

WATER AND WASTEWATER QUALITY

Water and Wastewater Quality Performance at uMgungundlovu District Municipality in 2022

The uMgungundlovu District Municipality is responsible to supply potable water to six local municipalities (LMs) in its designated operational areas. Potable water supplied to these LMs is monitored as per monitoring programme which is reviewed annually and in line with water safety plan. The municipality has also six wastewater treatment works which are maintained by Umgeni Water on behalf of the District Municipality. The final effluent from these wastewater treatment works is also monitored as per the monitoring programme. Together with Umgeni Water, the District Municipality developed wastewater risk abatement plans so as to minimise the risk associated with poor performance of the wastewater treatment works. Both water and wastewater quality results are uploaded on monthly basis on Department of Water and Sanitation websites, which is <https://ws.dws.gov.za/RIS/mywater.aspx> for community, regulatory authorities and stakeholders to access.

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 (Figure 1). In 2012, the municipality was successful to achieve Blue Drop status. Again in 2014, the municipality was able to retain its Blue Drop status through bulk water supply systems and this is an indication of commitment shown by the municipality towards better service delivery.

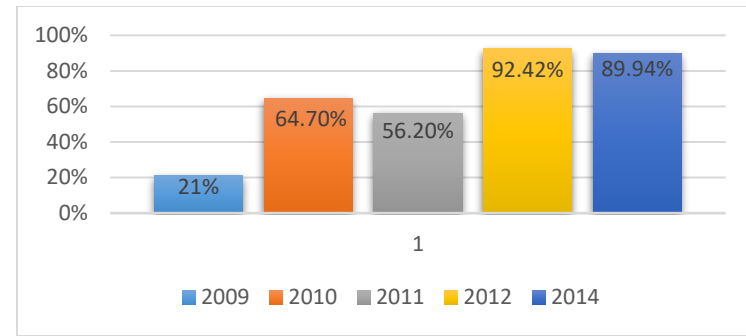


Figure1: Municipal Blue Drop scores

Note: The last Blue Drop assessments were conducted in 2014.

Green Drop certification

There have been four Green Drop assessments since it was introduced in 2008. Figure 2 below shows that after receiving the unfavourable score of 27% in 2009, best practices for wastewater quality management were put in place which resulted to an improved score in the subsequent assessments. In 2021, the District Municipality was able to achieve Green Drop status for Cool Air Wastewater Treatment Works. The overall Municipality Green Drop Score also increased from 76.10% to 86%.

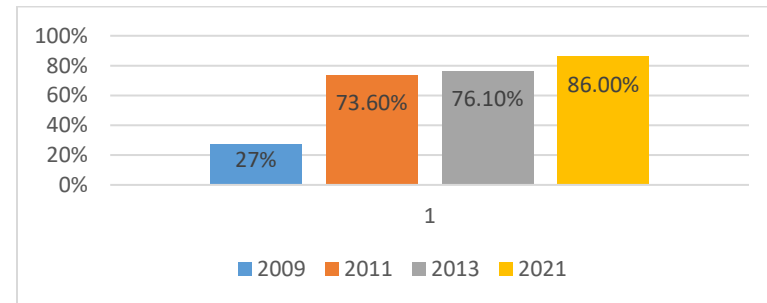


Figure 2: Municipal Green Drop scores

Note: The last Green Drop assessments was conducted in 2021

Water Quality Performance

Potable water quality is required to comply with SANS 241:2015 that requires quality to be evaluated and reported against five categories which are Acute health microbiological, Acute health chemical, Chronic health chemical, Aesthetic and Operational. SANS 241:2015 classify drinking water quality supplied to the population of up to 100 000 as follows:

- Acute health microbiological -: Excellent ($\geq 97\%$), Good ($\geq 95\%$), Unacceptable ($< 95\%$).
- Acute health chemical -: Excellent ($\geq 97\%$), Good ($\geq 95\%$), Unacceptable ($< 95\%$).
- Chronic health chemical -: Excellent ($\geq 95\%$), Good ($\geq 93\%$), Unacceptable ($< 93\%$).
- Aesthetic -: Excellent ($\geq 93\%$), Good ($\geq 90\%$), Unacceptable ($< 90\%$).
- Operational -: Excellent ($\geq 93\%$), Good ($\geq 90\%$), Unacceptable ($< 90\%$).

Table1: Potable water quality compliance for water supply systems (%).

Water Supply System	Acute Health Microbiological	Acute Health Chemical	Chronic Health Chemical	Aesthetic	Operational
Boreholes	98.4	100	97.9	98.2	96.7
Gomane	94.1	100	96.9	98.2	97.2
Impendle	87.1	-	99.3	99.5	87.8
Lidgetton	100	100	100	98.0	97.2
Mpofana	98.9	100	100	99.1	92.5
Nzinga	98.7	-	100	87.7	72.1
Rosetta	97.1	100	100	99.5	98.0
Umgeni	99.2	100	99.6	99.6	99.0

Acute health microbiological: - Out of eight water supply systems, six of them achieved more than 95% except Impendle spring and Gomane plant. Microbiological quality at Impendle spring is affected when there is heavy rain since the reservoir would normally receive high volumes of water resulting to inadequate chlorine contact time as chlorination process takes place in the reservoir. The municipality is currently

installing alternative disinfection system which should improve the results. The disinfection process at Gomane boreholes was affected by load shedding which affected performance of the plant and the process is monitored closely.

In line with incident management protocol, when failures were detected, corrective majors were put in place to ensure that the problem is resolved. There are also plans for constructing Impendle bulk water supply scheme to improve water supply for Impendle area.

Acute health chemical: - All water supply systems within this category were able to meet good standards for drinking water quality.

Chronic health chemical: - All water supply systems within this category were able to meet good standards for drinking water quality.

Aesthetic compliance: - All other water supply systems met the requirements except Nzinga and Impendle Spring which experienced slightly high turbidity due to high rainfalls. The process was optimised to ensure that it meets aesthetic limits for drinking water quality.

Operational: - Impendle spring and Nzinga were unable to meet good standards for drinking water quality under this category. This was mainly due to turbidity as a result of high rain falls, burst pipes and poor performance of the plant. When water quality was found not to meet operational drinking water quality standards, it was not distributed and process was optimised to meet the required standards.

The overall drinking water quality within uMgungundlovu District Municipality meet good drinking water quality.

Wastewater Quality Performance

In terms of Green Drop System, wastewater quality compliance for the final effluent is classified as follows:

- Bad -: $< 50\%$
- Poor -: $50\% - 69\%$
- Good -: $70\% - 89\%$
- Excellent -: $\geq 90\%$

Table2: Wastewater quality compliance against applicable discharge limits (%).

Wastewater Treatment Systems	Microbiological	Chemical	Physical
Appelsbosch	100	95.7	100
Camperdown	100	100	100
Cool Air	100	100	100
Howick	90.1	96.8	100
Mooi River	88.0	98.9	100
Richmond	86.7	100	100

Appelsbosch: - The plant was able to meet the standards for excellent final effluent with regards to all categories for compliance. At this stage the plant has challenges for wasting sludge as there are no drying beds and alternative sludge disposal system. There is a proposal to refurbish the old makeshift drying beds to ensure sludge is wasted sufficiently.

Camperdown: - The plant was able to achieve 100% under all categories for compliance. Upgrading of the chlorine contact tank has improved the performance of the treatment plant.

Cool Air: - The plant is performing well and has complied with all categories for excellent final effluent.

Howick: - The plant was able to meet the standards for excellent final effluent with regards to all categories for compliance. However, the treatment plant has a problem of excessive scum from the chlorine contact and settling of solids in the clarifiers is poor resulting in the carry over. Mpophomeni wastewater treatment works is currently being upgraded and the completion of this wastewater treatment works will reduce the flows going to Howick wastewater treatment works and as a result, quality of final effluent will also improve.

Mooi River: - It is only microbiological compliance which was good and all other categories were excellent, The load shedding affect disinfection process. The process is monitored closely and alternative disinfection is used when there is no power supply.

Richmond: - It is only microbiological compliance which was good and all other categories were excellent, The load shedding affect disinfection process. The process is monitored closely and alternative disinfection is used when there is no power supply.