

b.n. kirk (natal) cc

Reg. No. CK 1994/015428/23

Water, Sewage & Industrial Effluent Testing Laboratory

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CERTIFICATE OF ANALYSIS - BN Kirk (Natal) cc

CLIENT:	Ilembe District Municipality	S41-1
WORKS:	SANCOUSI WATER TREATMENT WORKS	
ADDRESS:	P.O. Box 1788 Kwadukuza 4450	
ATTENTION:	<i>Mr. H.N. Maphumulo</i>	REPORT DATE: 05-May-14
eMail:	Group 2 Details	DATE ANALYSED: 29-Apr-14
In accordance with the visit schedule and procedure QP21.		DATE RECEIVED: 24-Apr-14

ANALYTICAL RESULTS

1	2	3	4	2014														
Determinand	Test Method No	SANS 241-1:2011 Physical, aesthetic, operational, chemical and Microbiological determinands			% Analysis Compliance	% Sampling Compliance	Date Sampled											
		Risk	Unit	Standard limits ^a			06-03	12-03	18-03	27-03	01-04	10-04	16-04	24-04				

RAW WATER

Physical and aesthetic determinands

pH at 25°C ^c	P09/042	<i>Operational</i>	<i>pH units</i>				7.9		7.9	8.0	6.8	8.3	7.6	7.9				
Turbidity ^b {A}	P09/045	<i>Operational</i>	<i>NTU</i>				281		129	95	311	62	16	21				
		<i>Aesthetic</i>	<i>NTU</i>				281		129	95	311	62	16	21				
Conductivity at 25°C	P09/044	<i>Aesthetic</i>	<i>mS/m</i>				12		12	15	15	16	19	17				

FINAL WATER

Physical and aesthetic determinands

pH at 25°C ^c	P09/042	<i>Operational</i>	<i>pH units</i>	≥ 5 to ≤ 9.7	100%	100%	7.4	7.4	7.3	7.3	8.1	7.5	7.7	7.8				
Colour	P09/011	<i>Aesthetic</i>	<i>mg/L Pt-Co</i>	≤ 15	75%	38%	32	42	2.0		4.9		1.6	0				
Turbidity ^b {A}	P09/045	<i>Operational</i>	<i>NTU</i>	≤ 1	13%	6%	11	54	2.1		49		0.79	4.3				
		<i>Aesthetic</i>	<i>NTU</i>	≤ 5	50%	25%	11	54	2.1		49		0.79	4.3				
Conductivity at 25°C	P09/044	<i>Aesthetic</i>	<i>mS/m</i>	≤ 170	100%	50%	13	13	14		17		18	22				
Total Chlorine	-	<i>ns</i>	<i>ns</i>	<i>ns</i>			1.21	0.23	1.29	0.41	0.77	3.42	0.18	>5.0				
Free chlorine	P09/025	<i>Chronic health</i>	<i>mg/L</i>	≤ 5	94%	94%	1.10	0.14	1.20	0.25	0.63	3.20	0.12	>5.0				
Monochloramine	P09/025	<i>Chronic health</i>	<i>mg/L</i>	≤ 3	94%	94%	0.11	0.09	0.09	0.16	0.14	0.22	0.06	>5.0				

Chemical determinands - macro-determinands															
Nitrate as NO ³	P09/018	Acute health - 1	mg/L	ns			5.4	4.5	6.4		0.80		1.00	0.86	
Nitrate as N ^d	P09/018	Acute health - 1	mg/L	≤ 11	100%	50%	1.2	1.0	1.4		0.18		0.23	0.19	
Nitrite as N ^d	P09/019	Acute health - 1	mg/L	≤ 0.9	100%	38%	<0.01	0.03	0.01		0.02		0.04	0.05	

Chemical determinands - micro-determinands															
Iron as Fe	P09/014	Chronic health	mg/L	≤ 2	100%	50%	0.79	2.0	0.14		1.1		0.04	1.4	
		Aesthetic	mg/L	≤ 0.3	50%	25%	0.79	2.0	0.14		1.1		0.04	1.4	
Aluminium as Al	P09/053	Operational	mg/L	≤ 0.3	71%	56%	0.80	2.8	0.13	1.2	1.6	0.30	0.10	0.83	

a = The health-related standards are based on the consumption of 2 L of water per day per person of a mass of 60kg over a period of 70 years.
b = Values in excess of those given in column 4 may negatively impact disinfection.
c = Low pH values can result in structural problems in the distribution system.
d = This is equivalent to nitrate at 50mg NO₃⁻ /L and nitrite as 3mg NO₂⁻ /L
e = Microcystin only needs to be measured where an algal bloom (>20 000 cyanobacteria cells per millilitre) is present in a raw water source. In the absence of algal monitoring, an algal bloom is deemed to occur where the surface water is visibly green in the vicinity of the abstraction, or samples taken have a strong musty odour.

MICROBIOLOGICAL RESULTS


E.coli ^a {A}	P09/046	Acute health - 1	Count per 100ml	Not detected	81%	81%	0	82	62	0	0	0	0	0	
Faecal coliforms ^b {A}	P09/046	Acute health - 1	Count per 100ml	Not detected	81%	81%	0	88	62	0	0	0	0	0	
Total coliforms ^c	P09/102	Operational	Count per 100ml	< 10	75%	75%	0	268	65	0	202	0	0	0	
Heterotrophic plate count ^f	P09/103	Operational	Count per ml	< 1000	94%	94%	0	1900	372	136	524	0	36	0	

a = Definitive, preferred indicator of faecal pollution.
b = Indicator of unacceptable microbial water quality, could be tested instead of E.coli, but is not the preferred indicator of faecal pollution. Also provides information on treatment efficiency and aftergrowth in distribution networks.
c = Confirms a risk of human infection and faecal pollution and also provides information on treatment efficiency. The detection of selected viruses confirms faecal pollution of human origin.
d = Confirms a risk of infection and faecal pollution and also provides information on treatment efficiency. The detection of selected protozoan parasites confirms a human health risk.
e = Indicates potential faecal pollution and provides information on treatment efficiency and aftergrowth.
f = Process indicator that provides information on treatment efficiency, aftergrowth in distribution networks and adequacy of disinfectant residuals.
g = Process indicator that provides information on treatment efficiency.

KEY ** = TOO NUMEROUS TO COUNT ns = NOT SPECIFIED

for and on behalf of B N KIRK (Natal) cc


Dawn Bester - Laboratory
Manager
Technical Signatory


Date

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2. In the case of sample/s submitted by or on behalf of the client, the results expressed in this certificate represent only the
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Accreditation Disclaimer:

1. Results marked {A} are included in the SANAS Schedule of accreditation for this laboratory.
2. Results marked "Subcontracted Test" in this report, are not included in the SANAS Schedule of accreditation for this laboratory.
3. The estimated uncertainty of measurements for the accredited test results is obtainable from the laboratory - QP24 Appendix A.
4. The results relate to the sample tested and the most recent methods available with a 95% confidence level.

End of Report