



# REGEN WATERS

LABORATORY • LABORATORIUM

CK. 89/14418/23

4 Woltemade Street  
P.O. Box 8328  
WITBANK 1035

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## HENDRINA POWER STATION

<b>CHEMICAL ANALYSIS</b>	Our Ref: HPS / 59 - 63 /D /05/11
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Date received: 24 May 2011  
Date reported: 1 June 2011  
Quantity Analyzed: 5  
Lab No :

Attention: Mr. G. Coertze

Analysis Results mg/l	D59 Optimum Kitchen	D60 Lab	SANS Standards -241 (2005)	
			Class 1 (recommended operational limit)	Class 2 (max allowable for limited duration)
Total Dissolved Solids	122	120	< 1 000	> 1 000 - 2 400
Nitrate & Nitrite as N	0.21	0.22	< 10	> 10 - 20
Chlorides as Cl	14	13	< 200	> 200 - 600
Total Alkalinity as CaCO <sub>3</sub>	55	59		
Fluoride as F	<0.20	<0.20	< 1.0	> 1.0 - 1.5
Sulphate as SO <sub>4</sub>	19.6	18.9	< 400	> 400 - 600
Calcium as Ca	11.1	10.6	< 150	> 150 - 300
Magnesium as Mg	7.46	7.48	< 70	> 70 - 100
Sodium as Na	13.5	14.3	< 200	> 200 - 400
Potassium as K	2.09	2.15	< 50	> 50 - 100
Iron as Fe	0.02	<0.01	< 0.20	> 0.20 - 2.0
Manganese as Mn	<0.01	<0.01	< 0.10	> 0.10 - 1.0
Conductivity at 25° C in mS/m	19.0	19.0	< 150	> 150 - 370
pH-Value at 25 ° C	8.76	8.62	5.0 - 9.5	> 4.0 - 10.0
Turbidity as N.T.U	0.9	1.0	< 1	> 1 - 5
Free & Saline Ammonia NH <sub>3</sub> as N	<0.20	<0.20		
Aluminium as Al	0.11	0.09	< 0.30	> 0.30 - 0.50

All heavy metal analyses have been performed on filtered samples

Tests marked with an asterisk \* are not SANAS accredited

These results are related only to the items tested

QUALITY CONTROL CHECKS		
Cation Balance	1.82	1.83
Anion Balance	1.92	1.96
% Difference	-2.6	-3.3
Measured TDS	122	120
Calculated TDS	102	103
Limits > 1.0 - <1.2	1.2	1.2
Calcul TDS / E.C. (0.55 - 0.70)	0.5	0.5

P.L.G. UYS (M.D.)



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Analysis Results mg/l	D59	D60	SANS Standards -241 (2005)	
	Optimum Kitchen	Lab	Class 1 (recommended operational limit)	Class 2 (max allowable for limited duration)
Selenium as Se	<0.01	<0.01	<0.02	>0.02 - 0.05
Vanadium as V	<0.01	<0.01	<0.20	>0.2 - 0.5
Dissolved Organic Carbon (DOC)	3.48	1.94		
Phenolic Compounds	<0.005	<0.005	<0.01	>0.01 - 0.07
Cyanide as CN	<0.01	<0.01	<0.05	>0.05 - 0.07
Cadmium as Cd	<0.003	<0.003	<0.005	>0.005 - 0.01
Cobalt as Co	<0.01	<0.01	<0.50	>0.50 - 1.0
Total Chromium as Cr	<0.01	<0.01	<0.10	>0.10 - 0.50
Copper as Cu	<0.01	<0.01	<1.0	>1.0 - 2.0
Antimony as Sb	<0.005	<0.005	<0.01	>0.01 - 0.05
Nickel as Ni	<0.01	<0.01	<0.15	>0.15 - 0.35
Lead as Pb	<0.01	<0.01	<0.02	>0.02 - 0.05
Zinc as Zn	0.02	0.02	<5.0	>5.0 - 10.0
Arsenic as As	<0.01	<0.01	<0.01	>0.01 - 0.05
Mercury as Hg	<0.001	<0.001	<0.001	>0.001 - 0.005
Colour as Pt-Co*	5	5	<20	>20 - 50
Odour*	No offensive odour	No offensive odour		
Taste*	Acceptable Taste	Acceptable Taste		

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Date received: 24 May 2011

Attention: Mr. G. Coertze

Date reported: 1 June 2011

Quantity Analyzed: 5

Lab No :

Analysis Results mg/l	D61	D62	SANS Standards -241 (2005)	
	Waterplant Tap	Pump Station	Class 1 (recommended operational limit)	Class 2 (max allowable for limited duration)
Total Dissolved Solids	124	126	< 1 000	> 1 000 - 2 400
Nitrate & Nitrite as N	0.23	0.23	< 10	> 10 - 20
Chlorides as Cl	15	14	< 200	> 200 - 600
Total Alkalinity as CaCO <sub>3</sub>	55	59		
Fluoride as F	<0.20	<0.20	< 1.0	> 1.0 - 1.5
Sulphate as SO <sub>4</sub>	19.6	20.4	< 400	> 400 - 600
Calcium as Ca	10.9	11.3	< 150	> 150 - 300
Magnesium as Mg	7.66	7.69	< 70	> 70 - 100
Sodium as Na	14.9	15.6	< 200	> 200 - 400
Potassium as K	2.23	2.24	< 50	> 50 - 100
Iron as Fe	<0.01	<0.01	< 0.20	> 0.20 - 2.0
Manganese as Mn	<0.01	<0.01	< 0.10	> 0.10 - 1.0
Conductivity at 25° C in mS/m	19.3	19.5	< 150	> 150 - 370
pH-Value at 25 ° C	8.57	8.90	5.0 - 9.5	> 4.0 - 10.0
Turbidity as N.T.U	0.7	0.6	< 1	> 1 - 5
Free & Saline Ammonia NH <sub>3</sub> as N	<0.20	<0.20		
Aluminium as Al	0.05	0.05	< 0.30	> 0.30 - 0.50

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QUALITY CONTROL CHECKS		
Cation Balance	1.89	1.94
Anion Balance	1.95	2.02
% Difference	-1.6	-2.0
Measured TDS	124	126
Calculated TDS	105	108
Limits > 1.0 - <1.2	1.2	1.2
Calcul TDS / E.C. (0.55 - 0.70)	0.5	0.6

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Date reported: 1 June 2011

Quantity Analyzed: 5

Lab No :

D61

D62

Analysis Results mg/l	Waterplant Tap	Pump Station	SANS Standards -241 (2005)	
			Class 1 (recommended operational limit)	Class 2 (max allowable for limited duration)
Selenium as Se	<0.01	<0.01	<0.02	>0.02 - 0.05
Vanadium as V	<0.01	<0.01	<0.20	>0.2 - 0.5
Dissolved Organic Carbon (DOC)	1.9	2.62		
Phenolic Compounds	<0.005	<0.005	<0.01	>0.01 - 0.07
Cyanide as CN	<0.01	<0.01	<0.05	>0.05 - 0.07
Cadmium as Cd	<0.003	<0.003	<0.005	>0.005 - 0.01
Cobalt as Co	<0.01	<0.01	<0.50	>0.50 - 1.0
Total Chromium as Cr	<0.01	<0.01	<0.10	>0.10 - 0.50
Copper as Cu	<0.01	<0.01	<1.0	>1.0 - 2.0
Antimony as Sb	<0.005	<0.005	<0.01	>0.01 - 0.05
Nickel as Ni	<0.01	<0.01	<0.15	>0.15 - 0.35
Lead as Pb	<0.01	<0.01	<0.02	>0.02 - 0.05
Zinc as Zn	0.04	0.01	<5.0	>5.0 - 10.0
Arsenic as As	<0.01	<0.01	<0.01	>0.01 - 0.05
Mercury as Hg	<0.001	<0.001	<0.001	>0.001 - 0.005
Colour as Pt-Co*	5	5	<20	>20 - 50
Odour*	No offensive odour	No offensive odour		
Taste*	Acceptable Taste	Acceptable Taste		

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D63

Analysis Results mg/l	Raw Water Tap	SANS Standards -241 (2005)	
		Class 1 (recommended operational limit)	Class 2 (max allowable for limited duration)
Total Dissolved Solids	114	< 1 000	> 1 000 - 2 400
Nitrate & Nitrite as N	0.19	< 10	> 10 - 20
Chlorides as Cl	10	< 200	> 200 - 600
Total Alkalinity as CaCO <sub>3</sub>	49		
Fluoride as F	<0.20	< 1.0	> 1.0 - 1.5
Sulphate as SO <sub>4</sub>	24.2	< 400	> 400 - 600
Calcium as Ca	11.3	< 150	> 150 - 300
Magnesium as Mg	7.85	< 70	> 70 - 100
Sodium as Na	10.3	< 200	> 200 - 400
Potassium as K	2.47	< 50	> 50 - 100
Iron as Fe	0.26	< 0.20	> 0.20 - 2.0
Manganese as Mn	<0.01	< 0.10	> 0.10 - 1.0
Conductivity at 25° C in mS/m	17.4	< 150	> 150 - 370
pH-Value at 25 ° C	7.66	5.0 - 9.5	> 4.0 - 10.0
Turbidity as N.T.U	8.5	< 1	> 1 - 5
Free & Saline Ammonia NH <sub>3</sub> as N	<0.20		
Aluminium as Al	0.16	< 0.30	> 0.30 - 0.50

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QUALITY CONTROL CHECKS	
Cation Balance	1.75
Anion Balance	1.78
% Difference	-0.7
Measured TDS	114
Calculated TDS	97
Limits > 1.0 - <1.2	1.2
Calcul TDS / E.C. (0.55 - 0.70)	0.6

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D63

Analysis Results mg/l	Raw Water Tap	SANS Standards -241 (2005)	
		Class 1 (recommended operational limit)	Class 2 (max allowable for limited duration)
Selenium as Se	<0.01	<0.02	>0.02 - 0.05
Vanadium as V	<0.01	<0.20	>0.2 - 0.5
Dissolved Organic Carbon (DOC)	5.84		
Phenolic Compounds	<0.005	<0.01	>0.01 - 0.07
Cyanide as CN	<0.01	<0.05	>0.05 - 0.07
Cadmium as Cd	<0.003	<0.005	>0.005 - 0.01
Cobalt as Co	<0.01	<0.50	>0.50 - 1.0
Total Chromium as Cr	<0.01	<0.10	>0.10 - 0.50
Copper as Cu	0.03	<1.0	>1.0 - 2.0
Antimony as Sb	<0.005	<0.01	>0.01 - 0.05
Nickel as Ni	<0.01	<0.15	>0.15 - 0.35
Lead as Pb	<0.01	<0.02	>0.02 - 0.05
Zinc as Zn	0.02	<5.0	>5.0 - 10.0
Arsenic as As	<0.01	<0.01	>0.01 - 0.05
Mercury as Hg	<0.001	<0.001	>0.001 - 0.005
Colour as Pt-Co*	5	<20	>20 - 50
Odour*	No offensive odour		
Taste*	Acceptable Taste		

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