

ELECTRICITY LOAD SHEDDING TAKES ITS TOLL ON DRINKING WATER SUPPLY BY UMGENI WATER AND EXACERBATED AS STAGE 6 IS INCREASINGLY IMPLEMENTED

Issued by the Corporate Stakeholder Management Unit, Office of the Chief Executive Umgeni Water

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Eskom electricity load shedding is affecting supply of drinking water to municipalities within Umgeni Water's service area. As a consequence, thousands of consumers within the uMgungundlovu District Municipality, Msunduzi Local Municipality, iLembe District Municipality, Ugu District Municipality, Harry Gwala District Municipality, King Cetshwayo District Municipality and the eThekweni Metropolitan Municipality receive an erratic supply of drinking water or, at times, no water from their taps for the duration of load shedding and often longer as water supply infrastructure recover from the effects of power outages.

Stage 6 load shedding was implemented from January 2023, initially intermittently, and subsequently became more frequent. From Wednesday, 12 April 2023, to the present, Stage 6 has continued, resulting in power supply interruptions twice a day for at least four hours on each occasion at some of Umgeni Water's plants where raw is treated to drinking water quality.

In the Mgeni System, the largest system in KwaZulu-Natal, the areas worst affected by water supply failures through power supply interruptions are Vulindlela, Mpophomeni and Hilton, all of which are high-lying and dependent on the Howick West Reservoir for potable water to be transferred through a system of pumping. Other areas that do not receive water during load shedding are KwaHaza, KwaChief and Mashingini. In Impendle, all areas are affected while in the Mpofana system, Bruntville is often starved of water supply when power supply disruptions occur.

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The Midmar Pump Station and the Midmar Water Treatment Works are excluded from load shedding; hence conveyance of raw water and its treatment are not affected. When power outages occur, downstream Millfalls Reservoir is able to receive water from the Midmar Water Treatment Works and it, in turn, is able to transfer the water to the Howick West Reservoir.

The water remains in the Howick West Reservoir until power supply is restored. Consequently, the reservoirs of uMgungundlovu District Municipality and Msunduzi Local Municipality in Vulindlela are unable to supply water to consumers in the vast area of Vulindlela. Water is pumped from the Groenkloof Reservoir in Hilton to Vulindlela. Hilton is affected when power supply outages occur.

The reservoir in Richmond is also reliant on the Midmar Water Treatment Works supply zone. It is affected because water has to be pumped there as well. Areas within Richmond that are affected by no water supply are Ndaleni, Nhlazuka and Mbutshisweni. In the Mkhambathini area, Ukhalo is known to be unable to receive water.

When power supply is restored, it takes at least an hour for the supply mechanisms, both in the bulk and reticulation networks, to return to full functionality. In the meantime, what little storage remains in reservoirs begin emptying out and there is no accompanying replenishment. This leads to intermittent or no water supply to consumers.

From the Midmar Water Treatment Works water is gravity fed to the eThekweni Metro via Point M in Umlaas Road. The eThekweni Metro is, therefore, able to receive full supply during load shedding for distribution to various areas, including Mid-Illovo, Eston, Umbumbulu and Hillcrest.

The DV Harris Water Treatment Works, situated in the outskirts of Pietermaritzburg and part of the Mgeni System, continues to take the brunt of load shedding. In an unrelated occurrence, on Thursday, 13 April 2023, a mechanical problem occurred in a valve situated on the bulk potable water pipeline that carries drinking water from this plant, which required staff of Umgeni Water to temporarily shut down the pipeline in order for repair work to be conducted.

In this period, Umgeni Water was unable to supply drinking water from this plant. The problem was resolved by the following day and supply restored, however, water supply interruptions caused by load shedding persist.

The DV Harris Water Treatment Works has a stand-by generator, but its operation for at least eight hours each day has created a situation of heavy diesel consumption. The 3 000-litre diesel storage tank on site

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depletes rapidly, and sourcing and refilling of it takes a few days. This means that during load shedding and when the stand-by generator is not working, water cannot leave the plant.

The DV Harris Water Treatment Works currently supplies 58MI/d (58 million litres) of water through the Msunduzi Belfort Pipeline. This pipeline feeds both the Claridge Reservoir (for the uMshwathi area) and Belfort Reservoir (for parts of Pietermaritzburg, Table Mountain and uMshwathi). The split in supply is 20MI/d to Claridge Reservoir and 38 MI/d to Belfort Reservoir. The uMshwathi system is fed using the Mpolweni pump station to supply two Umgeni Water reservoirs, Wartburg (8 million litres) and another (1.5 million litres), and uMgungundlovu District Municipality's 1.5 million litre reservoir. Dalton and Cool Air are supplied from the Wartburg Reservoir through smaller reservoirs. A system of electricity-driven pumping is used to transfer water to these areas.

Umgeni Water is concerned about the impact of load shedding on its ability to fulfil its mandate to provide an interrupted supply of drinking water. Eskom and municipalities have been approached to consider providing dedicated power lines to each pump station. If this materialises, then the pump stations will not be affected when there is load shedding.

At the Maphephetheni Water Treatment Works in Inanda, a stand-by diesel-powered generator is used at times of power supply interruptions, thereby ensuring continuous supply of potable water. However, there has been a significant increase in diesel use and cost.

In the Durban Central Region, the Durban Heights Water Treatment Works has two incomers, one of which has been excluded from load shedding. The exemption includes all production units, shaft pumping and the KwaDabeka Pump Station. The section that has not been excluded affects feed to the Pinetown Pump Station, which means no pumping can occur.

The pump station at Inanda Dam has two sources of energy, namely a stand-by pump and Hillcrest and Mzinyathi that supply the eThekweni Metro electricity department. Inanda Dam is one of two sources of raw water supply to the Durban Heights Water Treatment Works, situated in Reservoir Hills, Durban. The other is Nagle Dam in Cato Ridge, from where water gravitates into channels and then into four aqueducts. This means that the Durban Heights Water Treatment Works has an assured supply of raw

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water from Inanda and Nagle dams and available power at all times to ensure the plant continues to produce potable water.

The Inanda Pump Station has been exempt from load shedding.

The Durban Heights Water Treatment Works supplies reservoirs in the north, south, central and inner west regions of Durban.

The interconnected Wiggins Water Treatment Works in Bonella, Durban, has been exempt from load shedding. This system supplies potable water to central Durban. It also augments the Amanzimtoti Water Treatment Works through a system of gravity feed and pumping. At times of load shedding, transfer of water from the Wiggins Water Treatment Works to the Amanzimtoti Water Treatment Works is interrupted, exacerbating the deficit that already exists at the Amanzimtoti Water Treatment Works.

Parts of the Middle South Coast served by Umgeni Water, from Amanzimtoti in eThekweni to Umzinto in Ugu, remain constrained. Load shedding results in downtime of the South Coast augmentation booster pump station, which is situated between Wiggins and Amanzimtoti and is used to pump water to the Amanzimtoti Water Treatment Works. Supply to eThekweni Metro is from the Wiggins Water Treatment Works through a series of reservoirs and the South Coast augmentation booster pump station and is supported by the Amanzimtoti Water Treatment Works.

Reduced volumes of potable water caused by power outages at the booster pump station vary between 20% and 30% - or on average a deficit of between 30 MI/d and 40MI/d - depending on the stage of load shedding. Higher stages of power outages cause high levels of water shortages. This

results in reduced supply to eThekweni Metro for reticulation to Amanzimtoti and similar reduction in supply to Ugu District Municipality.

The Umzinto Water Treatment Works loses approximately 30% in potable water production during load shedding periods. This is caused by reduced abstraction volumes of raw water from the Umzinto and EJ Smith dams because pumps are unable to work. When load shedding occurs, generators are used in what becomes a slow and long process that often produces yields less than required volumes. A similar situation prevails at the Mtwalume Water Treatment Works, which also experiences reduced volumes of potable water produced due to reduced volumes of raw water.

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Mid-South Coast systems' full recovery time post-load shedding is, on average, two hours.

The Mhlabatshane Water Treatment Works has a back-up generator, which allows it to operate when power is switched off by Eskom or if there is power failure due to problems in the network.

The cumulative effect is reduced sales revenue while costs are rising sharply through increased use of diesel.

The Lower uMkhomazi Bulk Water Supply Scheme, currently under construction in Cragieburn, Umkomaas, and 20km north west off Scottburgh, will in the near future alleviate water supply constraints in Amanzimtoti to Hibberdene through provision of 100MI/d on a sustainable basis.

The Hazelmere Water Treatment Works in the north of Durban receives its water from the Hazelmere Dam through gravity feed. The water is treated at the plant and supplied to eThekweni Metro, iLembe District Municipality and Siza Water. The potable water production process comes to a standstill when electricity supply is interrupted, through either power failures or load shedding.

The potable water that has already been produced remains in the onsite reservoir and is only distributed when electricity supply is restored.

There are five bulk distribution systems within the Hazelmere supply area; all of them are dependent on electricity to power the pumps. The systems are Ndwedwe; Verulam/Grange; La Mercy; Avondale and Waterloo.

Of the five, only the Ndwedwe System has backup power supply. The Ndwedwe System has five pump stations, four of which have backup generators to run the pumps, which makes it possible to supply water from Umgeni Water's reservoirs during load shedding and unplanned power outages. In recent times, incidences of diesel theft have occurred, which could pose a risk to functioning of some of the back-up generators if it continues unabated.

The water treatment plants in the King Cetshwayo District that are operated and managed by Umgeni Water are affected during power supply stoppages because they do not have stand-by generators. This means the potable water that is produced cannot leave the plants and the Water Services Authority does not have adequate water to distribute to consumers in Eshowe and surrounding areas. The Ixopo Water Treatment Works, within Harry Gwala District Municipality, remains fully functional because it uses a diesel-powered generator at times of load shedding.

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