

Royal Bafokeng Nation Water Quality Report - 12 Month							Date generated: 03 October 2017		
October 2016 to September 2017									
Determinand	Measurement units	Risk	Required compliance to SANS 241: 2015 standard (%)	SANS 241: 2015 standard limits (1)	No of results	Achieved Compliance to SANS 241: 2015 Spec(%)	Descriptive statistics		
							Mean	Standard Deviation	Mean + 3 standard deviations
Microbiological determinands									
E. coli	(mpn per 100 mL)	Acute health	99.0%	0	253	99.6%	0	0.50	0
Total Coliforms	(mpn per 100 mL)	Operational	95.0%	10	253	95.7%	7	35.24	201
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	95.0%	≤1000	252	99.2%	29	207.73	385
Cryptosporidium spp (5)	(org / 10 Litre)	Acute health	99.0%	0	23	100.0%	0	0.00	0
Giardia spp (5)	(org / 10 Litre)	Acute health	99.0%	0	23	100.0%	0	0.00	0
Somatic Coliphages (5)	(count per 10 mL)	Operational	95.0%	0	98	100.0%	0	0.00	0
Physical and Aesthetic determinands									
Colour	(mg / L as Pt-Co)	Aesthetic	95.0%	≤15	110	100.0%	5.24	0.88	8.91
Conductivity	(mS / m)	Aesthetic	95.0%	≤170	251	100.0%	47.45	14.76	70.00
Total Dissolved Solids	(mg / L)	Aesthetic	95.0%	≤1200	251	100.0%	300.23	86.02	431.67
Turbidity	(NTU)	Operational	95.0%	≤1	249	98.0%	0.34	0.37	1.46
Turbidity	(NTU)	Aesthetic	95.0%	≤5	249	99.6%	0.34	0.37	1.46
pH	(pH units)	Operational	95.0%	≥ 5 to ≤ 9.7	251	100.0%	7.88	0.20	8.31
Chemical Properties									
Macro determinands									
Ammonia	(mg / L as N)	Aesthetic	95.0%	≤1.5	249	100.0%	0.13	0.14	0.50
Chloride	(mg / L as Cl)	Aesthetic	95.0%	≤300	111	100.0%	42.85	13.90	81.90
Free chlorine (2)	(mg / L as Cl ₂)	Chronic health	97.0%	≤5	253	100.0%	0.91	0.80	2.20
Monochloramine (3)	(mg / L as Cl ₂)	Chronic health	97.0%	≤4.1	253	100.0%	0.39	0.51	1.80
Fluoride	(mg / L as F)	Chronic health	97.0%	≤1.5	111	100.0%	0.27	0.08	0.50
Nitrate	(mg / L as N)	Acute health	99.0%	≤11	249	100.0%	0.43	0.23	0.88
Nitrite	(mg / L as N)	Acute health	99.0%	≤0.9	249	100.0%	0.03	0.01	0.07
Combined nitrate plus nitrite (7)	(mg / L as N)	Acute health	99.0%	≤1	248	100.0%	0.07	0.02	0.15
Residual disinfectant (4)	(mg / L)	Operational	95.0%	≥0.1 Sum of Free and Monochloramine	253	100.0%	1.30	0.66	2.20
Sodium	(mg / L as Na)	Aesthetic	95.0%	≤200	110	100.0%	37.46	16.89	68.00
Sulphate	(mg / L as SO ₄)	Aesthetic	95.0%	≤250	111	100.0%	53.23	20.18	81.00
Sulphate	(mg / L as SO ₄)	Acute health	99.0%	≤500	111	100.0%	53.23	20.18	81.00
Zinc	(mg / L as Zn)	Aesthetic	95.0%	≤5	110	100.0%	0.02	0.00	0.02
Micro determinands									
Aluminium	(µg / L as Al)	Operational	95.0%	≤300	110	99.1%	44.95	47.87	260.60
Antimony	(µg / L as Sb)	Chronic health	97.0%	≤20	72	100.0%	0.52	0.13	0.97
Arsenic	(µg / L as As)	Chronic health	97.0%	≤10	71	100.0%	1.27	0.87	4.46
Barium	(µg / L as Ba)	Chronic health	97.0%	≤700	110	100.0%	57.58	13.25	84.73
Boron	(µg / L as B)	Chronic health	97.0%	≤2400	110	100.0%	39.13	10.62	55.91
Cadmium	(µg / L as Cd)	Chronic health	97.0%	≤3	72	100.0%	2.50	0.00	2.50
Chromium (Total)	(µg / L as Cr)	Chronic health	97.0%	≤50	110	100.0%	15.00	0.00	15.00
Copper	(µg / L as Cu)	Chronic health	97.0%	≤2000	110	100.0%	11.95	4.24	28.73
Cyanide (Recoverable)	(µg / L as CN)	Acute health	99.0%	≤200	110	100.0%	5.41	2.45	17.73
Iron	(µg / L as Fe)	Chronic health	97.0%	≤2000	110	100.0%	27.35	40.55	131.85
Iron	(µg / L as Fe)	Aesthetic	95.0%	≤300	110	99.1%	27.35	40.55	131.85
Lead	(µg / L as Pb)	Chronic health	97.0%	≤10	72	100.0%	0.23	0.10	0.62
Manganese	(µg / L as Mn)	Chronic health	97.0%	≤400	110	100.0%	27.47	41.42	228.70
Manganese	(µg / L as Mn)	Aesthetic	95.0%	≤100	110	95.5%	27.47	41.42	228.70
Mercury	(µg / L as Hg)	Chronic health	97.0%	≤6	72	100.0%	0.80	0.00	0.80
Nickel	(µg / L as Ni)	Chronic health	97.0%	≤70	110	100.0%	10.05	0.39	10.91
Selenium	(µg / L as Se)	Chronic health	97.0%	≤40	71	100.0%	1.30	0.96	4.48
Uranium	(µg / L as U)	Chronic health	97.0%	≤30	72	100.0%	0.45	0.34	1.40
Organic determinands									
Total Organic Carbon	(mg / L)	Chronic health	97.0%	≤10	71	100.0%	4.19	1.46	8.01
Phenols as C ₆ H ₅ OH	(µg / L)	Aesthetic	95.0%	≤10	71	100.0%	4.77	0.99	5.00
Chloroform - CHCl ₃	(µg / L)	Chronic health	97.0%	≤300	72	100.0%	23.78	12.32	64.96
Bromoform - CHBr ₃	(µg / L)	Chronic health	97.0%	≤100	72	100.0%	1.31	1.10	3.82
Dibromochloromethane - CHBr ₂ Cl	(µg / L)	Chronic health	97.0%	≤100	72	100.0%	8.81	4.62	19.58
Bromodichloromethane - CHBrCl ₂	(µg / L)	Chronic health	97.0%	≤60	72	100.0%	15.45	3.88	23.29
Combined trihalomethanes (8)	(µg / L)	Chronic health	97.0%	≤1	72	100.0%	0.44	0.11	0.70
Total Microcystin (5)	(µg / L)	Chronic health	97.0%	≤1	72	100.0%	0.35	0.02	0.36
For monitoring/reporting purposes only (6)									
Calcium	(mg / L as Ca)	Aesthetic	not applicable	≤150	110	100.0%	28.09	8.30	41.91
Hardness	(mg / L as CaCO ₃)	Operational	not applicable	≥ 20 to ≤ 200	110	99.1%	125.36	35.80	174.02
Magnesium	(mg / L as Mg)	Aesthetic	not applicable	≤70	110	100.0%	15.92	5.74	25.91
Potassium	(mg / L as K)	Aesthetic	not applicable	≤50	110	100.0%	6.21	2.05	10.00
Rand Water Risk Determinands (RWRD)									
Odour	TON	RWRD	95.0%	≤2	146	100.0%	1.00	0.00	1.00
Taste	FTN	RWRD	95.0%	≤2	146	100.0%	1.00	0.00	1.00
Water quality risk indices									
Risk	Required compliance to SANS 241: 2015 standard	Overall Compliance-SANS 241							
Acute health microbiological	99.00%	99.67%							
Acute health chemical	99.00%	100.00%							
Chronic health	97.00%	100.00%							
Aesthetic	95.00%	99.62%							
Operational	95.00%	98.70%							
Notes:									
(1) Specification date of effect : 1 July 2016									
(2) Free chlorine : Results from chloraminated system									
(3) Monochloramine : Results are from the chloraminated systems									
(4) Residual disinfectant : Results from chloraminated system									
(5) Measured at water treatment works exit points									
(6) Customer request: Results not included in the risk indices compliance calculations									
(7) (NO ₂ /0.9 + NO ₃ /11)									
(8) (CHCl ₃ /300 + CHBr ₃ /100 + CHBr ₂ Cl/100 + CHBrCl ₂ /60)									