L	-	-	-	-	54.2	162.1	250.6	289.6	500
Antimony	µg/L	-	-	-	-	<2	<2	<2	<2	50
Arsenic	µg/L	-	-	-	-	<2	<2	<2	<2	50
Cadmium	µg/L	-	-	-	-	<1	<1	<1	<1	10
Chromium	µg/L	-	-	-	-	<3	2.0*	3.2*	3.5	500
Cobalt	µg/L	-	-	-	-	<2	<2	<2	<2	1000
Copper	mg/L	-	-	-	-	<0.05	<0.05	<0.05	<0.05	2
Cyanide (Free)	µg/L	-	-	-	-	<10	<10	<10	<10	-
Cyanide (Recoverable)	µg/L	-	-	-	-	<10	<10	<10	<10	70
Iron	mg/L	<0.02	0.05*	0.15*	0.16	<0.02	0.15*	0.39*	0.46	2
Lead	µg/L	-	-	-	-	<4	<4	<4	<4	50
Manganese	mg/L	0.07	0.11	0.13	0.14	< 0.01	0.11*	0.27*	0.45	1
Mercury	µg/L	-	-	-	-	<0.5	<0.5	<0.5	<0.5	5
Nickel	µg/L	-	-	-	-	<3	<3	<3	<3	350
Selenium	µg/L	-	-	-	-	<1	<1	<1	<1	50
Vanadium	µg/L	-	-	-	-	<10	<10	<10	<10	500
Total organic carbon	mg/L	1.6	2.7	4.7	5.4	2.8	3.7	4.8	4.9	20 <sup>§</sup>
Total Trihalomethanes	µg/L	-	-	-	-	3.8	28.5	51.1	57.4	300
Phenols	µg/L	-	-	-	-	<10	<10	<10	<10	70

Standards have been adopted from the SANS 241: 2006 Drinking Water specification. Class II limits are shown which are suitable for lifetime consumption.

\* Statistics for constituents that had some results below the detection limit were calculated using half the detection limit.

‡ Median

§ SANS 241:2006 specifies Dissolved Organic Carbon.

‡ SANS 241:2006 Operational Alert.

# Umgeni Water's Warning Limits.

**Amanzimtoti Waterworks, 45.1 ML/d, Period 01 July 2010 - 30 June 2011**

DETERMINAND	Units	Raw Water				Final Water				SANS 241:2006 Class II Limit
		Minimum	Average	95 <sup>th</sup> Percentile	Maximum	Minimum	Average	95 <sup>th</sup> Percentile	Maximum	
Free Chlorine	mg/L	-	-	-	-	0.80	1.02	1.20	1.20	0.05 - 0.3 <sup>#</sup>
Total Chlorine	mg/L	-	-	-	-	0.90	1.27	1.53	1.70	1.80 - 2.50 <sup>#</sup>
Colony Count @ 37°C	per mL	-	-	-	-	0	0 <sup>‡</sup>	2 <sup>‡</sup>	50	5000 <sup>‡</sup>
Coliforms	per 100 mL	34	846 <sup>‡</sup>	2419 <sup>*</sup>	>4838	0	0 <sup>‡</sup>	0 <sup>‡</sup>	15	10 <sup>‡</sup>
<i>E.coli</i>	per 100 mL	0	8 <sup>‡</sup>	168	1454	0	0 <sup>‡</sup>	0 <sup>‡</sup>	0	0
Somatic coliphages	per 10 mL	-	-	-	-	0	0 <sup>‡</sup>	0 <sup>‡</sup>	0	1 <sup>‡</sup>
Colour	°H	3.5	24.8	46.9	49.4	<1.0	1.0*	2.0*	4.6	50
Conductivity	mS/m	-	-	-	-	15	21	25	28	370
Dissolved solids	mg/L	-	-	-	-	100	135	163	164	2400
Suspended solids	mg/L	2	16.9	60.9	64.0	<4.0	<4.0	<4.0	<4.0	-
pH	pH units	-	-	-	-	7.6	7.9	8.4	8.4	8.0 - 9.2 <sup>#</sup>
Turbidity	NTU	7.5	25.7	77.3	126.0	0.2	0.3	0.5	0.7	5
Alkalinity	mg/L	17.1	21.2	24.2	24.5	25.2	46.3	60.8	65.7	-
Total Hardness	mg/L	-	-	-	-	37	49	54	55	20 - 300 <sup>#</sup>
Ammonia as N	mg/L	-	-	-	-	<0.04	0.04*	0.10*	0.11	2
Calcium	mg/L	-	-	-	-	9	11	13	13	300
Chloride	mg/L	-	-	-	-	24	29	31	31	600
Fluoride	µg/L	<100	52*	50*	179	<100	64*	107*	107	1500
Magnesium	mg/L	-	-	-	-	3.6	4.9	5.3	5.4	100
Nitrate + Nitrite as N	mg/L	-	-	-	-	0.2	0.6	0.9	1.1	20
Potassium	mg/L	-	-	-	-	1.8	2.2	2.4	2.5	100
Sodium	mg/L	-	-	-	-	17.3	22.1	24.4	25.1	400
Sulphate	mg/L	-	-	-	-	3.8	9.2	13.3	13.7	600
Zinc	mg/L	-	-	-	-	<0.03	<0.03	<0.03	<0.03	10
Aluminium	µg/L	-	-	-	-	28	75	128	148	500
Antimony	µg/L	-	-	-	-	<2.0	<2.0	<2.0	<2.0	50
Arsenic	µg/L	-	-	-	-	<2.0	<2.0	<2.0	<2.0	50
Cadmium	µg/L	-	-	-	-	<0.10	<0.10	<0.10	<0.10	10
Chromium	µg/L	-	-	-	-	<3.0	2*	3.2*	3.5	500
Cobalt	µg/L	-	-	-	-	<2.0	<2.0	<2.0	<2.0	1000
Copper	mg/L	-	-	-	-	<0.05	<0.05	<0.05	<0.05	2
Cyanide (Free)	µg/L	-	-	-	-	<10	<10	<10	<10	-
Cyanide (Recoverable)	µg/L	-	-	-	-	<10	<10	<10	<10	70
Iron	mg/L	0.93	1.80	2.56	5.60	0.01	0.04	0.10	0.17	2
Lead	µg/L	-	-	-	-	<4.0	<4.0	<4.0	<4.0	50
Manganese	mg/L	0.01	0.05	0.11	0.24	<0.01	0.01*	0.01*	0.02	1
Mercury	µg/L	-	-	-	-	<0.50	<0.50	<0.50	<0.50	5
Nickel	µg/L	-	-	-	-	<3.0	<3.0	<3.0	<3.0	350
Selenium	µg/L	-	-	-	-	<1.0	<1.0	<1.0	<1.0	50
Vanadium	µg/L	-	-	-	-	<10.0	<10.0	<10.0	<10.0	500
Total organic carbon	mg/L	2.3	4.0	5.8	6.2	2.3 <sup>§</sup>	2.8 <sup>§</sup>	3.5 <sup>§</sup>	3.8 <sup>§</sup>	20 <sup>§</sup>
Total Trihalomethanes	µg/L	-	-	-	-	36	54	64	66	300
Phenols	µg/L	-	-	-	-	<10.0	<10.0	<10.0	<10.0	70

Standards have been adopted from the SANS 241: 2006 Drinking Water specification.

\* Statistics for constituents that had some results below the detection limit were calculated using half the detection limit.

‡ Median

§ SANS 241:2006 specifies Dissolved Organic Carbon.

± SANS 241:2006 Operational Alert.

# Umgeni Water's Warning Limits.

Umzinto Waterworks, 10.2 ML/d, Period 01 July 2009 - 30 June 2010

DETERMINAND	Units	Dam Raw (River Raw)				Final Water				SANS 241:2006 Class II Limit
		Minimum	Average	95 <sup>th</sup> Percentile	Maximum	Minimum	Average	95 <sup>th</sup> Percentile	Maximum	
Free Chlorine	mg/L	-	-	-	-	<0.05	1.68*	2.00*	2.00	0.05 - 0.3 <sup>#</sup>
Total Chlorine	mg/L	-	-	-	-	<0.05	2.07*	3.00*	3.00	1.80 - 2.50 <sup>#</sup>
Colony Count @ 37°C	per mL	-	-	-	-	0	0 <sup>‡</sup>	7.4	29	5000 <sup>‡</sup>
Coliforms	per 100 mL	84 (3)	2147 <sup>‡</sup> (4 <sup>‡</sup> )	4664 <sup>‡</sup> (5 <sup>‡</sup> )	24190 (6)	0	0 <sup>‡</sup>	0	118	10 <sup>‡</sup>
<i>E.coli</i>	per 100 mL	0 (6)	210 <sup>‡</sup> (40 <sup>‡</sup> )	933 <sup>‡</sup> (88 <sup>‡</sup> )	4838 (110)	0	0 <sup>‡</sup>	0	1	0
Somatic coliphages	per 10 mL	-	-	-	-	0	0 <sup>‡</sup>	0	0	1 <sup>‡</sup>
Colour	°H	6.8 (6.8)	16.0 (14.1)	19.0 (30.1)	80.6 (31.2)	0.5	1.7	2.8	3.1	50
Conductivity	mS/m	27.1 (23.8)	35.0 (30.7)	45.4 (33.4)	48.4 (33.5)	23.4	32.7	36.1	36.3	370
Dissolved solids	mg/L	174 (119)	228 (175)	290 (203)	305 (210)	144	205	233	239	2400
Suspended solids	mg/L	<4.0 (<4.0)	17.1* (3.6*)	42.8* (6.3*)	123.2 (20.4)	<4.0	<4.0	<4.0	<4.0	-
pH	pH units	7.5 (7.1)	7.8 (7.7)	8.1 (8.1)	8.3 (8.1)	7.5	7.9	8.4	8.4	8.0 - 9.2 <sup>#</sup>
Turbidity	NTU	3.2 (1.2)	16.6 (5.4)	48.5 (18.4)	50.0 (31.8)	0.2	0.4	0.4	1.9	5
Alkalinity	mg/L	44.6 (-)	86.2 (-)	122.0 (-)	126.3 (-)	64	83	91	91	-
Ammonia as N	mg/L	-	-	-	-	<0.04	0.04*	0.10*	0.11	2
Calcium	mg/L	11.1 (6.8)	17.1 (10.0)	24.0 (11.0)	24.4 (11.0)	11.6	16.3	17.7	17.7	300
Chloride	mg/L	36.7 (24.2)	47.6 (38.5)	60.5 (47.0)	67.9 (48.8)	38.7	48.8	55.2	55.8	600
Fluoride	µg/L	<100 (251)	215* (306)	324* (374)	361 (382)	218	293	336	345	1500
Magnesium	mg/L	8.3 (6.9)	11.4 (9.3)	15.8 (10.2)	15.8 (10.2)	6.6	9.9	11.3	11.6	100
Nitrate + Nitrite as N	mg/L	-	-	-	-	<0.05	0.37*	1.00*	1.53	20
Potassium	mg/L	-	-	-	-	2.0	2.4	3.0	3.1	100
Sodium	mg/L	-	-	-	-	25.8	35.8	39.5	39.8	400
Sulphate	mg/L	<0.16 (4.3)	9.8* (8.1)	19.7* (13.1)	23.6 (14.1)	6.2	9.4	13.2	13.6	600
Zinc	mg/L	-	-	-	-	<0.03	<0.03	<0.03	<0.03	10
Aluminium	µg/L	-	-	-	-	43	74	133	141	500
Antimony	µg/L	-	-	-	-	<2.0	<2.0	<2.0	<2.0	50
Arsenic	µg/L	-	-	-	-	<2.0	<2.0	<2.0	<2.0	50
Cadmium	µg/L	-	-	-	-	<1.0	<1.0	<1.0	<1.0	10
Chromium	µg/L	-	-	-	-	<3.0	<3.0	<3.0	<3.0	500
Cobalt	µg/L	-	-	-	-	<2.0	<2.0	<2.0	<2.0	1000
Copper	mg/L	-	-	-	-	<0.05	<0.05	<0.05	<0.05	2
Iron	mg/L	0.18 (0.06)	0.80 (0.39)	2.09 (0.92)	3.26 (1.63)	<0.02	0.04	0.12	0.18	2
Lead	µg/L	-	-	-	-	<4.0	<4.0	<4.0	<4.0	50
Manganese	mg/L	<0.01 (<0.01)	0.44* (0.05*)	0.11* (0.09*)	1.27 (0.18)	<0.01	<0.01	0.02*	0.05	1
Mercury	µg/L	-	-	-	-	<0.05	0.49*	0.81*	0.85	5
Nickel	µg/L	-	-	-	-	<3.0	<3.0	<3.0	<3.0	350
Selenium	µg/L	-	-	-	-	<1.0	<1.0	<1.0	<1.0	50
Vanadium	µg/L	<10.0 (-)	<10.0 (-)	<10.0 (-)	<10.0 (-)	<10.0	<10.0	<10.0	<10.0	500
Total organic carbon	mg/L	4.2 (2.5)	7.7 (3.7)	9.4 (5.1)	9.8 (6.0)	2.4	3.8	4.9	5.3	20 <sup>§</sup>
Total Trihalomethanes	µg/L	-	-	-	-	8.0	88.9	147.8	167.0	300

Standards have been adopted from the SANS 241: 2006 Drinking Water specification.

\* Statistics for constituents that had some results below the detection limit were calculated using half the detection limit.

‡ Median

§ SANS 241:2006 specifies Dissolved Organic Carbon.

± SANS 241:2006 Operational Alert.

# Umgeni Water's Warning Limits.

**Mtwalume Waterworks, 9.0 ML/d, Period 01 July 2010- 30 June 2011**

DETERMINAND	Units	Raw Water				Final Water				SANS 241:2006 Class II Limit
		Minimum	Average	95 <sup>th</sup> Percentile	Maximum	Minimum	Average	95 <sup>th</sup> Percentile	Maximum	
Free Chlorine	mg/L	-	-	-	-	1.5	1.9	2.0	2.7	0.05 - 0.3 <sup>#</sup>
Total Chlorine	mg/L	-	-	-	-	1.6	2.2	2.9	3.0	1.80 - 2.50 <sup>#</sup>
Colony Count @ 37°C	per mL	-	-	-	-	0	1 <sup>‡</sup>	3 <sup>‡</sup>	26	5000 <sup>‡</sup>
Coliforms	per 100 mL	2419	5180 <sup>§</sup>	19228 <sup>§</sup>	24190	0	0 <sup>‡</sup>	0 <sup>‡</sup>	0	10 <sup>‡</sup>
<i>E.coli</i>	per 100 mL	250	630 <sup>§</sup>	4905 <sup>§</sup>	6870	0	0 <sup>‡</sup>	0 <sup>‡</sup>	0	0
Somatic coliphages	per 10 mL	-	-	-	-	0	0 <sup>‡</sup>	0 <sup>‡</sup>	0	1 <sup>‡</sup>
Colour	°H	4	14	23	25	<1.0	1.4*	2.7*	2.9	50
Conductivity	mS/m	16.0	22.7	28.4	29.0	20.0	24.5	27.3	27.5	370
Dissolved solids	mg/L	102	148	178	188	123	142	158	165	2400
Suspended solids	mg/L	<4.0	13.7*	33.82*	38	<4.0	<4.0	<4.0	<4.0	-
pH	pH units	7.2	7.6	7.8	7.8	7.5	7.7	8.2	8.4	8.0 - 9.2 <sup>#</sup>
Turbidity	NTU	2.2	19.2	47.4	128.0	0.3	0.5	0.9	0.9	5
Alkalinity	mg/L	39.7	52.4	62.3	63.3	33.6	49.9	59.2	60.1	-
Total Hardness	mg/L	20.0	20.6	21.3	21.5	40.6	51.3	57.9	59.5	20 - 300 <sup>#</sup>
Ammonia as N	mg/L	<0.04	0.05*	0.09*	0.10	<0.04	0.03*	0.05*	0.06	2
Calcium	mg/L	5.62	7.22	8.43	8.58	6.72	9.28	10.90	11.50	300
Chloride	mg/L	23.9	29.6	34.1	34.5	32.7	37.8	44.1	44.2	600
Fluoride	µg/L	173	206	223	224	136	181	228	232	1500
Magnesium	mg/L	4.90	6.21	7.14	7.24	5.70	6.74	7.37	7.37	100
Nitrate + Nitrite as N	mg/L	-	-	-	-	<0.05	0.26*	0.51*	0.58*	20
Potassium	mg/L	-	-	-	-	1.4	1.5	1.7	1.8	100
Sodium	mg/L	-	-	-	-	1.5	1.8	2.4	2.5	400
Sulphate	mg/L	5.2	6.8	7.9	8.2	25.3	29.8	34.2	35.0	600
Zinc	mg/L	-	-	-	-	<0.03	0.04*	0.06*	0.06	10
Aluminium	µg/L	-	-	-	-	31	68	147	159	500
Antimony	µg/L	-	-	-	-	<2.0	<2.0	<2.0	<2.0	50
Arsenic	µg/L	-	-	-	-	<2.0	<2.0	<2.0	<2.0	50
Cadmium	µg/L	-	-	-	-	<1.0	<1.0	<1.0	<1.0	10
Chromium	µg/L	-	-	-	-	<3.0	<3.0	<3.0	<3.0	500
Cobalt	µg/L	-	-	-	-	<2.0	<2.0	<2.0	<2.0	1000
Copper	mg/L	-	-	-	-	<0.05	<0.05	<0.05	<0.05	2
Iron	mg/L	-	-	-	-	<10	<10	<10	<10	2
Lead	µg/L	-	-	-	-	<10	<10	<10	<10	50
Manganese	mg/L	0.12	0.66	1.13	1.18	<0.02	0.04*	0.10*	0.23	1
Mercury	µg/L	-	-	-	-	<4.0	<4.0	<4.0	<4.0	5
Nickel	µg/L	<0.01	0.02*	0.04*	0.06	<0.01	0.01*	0.01*	0.02	350
Selenium	µg/L	-	-	-	-	<0.5	<0.5	<0.5	<0.5	50
Vanadium	µg/L	-	-	-	-	<3.0	<3.0	<3.0	<3.0	500
Total organic carbon	mg/L	-	-	-	-	<1.0	<1.0	<1.0	<1.0	20 <sup>§</sup>
Total Trihalomethanes	µg/L	-	-	-	-	<10	<10	<10	<10	300
Phenols	µg/L	1.7	3.1	5.3	8.0	1.5	2.7	3.9	4.4	70

Standards have been adopted from the SANS 241: 2006 Drinking Water specification.

\* Statistics for constituents that had some results below the detection limit were calculated using half the detection limit.

‡ Median

§ SANS 241:2006 specifies Dissolved Organic Carbon.

± SANS 241:2006 Operational Alert.

# Umgeni Water's Warning Limits.

**Mvoti Waterworks, 12.0 ML/d, Period 01 July 2010- 30 June 2011**

DETERMINAND	Units	Raw Water				Final Water				SANS 241:2006 Class II Limit
		Minimum	Average	95 <sup>th</sup> Percentile	Maximum	Minimum	Average	95 <sup>th</sup> Percentile	Maximum	
Free Chlorine	mg/L	-	-	-	-	0.5	1.9	2.5	3.5	0.05 - 0.3 <sup>#</sup>
Total Chlorine	mg/L	-	-	-	-	0.6	2.3	3.0	4.0	1.80 - 2.50 <sup>#</sup>
Colony Count @ 37°C	per mL	-	-	-	-	0	5 <sup>‡</sup>	19 <sup>‡</sup>	246	5000 <sup>‡</sup>
Coliforms	per 100 mL	0	2 <sup>‡</sup>	2419 <sup>‡</sup>	3972	0	0 <sup>‡</sup>	0 <sup>‡</sup>	1	10 <sup>‡</sup>
<i>E.coli</i>	per 100 mL	0	0 <sup>‡</sup>	152 <sup>‡</sup>	1374	0	0 <sup>‡</sup>	0 <sup>‡</sup>	0	0
Somatic coliphages	per 10 mL	-	-	-	-	-	-	-	-	1 <sup>‡</sup>
Colour	°H	-	-	-	-	<0.5	1.1*	2.3*	3.7	50
Conductivity	mS/m	15.8	24.8	28.5	183.4	15.2	24.3	31.0	32.4	370
Dissolved solids	mg/L	-	-	-	-	107.0	133.6	163.1	165	2400
Suspended solids	mg/L	-	-	-	-	<4	<4	<4	<4	-
pH	pH units	7.0	7.6	8.1	8.4	7.0	7.5	8.0	8.4	8.0 - 9.2 <sup>#</sup>
Turbidity	NTU	5	32	93	603	0.3	2.8	5.4	8.3	5
Ammonia as N	mg/L	-	-	-	-	26.4	58.5	105.9	109.6	2
Calcium	mg/L	-	-	-	-	31.9	45.9	54.4	54.7	300
Chloride	mg/L	-	-	-	-	<0.04	0.02*	0.04*	0.07	600
Fluoride	µg/L	-	-	-	-	5.7	9.7	12.8	13.1	1500
Magnesium	mg/L	-	-	-	-	22	33	44	44	100
Nitrate + Nitrite as N	mg/L	-	-	-	-	<100	150*	227*	228	20
Potassium	mg/L	-	-	-	-	4.2	6.9	9.0	9.0	100
Sodium	mg/L	-	-	-	-	<0.05	0.16*	0.32*	0.41	400
Sulphate	mg/L	-	-	-	-	2.2	3.0	4.2	4.6	600
Zinc	mg/L	-	-	-	-	17	28	37	38	10
Aluminium	µg/L	-	-	-	-	4	7	10	10	500
Antimony	µg/L	-	-	-	-	<0.03	<0.03*	0.04*	0.04	50
Arsenic	µg/L	-	-	-	-	55	137	236	316	50
Cadmium	µg/L	-	-	-	-	<2.0	<2.0	<2.0	<2.0	10
Chromium	µg/L	-	-	-	-	<2.0	<2.0	<2.0	<2.0	500
Cobalt	µg/L	-	-	-	-	<1.0	<1.0	<1.0	<1.0	1000
Copper	mg/L	-	-	-	-	<3.0	<3.0	<3.0	<3.0	2
Iron	mg/L	-	-	-	-	<2.0	<2.0	<2.0	<2.0	2
Lead	µg/L	-	-	-	-	<0.05	<0.05	<0.05	<0.05	50
Manganese	mg/L	-	-	-	-	-	-	-	-	1
Mercury	µg/L	-	-	-	-	<10	<10	<10	<10	5
Nickel	µg/L	0.3	0.9	1.7	3.9	0.04	0.13	0.20	0.41	350
Selenium	µg/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	50
Vanadium	µg/L	0.01	0.03	0.08	0.14	<0.01	0.01*	0.03*	0.04	500
Total organic carbon	mg/L	-	-	-	-	<0.5	<0.5	<0.5	<0.5	20 <sup>§</sup>
Total Trihalomethanes	µg/L	-	-	-	-	<3.0	<3.0	<3.0	<3.0	300
Phenols	µg/L	-	-	-	-	<1.0	<1.0	<1.0	<1.0	70

Standards have been adopted from the SANS 241: 2006 Drinking Water specification. Class II limits are shown which are suitable for lifetime consumption.

\* Statistics for constituents that had some results below the detection limit were calculated using half the detection limit.

‡ Median

§ SANS 241:2006 specifies Dissolved Organic Carbon.

± SANS 241:2006 Operational Alert.

# Umgeni Water's Warning Limits.