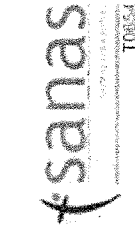


Chemistry



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Part of Fish Care



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SANAS 241
2015

CERTIFICATE OF ANALYSES

Report Nr.: WT005655.DOC

****none****

Dune Ridge Estate
Big Bay
7441

Date received: 09-02-2018

Sampled by client

BIT SPUNE

Water Analyses Report

Origin	Lab. Nr.	pH @ 25°C	EC @ 25°C mS/m	Na mg/l	K mg/l	Ca mg/l	Mg mg/l	Fe mg/l	Cl mg/l	CO ₃ ²⁻ mg/l	HCO ₃ ⁻ mg/l	SO ₄ ⁻² mg/l	B mg/l	Mn mg/l	Cu mg/l	Zn mg/l	P mg/l	NH ₄ -N mg/l	NO ₃ -N mg/l	*F mg/l	*TDS mg/l
	5655	8.0	138	195.5	2.6	61.3	15.1	<0.04	266.0	446.0	60	0.47	<0.03	<0.02	<0.03	0.02	0.02	<0.28	6.09	0.2	881.0
		5.97	≤ 170	≤ 200				≤ 20	≤ 320		≤ 50	≤ 24	≤ 0.4	≤ 20	≤ 50	≤ 1.5	≤ 11.0	≤ 1.5	≤ 1200		

Origin	Lab. Nr.	Date Sampled	Temperature at reception (°C)	Date Analysed
	5655	Unknown	10.3	05/03/2018

* = Not SANAS Accredited

ANGELIER (M) FX
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Statement: The reported results may be applied only to samples received. Any recommendations included with this report are based on the assumption that the samples were representative of the source from which they were taken.

Notes:

To ensure sample integrity, samples are stored only for seven days after release of the report. Thereafter it is disposed of and a fresh sample will be required if additional analyses are requested.
Results marked with "Not SANAS Accredited" in this report are not included in the SANAS Schedule of Accreditation for this laboratory. These results relate to the items tested. This test report shall not be reproduced except in full, without written approval of the laboratory.
Refer to website for uncertainty of measurement and referenced methods.
Sample condition: Samples received in good condition.

Limite to Van
chem (alle to
C/II base

MICROBIOLOGICAL

Sandisiwe Mbula
Technical Signatory (Water chemistry)

07-03-2018
Date reported

Microbiological determinands - As per SANS 241: 2011 Table 1

Physical, aesthetic, operational and chemical determinands:

Determinand	Unit	2014 BLUE DROP LIMITS Department of Water Affairs				WHO limits- might equate to SANS 241: 2013 limits ↑ relaxed limit, ↓ more stringent limit		2015 BLUE DROP LIMITS (derived from SANS 241: 2014)		
		SANS 241: 2006		SANS 241: 2011		WHO 4 th ed Guidelines		Risk	Standard limits	
		Risk	Standard limits	Risk	Standard limits	Risk	Guidelines			
Microbiological determinands										
Bacteriological										
<i>Escherichia coli</i> (<i>E. coli</i>)	Count/100mL			Acute Health	ND			Acute Health	ND	→
Faecal coliforms	Count/100mL			Acute Health	ND			Acute Health	ND	→
Protozoan										
<i>Cryptosporidium</i> species	Count/10mL							Acute Health	ND	
<i>Giardia</i> species	Count/10mL							Acute Health	ND	
Total coliforms	Count/100mL			Operational	< 10			Operational	< 10	
Heterotrophic plate count	Count/1mL	Operational	< 5 000					Operational	< 1 000	↓
Physical and aesthetic determinands										
Free chlorine	mg/L	-	-	-	-	Chronic health	≤ 5 (new)	Chronic health	≤ 5	
Monochloramine	mg/L	-	-	-	-	Chronic health	≤ 3 (new)	Chronic health	≤ 3	
Colour	Pt-Co	Aesthetic	< 20	-	-			Aesthetic	< 15	↓
Conductivity at 25°C	mS/m	-	-	Aesthetic	≤ 170			Aesthetic	≤ 170	→
Total dissolved solids	mg/L	-	-	Aesthetic	≤ 1 200			Aesthetic	≤ 1 200	→
Turbidity	NTU	-	-	Operational	≤ 1			Operational Aesthetic	≤ 1 ≤ 5	→

Determinand	Unit	2014 BLUE DROP LIMITS Department of Water Affairs				WHO limits- might equate to SANS 241: 2013 limits ↑ relaxed limit, ↓ more stringent limit		2015 BLUE DROP LIMITS (derived from SANS 241: 2014)		
		SANS 241: 2006		SANS 241: 2011		WHO 4 th ed Guidelines		Risk	Standard limits	
		Risk	Standard limits	Risk	Standard limits	Risk	Guidelines			
pH at 25 C	pH units	-	-	Operational	≥ 5 to ≤ 9,7			Operational	≥ 5 to ≤ 9,7	→
Chemical determinands — macro-determinands										
Ammonia as N	mg/L	-	-	Aesthetic	≤ 1,5			Aesthetic	≤ 1,5	→
Calcium		-	-	-	-					
Chloride as Cl ⁻	mg/L	-	-	Aesthetic	≤ 300			Aesthetic	≤ 300	→
Fluoride as F ⁻	mg/L			Health (chronic)	≤ 1,5	Chronic health	≤ 1,5 ↑	Chronic health	≤ 1,5	→
Magnesium as Mg		-	-	-	-					
Nitrate as N	mg/L	-	-	Acute health	≤ 11	Acute health	≤ 11 (new)	Acute health	≤ 11	
Nitrite as N	mg/L	-	-	Acute health	≤ 0,9	Acute health	≤ 0,9 (new)	Acute health	≤ 0,9	
Nitrite-nitrate ratio								Acute health	≤ 1	
Nitrate and Nitrite as N	mg/L	Health	< 10	-	-			-	-	
Sodium as Na	mg/L	-	-	Aesthetic	≤ 200			Aesthetic	≤ 200	→
Sulfate as SO ₄ ²⁻	mg/L			Health (acute)	≤ 500	Acute health	≤ 500 ↑	Acute health Aesthetic	≤ 500 ≤ 250	→
Zinc as Zn	mg/L	-	-	Aesthetic	≤ 5			Aesthetic	≤ 5	→
Chemical determinands — micro-determinands										
Aluminium as Al	µg/L	-	-	Operational	≤ 300			Operational	≤ 300	→
Antimony as Sb	µg/L	-	-	Health (chronic)	≤ 20	Chronic health	≤ 20 ↑	Chronic health	≤ 20	→
Arsenic as As	µg/L	Health	< 10	-	-	Chronic health	≤ 10 →	Chronic health	≤ 10	→
Barium as Ba	µg/L							Chronic health	≤ 700	

Determinand	Unit	2014 BLUE DROP LIMITS Department of Water Affairs				WHO limits- might equate to SANS 241: 2013 limits ↑ relaxed limit, ↓ more stringent limit		2015 BLUE DROP LIMITS (derived from SANS 241: 2014)		
		SANS 241: 2006		SANS 241: 2011		WHO 4 th ed Guidelines		Risk	Standard limits	
		Risk	Standard limits	Risk	Standard limits	Risk	Guidelines			
Boron as B	µg/L							Chronic health	≤ 2 400	
Cadmium as Cd	µg/L	Health	< 5	-	-	Chronic health	≤ 3 ↓	Chronic health	≤ 3	↓
Chromium (total) as Cr	µg/L	Health	< 100	-	-	Chronic health	≤ 50 ↓	Chronic health	≤ 50	↓
Cobalt as Co	µg/L	Health	< 500	-	-			-	-	
Copper as Cu	µg/L	-	-	Health (chronic)	≤ 2 000	Chronic health	≤ 2 000 ↑	Chronic health	≤ 2 000	→
Cyanide (recoverable) as CN ⁻	µg/L	-	-	Health (acute)	≤ 70	Acute health	≤ 70 ↑	Acute health	≤ 200	↑
Iron as Fe	µg/L	-	-	Aesthetic	≤ 300	Chronic health	≤ 2 000 (new)	Chronic health Aesthetic	≤ 2 000 ≤ 300	→
Lead as Pb	µg/L	Health	< 20	-	-	Chronic health	≤ 10 ↓	Chronic health	≤ 10	↓
Manganese as Mn	µg/L	Aesthetic	< 100	-	-	Chronic health	≤ 500(new)	Chronic health Aesthetic	≤ 400 ≤ 100	→
Mercury as Hg	µg/L	-	-	Health (chronic)	≤ 6	Chronic health	≤ 6 ↑	Chronic health	≤ 6	→
Nickel as Ni	µg/L	Health	< 150	-	-	Chronic health	≤ 70 ↓	Chronic health	≤ 70	↓
Selenium as Se	µg/L	Health	< 20	-	-	Chronic health	≤ 10 ↓	Chronic health	≤ 40	↑
Uranium as U	µg/L	-	-	-	-	Chronic health	≤ 15 (new)	Chronic health	≤ 30	
Vanadium as V	µg/L	Health	< 200	-	-			-	-	
Chemical determinands – organic determinands										
Dissolved organic carbon as C	mg/L	Health	< 10	-	-			-	-	
Total organic carbon as C	mg/L	-	-	Health (chronic)	≤ 10	Chronic health	≤ 10 (new)	Chronic health	≤ 10	→
Trihalomethanes (total)	mg/L	Health	< 200	-	-			-	-	

Determinand	Unit	2014 BLUE DROP LIMITS Department of Water Affairs				WHO limits- might equate to SANS 241: 2013 limits ↑ relaxed limit, ↓ more stringent limit		2015 BLUE DROP LIMITS (derived from SANS 241: 2014)		
		SANS 241: 2006		SANS 241: 2011		WHO 4 th ed Guidelines		Risk	Standard limits	
		Risk	Standard limits	Risk	Standard limits	Risk	Guidelines			
Trihalomethanes										
Chloroform	µg/L			Chronic health	≤ 300	Chronic health	≤ 300	Chronic health	≤ 300	
Bromoform	µg/L	-	-	Chronic health	≤ 100	Chronic health	≤ 100	Chronic health	≤ 100	
Dibromochloromethane	µg/L			Chronic health	≤ 100	Chronic health	≤ 100	Chronic health	≤ 100	
Bromodichloromethane	µg/L			Chronic health	≤ 60	Chronic health	≤ 60	Chronic health	≤ 60	
Trihalomethane ratio								Chronic health	≤ 1	
Total Microcystin as LR	µg/L	-	-	-	-	Chronic health	≤ 1 (new)	Chronic health	≤ 1	
Phenols	µg/L	-	-	Aesthetic	≤ 10			Aesthetic	≤ 10	→

Disinfectant residuals										
Free chlorine										
Treatment works	mg/L							Operational	>0 to ≤ 0.5	
Points of consumption								Operational	>0 to ≤ 0.2	
Monochloramine										
Treatment works	mg/L							Operational	>0 to ≤ 0.5	
Points of consumption								Operational	>0 to ≤ 0.2	