

Swartland Final			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241- 2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
Conductivity	mS/m	Aesthetic	≤ 170	47	47	100.0%	Excellent	P/N	Yes	9.68
pH (at 25°C)		Operational	≥5.0 - ≤ 9.7	47	47	100.0%	Excellent	P	Yes	8.75
Turbidity	NTU	Operational	≤ 1	47	47	100.0%	Excellent	P/R	Yes	0.43
		Aesthetic	≤ 5	47	47	100.0%	Excellent	P/N	Yes	
E Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	41	41	100.0%	Excellent	P	Yes	0.00
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	41	40	97.6%	Excellent	N	Yes	5.02
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	12	12	100.0%	Excellent	P	Yes	6.71
Free Chlorine	mg/L	Chronic Health	≤ 5	40	40	100.0%	Excellent	N	Yes	0.63
Colour	mg/L	Aesthetic	≤ 15	32	32	100.0%	Excellent		Yes	4.94
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	40	40	100.0%	Excellent	R	Yes	24.24
Sodium (as Na)	mg/L	Aesthetic	≤ 200	22	22	100.0%	Excellent	N	Yes	39.35
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	42	42	100.0%	Excellent	N	Yes	63.81
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	15	15	100.0%	Excellent	N	Yes	0.80
		Aesthetic	≤ 300	15	15	100.0%	Excellent	R	Yes	
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	15	15	100.0%	Excellent	N	Yes	2.67
		Aesthetic	≤ 100	15	15	100.0%	Excellent	R	Yes	
Aluminium (as Al)	ug/L	Operational	≤300	15	15	100.0%	Excellent		Yes	26.47
Alkalinity (as CaCO ₃)	mg/L		-	0						
Total Hardness (as CaCO ₃)	mg/L		-	0						
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0					
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0					
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0					
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0					
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0					
		Aesthetic	≤ 250	0	0					
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0					
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0					
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Chloroform	ug/L	Chronic Health	≤ 300	0	0					
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0					
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0					
Bromoform	ug/L	Chronic Health	≤ 100	0	0					
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0					
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0					
Phenols	ug/L	Aesthetic	≤10	0	0					
Calcium Hardness (as CaCO ₃)	mg/L		-	0						
Magnesium Hardness (as CaCO ₃)	mg/L		-	0						
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0					
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0					
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0					
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0					
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0					
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0					
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0					
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0					
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0					
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0					
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0					
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0					
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0					
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0					
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0					
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0					
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0					
CaCO ₃ Precipitation Potential			-	0						
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0					
Monochloramine	mg/L	Chronic Health	≤ 3	0	0					

Acute Health Chemical	0	0	
Acute Health Microbiological	41	41	100.0%
Chronic Health	70	70	100.0%
Aesthetic	260	260	100.0%
Operational Efficiency	162	161	99.4%

Withoogte Final			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241- 2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character P = prescribed monitoring R = identified risk N = negligible risk	Average	
Conductivity	mS/m	Aesthetic	≤ 170	40	40	100.0%	Excellent	P/N	Yes	31.45
pH (at 25°C)		Operational	≥5.0 - ≤ 9.7	40	40	100.0%	Excellent	P	Yes	8.20
Turbidity	NTU	Operational	≤ 1	40	39	97.5%	Excellent	P/R	Yes	0.57
		Aesthetic	≤ 5	40	40	100.0%	Excellent	P/N	Yes	
E Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	59	59	100.0%	Excellent	P	Yes	0.00
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	59	59	100.0%	Excellent	N	Yes	0.00
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	16	16	100.0%	Excellent	P	Yes	1.67
Free Chlorine	mg/L	Chronic Health	≤ 5	39	39	100.0%	Excellent	N	Yes	1.12
Colour	mg/L	Aesthetic	≤ 15	27	26	96.3%	Excellent		Yes	5.81
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	32	32	100.0%	Excellent	R	Yes	85.36
Sodium (as Na)	mg/L	Aesthetic	≤ 200	18	18	100.0%	Excellent	N	Yes	101.19
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	33	33	100.0%	Excellent	N	Yes	204.79
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	17	17	100.0%	Excellent	N	Yes	2.94
		Aesthetic	≤ 300	17	17	100.0%	Excellent	R	Yes	
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	17	17	100.0%	Excellent	N	Yes	0.41
		Aesthetic	≤ 100	17	17	100.0%	Excellent	R	Yes	
Aluminium (as Al)	ug/L	Operational	≤300	16	16	100.0%	Excellent		Yes	8.56
Alkalinity (as CaCO ₃)	mg/L		-	0						
Total Hardness (as CaCO ₃)	mg/L		-	0						
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0					
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0					
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0					
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0					
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0					
		Aesthetic	≤ 250	0	0					
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0					
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0					
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Chloroform	ug/L	Chronic Health	≤ 300	0	0					
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0					
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0					
Bromoform	ug/L	Chronic Health	≤ 100	0	0					
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0					
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0					
Phenols	ug/L	Aesthetic	≤10	0	0					
Calcium Hardness (as CaCO ₃)	mg/L		-	0						
Magnesium Hardness (as CaCO ₃)	mg/L		-	0						
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0					
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0					
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0					
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0					
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0					
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0					
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0					
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0					
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0					
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0					
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0					
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0					
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0					
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0					
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0					
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0					
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0					
CaCO ₃ Precipitation Potential			-	0						
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0					
Monochloramine	mg/L	Chronic Health	≤ 3	0	0					

Acute Health Chemical	0	0	
Acute Health Microbiological	59	59	100.0%
Chronic Health	73	73	100.0%
Aesthetic	224	223	99.6%
Operational Efficiency	171	170	99.4%

Moorreesburg			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241:2011 and SANS 241- 2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
Conductivity	mS/m	Aesthetic	≤ 170	34	34	100.0%	Excellent	P/N	Yes	25.34
pH (at 25°C)		Operational	≥5.0 - ≤ 9.7	34	34	100.0%	Excellent	P	Yes	8.66
Turbidity	NTU	Operational	≤ 1	34	34	100.0%	Excellent	P/R	Yes	0.37
		Aesthetic	≤ 5	34	34	100.0%	Excellent	P/N	Yes	
E.Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	34	33	97.1%	Excellent	P	Yes	0.09
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	34	32	94.1%	Excellent	P	Yes	190.35
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	34	33	97.1%	Excellent	N	Yes	2.47
Free Chlorine	mg/L	Chronic Health	≤ 5	26	26	100.0%	Excellent	N	Yes	0.09
Colour	mg/L	Aesthetic	≤ 15	0	0	#DIV/0!				#DIV/0!
Alkalinity (as CaCO ₃)	mg/L		-	0						#DIV/0!
Total Hardness (as CaCO ₃)	mg/L		-	0						#DIV/0!
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0	#DIV/0!				#DIV/0!
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0	#DIV/0!				#DIV/0!
Sodium (as Na)	mg/L	Aesthetic	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0	#DIV/0!				#DIV/0!
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0	#DIV/0!		N		#DIV/0!
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0	#DIV/0!		R		#DIV/0!
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 250	0	0	#DIV/0!		N		#DIV/0!
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	0	0	#DIV/0!		N		#DIV/0!
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0	#DIV/0!		N		#DIV/0!
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0	#DIV/0!		R		#DIV/0!
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	< 100	0	0	#DIV/0!		R		#DIV/0!
Aluminium (as Al)	ug/L	Operational	≤300	0	0	#DIV/0!				#DIV/0!
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					#DIV/0!
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Chloroform	ug/L	Chronic Health	≤ 300	0	0	#DIV/0!		N		#DIV/0!
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0	#DIV/0!		N		#DIV/0!
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Bromoform	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0	#DIV/0!				#DIV/0!
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0	#DIV/0!		N		#DIV/0!
Phenols	ug/L	Aesthetic	≤10	0	0	#DIV/0!		N		#DIV/0!
Calcium Hardness (as CaCO ₃)	mg/L		-	0						#DIV/0!
Magnesium Hardness (as CaCO ₃)	mg/L		-	0						#DIV/0!
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0	#DIV/0!		R		#DIV/0!
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0	#DIV/0!		N		#DIV/0!
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0	#DIV/0!		N		#DIV/0!
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0	#DIV/0!		N		#DIV/0!
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0					#DIV/0!
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0	#DIV/0!		N		#DIV/0!
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0	#DIV/0!		N		#DIV/0!
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0	#DIV/0!		N		#DIV/0!
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					#DIV/0!
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0	#DIV/0!				#DIV/0!
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0	#DIV/0!		N		#DIV/0!
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0	#DIV/0!		N		#DIV/0!
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0	#DIV/0!		N		#DIV/0!
CaCO ₃ Precipitation Potential			-	0						#DIV/0!
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0	#DIV/0!				#DIV/0!
Monochloramine	mg/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!

Acute Health Chemical	0	0	#DIV/0!
Acute Health Microbiological	34	33	97.1%
Chronic Health	26	26	100.0%
Aesthetic	68	68	100.0%
Operational Efficiency	136	133	97.8%

Koringberg			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241- 2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
Conductivity	mS/m	Aesthetic	≤ 170	33	33	100.0%	Excellent	P/N	Yes	30.50
pH (at 25°C)		Operational	≥5.0 - ≤ 9.7	33	33	100.0%	Excellent	P	Yes	8.43
Turbidity	NTU	Operational	≤ 1	33	32	97.0%	Excellent	P/R	Yes	0.46
		Aesthetic	≤ 5	33	33	100.0%	Excellent	P/N	Yes	
E Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	37	37	100.0%	Excellent	P	Yes	0.00
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	37	36	97.3%	Excellent	N	Yes	5.74
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	27	27	100.0%	Excellent	P	Yes	33.38
Free Chlorine	mg/L	Chronic Health	≤ 5	30	30	100.0%	Excellent	N	Yes	0.12
Colour	mg/L	Aesthetic	≤ 15	0	0					
Alkalinity (as CaCO ₃)	mg/L		-	0	0					
Total Hardness (as CaCO ₃)	mg/L		-	0	0					
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0					
Sodium (as Na)	mg/L	Aesthetic	≤ 200	0	0					
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0					
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0					
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	0	0					
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0					
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0					
		Aesthetic	≤ 250	0	0					
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	0	0					
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0					
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0					
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	0	0					
		Aesthetic	≤ 300	0	0					
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	0	0					
		Aesthetic	≤ 100	0	0					
Aluminium (as Al)	ug/L	Operational	≤300	0	0					
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Chloroform	ug/L	Chronic Health	≤ 300	0	0					
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0					
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0					
Bromoform	ug/L	Chronic Health	≤ 100	0	0					
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0					
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0					
Phenols	ug/L	Aesthetic	≤10	0	0					
Calcium Hardness (as CaCO ₃)	mg/L		-	0	0					
Magnesium Hardness (as CaCO ₃)	mg/L		-	0	0					
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0					
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0					
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0					
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0					
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0					
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0					
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0					
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0					
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0					
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0					
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0					
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0					
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0					
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0					
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0					
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0					
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0					
CaCO ₃ Precipitation Potential			-	0	0					
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0					
Monochloramine	mg/L	Chronic Health	≤ 3	0	0					

Acute Health Chemical	0	0		
Acute Health Microbiological	37	37	100.0%	Excellent
Chronic Health	30	30	100.0%	Excellent
Aesthetic	66	66	100.0%	Excellent
Operational Efficiency	130	128	98.5%	Excellent

Malmesbury			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241- 2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
Conductivity	mS/m	Aesthetic	≤ 170	96	96	100.0%	Excellent	P/N	Yes	11.65
pH (at 25°C)		Operational	>5.0 - < 9.7	96	96	100.0%	Excellent	P	Yes	8.50
Turbidity	NTU	Operational	≤ 1	96	86	89.6%	Unacceptable	P/R	No	1.12
		Aesthetic	≤ 5	96	93	96.9%	Excellent	P/N	Yes	
E.Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	103	101	98.1%	Excellent	P	Yes	0.03
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	103	97	94.2%	Excellent	N	Yes	4.98
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	96	89	92.7%	Good	P	Yes	129.12
Free Chlorine	mg/L	Chronic Health	≤ 5	80	80	100.0%	Excellent	N	Yes	0.16
Colour	mg/L	Aesthetic	≤ 15	0	0	#DIV/0!				
Alkalinity (as CaCO ₃)	mg/L		-	0	0					
Total Hardness (as CaCO ₃)	mg/L		-	0	0					
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0	#DIV/0!				
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0	#DIV/0!				
Sodium (as Na)	mg/L	Aesthetic	≤ 200	0	0	#DIV/0!				
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0	#DIV/0!				
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0	#DIV/0!				
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	0	0	#DIV/0!				
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0	#DIV/0!				
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0	#DIV/0!				
		Aesthetic	≤ 250	0	0	#DIV/0!				
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	0	0	#DIV/0!				
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0	#DIV/0!				
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0	#DIV/0!				
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!				
		Aesthetic	≤ 300	0	0	#DIV/0!				
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	0	0	#DIV/0!				
		Aesthetic	≤ 100	0	0	#DIV/0!				
Aluminium (as Al)	ug/L	Operational	≤ 300	0	0	#DIV/0!				
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				
Chloroform	ug/L	Chronic Health	≤ 300	0	0	#DIV/0!				
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0	#DIV/0!				
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!				
Bromoform	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!				
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0	#DIV/0!				
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0	#DIV/0!				
Phenols	ug/L	Aesthetic	≤ 10	0	0	#DIV/0!				
Calcium Hardness (as CaCO ₃)	mg/L		-	0	0					
Magnesium Hardness (as CaCO ₃)	mg/L		-	0	0					
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0	#DIV/0!				
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0	#DIV/0!				
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0	#DIV/0!				
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!				
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0	#DIV/0!				
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0	#DIV/0!				
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0					
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!				
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!				
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0	#DIV/0!				
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0	#DIV/0!				
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0	#DIV/0!				
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0	#DIV/0!				
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0	#DIV/0!				
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0	#DIV/0!				
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0	#DIV/0!				
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0	#DIV/0!				
CaCO ₃ Precipitation Potential			-	0	0					
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0	#DIV/0!				
Monochloramine	mg/L	Chronic Health	≤ 3	0	0	#DIV/0!				

Acute Health Chemical	0	0	
Acute Health Microbiological	103	101	98.1%
Chronic Health	80	80	100.0%
Aesthetic	192	189	98.4%
Operational Efficiency	391	368	94.1%

Darling			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241- 2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
Conductivity	mS/m	Aesthetic	≤ 170	50	50	100.0%	Excellent	P/N	Yes	12.17
pH (at 25°C)		Operational	≥5.0 - ≤ 9.7	50	49	98.0%	Excellent	P	Yes	9.27
Turbidity	NTU	Operational	≤ 1	50	47	94.0%	Excellent	P/R	Yes	0.42
		Aesthetic	≤ 5	50	50	100.0%	Excellent	P/N	Yes	
E Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	57	56	98.2%	Excellent	P	Yes	0.04
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	58	57	98.3%	Excellent	N	Yes	1.16
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	50	48	96.0%	Excellent	P	Yes	60.14
Free Chlorine	mg/L	Chronic Health	≤ 5	43	43	100.0%	Excellent	N	Yes	0.04
Colour	mg/L	Aesthetic	≤ 15	0	0					
Alkalinity (as CaCO ₃)	mg/L		-	0						
Total Hardness (as CaCO ₃)	mg/L		-	0						
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0					
Sodium (as Na)	mg/L	Aesthetic	≤ 200	0	0					
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0					
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0					
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	0	0					
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0					
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0					
		Aesthetic	≤ 250	0	0					
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	0	0					
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0					
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0					
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	0	0					
		Aesthetic	≤ 300	0	0					
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	0	0					
		Aesthetic	≤ 100	0	0					
Aluminium (as Al)	ug/L	Operational	≤300	0	0					
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Chloroform	ug/L	Chronic Health	≤ 300	0	0					
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0					
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0					
Bromoform	ug/L	Chronic Health	≤ 100	0	0					
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0					
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0					
Phenols	ug/L	Aesthetic	≤10	0	0					
Calcium Hardness (as CaCO ₃)	mg/L		-	0						
Magnesium Hardness (as CaCO ₃)	mg/L		-	0						
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0					
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0					
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0					
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0					
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0					
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0					
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0					
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0					
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0					
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0					
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0					
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0					
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0					
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0					
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0					
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0					
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0					
CaCO ₃ Precipitation Potential			-	0						
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0					
Monochloramine	mg/L	Chronic Health	≤ 3	0	0					

Acute Health Chemical	0	0	
Acute Health Microbiological	57	56	98.2%
Chronic Health	43	43	100.0%
Aesthetic	100	100	100.0%
Operational Efficiency	208	201	96.6%

Riebeek Kasteel			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241- 2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)		Operational	≥5.0 - ≤ 9.7	12	3	25.0%	Unacceptable	P	No	10.98
Conductivity	mS/m	Aesthetic	≤ 170	12	12	100.0%	Excellent	P/N	Yes	9.53
Turbidity	NTU	Operational	≤ 1	12	12	100.0%	Excellent	P/R	Yes	0.34
		Aesthetic	≤ 5	12	12	100.0%	Excellent	P/N	Yes	
E.Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	12	12	100.0%	Excellent	P	Yes	0.00
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	12	12	100.0%	Excellent	P	Yes	27.92
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	12	11	91.7%	Good	N	Yes	9.83
Free Chlorine	mg/L	Chronic Health	≤ 5	9	9	100.0%	Excellent	N	Yes	0.03
Colour	mg/L	Aesthetic	≤ 15	0	0	#DIV/0!				#DIV/0!
Alkalinity (as CaCO ₃)	mg/L		-	0						#DIV/0!
Total Hardness (as CaCO ₃)	mg/L		-	0						#DIV/0!
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0	#DIV/0!				#DIV/0!
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0	#DIV/0!				#DIV/0!
Sodium (as Na)	mg/L	Aesthetic	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0	#DIV/0!				#DIV/0!
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0	#DIV/0!		N		#DIV/0!
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0	#DIV/0!		R		#DIV/0!
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 250	0	0	#DIV/0!		N		#DIV/0!
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	0	0	#DIV/0!		N		#DIV/0!
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0	#DIV/0!		N		#DIV/0!
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0	#DIV/0!		R		#DIV/0!
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 100	0	0	#DIV/0!		R		#DIV/0!
Aluminium (as Al)	ug/L	Operational	≤ 300	0	0	#DIV/0!				#DIV/0!
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0						
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Chloroform	ug/L	Chronic Health	≤ 300	0	0	#DIV/0!		N		#DIV/0!
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0	#DIV/0!		N		#DIV/0!
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Bromoform	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0	#DIV/0!				#DIV/0!
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0	#DIV/0!		N		#DIV/0!
Phenols	ug/L	Aesthetic	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Calcium Hardness (as CaCO ₃)	mg/L		-	0						
Magnesium Hardness (as CaCO ₃)	mg/L		-	0						
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0	#DIV/0!		R		#DIV/0!
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0	#DIV/0!		N		#DIV/0!
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0	#DIV/0!		N		#DIV/0!
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0	#DIV/0!		N		#DIV/0!
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0	#DIV/0!				#DIV/0!
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0	#DIV/0!		N		#DIV/0!
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0	#DIV/0!		N		#DIV/0!
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0	#DIV/0!		N		#DIV/0!
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0	#DIV/0!				#DIV/0!
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0	#DIV/0!				#DIV/0!
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0	#DIV/0!		N		#DIV/0!
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0	#DIV/0!		N		#DIV/0!
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0	#DIV/0!		N		#DIV/0!
CaCO ₃ Precipitation Potential			-	0						
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0	#DIV/0!				#DIV/0!
Monochloramine	mg/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!

Acute Health Chemical	0	0	#DIV/0!
Acute Health Microbiological	12	12	100.0%
Chronic Health	9	9	100.0%
Aesthetic	24	24	100.0%
Operational Efficiency	48	38	79.2%

Riebeek Wes			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241- 2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
Conductivity	mS/m	Aesthetic	≤ 170	12	12	100.0%	Excellent	P/N	Yes	10.98
pH (at 25°C)		Operational	≥ 5.0 - ≤ 9.7	12	12	100.0%	Excellent	P	Yes	8.25
Turbidity	NTU	Operational	≤ 1	12	12	100.0%	Excellent	P/R	Yes	0.30
		Aesthetic	≤ 5	12	12	100.0%	Excellent	P/N	Yes	
E.Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	12	12	100.0%	Excellent	P	Yes	0.00
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	12	12	100.0%	Excellent	P	Yes	77.42
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	12	12	100.0%	Excellent	N	Yes	0.33
Free Chlorine	mg/L	Chronic Health	≤ 5	7	7	100.0%	Excellent	N	Yes	0.03
Colour	mg/L	Aesthetic	≤ 15	0	0	#DIV/0!				#DIV/0!
Alkalinity (as CaCO ₃)	mg/L		-	0	0					#DIV/0!
Total Hardness (as CaCO ₃)	mg/L		-	0	0					#DIV/0!
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0	#DIV/0!				#DIV/0!
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0	#DIV/0!				#DIV/0!
Sodium (as Na)	mg/L	Aesthetic	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0	#DIV/0!				#DIV/0!
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0	#DIV/0!		N		#DIV/0!
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0	#DIV/0!		R		#DIV/0!
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 250	0	0	#DIV/0!		N		#DIV/0!
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	0	0	#DIV/0!		N		#DIV/0!
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0	#DIV/0!		N		#DIV/0!
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0	#DIV/0!		R		#DIV/0!
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 100	0	0	#DIV/0!		R		#DIV/0!
Aluminium (as Al)	ug/L	Operational	≤ 300	0	0	#DIV/0!				#DIV/0!
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Chloroform	ug/L	Chronic Health	≤ 300	0	0	#DIV/0!		N		#DIV/0!
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0	#DIV/0!		N		#DIV/0!
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Bromoform	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0	#DIV/0!				#DIV/0!
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0	#DIV/0!		N		#DIV/0!
Phenols	ug/L	Aesthetic	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Calcium Hardness (as CaCO ₃)	mg/L		-	0	0					
Magnesium Hardness (as CaCO ₃)	mg/L		-	0	0					
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0	#DIV/0!		R		#DIV/0!
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0	#DIV/0!		N		#DIV/0!
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0	#DIV/0!		N		#DIV/0!
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0	#DIV/0!		N		#DIV/0!
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0					
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0	#DIV/0!		N		#DIV/0!
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0	#DIV/0!		N		#DIV/0!
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0	#DIV/0!		N		#DIV/0!
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0	#DIV/0!				#DIV/0!
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0	#DIV/0!		N		#DIV/0!
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0	#DIV/0!		N		#DIV/0!
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0	#DIV/0!		N		#DIV/0!
CaCO ₃ Precipitation Potential			-	0	0					
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0	#DIV/0!				#DIV/0!
Monochloramine	mg/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!

Acute Health Chemical	0	0	#DIV/0!
Acute Health Microbiological	12	12	100.0%
Chronic Health	7	7	100.0%
Aesthetic	24	24	100.0%
Operational Efficiency	48	48	100.0%

Yzerfontein			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241- 2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
Conductivity	mS/m	Aesthetic	≤ 170	33	33	100.0%	Excellent	P/N	Yes	12.65
pH (at 25°C)		Operational	≥ 5.0 - ≤ 9.7	33	29	87.9%	Unacceptable	P	No	9.53
Turbidity	NTU	Operational	≤ 1	33	33	100.0%	Excellent	P/R	Yes	0.41
		Aesthetic	≤ 5	33	33	100.0%	Excellent	P/N	Yes	
E.Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	39	38	97.4%	Excellent	P	Yes	0.03
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	39	38	97.4%	Excellent	N	Yes	2.26
Heterotrophic Plate Count	cfu/ml	Operational	< 1000	31	30	96.8%	Excellent	P	Yes	72.98
Free Chlorine	mg/L	Chronic Health	≤ 5	30	30	100.0%	Excellent	N	Yes	0.02
Colour	mg/L	Aesthetic	≤ 15	0	0	#DIV/0!				
Alkalinity (as CaCO ₃)	mg/L		-	0						
Total Hardness (as CaCO ₃)	mg/L		-	0						
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0	#DIV/0!				
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0	#DIV/0!				
Sodium (as Na)	mg/L	Aesthetic	≤ 200	0	0	#DIV/0!				
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0	#DIV/0!				
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0	#DIV/0!				
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	0	0	#DIV/0!				
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0	#DIV/0!				
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0	#DIV/0!				
		Aesthetic	≤ 250	0	0	#DIV/0!				
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	0	0	#DIV/0!				
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0	#DIV/0!				
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0	#DIV/0!				
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!				
		Aesthetic	≤ 300	0	0	#DIV/0!				
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	0	0	#DIV/0!				
		Aesthetic	≤ 100	0	0	#DIV/0!				
Aluminium (as Al)	ug/L	Operational	≤ 300	0	0	#DIV/0!				
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				
Chloroform	ug/L	Chronic Health	≤ 300	0	0	#DIV/0!				
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0	#DIV/0!				
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!				
Bromoform	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!				
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0	#DIV/0!				
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0	#DIV/0!				
Phenols	ug/L	Aesthetic	≤ 10	0	0	#DIV/0!				
Calcium Hardness (as CaCO ₃)	mg/L		-	0						
Magnesium Hardness (as CaCO ₃)	mg/L		-	0						
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0	#DIV/0!				
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0	#DIV/0!				
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0	#DIV/0!				
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!				
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0	#DIV/0!				
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0	#DIV/0!				
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0					
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!				
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!				
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0	#DIV/0!				
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0	#DIV/0!				
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0	#DIV/0!				
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0	#DIV/0!				
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0	#DIV/0!				
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0	#DIV/0!				
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0	#DIV/0!				
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0	#DIV/0!				
CaCO ₃ Precipitation Potential			-	0						
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0	#DIV/0!				
Monochloramine	mg/L	Chronic Health	≤ 3	0	0	#DIV/0!				

Acute Health Chemical	0	0	
Acute Health Microbiological	39	38	97.4%
Chronic Health	30	30	100.0%
Aesthetic	66	66	100.0%
Operational Efficiency	136	130	95.6%

Riverlands			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241:2011 and SANS 241- 2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
Conductivity	mS/m	Aesthetic	≤ 170	25	25	100.0%	Excellent	P/N	Yes	15.41
pH (at 25°C)		Operational	≥5.0 - ≤ 9.7	25	25	100.0%	Excellent	P	Yes	7.90
Turbidity	NTU	Operational	≤ 1	25	24	96.0%	Excellent	P/R	Yes	0.50
		Aesthetic	≤ 5	25	25	100.0%	Excellent	P/N	Yes	
E.Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	25	24	96.0%	Good	P	Yes	1.20
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	25	18	72.0%	Unacceptable	P	No	419.92
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	25	21	84.0%	Unacceptable	N	No	6.32
Free Chlorine	mg/L	Chronic Health	≤ 5	22	22	100.0%	Excellent	N	Yes	0.03
Colour	mg/L	Aesthetic	≤ 15	0	0	#DIV/0!				#DIV/0!
Alkalinity (as CaCO ₃)	mg/L		-	0	0					#DIV/0!
Total Hardness (as CaCO ₃)	mg/L		-	0	0					#DIV/0!
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0	#DIV/0!				#DIV/0!
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0	#DIV/0!				#DIV/0!
Sodium (as Na)	mg/L	Aesthetic	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0	#DIV/0!				#DIV/0!
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0	#DIV/0!		N		#DIV/0!
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0	#DIV/0!		R		#DIV/0!
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 250	0	0	#DIV/0!		N		#DIV/0!
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	0	0	#DIV/0!		N		#DIV/0!
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0	#DIV/0!		N		#DIV/0!
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0	#DIV/0!		R		#DIV/0!
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 100	0	0	#DIV/0!		R		#DIV/0!
Aluminium (as Al)	ug/L	Operational	≤300	0	0	#DIV/0!				#DIV/0!
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					#DIV/0!
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Chloroform	ug/L	Chronic Health	≤ 300	0	0	#DIV/0!		N		#DIV/0!
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0	#DIV/0!		N		#DIV/0!
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Bromoform	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0	#DIV/0!				#DIV/0!
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0	#DIV/0!		N		#DIV/0!
Phenols	ug/L	Aesthetic	≤10	0	0	#DIV/0!		N		#DIV/0!
Calcium Hardness (as CaCO ₃)	mg/L		-	0	0					#DIV/0!
Magnesium Hardness (as CaCO ₃)	mg/L		-	0	0					#DIV/0!
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0	#DIV/0!		R		#DIV/0!
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0	#DIV/0!		N		#DIV/0!
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0	#DIV/0!		N		#DIV/0!
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0	#DIV/0!		N		#DIV/0!
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0					#DIV/0!
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0	#DIV/0!		N		#DIV/0!
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0	#DIV/0!		N		#DIV/0!
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0	#DIV/0!		N		#DIV/0!
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					#DIV/0!
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0	#DIV/0!				#DIV/0!
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0	#DIV/0!		N		#DIV/0!
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0	#DIV/0!		N		#DIV/0!
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0	#DIV/0!		N		#DIV/0!
CaCO ₃ Precipitation Potential			-	0	0					#DIV/0!
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0	#DIV/0!				#DIV/0!
Monochloramine	mg/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!

Acute Health Chemical	0	0	#DIV/0!
Acute Health Microbiological	25	24	96.0%
Chronic Health	22	22	100.0%
Aesthetic	50	50	100.0%
Operational Efficiency	100	88	88.0%

Unacceptable

Abbotsdale			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241- 2006 Class 1)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
Conductivity	mS/m	Aesthetic	≤ 170	14	14	100.0%	Excellent	P/N	Yes	12.85
Turbidity	NTU	Operational	≤ 1	14	2	14.3%	Unacceptable	P/R	No	7.04
		Aesthetic	≤ 5	14	3	21.4%	Unacceptable	P/N	No	
pH (at 25°C)		Operational	≥5.0 - ≤ 9.7	14	3	21.4%	Unacceptable	P	No	2.14
E.Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	14	13	92.9%	Unacceptable	P	No	0.36
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	14	11	78.6%	Unacceptable	N	No	23.93
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	14	14	100.0%	Excellent	P	Yes	139.86
Free Chlorine	mg/L	Chronic Health	≤ 5	11	11	100.0%	Excellent	N	Yes	0.03
Colour	mg/L	Aesthetic	≤ 15	0	0	#DIV/0!				#DIV/0!
Alkalinity (as CaCO ₃)	mg/L		-	0						
Total Hardness (as CaCO ₃)	mg/L		-	0						
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0	#DIV/0!				#DIV/0!
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0	#DIV/0!				#DIV/0!
Sodium (as Na)	mg/L	Aesthetic	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0	#DIV/0!				#DIV/0!
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0	#DIV/0!		N		#DIV/0!
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0	#DIV/0!		R		#DIV/0!
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 250	0	0	#DIV/0!		N		#DIV/0!
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	0	0	#DIV/0!		N		#DIV/0!
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0	#DIV/0!		N		#DIV/0!
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0	#DIV/0!		R		#DIV/0!
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	< 100	0	0	#DIV/0!		R		#DIV/0!
Aluminium (as Al)	ug/L	Operational	≤ 300	0	0	#DIV/0!				#DIV/0!
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					#DIV/0!
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Chloroform	ug/L	Chronic Health	≤ 300	0	0	#DIV/0!		N		#DIV/0!
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0	#DIV/0!		N		#DIV/0!
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Bromoform	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0	#DIV/0!				#DIV/0!
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0	#DIV/0!		N		#DIV/0!
Phenols	ug/L	Aesthetic	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Calcium Hardness (as CaCO ₃)	mg/L		-	0						
Magnesium Hardness (as CaCO ₃)	mg/L		-	0						
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0	#DIV/0!		R		#DIV/0!
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0	#DIV/0!		N		#DIV/0!
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0	#DIV/0!		N		#DIV/0!
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0	#DIV/0!		N		#DIV/0!
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0					#DIV/0!
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0	#DIV/0!		N		#DIV/0!
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0	#DIV/0!		N		#DIV/0!
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0	#DIV/0!		N		#DIV/0!
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					#DIV/0!
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0	#DIV/0!				#DIV/0!
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0	#DIV/0!		N		#DIV/0!
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0	#DIV/0!		N		#DIV/0!
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0	#DIV/0!		N		#DIV/0!
CaCO ₃ Precipitation Potential			-	0						
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0	#DIV/0!				#DIV/0!
Monochloramine	mg/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!
Acute Health Chemical				0	0	#DIV/0!				
Acute Health Microbiological				14	13	92.9%	Unacceptable			
Chronic Health				11	11	100.0%	Excellent			
Aesthetic				28	17	60.7%	Unacceptable			
Operational Efficiency				56	30	53.6%	Unacceptable			

Chatsworth			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241:2011 and SANS 241- 2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes /No)	Average
Conductivity	mS/m	Aesthetic	≤ 170	20	20	100.0%	Excellent	P/N	Yes	16.57
pH (at 25°C)		Operational	≥5.0 - ≤ 9.7	20	20	100.0%	Excellent	P	Yes	7.88
Turbidity	NTU	Operational	≤ 1	20	18	90.0%	Good	P/R	Yes	0.56
		Aesthetic	≤ 5	20	20	100.0%	Excellent	P/N	Yes	
E. Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	20	19	95.0%	Good	P	Yes	0.50
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	20	17	85.0%	Unacceptable	P	No	411.75
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	20	18	90.0%	Good	N	Yes	11.40
Free Chlorine	mg/L	Chronic Health	≤ 5	15	15	100.0%	Excellent	N	Yes	0.03
Colour	mg/L	Aesthetic	≤ 15	0	0	#DIV/0!				#DIV/0!
Alkalinity (as CaCO ₃)	mg/L		-	0						#DIV/0!
Total Hardness (as CaCO ₃)	mg/L		-	0						#DIV/0!
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0	#DIV/0!				#DIV/0!
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0	#DIV/0!				#DIV/0!
Sodium (as Na)	mg/L	Aesthetic	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0	#DIV/0!				#DIV/0!
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0	#DIV/0!		N		#DIV/0!
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0	#DIV/0!		R		#DIV/0!
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 250	0	0	#DIV/0!		N		#DIV/0!
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	0	0	#DIV/0!		N		#DIV/0!
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0	#DIV/0!		N		#DIV/0!
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0	#DIV/0!		R		#DIV/0!
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	< 100	0	0	#DIV/0!		R		#DIV/0!
Aluminium (as Al)	ug/L	Operational	≤300	0	0	#DIV/0!				#DIV/0!
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					#DIV/0!
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Chloroform	ug/L	Chronic Health	≤ 300	0	0	#DIV/0!		N		#DIV/0!
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0	#DIV/0!		N		#DIV/0!
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Bromoform	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0	#DIV/0!				#DIV/0!
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0	#DIV/0!		N		#DIV/0!
Phenols	ug/L	Aesthetic	≤10	0	0	#DIV/0!		N		#DIV/0!
Calcium Hardness (as CaCO ₃)	mg/L		-	0						
Magnesium Hardness (as CaCO ₃)	mg/L		-	0						
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0	#DIV/0!		R		#DIV/0!
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0	#DIV/0!		N		#DIV/0!
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0	#DIV/0!		N		#DIV/0!
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0	#DIV/0!		N		#DIV/0!
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0					#DIV/0!
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0	#DIV/0!		N		#DIV/0!
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0	#DIV/0!		N		#DIV/0!
Selenium (as Se)	ug/L	Chronic Health	< 40	0	0	#DIV/0!		N		#DIV/0!
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					#DIV/0!
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0	#DIV/0!				#DIV/0!
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0	#DIV/0!		N		#DIV/0!
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0	#DIV/0!		N		#DIV/0!
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0	#DIV/0!		N		#DIV/0!
CaCO ₃ Precipitation Potential			-	0						
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0	#DIV/0!				#DIV/0!
Monochloramine	mg/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!

Acute Health Chemical	0	0	#DIV/0!
Acute Health Microbiological	20	19	95.0%
Chronic Health	15	15	100.0%
Aesthetic	40	40	100.0%
Operational Efficiency	80	73	91.3%

Kalbaskraal			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241- 2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance (Population < 100 000)	Risk Character prescribed monitoring P = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
Conductivity	mS/m	Aesthetic	≤ 170	19	19	100.0%	Excellent	P/N	Yes	12.60
pH (at 25°C)		Operational	≥ 5.0 - ≤ 9.7	19	19	100.0%	Excellent	P	Yes	8.58
Turbidity	NTU	Operational	≤ 1	19	18	94.7%	Excellent	P/R	Yes	0.41
		Aesthetic	≤ 5	19	19	100.0%	Excellent	P/N	Yes	
E.Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	19	17	89.5%	Unacceptable	P	No	0.26
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	19	17	89.5%	Unacceptable	P	No	298.63
Total Coliform Count (<1 taken as 0)	cfu/100ml	Operational	≤ 10	19	16	84.2%	Unacceptable	N	No	5.11
Free Chlorine	mg/L	Chronic Health	≤ 5	16	16	100.0%	Excellent	N	Yes	0.03
Colour	mg/L	Aesthetic	≤ 15	0	0	#DIV/0!				#DIV/0!
Alkalinity (as CaCO ₃)	mg/L		-	0	0					#DIV/0!
Total Hardness (as CaCO ₃)	mg/L		-	0	0					#DIV/0!
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0	#DIV/0!				#DIV/0!
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0	#DIV/0!				#DIV/0!
Sodium (as Na)	mg/L	Aesthetic	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0	#DIV/0!				#DIV/0!
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0	#DIV/0!		N		#DIV/0!
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0	#DIV/0!		R		#DIV/0!
Sulphate (as SO ₄ ²⁻)	mg/L	Acute Health Chemical	≤ 500	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 250	0	0	#DIV/0!		N		#DIV/0!
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	0	0	#DIV/0!		N		#DIV/0!
Ammonia Nitrogen (as N)	mg/L	Aesthetic	≤ 1.5	0	0	#DIV/0!		N		#DIV/0!
Nitrate & Nitrite Nitrogen (as N)	mg/L	Acute Health Chemical	≤ 12	0	0	#DIV/0!		R		#DIV/0!
Iron (as Fe)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 300	0	0	#DIV/0!		R		#DIV/0!
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	0	0	#DIV/0!		N		#DIV/0!
		Aesthetic	≤ 100	0	0	#DIV/0!		R		#DIV/0!
Aluminium (as Al)	ug/L	Operational	≤ 300	0	0	#DIV/0!				#DIV/0!
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0	#DIV/0!				#DIV/0!
Chloroform	ug/L	Chronic Health	≤ 300	0	0	#DIV/0!		N		#DIV/0!
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0	#DIV/0!		N		#DIV/0!
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Bromoform	ug/L	Chronic Health	≤ 100	0	0	#DIV/0!		N		#DIV/0!
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0	#DIV/0!				#DIV/0!
Combined Trihalomethanes	mg/L	Chronic Health	≤ 1	0	0	#DIV/0!		N		#DIV/0!
Phenols	ug/L	Aesthetic	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Calcium Hardness (as CaCO ₃)	mg/L		-	0	0					
Magnesium Hardness (as CaCO ₃)	mg/L		-	0	0					
Nitrate as N	mg/L	Acute Health Chemical	≤ 11	0	0	#DIV/0!		R		#DIV/0!
Nitrite as N	mg/L	Acute Health Chemical	≤ 0.9	0	0	#DIV/0!		N		#DIV/0!
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0	#DIV/0!		N		#DIV/0!
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0	#DIV/0!		N		#DIV/0!
Cobalt (as Co)	ug/L	Chronic Health	≤ 500	0	0					
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0	#DIV/0!		N		#DIV/0!
Lead (as Pb)	ug/L	Chronic Health	≤ 10	0	0	#DIV/0!		N		#DIV/0!
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0	#DIV/0!		N		#DIV/0!
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0	#DIV/0!		N		#DIV/0!
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0	#DIV/0!		N		#DIV/0!
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0	#DIV/0!		N		#DIV/0!
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0	#DIV/0!				#DIV/0!
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0	#DIV/0!		N		#DIV/0!
Barium (as Ba)	ug/L	Chronic Health	≤ 700	0	0	#DIV/0!		N		#DIV/0!
Boron (as B)	mg/L	Chronic Health	≤ 2.4	0	0	#DIV/0!		N		#DIV/0!
CaCO ₃ Precipitation Potential			-	0	0					
Microcystin (as LR)	ug/L	Chronic Health	≤ 1	0	0	#DIV/0!				#DIV/0!
Monochloramine	mg/L	Chronic Health	≤ 3	0	0	#DIV/0!		N		#DIV/0!

Acute Health Chemical	0	0	#DIV/0!			
Acute Health Microbiological	19	17	89.5%	Unacceptable		
Chronic Health	16	16	100.0%	Excellent		
Aesthetic	38	38	100.0%	Excellent		
Operational Efficiency	76	70	92.1%	Good		