

## WATER AND WASTEWATER QUALITY

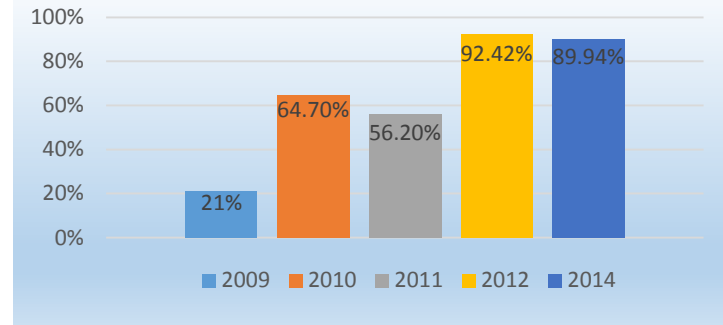
### Water and Wastewater Quality Performance at uMgungundlovu District Municipality

uMgungundlovu District Municipality (UMDM) is responsible to provide water and sanitation services to six local municipalities, namely: uMshwathi, Mkhambathini, Richmond, uMngeni, Mpofana and Impendle. In line with legal requirement, the quality of potable water supplied to the community from each water supply system is monitored as per the monitoring programme which is reviewed every year. The results are uploaded onto Blue Drop System (BDS) and can be viewed under Department of Water and Sanitation (DWS) website which is: [www.dwa.gov.za/mywater](http://www.dwa.gov.za/mywater).

There are six wastewater treatment works under UMDM. The final effluent from these wastewater treatment works is also monitored as per the applicable licence or General Authorization. The final effluent results are submitted to DWS. Monthly performance of each wastewater treatment scheme can be viewed under DWS website, [www.dwa.gov.za/dir\\_ws/GDS](http://www.dwa.gov.za/dir_ws/GDS).

#### Blue Drop certification

Since the inception of the Blue Drop certification programme, the municipality has been showing an improvement in the management of drinking water quality. In 2012, the municipality was able to achieve Blue Drop status which is an indication of commitment towards better service delivery.

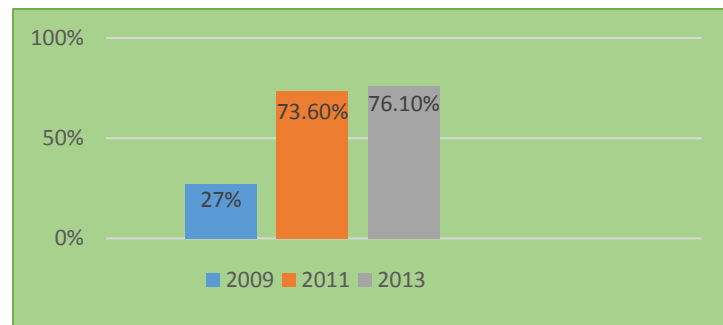


**Figure1: Municipal Blue Drop scores**

Note: The last Blue Drop assessments was conducted in 2014

#### Green Drop certification

There have been only three Green Drop full assessments since it was introduced in 2008. Figure2 below shows that after receiving the poor score of Green Drop in 2009, best practices for wastewater quality management were put in place. The municipality is working towards achieving Green Drop status in future.



**Figure 2: Municipal Green Drop scores**

Note: The last Green Drop assessments was conducted in 2013

## Water Quality Performance

Potable water quality is now required to comply with SANS 241:2015 that requires quality to be evaluated and reported against four categories which are microbiological, chemicals, physical & organoleptic and operational. SANS 241:2015 classify drinking water quality supplied to the population of up to 100 000 as follows:

- Microbiological -: Excellent (99%), Good (97%), Need attention (95%), Intervention required (<95%).
- Chemical -: Excellent (95%), Good (85%), Need attention (80%), Intervention required (<80%).
- Physical & organoleptic -: Excellent (95%), Good (85%), Need attention (80%), Intervention required (<80%).
- Operational -: Excellent (85%), Good (80%), Need attention (70%), Intervention required (<70%).

**Table1: Portable water quality compliance (%) for water supply systems (December 2015 – November 2016)**

Water Supply Systems	Compliance% with SANS 241:2015			
	Microbiological	Chemical	Physical & Organoleptic	Operational
Appelsbosch	99	100	97	90
Boreholes	95	100	100	76
Gomane	92	88	100	63
Impendle	78	100	100	73
Lidgetton	100	100	97	87
Makeni	95	100	94	71
Mpofana	99	100	100	96
Mtulwa	96	0	65	66
Ntanzi	100	100	100	75
Nzinga	89	100	99	70
Rosetta	99	100	97	97
Springs	100	100	100	100
Umgeni Bulk	96	100	100	86

**Microbiological quality:** - Gomane, Impendle and Nzinga did not comply with the allowable standards for microbiological quality. The main reason was due to inadequate chlorine dosing for disinfection which was the result, in some cases, for pump failure and lack of process monitoring during the night while the plant was in operation. To improve the results, the District Municipality is currently conducting plant audits and also reviewing water safety plan to assess the risks from catchment, treatment plant as well as distribution. Makhuzeni, which is under Nzinga system is being installed with Wataka plant. In December 2016, the District Municipality has also placed six interns that are working as process controllers to assist with the operation and monitoring of water treatment plants at Impendle.

**Chemical quality:** - Gomane borehole had a problem of arsenic. The arsenic removal system has been installed and was commissioned in December 2016 and the chemical quality is expected to improve. Mtulwa borehole has a problem of iron and manganese. Ozone system which will assist in iron removal has been installed and will be commissioned as soon as the project for connecting the second borehole to Mtulwa plant is complete. At this stage, water is pre-chlorinated to reduce the level of iron and manganese.

**Physical & organoleptic:** - Mtulwa water treatment system has shown non-compliance under this category due to elevated turbidity levels following the clogging of filters. The filter media was replaced early in January 2017 and the results are expected to improve.

**Operational:** - More than 50% of the treatment systems had operational problems. Noncompliance was a result of high turbidity and elevated content of aluminium (Al). The problem is being addressed by increasing frequency of operational monitoring of water quality and backwashing. The municipality is further considering to have a night shift at Nzinga treatment plant.

## Wastewater Quality Performance

According to Green Drop requirements, effluent quality with a score of 90% and above is seen as compliance. Out of six wastewater treatment works, Mooi River wastewater treatment works battles most to improve its performance due to the fact that it is overloaded and needs to be upgraded.

**Table2: Wastewater quality compliance against applicable discharge limits (January 2016- December 2016).**

Wastewater Treatment Systems	Microbiological	Physical	Chemical
Howick	85%	72%	86%
Cool Air	100%	98%	100%
Richmond	33%	98%	96%
Appelsbosch	83%	100%	87%
Camperdown	69%	100%	100%
Mooi River	0%	57%	48%

Howick and Mooi River have shown non-compliance in all categories:

- Howick -: The non-compliance was impacted by insufficient capacity of dewatering system. There is a project to increase the capacity of the dewatering process. There is Mpophomeni wastewater treatment works that will be constructed and this will further reduce the strain on the Howick WWW.
- Mooi River -: The plant performance is affected by high volumes exceeding the design capacity by more than 200%. Umgeni Water is currently installing a fourth pump to balance the flows between

the reactor and the clarifier. As a mitigation, the plant is exploring the option of refurbishing the old reactor.

- The non-compliance for Richmond was impacted by poor disinfection. According to one of the reports from Umgeni Water as they now operate, maintain and manage the wastewater treatment works, there are plans to improve the design of the contact tank to include baffles and thereby increase the contact time.
- Camperdown and Appelsbosch had a low chlorine level which has resulted in non-compliance. In the last three months, both plants were fully compliant and have achieved 100%.