



CERTIFICATE OF ANALYSIS

C-201806514



Postal Address: PO Box 861, Emalahleni, 1035  
 Physical Address: 6 Newton Street, Industrial Area, Ext 11, Middeburg, 1055  
 Tel: 013 245 2633/5  
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Subject	Water Analyses	Client Name	Stoep Tshwete Local Municipality	Contract / Order No.	BA 13/08/2017
Water Source	Potable (SANS241:2015)	Client Physical Address	Cnr Walter Stouk Street and Wandanus Ave	Contract Date	15.03.2018
Date of Collection	12.11.2018		Middelburg	Expiry Date	14.03.2021
Date of Receipt	13.11.2018	Contact person	Zelina Louw	SAES No.	B112
Date Analysis Started	13.11.2018	Contact number and e-mail	004 802 7816/ zelina@stlm.gov.za	NLA No.	171
Date Completed	14.12.2018	Sampler/Counter	K.Swart	DWA No.	163
	Sample Name	Doornkop 1	Doornkop Suid	Doornkop 2	Method Number
ANALYSIS REQUIRED	LAB REF. NO	STLMP180896	STLMP180897	STLMP180898	
	Condition of Sample	Clear with particles	Clear	Clear	
PHYSICAL DETERMINANDS	UNIT				
**Colour	mg/L Pt-Co	<2.5	<2.5	<2.5	TM-21
Electrical Conductivity @ 25°C	mS/m	<10	19.58	<10	TM-04
**Total Dissolved Solids	mg/L	55.60	113.26	52.74	TM-43
Turbidity	NTU	<0.400	<0.400	0.750	TM-06
pH at 25°C	pH units	7.34	7.42	7.39	TM-03
CHEMICAL MACRO - DETERMINANDS	UNIT				
**Free chlorine as Cl	mg/L	xxx	0.61	1.64	ns
**Monochloramine	mg/L	xxx	xxx	Blank	ns
Nitrate as N	mg/L	1.40	1.77	1.98	TM-08
Nitrite as N	mg/L	<0.050	<0.050	<0.050	TM-07
**Combined Nitrate plus Nitrite	mg/L	<0.10	<0.10	Blank	ns
**Sulphate as SO <sub>4</sub>	mg/L	5.1	5.1	3.5	TM-40
Fluoride as F	mg/L	<0.40	<0.40	<0.40	TM-05/TM-10
Free and Saline Ammonia	mg/L	<0.20	<0.20	<0.20	TM-13/TM-14
Chloride as Cl	mg/L	<10	<10	<10	TM-17
**Sodium as Na	mg/L	4.58	7.54	3.52	TM-37
**Zinc as Zn	mg/L	<0.081	<0.081	<0.081	TM-83
MICROBIOLOGICAL DETERMINANDS	UNIT				
E.Coli	Count per mL	<1	<1	<1	TM-02
PROTOZOAN PARASITES	UNIT				
*Cryptosporidium species	Count per 10 mL	0	0	0	ns
*Giardia species	Count per 10 mL	0	0	0	ns
Total Coliforms	Count per 100 mL	236	<1	24	TM-02
Heterotrophic Plate Count	Count per 1 mL	<20	<20	<20	TM-01
*Somatic Coliphages	Count per 10 mL	0	0	0	ns

NOTES:

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*A. D. Shethela*

Valedani Phathela - Technical Signatory

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Water Analyses	Client Name	Client Physical Address	Client Name	Client Physical Address	Contract / Order No.	Contract Date:	Expiry Date:	SABS No.	NLA No.	DNA No.	Method Number	ANALYSIS REQUIRED		
												Water Source	Date of Collection	Date of Receipt
Private (SANS241:2015)	12.11.2018	12.11.2018	Private person	084 802 7816/ zsidig@stlm.gov.za	BA 1306/2017	15.03.2018	14.09.2021	8112	171	183		STLMP180896	STLMP180896	
UNIT	Clear with particles	Clear	Clear with particles	Clear										
**Antimony as Sb	µg/L	<1	<1	<1									<1	TM-83
**Arsenic as As	µg/L	<6	<6	<6									<6	TM-83
**Barium as Ba	µg/L	33,00	33,00	45,00									32,00	TM-83
**Boron as B	µg/L	<11	<11	<11									<11	TM-83
**Cadmium as Cd	µg/L	<1	<1	<1									<1	TM-83
**Total Chromium as Cr	µg/L	<3	<3	<3									<3	TM-83
**Copper as Cu	µg/L	<413	<413	<413									<413	TM-83
**Cyanide (Recoverable) as CN	µg/L	<10	<10	<10									<10	ns
Iron as Fe	µg/L	<200	<200	<200									<200	TM-83
**Lead as Pb	µg/L	<4	<4	<4									<4	TM-83
Manganese as Mn	µg/L	<100	<100	<100									<100	TM-83
**Mercury as Hg	µg/L	<1	<1	<1									<1	ns
**Nickel as Ni	µg/L	<2	<2	<2									<2	TM-83
**Selenium as Se	µg/L	3	3	<1									1	ns
**Uranium as U	µg/L	1	1	<1									<1	ns
**Aluminium as Al	µg/L	<41	<41	<41									<41	TM-12
CHEMICAL DETERMINANDS - ORGANIC DETERMINANDS	LIMIT													
**Total Organic Carbon as C	mg/L	<1,0	<1,0	<1,0									<1,0	ns
TRIHALOMETHANES	UNIT													
*Chloroform	µg/L	<10	<10	<10									<10	ns
*Bromoform	µg/L	<10	<10	<10									<10	ns
*Dibromochloromethane	µg/L	<10	<10	<10									<10	ns
*Bromodichloromethane	µg/L	<10	<10	<10									<10	ns
*Combined trihalomethane	Ratio	<0,10	0,21	0,21									1,21	ns
*Total microcystin	µg/L	<0,15	<0,15	<0,15									0,15	ns
*Phenols	µg/L	<10	<10	<10									<10	ns
OPERATIONAL ALERTS	UNIT													
**Hardness as CaCO3	mg/L	34	34	90									26	TM-18
**Total Hardness as CaCO3	mg/L	34	34	84									30	TM-28
**Calcium Hardness as CaCO3	mg/L	20	20	61									25	TM-28
**Magnesium Hardness as CaCO3	mg/L	14	14	22									5	TM-28
**Calcium as Ca	mg/L	7,89	7,89	24,52									10,21	TM-20
**Magnesium as Mg	mg/L	3,46	3,46	5,44									1,21	TM-31
**Potassium as K	mg/L	2,94	2,94	2,90									3,47	TM-34
Cation - Anions Balancing Calculations ( Water Quality Analysis)														
**Corrosivity Index	Index	0,27	0,27	0,10									0,27	ns
**% Balancing	Ratio	99,48	99,48	98,91									98,37	ns

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*ffDhathela*

Vukuzani Phuthula - Technical Signatory



CERTIFICATE OF ANALYSIS

C-201800614



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 Tel: 013 240 2633/5  
 Fax: 013 245 2692/1557

Water Source	Water Analyses	Client Name	Steve Tshwete Local Municipality	Contract / Order No.	BA 13/08/2017
Date of Collection	Porable (SANIS241.2015)	Client Physical Address	Cor Water Boku Street and Wanderer Ave Middelburg	Contract Date	15.03.2018
Date of Receipt	11.11.2018	Contact person	Zelda Louw	Expiry Date	14.03.2021
Date Analysis Started	12.11.2018	Contact number and e-mail	084 802 7816 / zelda@tlm.gov.za	SABS No.	B112
Date Completed	14.12.2018	Sampler/Counter	K.Swart	NLA No.	171
				DWA No.	163
	Sample Name	Mafube	Blank	Blank	Method Number
	LAB REF. NO	STLMP180899	Blank	Blank	
	Condition of Sample	Clear with particles	Blank	Blank	
	UNIT				
PHYSICAL DETERMINANDS					
**Colour	mg/L Pt-Co	<2.5	Blank	Blank	TM-21
Electrical Conductivity @ 25°C	ms/m	42.40	Blank	Blank	TM-04
**Total Dissolved Solids	mg/L	241.18	Blank	Blank	TM-43
Turbidity	NTU	1.70	Blank	Blank	TM-05
pH at 25°C	pH units	7.54	Blank	Blank	TM-03
CHEMICAL MACRO - DETERMINANDS	UNIT				
**Free chlorine as Cl	mg/L	2.20	Blank	Blank	ns
**Monochloramine	mg/L	xxx	Blank	Blank	ns
Nitrate as N	mg/L	0.60	Blank	Blank	TM-08
Nitrite as N	mg/L	<0.050	Blank	Blank	TM-07
**Combined Nitrate plus Nitrite	mg/L	<0.10	Blank	Blank	ns
**Sulphate as SO <sub>4</sub>	mg/L	2.6	Blank	Blank	TM-40
Fluoride as F	mg/L	1.40	Blank	Blank	TM-05/TM-10
Free and Sulfone Ammonia	mg/L	<0.20	Blank	Blank	TM-13/TM-14
Chloride as Cl	mg/L	39	Blank	Blank	TM-17
**Sodium as Na	mg/L	36.52	Blank	Blank	TM-37
**Zinc as Zn	mg/L	<0.091	Blank	Blank	TM-83
MICROBIOLOGICAL DETERMINANDS	UNIT				
E.Coli	Count per mL	<1	Blank	Blank	TM-02
PROTOZOAN PARASITES	UNIT				
**Cryptosporidium species	Count per 10 mL	0	Blank	Blank	ns
**Giardia species	Count per 10 mL	0	Blank	Blank	ns
Total Coliforms	Count per 100 mL	<1	Blank	Blank	TM-02
Heterotrophic Plate Count	Count per 1 mL	<30	Blank	Blank	TM-01
**Somatic Coliphages	Count per 10 mL	0	Blank	Blank	ns

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*A. Phathela*

Vulezani Phathela - Technical Signatory



CERTIFICATE OF ANALYSIS

C-201800814

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 Fax: 013 246 2602/1557

Water Analytes		Client Name	Steve Tulwite Local Municipality	Contract / Order No.	DA 13/09/2017
Water Source	Potable (SAN241:2015)	Client Physical Address	Chr Walker Steadu Street and Wentlerea Ave	Contract Date:	15.03.2018
Date of Collection	11.11.2018		Middelburg	Expiry Date:	14.03.2021
Date of Receipt	12.11.2018	Contact person	Zelda Louw	SABS No.	B112
Date Analysis Started	12.11.2018	Contact number and e-mail	084 802 7816; zelda@slm.gov.za	NLA No.	171
Date Completed	14.12.2018	Sample/Courier	K.Swert	DWA No.	163
<b>ANALYSIS REQUIRED</b>		<b>Sample Name</b>	<b>Blank</b>	<b>Blank</b>	<b>Method Number</b>
		<b>LAB REF. NO</b>	<b>STLMP/180899</b>	<b>Blank</b>	<b>Blank</b>
		<b>Condition of Sample</b>	<b>Clear with particles</b>	<b>Blank</b>	<b>Blank</b>
		<b>UNIT</b>			
<b>CHEMICAL DETERMINANDS - MICRO DETERMINANDS</b>					
**Antimony as Sb	µg/L	<1	Blank	Blank	TM-33
**Arsenic as As	µg/L	<5	Blank	Blank	TM-33
**Barium as Ba	µg/L	148.00	Blank	Blank	TM-53
**Boron as B	µg/L	<11	Blank	Blank	TM-93
**Cadmium as Cd	µg/L	<1	Blank	Blank	TM-93
**Total Chromium as Cr	µg/L	<3	Blank	Blank	TM-93
**Copper as Cu	µg/L	<413	Blank	Blank	TM-93
**Cyanide (Recoverable) as CN	µg/L	<10	Blank	Blank	ns
Iron as Fe	µg/L	<200	Blank	Blank	TM-93
**Lead as Pb	µg/L	<4	Blank	Blank	TM-93
Manganese as Mn	µg/L	<100	Blank	Blank	TM-93
**Mercury as Hg	µg/L	<1	Blank	Blank	ns
**Nickel as Ni	µg/L	<1	Blank	Blank	TM-93
**Selenium as Se	µg/L	1	Blank	Blank	ns
**Uranium as U	µg/L	<1	Blank	Blank	ns
**Aluminium as Al	µg/L	<41	Blank	Blank	TM-12
<b>CHEMICAL DETERMINANDS - ORGANIC DETERMINANDS</b>					
**Total Organic Carbon as C	mg/L	<1.0	Blank	Blank	ns
<b>TRIHALOMETHANES</b>					
**Chloroform	µg/L	<10	Blank	Blank	ns
**Bromobrom	µg/L	<10	Blank	Blank	ns
**Dibromochloromethane	µg/L	<10	Blank	Blank	ns
**Bromodichloromethane	µg/L	<10	Blank	Blank	ns
**Combined trihalomethane	Ratio	<0.10	Blank	Blank	ns
**Total microcystin	µg/L	0.16	Blank	Blank	ns
**Phenols	µg/L	<10	Blank	Blank	ns
<b>OPERATIONAL ALERTS</b>					
**m-Alkalinity as CaCO3	mg/L	178	Blank	Blank	TM-18
**Total Hardness as CaCO3	mg/L	148	Blank	Blank	TM-28
**Calcium Hardness as CaCO3	mg/L	77	Blank	Blank	TM-28
**Magnesium Hardness as CaCO3	mg/L	71	Blank	Blank	TM-28
**Calcium as Ca	mg/L	30.91	Blank	Blank	TM-20
**Magnesium as Mg	mg/L	17.21	Blank	Blank	TM-31
**Potassium as k	mg/L	1.80	Blank	Blank	TM-34
<b>Cation - Anions Balancing Calculations ( Water Quality Analysts)</b>					
**Corrosivity Index	Index	0.23	Blank	Blank	ns
**% Balancing	Ratio	97.89	Blank	Blank	ns

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3. R17 = Results to follow

*Handwritten signature: A. Phuthela*

Vulezani Phuthela - Technical Signatory



**CERTIFICATE OF ANALYSIS**  
C-201800614



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Water Source	Potable (SANS241:2015)	Client Name	Steve Tshwete Local Municipality	Contract / Order No.	BA 13/08/2017
Date of Collection	11.11.2018	Client Physical Address	Chr Venter Esauk Street and Wondras Ave Middelburg	Contract Date:	15.03.2018
Date of Receipt	12.11.2018	Contact person	Zelids Low	Expiry Date:	14.03.2021
Date Analysis Started	12.11.2018	Contact number and e-mail	084 802 7816/ zehal@lqm.gov.za	SABS No.	B112
Date Completed	14.12.2018	Sampler/Counter	K.Swart	NLA No.	171
		Sample Name	Bankfontein	DWA No.	163
<b>ANALYSIS REQUIRED</b>		LAB REF. NO	STLMP180990		
		Condition of Sample	Clear		
<b>PHYSICAL DETERMINANDS</b>	<b>UNIT</b>				<b>Method Number</b>
**Colour	mg/L Pt-Co	<2.5	Blank	Blank	
Electrical Conductivity @ 25°C	mS/m	23.50	Blank	Blank	TM-21
**Total Dissolved Solids	mg/L	129.61	Blank	Blank	TM-04
Turbidity	NTU	<0.400	Blank	Blank	TM-43
pH at 25°C	pH units	7.81	Blank	Blank	TM-05
<b>CHEMICAL MACRO - DETERMINANDS</b>	<b>UNIT</b>				TM-03
**Free chlorine as Cl	mg/L	1.05	Blank	Blank	ns
**Monochloramine	mg/L	xxx	Blank	Blank	ns
Nitrate as N	mg/L	<0.40	Blank	Blank	TM-08
Nitrite as N	mg/L	<0.050	Blank	Blank	TM-07
**Combined Nitrate plus Nitrite	mg/L	<0.10	Blank	Blank	ns
**Sulphate as SO <sub>4</sub>	mg/L	1.7	Blank	Blank	TM-40
Fluoride as F	mg/L	<0.40	Blank	Blank	TM-05/TM-10
Free and Saline Ammonia	mg/L	<0.20	Blank	Blank	TM-13/TM-14
Chloride as Cl	mg/L	<10	Blank	Blank	TM-17
**Sodium as Na	mg/L	26.50	Blank	Blank	TM-37
**Zinc as Zn	mg/L	<0.061	Blank	Blank	TM-83
<b>MICROBIOLOGICAL DETERMINANDS</b>	<b>UNIT</b>				
E.Coli	Count per mL	<1	Blank	Blank	TM-02
<b>PROTOZOAN PARASITES</b>	<b>UNIT</b>				
*Cryptosporidium species	Count per 10 mL	0	Blank	Blank	ns
*Giardia species	Count per 10 mL	0	Blank	Blank	ns
Total Coliforms	Count per 100 mL	1203	Blank	Blank	TM-02
Heterotrophic Plate Count	Count per 1 mL	380	Blank	Blank	TM-01
**Somatic Coliphages	Count per 10 mL	0	Blank	Blank	ns

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*Phathela*

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Water Source	Water Analysis		Client Name	Client Physical Address	Slove Tshwets Local Municipality Cir Water Bosuk Street and Wonderes Ave Middelburg	Contract / Order No.	BA 1306/2017
	Proble (SAWS241:2015)	Date of Collection					
	11.11.2018						15.03.2018
Date of Receipt	12.11.2018	Contd person					14.03.2021
Date of Analysis Started	12.11.2018	Contact number and e-mail				SABS No.	0112
Date Completed	14.12.2018	Sampler/Counter				NLA No.	171
						DNA No.	163
ANALYSIS REQUIRED	Sample Name	Bankfontein	Blank	Blank	Blank	Blank	Method Number
	LAB REF. NO	STLMP180900	Blank	Blank	Blank	Blank	
CHEMICAL DETERMINANDS - MICRO DETERMINANDS	Condition of Sample	Clear					
	UNIT						
**Arsimony as Sb	µg/L	<1	Blank	Blank	Blank	Blank	TM-83
**Arsenic as As	µg/L	<5	Blank	Blank	Blank	Blank	TM-83
**Barium as Ba	µg/L	140.00	Blank	Blank	Blank	Blank	TM-83
**Boron as B	µg/L	<11	Blank	Blank	Blank	Blank	TM-83
**Cadmium as Cd	µg/L	<1	Blank	Blank	Blank	Blank	TM-83
**Total Chromium as Cr	µg/L	<3	Blank	Blank	Blank	Blank	TM-83
**Copper as Cu	µg/L	<413	Blank	Blank	Blank	Blank	TM-83
**Cyanide (Recoverable) as CN	µg/L	<10	Blank	Blank	Blank	Blank	ns
Iron as Fe	µg/L	<200	Blank	Blank	Blank	Blank	TM-83
**Lead as Pb	µg/L	<4	Blank	Blank	Blank	Blank	TM-83
Manganese as Mn	µg/L	<100	Blank	Blank	Blank	Blank	TM-83
**Mercury as Hg	µg/L	<1	Blank	Blank	Blank	Blank	ns
**Nickel as Ni	µg/L	<1	Blank	Blank	Blank	Blank	TM-83
**Selenium as Se	µg/L	<1	Blank	Blank	Blank	Blank	ns
**Uranium as U	µg/L	<1	Blank	Blank	Blank	Blank	ns
**Aluminium as Al	µg/L	<41	Blank	Blank	Blank	Blank	TM-12
CHEMICAL DETERMINANDS - ORGANIC DETERMINANDS	UNIT						
**Total Organic Carbon as C	mg/L	<1.0	Blank	Blank	Blank	Blank	ns
TRIHALOMETHANES	UNIT						
*Chloroform	µg/L	<10	Blank	Blank	Blank	Blank	ns
*Bromoform	µg/L	<10	Blank	Blank	Blank	Blank	ns
*Dibromochloromethane	µg/L	<10	Blank	Blank	Blank	Blank	ns
*Bromodichloromethane	µg/L	<10	Blank	Blank	Blank	Blank	ns
*Combined trihalomethane	µg/L	0.21	Blank	Blank	Blank	Blank	ns
**Total microcystin	µg/L	0.15	Blank	Blank	Blank	Blank	ns
*Pheols	µg/L	<10	Blank	Blank	Blank	Blank	ns
OPERATIONAL ALERTS	UNIT						
**Total Alkalinity as CaCO3	mg/L	120	Blank	Blank	Blank	Blank	TM-19
**Total Hardness as CaCO3	mg/L	84	Blank	Blank	Blank	Blank	TM-28
**Calcium Hardness as CaCO3	mg/L	39	Blank	Blank	Blank	Blank	TM-28
**Magnesium Hardness as CaCO3	mg/L	25	Blank	Blank	Blank	Blank	TM-28
**Calcium as Ca	mg/L	15.47	Blank	Blank	Blank	Blank	TM-20
**Magnesium as Mg	mg/L	6.06	Blank	Blank	Blank	Blank	TM-31
**Potassium as k	mg/L	1.39	Blank	Blank	Blank	Blank	TM-34
Cation - Anions Balancing Calculations ( Water Quality Analysis)							
**Corrosivity Index	Index	0.05	Blank	Blank	Blank	Blank	ns
**% Balancing	%	98.47	Blank	Blank	Blank	Blank	ns

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*A. D. Phathela*

Walterus Phathela - Technical Signatory