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2015/03/17

ANALYTICAL REPORT

OUR REF: uMGUNGUNDLOVU MUNICIPALITY 4018/15
COMPANY NAME: uMGUNGUNDLOVU MUNICIPALITY
CONTACT ADDRESS: P O BOX 3235, PIETERMARITZBURG, 3200
CONTACT PERSON: ROYAL NZUZA
SAMPLE TYPE: WASTEWATER
DATE SUBMITTED: 2015/03/10

Determinand	Units	Method No	DWA General Effluent Standards	Results	
				4018/15	4019/15
				RICHMOND/STW FINAL 09.03.15	RICHMOND/STW RAW 09.03.15
Ammonia	mg N/l	64	6	0.14	16.3
Chemical oxygen demand (total)	mg O ₂ /l	3	75	36	364
Chloride	mg Cl/l	16	Not specified	42	
<i>E. coli</i>	colonies per 100ml	31	1000	1 800	
Electrical conductivity at 25°C	mS/m	2	150	33	46
Free chlorine*	mg Cl ₂ /l	-	0.25	<0.1	
Nitrate/Nitrite	mg N/l	65	15	0.48	
Orthophosphate	mg P/l	66	10	0.146	1.71
Oxygen absorbed	mg O ₂ /l	39	10	4	26
pH at 25°C	pH units	1	5.5 – 9.5	7.2	6.9
Suspended solids at 105°C	mg/l	5	25	14	290
Total alkalinity	mg CaCO ₃ /l	10	Not specified	56	130

Determinand	Units	Method No	Results	
			4020/15	4021/15
			RICHMOND/STW SECONDARY 09.03.15	RICHMOND/STW ML 09.03.15
Ammonia	mg N/l	64	<0.08	
Nitrate/Nitrite	mg N/l	65	0.47	
Oxygen absorbed	mg O ₂ /l	39	4	
pH at 25°C	pH units	1	7.1	6.8
Suspended solids at 105°C	mg/l	5		6 015
Total alkalinity	mg CaCO ₃ /l	10	64	

Directors: Dr MMJ-F Talbot, Mr FD Urbaniak-Hedley (British), Mrs VR Talbot
 Talbot & Talbot (Pty) Ltd - Company Registration Number 2000/021732/07

Determinand	Units	Method No	Results	
			4022/15	4023/15
			RICHMOND UPSTREAM 09.03.15	RICHMOND DOWNSTREAM 09.03.15
Ammonia	mg N/l	64	<0.08	0.19
Chemical oxygen demand (total)	mg O ₂ /l	3	<20	<20
<i>E. coli</i>	colonies per 100ml	31	390	3,400
Nitrate/Nitrite	mg N/l	65	1.78	0.74
Orthophosphate	mg P/l	66	0.007	0.033
pH at 25°C	pH units	1	7.0	7.1
Suspended solids at 105°C	mg/l	5	12	<10

Technical Signatory: Chemistry _____ Bacteriology _____

- This report relates only to the samples tested. This report shall not be reproduced, except in full, without the written approval of **TALBOT LABORATORIES**.
- Tests marked with an asterisk (*) in this report are not SANAS accredited and are not included in the Schedule of Accreditation for our laboratory.
- Opinions and interpretations expressed herein are outside the scope of SANAS accreditation.
- Note: Results marked with a double asterisk (**) have been sub-contracted to a peer laboratory.
- Note: Estimates of Uncertainty of Measurement may be obtained from the laboratory if required.

**APPENDIX
UNCERTAINTY OF MEASUREMENT**

Determinand	Method No	Uncertainty of Measurement (%)	Determinand	Method No	Uncertainty of Measurement (%)
Ammonia	64	± 4.80	Mercury (ICP-MS)	83	± 12.00
Aluminium (ICP-MS)	83	± 13.23	Molybdenum (ICP-MS)	83	± 9.50
Antimony (ICP-MS)	83	± 11.16	Nickel (AAS)	55A	± 3.80
Arsenic (ICP-MS)	83	± 10.56	Nickel (ICP-MS)	83	± 10.63
Barium (ICP-MS)	83	± 9.81	Nitrate/Nitrite	65	± 4.79
Beryllium (ICP-MS)	83	± 9.07	Orthophosphate	66	± 4.80
Boron (ICP-MS)	83	± 12.93	Oxygen Absorbed	39	± 4.40
Cadmium (ICP-MS)	83	± 10.10	Potassium (AAS)	7A	± 5.60
Calcium (AAS)	8A	± 2.56	pH at 25°C (Radiometer)	1	± 1.36
Chromium (ICP-MS)	83	± 8.96	pH Value 25°C (Eutech)	1A	± 1.12
Cobalt (ICP-MS)	83	± 8.91	Selenium (ICP-MS)	83	± 14.60
Copper (AAS)	24A	± 4.20	Silver (ICP-MS)	83	± 18.59
Copper (ICP-MS)	83	± 12.79	Sodium (AAS)	6A	± 5.08
Chemical Oxygen Demand	3	± 3.71	Strontium (ICP-MS)	83	± 8.18
Chloride	16	± 2.80	Sulphate	67	± 3.87
Electrical Conductivity at 25°C	2	± 2.74	Suspended Solids at 105°C	5	± 4.08
Fluoride (Lovibond)	18	± 4.82	Thallium (ICP-MS)	83	± 9.33
Fluoride (MultiDirect)	18A	± 4.10	Tin (ICP-MS)	83	± 10.21
Hexavalent Chromium	68	± 6.67	Titanium (ICP-MS)	83	± 15.52
Iron (AAS)	20A	± 6.20	Total Alkalinity	10	± 2.36
Iron (ICP-MS)	83	± 15.42	Total Dissolved Solids at 180°C	41	± 1.25
Lead (AAS)	26A	± 3.80	Total Solids at 105°C	59	± 0.44
Lead (ICP-MS)	83	± 10.06	Turbidity	4	± 1.70
Lithium (ICP-MS)	83	± 11.86	Uranium (ICP-MS)	83	± 7.95
Magnesium (AAS)	9A	± 5.15	Vanadium (ICP-MS)	83	± 11.15
Manganese (AAS)	19A	± 5.20	Zinc (AAS)	23A	± 4.63
Manganese (ICP-MS)	83	± 9.38	Zinc (ICP-MS)	83	± 15.13

Note: The Uncertainty of Measurement is calculated as a percentage and should be applied to the respective results.

Estimates of Uncertainty of Measurement for microbiological analyses can be provided on request.