

# EXECUTIVE SUMMARY

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In South Africa, The Department of Water and Sanitation (DWS) is the custodian of the nation's water resources and a public trustee. The DWS is obliged by the National Water Act (Act No. 36 of 1998) to establish monitoring networks and information systems and report on the status of water resources in the country. The annual National State of Water Report communicates available information on water resources to all water sector stakeholders, including water users. The main aims of the report are to assist water managers in decision-making, to evaluate the implementation of legislation, to highlight identified problem areas, and to outline measures taken by the DWS to eradicate highlighted issues and balance the water demand and supply. The report is based on an analysis of identified and monitored water resource indicators for the hydrological year, which will be from October 2022 to September 2023.

The 2022/23 hydrological year in South Africa was characterised by wetter and warmer weather associated with the global El Niño-Southern Oscillation's (ENSO) El Niño phase. The annual mean temperature anomaly for 2023, based on the data of 20 climate stations, was, on average, about 0.4 °C above the average of the reference period (1991-2020), making it the 8<sup>th</sup> hottest year on record since 1951. The eastern half of the country, characterised by summer rainfalls, has received significantly above-normal rainfall in the past three hydrological years.

During the 2023 summer season, significant rainfalls, mostly covering the eastern half of the country, were received. Again, during the 2023 winter season, the eastern half of the country anomalously received significant rainfalls (200-500 mm). These more-than-normal rainfalls experienced in the last four hydrological years significantly decreased the number of areas affected by drought conditions. Stream flow data also show a significant increase in the total annual flow volume in the current hydrological year compared to the previous year. Only three strategic stations were below normal, compared to five reported last year, with one being extremely below normal. One of the highlights was a station in the Olifants Water Management Area (WMA), which flows into Mozambique recorded 2601 million cubic meters (MCM) annual volume, the highest since 1980. The national dam storage levels of 221 dams for the 2021/22 and 2022/23 hydrological years were the highest and longest in the past five hydrological years.

Heavy rains not only cause high stream flows and fill most reservoirs but also recharge groundwater aquifers. National Average Groundwater levels reached 64,7% in July 2023, the highest in 22 years. The national average groundwater level status indicates a recovery trend from below normal in 2019 to above normal in 2023. During the groundwater quality assessment for 2022/23, several groundwater monitoring sites in Limpopo and North West were found to have relatively high nitrate concentrations ever recorded. Two borehole sites, ZQMGYA2 and ZQMGM11, anomalously crossed the

110 mg/L levels for the first time since monitoring started. On the downside, heavy rains often lead to flooding, which is destructive to humans and the environment. In 2023, the National Disaster Management Centre (NDMC) reported to have received alerts about overflowing dams and sewerage facilities. On 13 February 2023, the government in South Africa declared a National State of Disaster to enable an intensive, coordinated response to the impact of multiple flood events affecting seven provinces: Mpumalanga, Eastern Cape, Gauteng, KwaZulu-Natal, Limpopo, Northern Cape and North West. At the time of declaration, Mpumalanga (Nkomazi Local Municipality) and Eastern Cape (Chris Hani District Municipality) were reported to be the most affected by the floods. Post declaration, flooding continued in the Eastern Cape in March 2023 and again in May 2023. In June 2023, flooding occurred in the Western Cape, Northern Cape, and KwaZulu-Natal.

The heavy rains in some parts of the country led to the implementation of dam safety protocols to prevent dam failures and significant disasters. In November 2022, in parts of Gauteng and in the southern highveld of Mpumalanga near Standerton and Secunda, widespread flooding resulted in a large inflow of water into the Vaal Dam, raising dam levels and compelling the decision to open eight sluice gates for flood management. Dam safety protocols were triggered again in February 2023, where twelve sluice gates were opened to manage another Vaal Dam overflow and dam safety.

The report highlights the severe challenges of microbial contamination in the South African water resources (Rivers and Dams). Microbiological data collected from 43 hotspot sites in the country from October 2022 to September 2023 suggests that water at all 43 newly selected sites is unsuitable for drinking without treatment. While treating water at the household level through methods such as boiling, filtration, or chlorination can help mitigate the potential health risks, 35% of the sampled sites still demonstrated a high risk associated with using the water even after undergoing limited treatment. Furthermore, the findings indicated that 41% of the sites were unsuitable for irrigating crops intended for raw consumption, and 67% of the sampled sites were deemed unsuitable for recreational activities, posing a high risk of infection for individuals engaging in such activities. These recreational activities include full-contact activities such as swimming, washing laundry, and events like baptisms. Treating water at the household level through methods such as boiling, filtration, or chlorination can help mitigate the potential health risks.

A total of 144 Water Services Authorities (WSAs) were assessed during the 2022/23 hydrological year. However, 14.6% of the water services authorities did not upload data on the Integrated Regulatory Information System (IRIS). The results of the Water Supply Systems compliance in terms of chemical drinking water quality from October 2022 to September 2023 show that 79% of the systems had excellent compliance in terms of chemical quality compliance, 2.8% had good compliance, while 3.5% demonstrated poor chemical quality compliance.

The National Water Balance indicates a System Input Volume (SIV) of 4,39 billion m<sup>3</sup>/a, water losses of 1,79 billion m<sup>3</sup>/a (40,8%), and Non-Revenue Water (NRW) of 2,08 billion m<sup>3</sup>/a (47,4%). NRW and water losses have increased by a notable 5.9% and 4,3%, respectively, from June 2016. The Infrastructure Leakage Index (ILI) deteriorated drastically from 2016 to date. The ILI of 6,9, and 7,0 for 2022 and 2023, respectively, indicates poorly managed physical losses; this trend is expected to improve once municipalities have returned to normal, eliminated the leak repair backlogs, and improved revenue collection.

South Africa also faces challenges in water and sanitation services delivery, such as insufficient water infrastructure maintenance and/or investment. These challenges are further compounded by an increasing number of municipalities not managing their water infrastructure assets strategically; this includes record keeping of water infrastructure assets and their locations and the age and condition of water infrastructure assets. Water resource development mainly addresses issues such as socio-economic uplifting and development, ensuring the availability of safe water supplies to communities, and meeting the water requirements for industries and other sectors critical for economic growth. The Department has been involved in the development of water resources infrastructure to augment the water supply and safeguard future water security. Estimated funding of at least R126 billion is required to finance key water resource development projects in the next ten years. The bulk water projects under construction across the country to improve water supply to millions of residents in villages, towns, and cities include the Lesotho Highlands Water Project, Raising Hazelmere Dam, uMkhomazi Water Project, Raising Clanwilliam Dam, Raising Tzaneen Dam, Giyani pipeline from Nandoni Dam, and many more.

In 2015, South Africa adopted a revolutionary approach under the theme – “It is not all about flushing”, recognising that South Africa is a water-scarce country, with a projected 17% deficit in the availability of water by 2030 if the same rate of water consumption is maintained. The projected water deficit will have a significant impact on the historical way of providing waterborne sanitation and requires the sector to reconsider sanitation provision approaches, with more investment in non-sewered, low water, and waterless sanitation solutions as a means to increase the rate of sanitation service delivery within the seven years left until 2030. The DWS has recognized that due to climate change, water resources constraints, and energy supply challenges, the historic approach of providing waterborne sanitation is no longer sustainable and realistic in achieving universal access to safely managed sanitation. The envisaged 17% deficit in the availability of water and the projected demand by 2030 requires the water sector leader to embrace the use of a range of appropriate sanitation solutions and innovative technologies that require little or no water or recycled water.