

## b.n. kirk (natal) cc

Reg. No. CK 1994/015428/23

Water, Sewage &amp; Industrial Effluent Testing Laboratory

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## CERTIFICATE OF ANALYSIS - BN Kirk (Natal) cc

CLIENT:	Ilembe District Municipality	JOB NO:	D18-1
WORKS:	DRIEFONTEIN WATER TREATMENT WORKS		
ADDRESS:	P.O. Box 1788 Kwadukuza 4450		
ATTENTION:	<i>Mr. H.N. Maphumulo</i>	REPORT DATE:	08-05-2014
eMail:	<a href="#">Group 4 Details</a>	DATE ANALYSED:	06-05-2014
In accordance with the visit schedule and procedure QP21.		DATE RECEIVED:	30-04-2014

## ANALYTICAL RESULTS

Determinand	Test Method No	SANS 241-1:2011 Physical, aesthetic, operational, chemical and Microbiological determinands					2014															
		Risk	Unit	Standard limits <sup>a</sup>	% Analysis Compliance	% Monitoring Compliance	Date Sampled															
							Jan 2014	Jan - wk 2	Jan - wk 3	Jan - Wk 4	Feb - wk 1	Feb - wk 2	21-02	26-02	06-03	10-03	18-03	26-03	01-04	10-04	16-04	24-04



## FINAL WATER

## Physical and aesthetic determinands

pH at 25°C <sup>c</sup>	P09/042	<i>Operational</i>	<i>pH units</i>	$\geq 5$ to $\leq 9.7$	100%	60%	not sampled	not sampled	not sampled	not sampled	not sampled	not sampled	not sampled	No water	7.6	7.5	7.6	No Water	No Water	No Water	7.8	7.6	7.6			
Colour	P09/011	<i>Aesthetic</i>	<i>mg/L Pt-Co</i>	$\leq 15$	100%	60%									3.2	2.4	1.6				1.3	0	0.60			
Turbidity <sup>b</sup> {A}	P09/045	<i>Operational</i>	<i>NTU</i>	$\leq 1$	33%	60%									1.7	2.2	1.4				0.60	1.2	0.40			
		<i>Aesthetic</i>	<i>NTU</i>	$\leq 5$	100%	60%									1.7	2.2	1.4				0.60	1.2	0.40			
Conductivity at 25°C	P09/044	<i>Aesthetic</i>	<i>mS/m</i>	$\leq 170$	33%	60%									200	201	197				190	19	99			
Total Chlorine	-	<i>ns</i>	<i>ns</i>	<i>ns</i>											0.22	0.04	0.17				0.02	0.05	0.37			
Free chlorine	P09/025	<i>Chronic health</i>	<i>mg/L</i>	$\leq 5$	100%	60%									0.14	0.00	0.13				0.00	0.02	0.16			
Monochloramine	P09/025	<i>Chronic health</i>	<i>mg/L</i>	$\leq 3$	100%	60%									0.08	0.04	0.04				0.02	0.03	0.21			

## Chemical determinands - macro-determinands

Nitrate as NO <sup>3</sup>	P09/018	<i>Acute health - 1</i>	<i>mg/L</i>	<i>ns</i>											5.6	2.9	5.2				4.7	1.1	1.1			
Nitrate as N <sup>d</sup>	P09/018	<i>Acute health - 1</i>	<i>mg/L</i>	$\leq 11$	100%	60%									1.3	0.66	1.2				1.1	0.25	0.25			
Nitrite as N <sup>d</sup>	P09/019	<i>Acute health - 1</i>	<i>mg/L</i>	$\leq 0.9$	100%	100%																0.05	<0.01			

Chemical determinands - micro-determinands																													
Iron as Fe	P09/014	Chronic health	mg/L	≤ 2	100%	60%											0.21	0.30	0.19							0.15	0.09	0.08	
		Aesthetic	mg/L	≤ 0.3	100%	60%												0.21	0.30	0.19							0.15	0.09	0.08
Aluminium as Al	P09/053	Operational	mg/L	≤ 0.3	100%	60%												0.01	0.01	0.02							nd	nd	0.03
<p>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.</p> <p>b = Values in excess of those given in column 4 may negatively impact disinfection.</p> <p>c = Low pH values can result in structural problems in the distribution system.</p> <p>d = This is equivalent to nitrate at 50mg NO<sub>3</sub><sup>-</sup> /L and nitrite as 3mg NO<sub>2</sub><sup>-</sup> /L.</p> <p>e = Microcystin only needs to be measured where an algal bloom (&gt;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.</p>																													
MICROBIOLOGICAL RESULTS																													
E.coli <sup>a</sup> {A}	P09/046	Acute health - I	Count per 100ml	Not detected	83%	60%												0	0	0							37	0	0
Faecal coliforms <sup>b</sup> {A}	P09/046	Acute health - I	Count per 100ml	Not detected	83%	60%												0	0	0							37	0	0
Total coliforms <sup>c</sup>	P09/102	Operational	Count per 100ml	< 10	83%	60%												8	0	2							38	0	1
Heterotrophic plate count <sup>d</sup>	P09/103	Operational	Count per ml	< 1000	100%	60%												80	460	216							204	216	12
<p><b>Key: nd = not detected ** = too numerous to count</b></p> <p>a = Definitive, preferred indicator of faecal pollution.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>e = Indicates potential faecal pollution and provides information on treatment efficiency and aftergrowth.</p> <p>f = Process indicator that provides information on treatment efficiency, aftergrowth in distribution networks and adequacy of disinfectant residuals.</p> <p>g = Process indicator that provides information on treatment efficiency.</p>																													
<i>for and on behalf of B N KIRK (Natal)cc</i>																													
 <hr/> <b>Dawn Bester - Laboratory Manager</b> <i>Technical Signatory</i>										 <hr/> <b>S. Subban - Chemistry Lab</b> <i>Supervisor</i> <b>Technical Signatory</b>					08-05-2014 <hr/> <i>Date</i>														
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<p><b>Accreditation Disclaimer:</b></p> <p>1. Results marked {A} are included in the SANAS Schedule of accreditation for this laboratory.</p> <p>2. Results marked "Subcontracted Test" in this report, are not included in the SANAS Schedule of accreditation for this laboratory.</p> <p>3. The estimated uncertainty of measurements for the accredited test results is obtainable from the laboratory - QP24 Appendix A.</p> <p>4. The results relate to the sample tested and the most recent methods available with a 95% confidence level.</p>																													

End of Report