

Water and Waste Water Quality Analysis Results for the Months of March & April 2016

Sampling and analysis was done for the months of March and April 2016 by Amatola Water Scientific Lab for the entire Makana i.e. Grahamstown, Alicedale and Riebeeck East in Bulk and Reticulation, supply both Water and Waste Water.

Further emergency sampling was done on the 12th April 2016.

Water quality results are subdivided into Physical, Chemical and Microbiological requirements.

Table 1: Summary of water quality compliance

Section	Final - WTW			Reticulation Network			SANS 241 Limits
	No of Tests	Failures(No)	Compliance (%)	No of Tests	Failures	Compliance (%)	
March 2016							
Physical	37	9	75.68	48	10	79.17	≥93 Excellent ≥90 Good <90 Unacceptable
Chemical	57	0	100	68	0	100	≥ 95 Excellent ≥ 93 Good <93 Unacceptable
Microbiological / Bacteriological	50	6	100	60	5	91.67	≥ 97 Excellent ≥ 95 Good <95 Unacceptable
Total Monthly Compliance	144	9	93.8	174	15	91.4	
Section	Final - WTW			Reticulation Network			SANS 241 Limits
	No of Tests	Failures(No)	Compliance (%)	No of Tests	Failures	Compliance (%)	
April 2016							
Physical	32	5	84.38	47	7	85	≥93 Excellent ≥90 Good <90 Unacceptable
Chemical	50	0	100	73	0	100	≥ 95 Excellent ≥ 93 Good <93 Unacceptable
Microbiological / Bacteriological	45	0	100	65	6	90.77	≥ 97 Excellent ≥ 95 Good <95 Unacceptable
Total Monthly Compliance	127	5	96.1	185	13	93.0	

Summary of the emergency sampling is as follows:

Below are the results from the sampling points.

Samples	µg/l	Chronic Health ≤400 µg/l	Aesthetic ≤100 µg/l
Durban Cottage	1202		
Lower Reservoir	535		
Sunnyside Garden	144		
Mother Pike House	107		
Guest House	208		
Legal Reservoir	196		
Apple Bee Cottage	223		

According to DWS Quality of Domestic Water Supplies Volume 1: Assessment Guide page 85.

- 1000 to 4000 µg/l - Slight health risk to sensitive groups only, off-putting taste and colour, severe staining of clothes and fixtures
- 400 to 1000 µg/l - Slight health risk to sensitive groups only, increasing taste and colour, pale tea brown discolouring of water, moderate staining of clothes
- 100 to 400 µg/l - Insignificant effects on health, increase taste and colour, pale tea brown discolouring of water, moderate staining of clothes
- ≤100 µg/l - No Problems

Monthly Quality Statistics – March and April 2016

The results in January indicate non-compliance on physical analysis. Concentration of *Turbidity* in final water at James Kleynhans, Alicedale, Waainek and Riebeeck East which also affect the 7 sampling points on the Eastern side, is due to high solids from the raw water from Glenmeville dam, Howiesondpoort and use of lay dams in Waainek, borehole low yield in Riebeeck East.

Regulations of Drinking Water.

As per the drinking water regulations, when hazardous concentrations are detected, community have to be notified with remedy action e.g. Boiling the water to be advised until disinfection and retesting can confirm that contamination has been eliminated.

The municipality has an existing protocol on communicating such incident.

Waste Water Determinants

DETERMINANTS	SANS 241/ DWAE STANDARDS		SITE		
	Class I Water	Class II Water	Belmont Valley	Alicedale WWTW	Mayfield WTW
March 2016					
Chemical Oxygen Demand	75	75	74	-	116
Nitrate as N	5 – 9.5	4.0 – 10	15.05	-	1.25
Ammonia as N	6	6	11.05	-	25.28
April 2016					
Chemical Oxygen Demand	75	75	50	-	118
Nitrate as N	5 – 9.5	4.0 – 10	3.43	-	1.08
Ammonia as N	6	6	9.89	-	19.69

No sampling was done in Alicedale WWTW; the plant is currently not discharging to the river due to capacity issues. The effluent is treated through oxidation process and discharged to the ponds for polishing.

The lab did not sample in Mayfield WWTW.