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2015/03/30

**ANALYTICAL REPORT**

**OUR REF:** uMGUNGUNDLOVU MUNICIPALITY 4718/15  
**COMPANY NAME:** uMGUNGUNDLOVU MUNICIPALITY  
**CONTACT ADDRESS:** P O BOX 3235, PIETERMARITZBURG, 3200  
**CONTACT PERSON:** ROYAL NZUZA  
**SAMPLE TYPE:** WASTEWATER  
**DATE SUBMITTED:** 2015/03/19

Determinand	Units	Method No	DWA General Effluent Standards	Results	
				4718/15	4719/15
				COOLAIR/STW FINAL 18.03.15	COOLAIR/STW RAW 18.03.15
Ammonia	mg N/l	64	6	0.43	18.2
Chemical oxygen demand (total)	mg O <sub>2</sub> /l	3	75	24	169
Chloride	mg Cl/l	16	Not specified	46	
<i>E. coli</i>	colonies per 100ml	31	1000	0	
Electrical conductivity at 25°C	mS/m	2	150	42	56
Free chlorine*	mg Cl <sub>2</sub> /l	-	0.25	0.26	
Nitrate/Nitrite	mg N/l	65	15	0.53	
Orthophosphate	mg P/l	66	10	2.13	0.656
Oxygen absorbed	mg O <sub>2</sub> /l	39	10	3	26
pH at 25°C	pH units	1	5.5 – 9.5	7.3	7.2
Suspended solids at 105°C	mg/l	5	25	<10	204
Total alkalinity	mg CaCO <sub>3</sub> /l	10	Not specified	86	88

Determinand	Units	Method No	Results	
			4720/15	4721/15
			COOLAIR/STW SECONDARY 1 18.03.15	COOLAIR/STW SECONDARY TWO 18.03.15
Ammonia	mg N/l	64	0.38	<0.08
Nitrate/Nitrite	mg N/l	65	1.36	0.50
Oxygen absorbed	mg O <sub>2</sub> /l	39	17	6
pH at 25°C	pH units	1	7.2	7.2
Total alkalinity	mg CaCO <sub>3</sub> /l	10	93	187

Determinand	Units	Method No	Results	
			4722/15	4723/15
			COOLAIR/STW ML 1 18.03.15	COOLAIR/STW ML 2 18.03.15
pH at 25°C	pH units	1	6.9	6.9
Suspended solids at 105°C	mg/l	5	4 705	6 305

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	
			4724/15	4725/15
			COOLAIR UPSTREAM 18.03.15	COOLAIR DOWNSTREAM 18.03.15
Ammonia	mg N/l	64	<0.08	3.27
Chemical oxygen demand (total)	mg O <sub>2</sub> /l	3	285	28
<i>E. coli</i>	colonies per 100ml	31	0	1 800
Nitrate/Nitrite	mg N/l	65	0.07	0.13
Orthophosphate	mg P/l	66	0.049	2.45
pH at 25°C	pH units	1	9.6	7.0
Suspended solids at 105°C	mg/l	5	516	25

Technical Signatory: Chemistry \_\_\_\_\_ Bacteriology \_\_\_\_\_

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- 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.