

OCTOBER 2024



MONTHLY STATE OF WATER BULLETIN

WATER IS LIFE - SANITATION IS DIGNITY



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA



Overview

South Africa experiences winter rainfall in the southwestern parts of the country and summer rainfall in the eastern part. The country's southwestern tip has a Mediterranean climate with hot, dry summers and cool, wet winters. The South African climate is currently in a neutral El Niño-Southern Oscillation (ENSO). At the end of October 2024, the national dam levels were at **76.8%** of Full Supply Capacity (FSC). This level is lower than the last three hydrological years, at the same time of reporting when national storage levels were greater than 90% of FSC. At least **16.7%** of the national dams were **above 100% of FSC** (either full or spilling), **69%** were between 50 and 100% of FSC, **12%** were between 10 and 50% of FSC, and around **1.8%** were below 10% of FSC (critically low).

The most recent 24-month Standardised Precipitation Index revealed that several District Municipalities (DM) experienced severe drought in the last 24 Months including Namakwa DM, Thabo Mafutsanyane DM, Sarah Baartman DM, Capricorn DM, and Mopani DM. Moreover, district municipalities such as the Zululand DM, Gert Sibande DM, Bojanala DM, Ngaka Modiri Molema DM, Sekhukhune DM, Ekurhuleni DM and Sedibeng DM, experienced moderate drought in the last 24 Months.

The summer rainfall areas of the country have begun to receive significant rainfall, and the surface water storage is gradually improving. The Eastern Cape province experienced its first heavy rainfall and flood event of the season this month, marking the second major flood to hit the Nelson Mandela Metro in four months, with Kariega also experiencing extensive flooding in June 2024. Floods impacted parts of Gqeberha and Kariega, with Nelson Mandela Bay being the most severely affected. Infrastructure damage included the collapse of at least 30 houses and the destruction of 12 bridges, which has had an impact on regional school attendance. Severe flooding resulted in 10 fatalities and displaced 3,000 people.

Rainfall

The South African climate is currently in a neutral El Niño-Southern Oscillation (ENSO) and is predicted to weaken further. The monthly rainfall distribution for the current hydrological year which started in October 2024, is presented in Figure 1. In October most of the provinces received some rainfall (25-100 mm). Overall, rainfall amount of up to 100 mm was received over isolated parts of the Free State, Eastern Cape, and KwaZulu-Natal.

The monthly rainfall anomalies for the current hydrological year, expressed as a percentage of normal rainfall for October 2024, is presented in Figure 2. Above-normal rainfalls (>100 mm) were received in isolated parts of the Western Cape, Northern Cape, Eastern Cape, Mpumalanga, and KwaZulu Natal.

The SAWS multi-model rainfall and temperature forecast for October-November-December (OND), November-December-January (NDJ), and December-January-February (DJF) indicates Current predictions indicate above-normal rainfall for most north-eastern summer rainfall regions during the entire summer period. Some interior regions however still indicate below-normal rainfall during the mid- and late-summer seasons. Minimum and maximum temperatures are expected to be mostly above-normal countrywide for the forecast period.

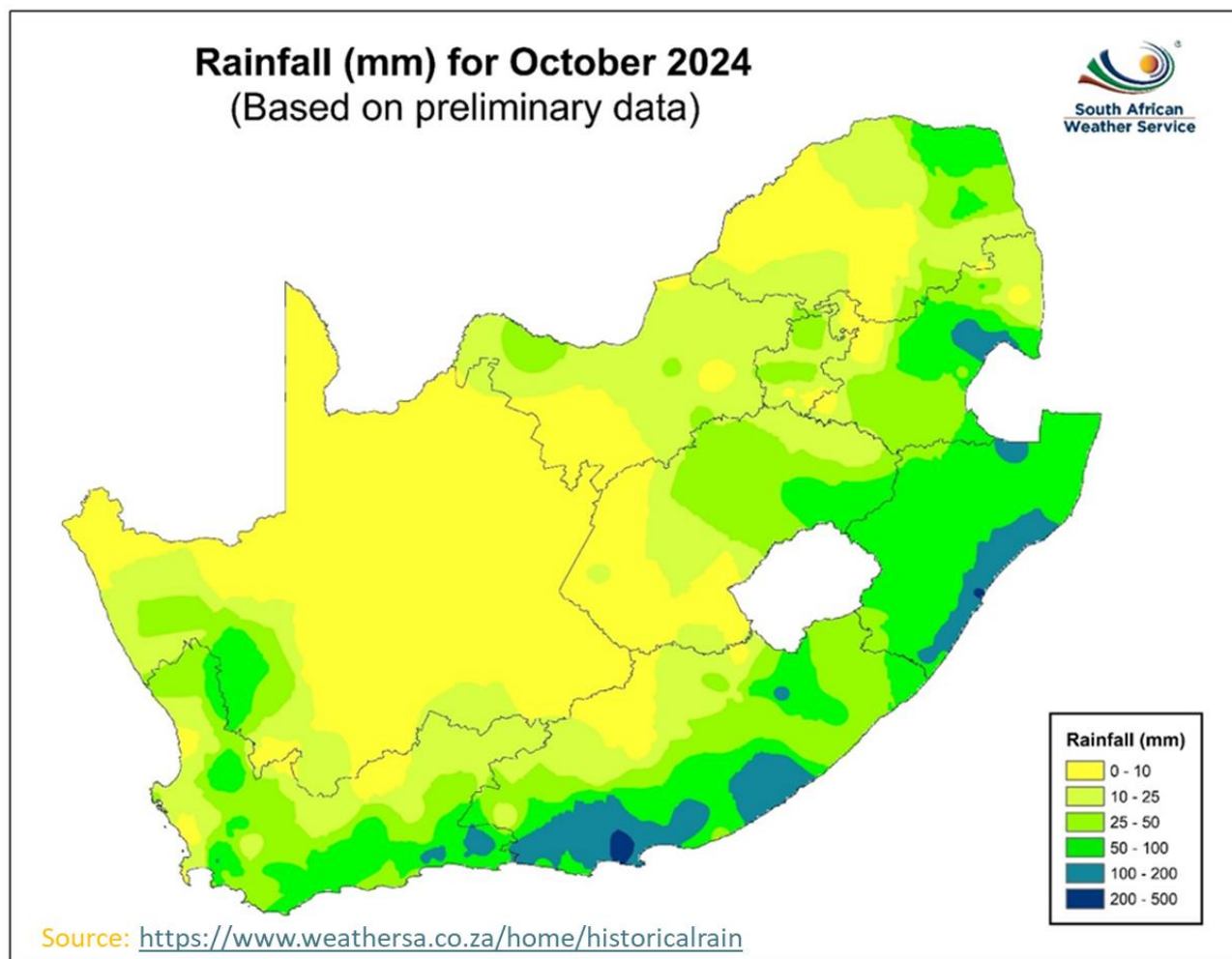
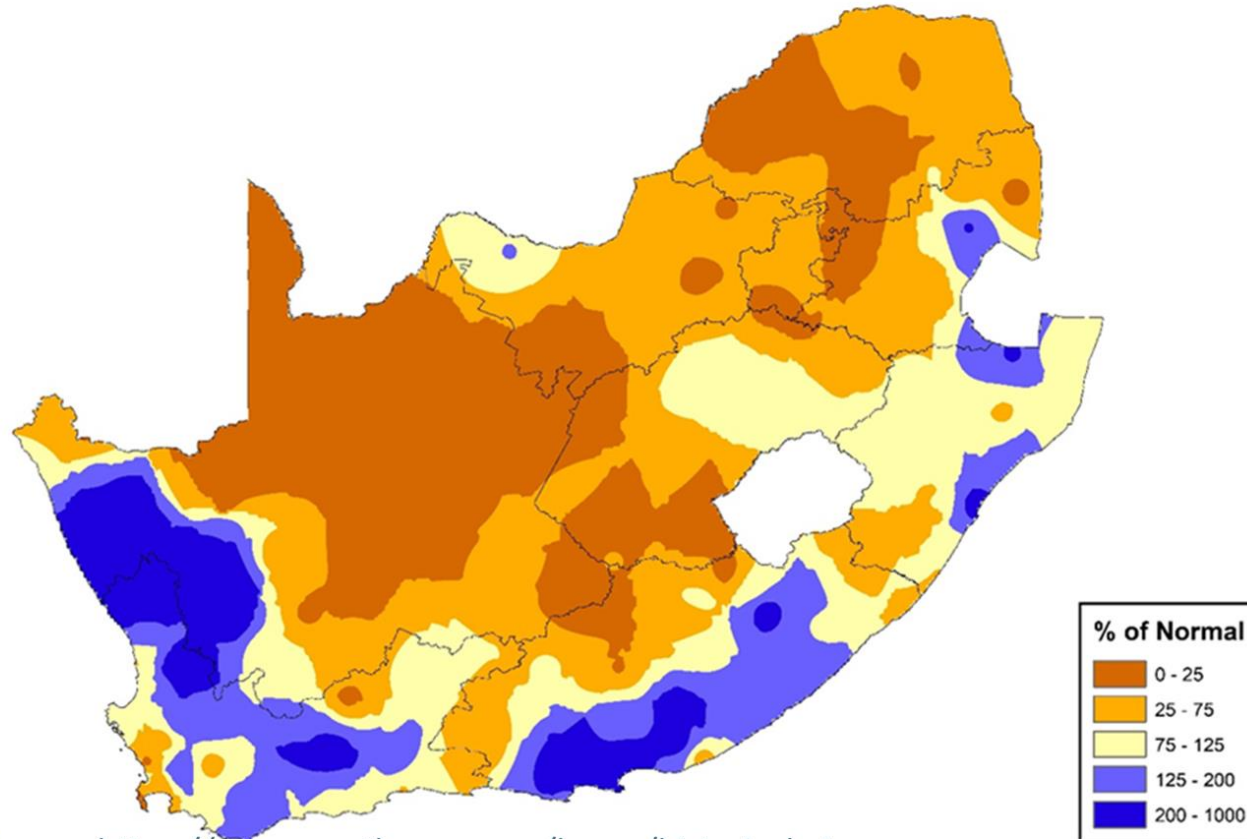


Figure 1: Monthly rainfall distribution for October 2024

Percentage of Normal Rainfall for October 2024
(Based on preliminary data. Normal period 1991-2020)



Source: <https://www.weathersa.co.za/home/historicalrain>

Figure 2: Summer season Percentage of normal rainfall for October 2024.

National Dam Storage

The national dam's water storage trends for the previous four hydrological years and the trend for the current hydrological year (2024/25) are presented in Figure 3. At the end of October 2024, the national dam levels were at **76.8%** of Full Supply Capacity (FSC). This level is lower than the last three hydrological years, at the same time of reporting when national storage levels were greater than 90% of FSC. At least **16.7%** of the national dams were **above 100% of FSC** (either full or spilling), **69%** were between 50 and 100% of FSC, **12%** were between 10 and 50% of FSC, and **1.8%** were below 10% of FSC (critically low).

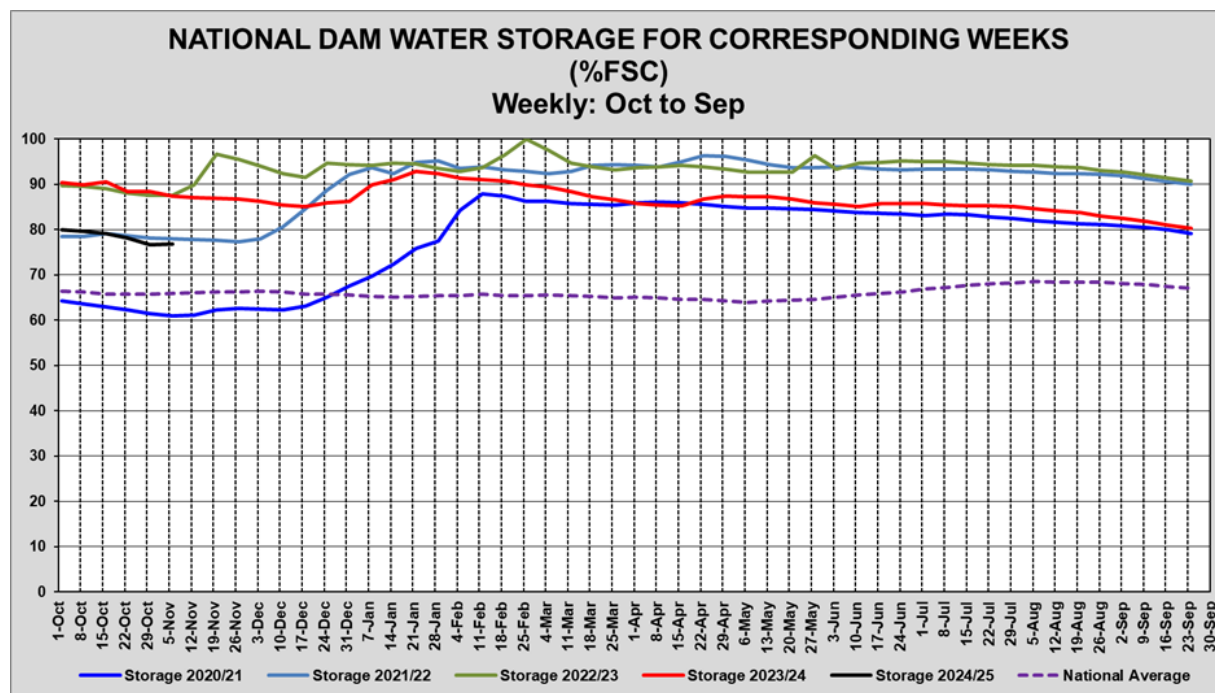


Figure 3: National Dam Storage at the end of October 2024

The comparison between October 2023 and October 2024 of the country's five largest dam storage (%of FSC) is presented in Table 1. Due to the drier and warmer conditions experienced spring 2024 compared to spring 2023, the Vaal Dam and Gariep Dam storage levels have declined by -40.2% and -17.3%, respectively.

The Middle-Letaba, Swartruggens Dam, Nwanedzi Dam and Glen Alpine Dams in Limpopo Province remain the only dams at critical levels, as given in Table 2.

Table 1: Storage Levels comparison for the Five Largest storage dams (by volume) to last year

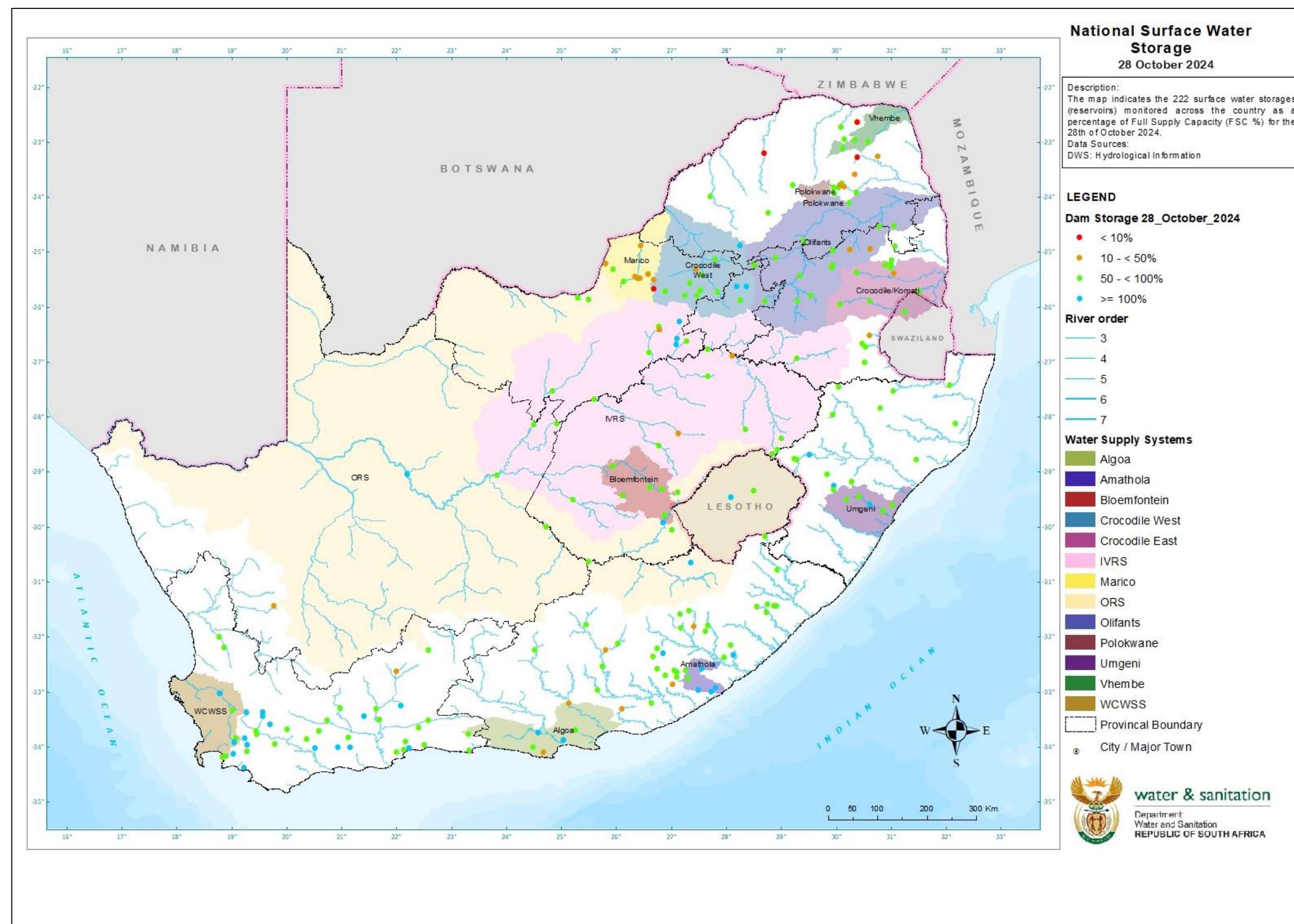
Reservoir	River	Province / Country	Full Supply Capacity	28 October 2023 (%FSC)	28 October 2024 (%FSC)	Difference (%)
Gariep Dam	Orange River	Free State	4903.45	85.8	68.5	-17.3
Vanderkloof Dam	Orange River	Free State	3136.93	95	94	-1.0
Sterkfontein Dam	Nuwejaarspruit River	Free State	2616.9	99.4	98	-1.4
Vaal Dam	Vaal River	Free State	2560.97	75	34.8	-40.2
Pongolapoor t Dam	Phongolo River	KwaZulu-Natal	2395.24	77.2	72.5	-4.7

Table 2: Dams currently below 10% of Full Supply Capacity compared to last year

Reservoir	River	Province / Country	WMA/Country	Full Supply Capacity	28 October 2023 (%FSC)	28 October 2024 (%FSC)	Difference (%)
Swartruggens Dam	Elands River	North West	Limpopo	0.47	80.5	0.7	-79.8
Glen Alpine Dam	Mogalakwena River	Limpopo	Limpopo	18.89	51.5	0.6	-50.9
Nwanedzi Dam	Nwanedzi River	Limpopo	Limpopo	5.14	78.5	9.9	-68.6
Middel-Letaba Dam	Middel-Letaba River	Limpopo	Olifants	171.93	3.6	0.7	-2.9

The spatial distribution of the dams showing the classified range of their storage levels as on 28 October 2024 is presented in Figure 4. Most of the dams in the Western Cape were above 100% of FSC (either full or spilling), while the majority of national dams across the country were at storage levels of between 50-100% of FSC.

Figure 5 presents the 24-month Standardised Precipitation Index (SPI) for September 2024, indicating that several District Municipalities (DM) experienced severe drought in the last 24 Months including Namakwa DM in the Northern Cape, Thabo Mafutsanyane DM in the Free State, Sarah Baartman DM in the Eastern Cape, and Capricorn and Mopani DMs in Limpopo. Moreover, district municipalities such as Zululand DM in KwaZulu-Natal, Gert Sibande DM in Mpumalanga, Bojanala and Ngaka Modiri Molema DMs in North-West, Sekhukhune DM in Limpopo, Ekurhuleni and Sedibeng DMs in Gauteng only experienced moderate drought. These areas are experiencing drought as a result of below-normal rainfall received during the previous summer rainfall season



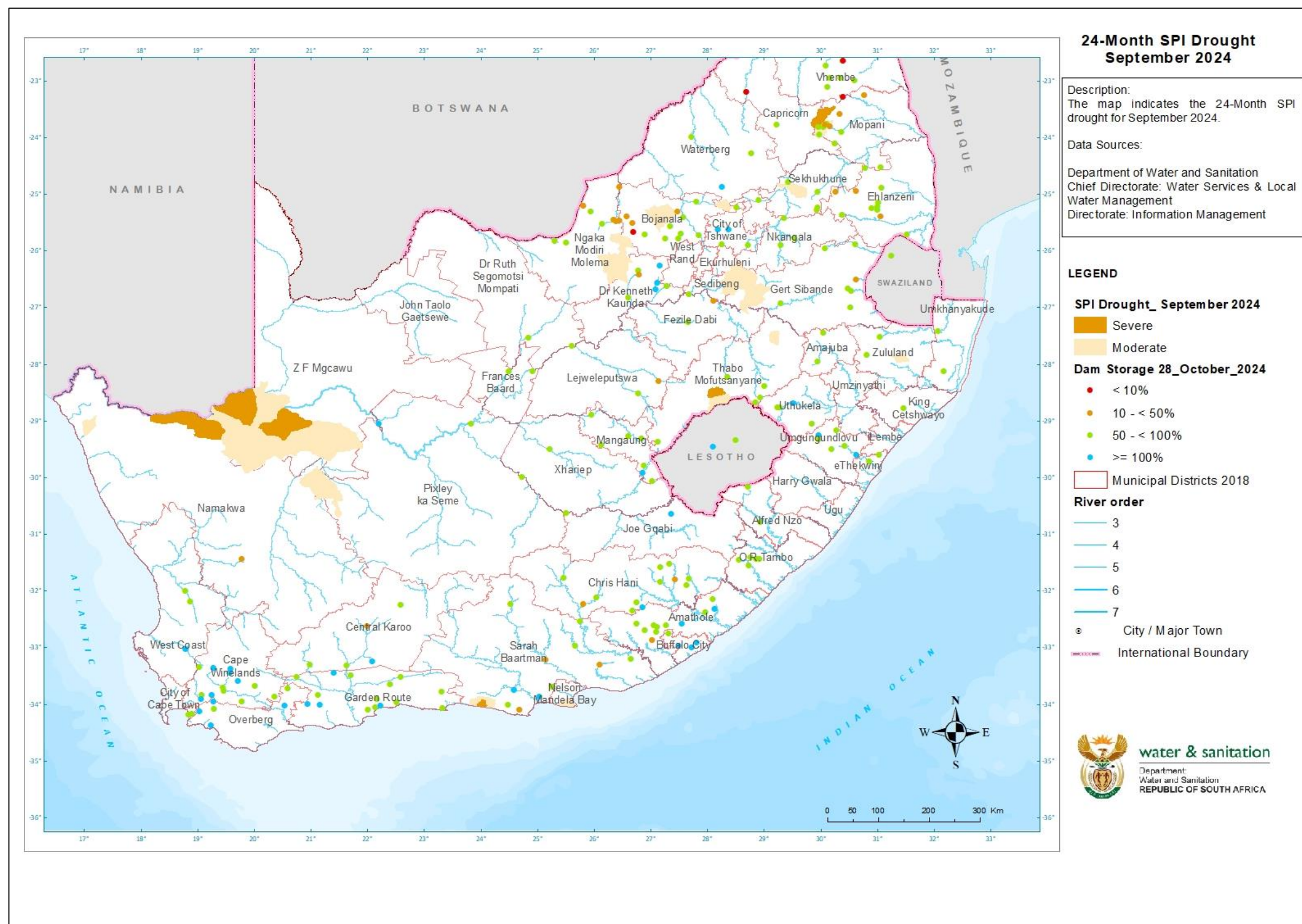


Figure 5: 24-month Standardised Precipitation Index (SPI) and dam levels

The comparison of the storage levels per province and international areas for October 2024 to the same time last year is presented in Figure 6. The provinces showing significant declines (>-10%) in dam storage levels compared to the previous year are Free State (-14.8%), Limpopo (-11.1%), Mpumalanga (-10.5%) and North West (-19.5%).

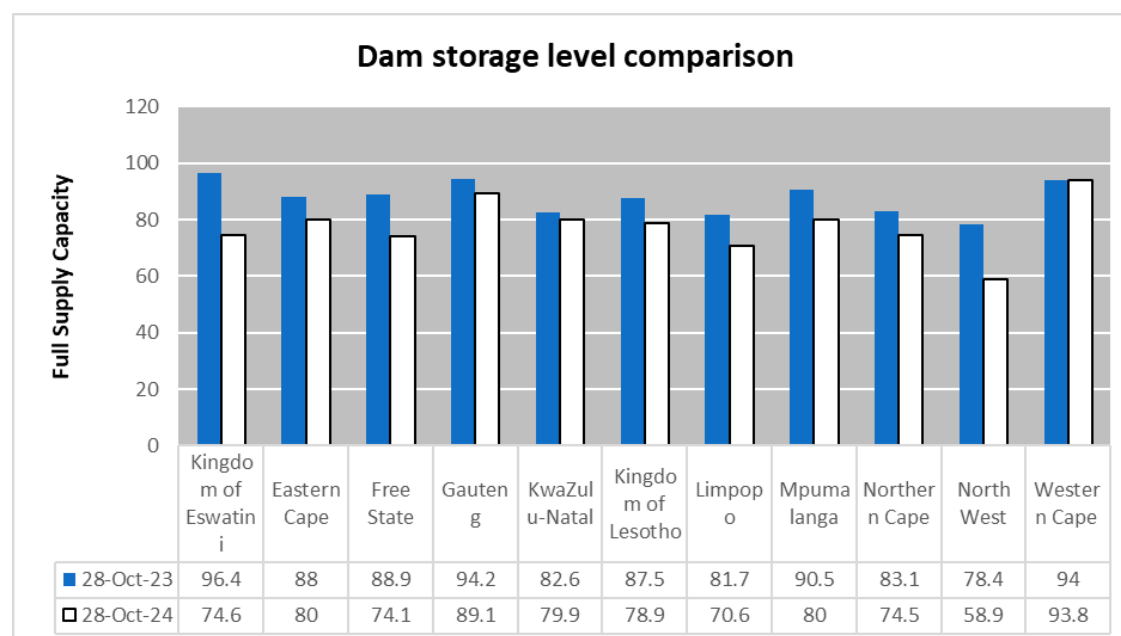


Figure 6: Water Storage Levels October 2023 vs. October 2024

District Municipalities

The year-on-year comparison of water storage levels per district municipality is presented in Figure 7. Only the Garden Route DM and Uthukela DM experienced increases in dam storage levels compared to last year. There are six district municipalities which experienced significant declines (>-20%) in dam levels compared to same time last year, namely, Fezile Dabi DM, Capricorn DM, Ngaka Modiri Molema DM, Sedibeng DM, Alfred Nzo DM, and Namakwa DM. Furthermore, Capricorn and Namakwa DMs have shown to be experiencing severe drought status on the 24-month SPI. While, Ngaka Modiri Molema and Sedibeng DMs are experiencing moderate drought status on the 24-month SPI.

The dam storage levels in water supply systems (WSSs) and applicable restrictions are presented in Table 3. The Algoa WSS decision date was changed from 1 June to 1 November, and a new annual operating analysis for the decision date was performed, resulting in an update of water restrictions which were in effect from 1 November 2023 to 31 October 2024. However, these restrictions are yet to be gazetted.

Due to infrastructure limitations, permanent restrictions are applicable for the Polokwane and Bloemfontein WSSs.

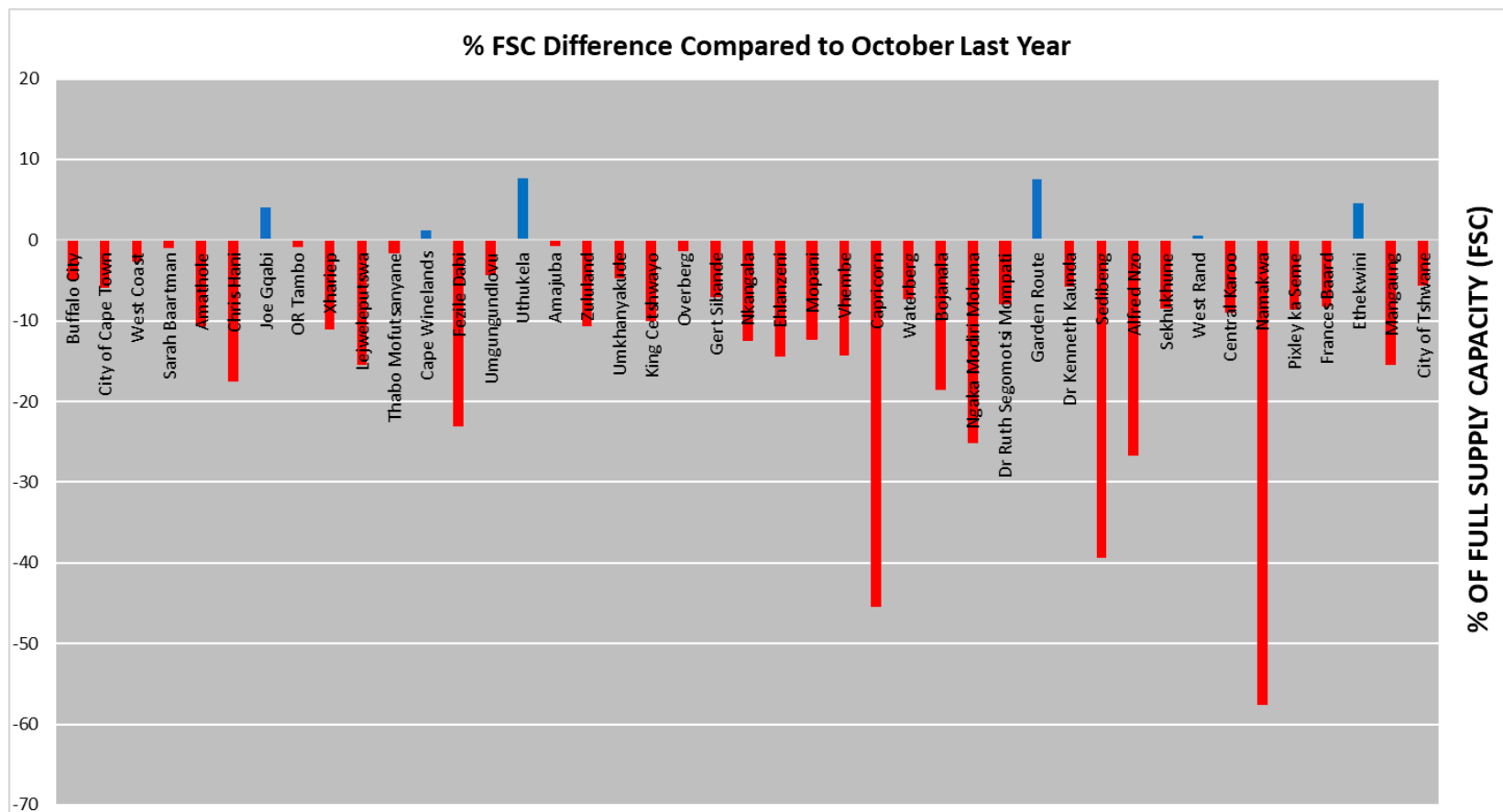


Figure 7: Comparison of water storage levels per District Municipality October 2023 vs October 2024

Table 3: Water Supply Systems storage levels

Water Supply Systems/clusters	Capacity in 10 ⁶ m ³	28 October 2023 (% FSC)	28 October 2024 (% FSC)	System Description
Algoa WSS	282	78	77.3	The following 5 dams serve the Nelson Mandela Bay Metro, Sarah Baartman (SB) DM, Kouga LM and Gamtoos Irrigation: Kromrivier Dam, Impofu Dam, Kouga Dam, Loerie Dam, Groendal Dam
Amathole WSS	241	103.8	100.6	The following 6 dams serve Bisho & Buffalo City, East London: Laing Dam, Rooikrans Dam, Bridle Drift Dam, Nahoon Dam, Gubu Dam, Wriggleswade Dam
Klipplaat WSS	57	100.6	95.4	The following 3 dams serve Queenstown (Chris Hani DM, Enoch Ngijima LM): Boesmanskranz Dam, Waterdown Dam, Oukraal Dam
Luvuvhu WSS	225	96.7	89.7	The following 3 dams serve Thohoyandou etc: Albasini Dam, Vondo Dam, Nandoni Dam
Bloemfontein WSS	219	93.9	78.2	The following 4 dams serve Bloemfontein, Botshabelo and Thaba Nchu: Rustfontein Dam, Groothoek Dam, Welbedacht Dam, Knellpoort Dam
Butterworth WSS	14	100.2	79.9	Xilinx Dam and Gcuwa weirs serve Butterworth
Integrated Vaal River WSS	10 546	88.1	73.6	The following 14 dams serve Gauteng, Sasol, and Eskom: Vaal Dam, Grootdraai Dam, Sterkfontein Dam, Bloemhof Dam, Katse Dam, Mohale Dam, Woodstock Dam, Zaaihoek Dam, Jericho Dam, Westoe Dam, Morgenstond Dam, Heyshope Dam, Nooitgedacht Dam, Vygeboom Dam
Polokwane WSS	254.27	92.8	79.5	The following 2 dams serve Polokwane: Flag Boshielo Dam, Ebenezer Dam
Crocodile West WSS	444	89.8	75.8	The following 7 dams serve Tshwane up to Rustenburg: Hartbeespoort Dam, Rietvlei Dam, Bospoort Dam, Roodeplaat Dam, Klipvoor Dam, Vaalkop Dam, and Roodekopjes Dam
uMgeni WSS	923	86.7	84	The following 5 dams serve Ethekeeni, iLembe & Msunduzi: Midmar Dam, Nagle Dam, Albert Falls Dam, Inanda Dam, and Spring Grove Dam
Cape Town WSS	889	100.2	99.1	The following 6 dams serve the City of Cape Town: Voelvlei Dam, Wemmershoek Dam, Berg River Dam, Steenbras-Lower Dam, Steenbras-Upper Dam, and Theewaterskloof Dam
Crocodile East WSS	159	85.5	67.5	Kwena Dam supplies Nelspruit, KaNyamazane, Matsulu, Malelane, and Komatipoort areas and surroundings
Orange WSS	7 996	89.4	78.4	The following two dams service parts of the Free State, Northern, and Eastern Cape provinces: Gariep Dam, and Vanderkloof Dam
uMhlathuze WSS	301	100	89.9	Goedertrouw Dam supplies Richards Bay, Empangeni small towns surrounding rural areas, industries, and irrigators, supported by lakes and transfer from Thukela River

Table 4: Water Supply Systems with Restrictions

Water Supply Systems/clusters	Restrictions
Algoa WSS	The decision date was changed from 1 June to 1 November, therefore new AOA was conducted, and water restrictions were imposed as from 1 November 2023, Urban (Domestic and Industrial) = 5%, Irrigation = 15% for Kouga Subsystem and Urban (Domestic and Industrial) = 40%, Irrigation = 50% for the Kromme Subsystem, Gazetted on 26 April 2024 (Notice No. 50569)
Bloemfontein WSS	A 15% restriction has been recommended on Domestic and Industrial water supply when the system drops below 95%, notice is yet to be gazetted
Polokwane WSS	20% restrictions on Domestic and Industrial

Extreme Weather Conditions - October 2024

The summer rainfall areas of the country have begun to receive significant rainfall, and the surface water storage is gradually improving. The Eastern Cape province experienced its first heavy rainfall and flood event of the season in October, marking the second major flood to hit the Nelson Mandela Metro in four months, with Kariega also experiencing extensive flooding in June 2024. The rainfall was caused by a cut-off low-pressure system that developed over the south-west parts of the country on Sunday (20 October 2024), accompanied by a stationary surface high-pressure system that brought moisture to the south and south-east of the country. "The cut-off low-pressure systems are notorious for resulting in severe weather during the Spring months, including heavy rainfall that can lead to flooding, as well as intense thunderstorms accompanied by hail and damaging winds" (SAWS,2024).

SAWS predicted in a report released on 19 October 2024, that the cut-off low-pressure system would cause widespread and disruptive rainfall along the Eastern Cape's coastal regions and adjacent areas, as well as the southern and central coasts of KwaZulu-Natal, resulting in minor to significant flooding in some areas. Figure 8 displays the predicted accumulation of rainfall from 19 to 21 October 2024. The Numerical Weather Prediction (NWP) models forecasted rainfall accumulation of up to 200 mm along the Eastern Cape's coastal areas and the central and southern coasts of KwaZulu-Natal.

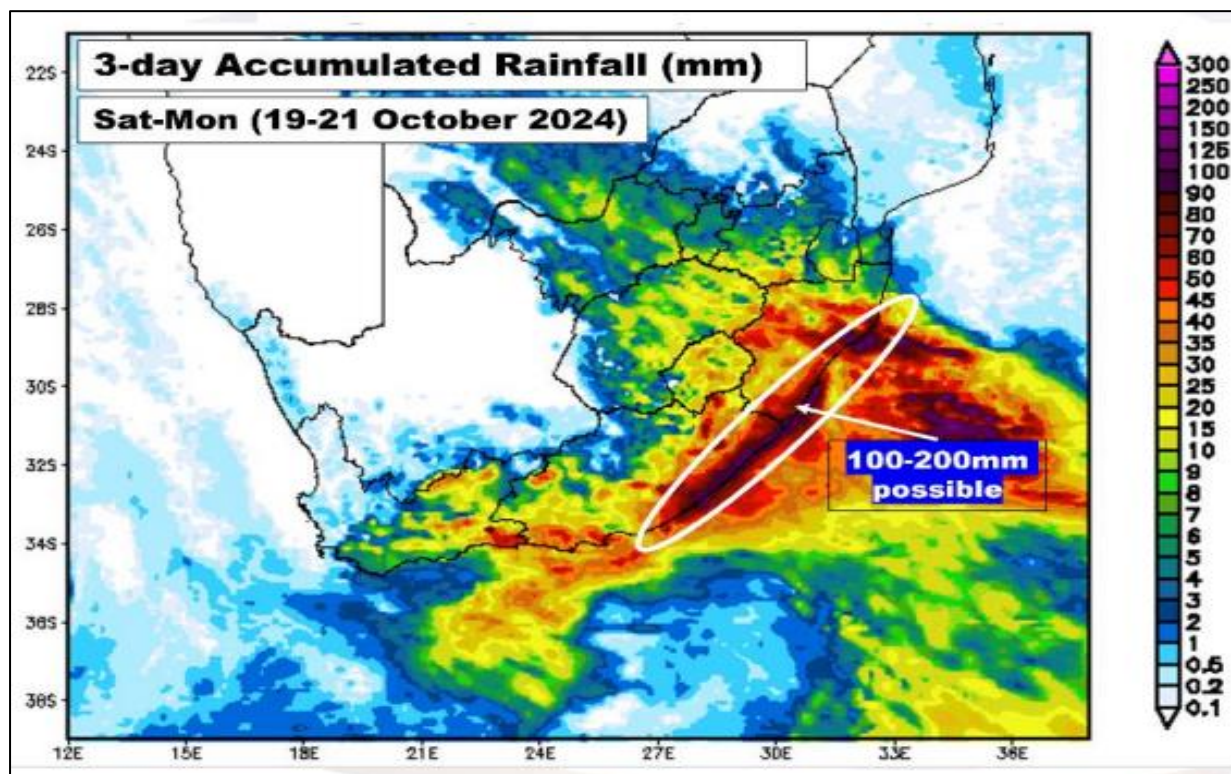


Figure 8: Predicted accumulated rainfall for 19 to 21 October 2024 as forecast by the Global Unified Model (UMGA) (Source: SAWS).

SAWS issued several impact-based warnings on disruptive rainfall in the province from the 19th of October with some presented in Figure 9. The impact-based warnings included:

- **Orange Level 5 Warning** for disruptive rain along the coast and adjacent interior between East London and Port Edward for Saturday (19/10/2024).

- **Orange Level 6 Warning** for disruptive rain along the coast and adjacent interior between Port Alfred and Mtunzini from 20-21/10/2024.
- **Yellow Level 4 Warning** for Disruptive rain for the Nelson Mandela Bay Metro, Kouga, Sundays River Valley, Makana, and Mdlambe Local Municipality as well Ngqushwa from 20-21/10/2024.

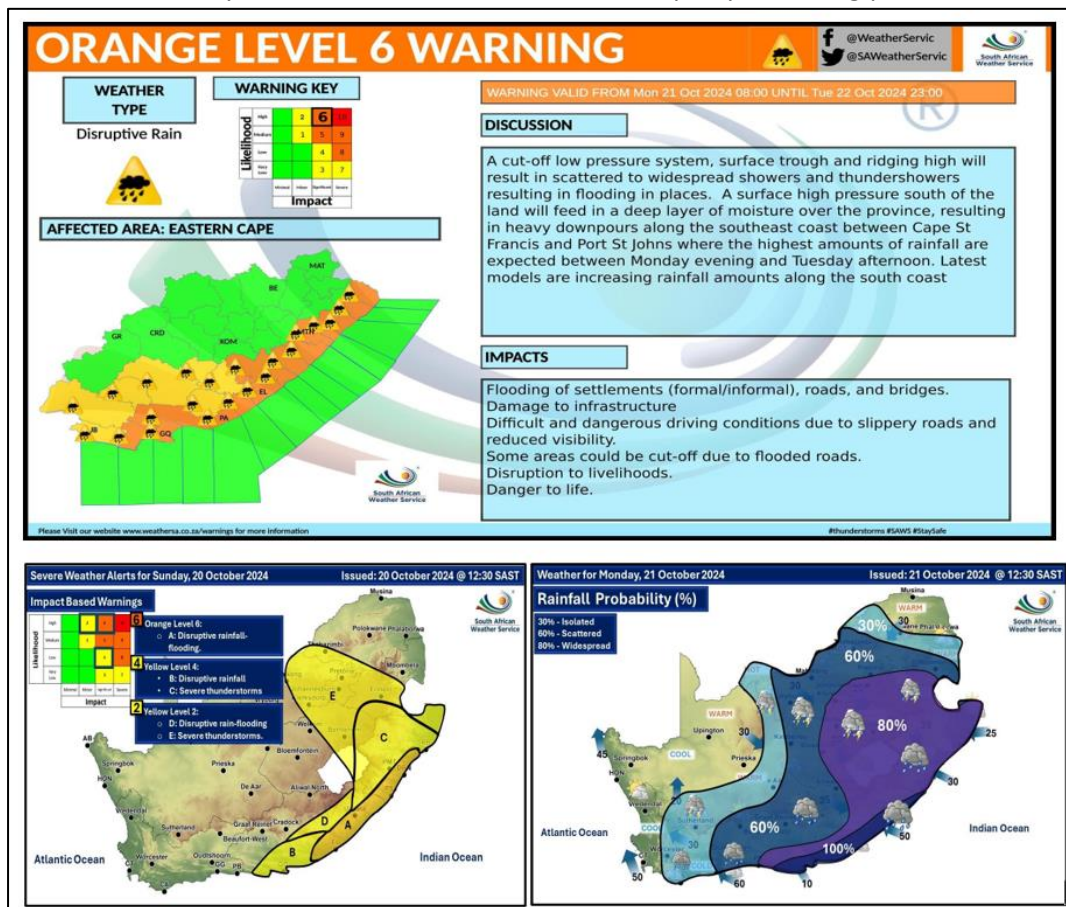


Figure 9: Severe weather warnings for parts of the Eastern Cape province (Source: SAWS)

As predicted by SAWS, adverse weather conditions affected parts of the Eastern Cape, causing flooding of settlements, properties, roads, and endangering lives. On 21 October 2024, SAWS reported that water depths ranging from 25 to 50 mm had been recorded in the country's eastern regions, with water depths exceeding 50 mm in the southern Eastern Cape (Figure 10). **The surface water storage in the province improved by 3.8% of FSC between 21 and 28 October 2024, increasing from 76.2% to 80% of FSC.**

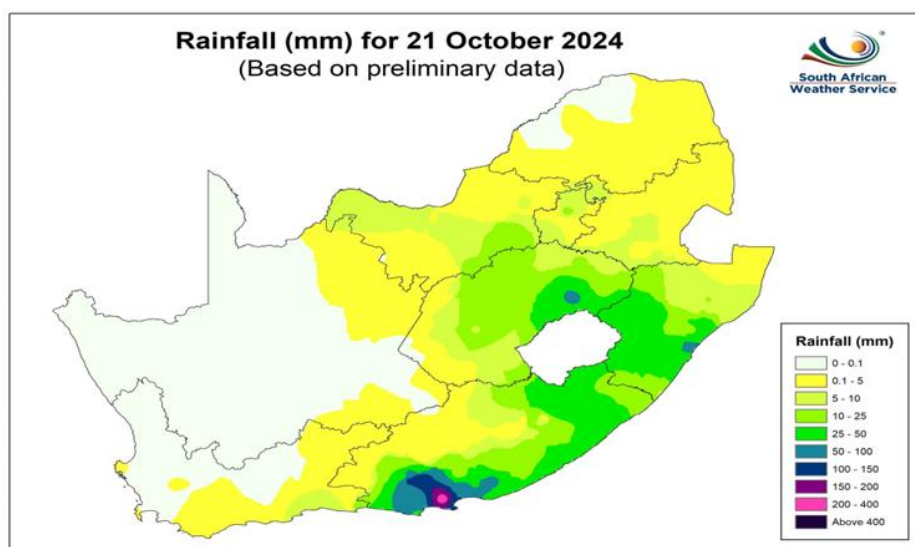


Figure 10: 1 day Rainfall Map showing heavy rainfall for parts of the Eastern Cape Province on 21 October 2024. (Source: SAWS)

Floods impacted parts of Gqeberha and Kariega, with Nelson Mandela Bay being the most severely affected. Infrastructure damage included the collapse of at least 30 houses and the destruction of 12 bridges, which has had an impact on regional school attendance. Severe flooding resulted in 10 fatalities and displaced 3,000 people. Figure 11 shows some of the resulting damage to infrastructure.



Figure 11: (a) the banks of the Swartkops River in Gqeberha and (b) resultant damage to Infrastructure – collapsing Nivens River bridge at Kariega on 22 October 2024 (Source: Daily Maverick).

Water rationing will be implemented in Durban for at least the next 12 months, according to eThekweni Municipality



Image: Screenshot/eThekweni Municipality

1. Water Rationing Implementation

In view of the continuous difficulties in supplying the city's water needs, Umgeni-uThukela Water Board (UW) declared on October 3, 2024, that Durban is getting ready to execute a water rationing plan throughout eThekweni Municipality effective starting on October 10, 2024. The Department of Water and Sanitation issued a notice to UW to reduce the volume of water abstracted from the Umgeni system to their licenced volumes of 470 million m³/annum to cut water use by 8.4% over the course of the following year, or about 118 million liters per day (eThekweni Municipality, 2024).

The directive was part of a broader strategy to manage water resources effectively, especially considering increasing demand and the potential for drought conditions. The DWS emphasized the importance of this measure to ensure sustainable water availability for the eThekweni Municipality and to prevent future shortages (eThekweni Municipality, 2024)

The decision is a response to the city's major issue of water loss, as over 52% of its purified water is lost due to leaks and theft (SABC, 2024). The upcoming rationing measures may involve scheduled water cuts, especially in high-consumption areas, as well as restrictions on non-essential water use (South Coast Sun, The Citizen, 2024). Residents are encouraged to conserve water and prepare for possible supply interruptions during this time.

Alongside these immediate actions, the municipality is committed to pursuing long-term solutions. This includes repairing existing infrastructure and improving leak detection systems to effectively address the root causes of the current water crisis. These initiatives aim to promote a sustainable water supply for the community in the future.

Durban's water rationing plan, which goes into force on October 10, 2024, is intended to efficiently preserve water. At the time of writing this report complete information was still pending, but recent releases have emphasized a few crucial points.

This necessary measure arises from a combination of interrelated factors that have significantly impacted the city's water supply.

2. Reasons for Rationing explained

High Water Loss: Currently, over 52% of the treated and purified water in Durban is lost due to a variety of issues, including leaks in the distribution system, theft of water supplies, and inefficiencies within the water management processes. This alarming statistic indicates that the city's infrastructure is not only failing to deliver water effectively but is also losing substantial potential revenue. Consequently, Durban can recover revenue from only approximately 44% of the water that it supplies to its residents

Rising Demand: The demand for water in Durban has been steadily increasing, primarily due to rapid urbanization and a significant rise in the population. As more people move to the city and existing residents consume more water, the overall demand has begun to outpace the city's current water supply capabilities. This growing discrepancy between demand and supply highlights the urgent need for implementing rationing measures to manage water resources responsibly.

Aging Infrastructure: A considerable portion of Durban's water infrastructure is several decades old and has not undergone necessary upgrades to align with modern requirements. This aging system is particularly vulnerable to leaks and failures, resulting in increased water wastage and further aggravating the existing water crisis. The inability of the infrastructure to meet contemporary demands poses a substantial challenge to the efficient delivery of water to consumers.

Climate Change: Climate change poses profound challenges to local water resources, influencing patterns of precipitation and leading to increased variability in water availability. The ongoing impacts of climate change contribute to a broader sense of water scarcity in urban areas like Durban. The potential long-term effects may include reduced reliability of water sources and increased difficulty in sustaining adequate water supply for the growing population. In summary, the impending water rationing in Durban is a critical response to the pressing issues of water loss, rising demand, aging infrastructure, and the effects of climate change. Addressing these challenges is essential for ensuring a sustainable water supply for the city's residents in the future.

Issue of Illegal Connections: The presence of illegal water connections significantly contributes to inefficiencies and overall water loss, complicating the municipality's efforts to manage its resources effectively.

Government Directive: The eThekweni Municipality has received a directive from the national Department of Water and Sanitation mandating an 8.4% reduction in water consumption, which has prompted the implementation of these rationing measures.

3. Conservation Measures

To ensure that residents are not adversely affected, the city reported to implement the following measures (eThekweni Municipality, 2024):

3.1.1 Install restrictors in water meters for all consumers

- 3.1.2 Reduce pressure in the reticulation network
- 3.1.3 Meter all unmetered consumers
- 3.1.4 Improve turnaround time for repairing leaks and pipe bursts by deploying ward-based plumbers
- 3.1.5 Educate the community on water conservation
- 3.1.6 Disconnect illegal connections- The average water consumption in eThekweni is notably high, ranging from 270 to 298 litres per capita (per person) per day, compared to the international average of 173 litres per capita per day. Throughout this process, the City's teams will be monitoring the system to manage excessive water demand.

4. Duration and Monitoring

Duration of Restrictions: The water restrictions will last for 12 months. During this time, the municipality will regularly review the plan and make changes as needed based on how much water is available and how much is being used.

Targeting Peak Demand: The plan will include specific water cuts in areas that use a lot of water, especially during times of high demand. This means some neighborhoods may have scheduled water outages or a reduced water supply if they use more water than allowed. Residents will receive advance notice of these outages.

Prohibition of Non-Essential Water Use: To save water, residents cannot use it for non-essential activities during the rationing period. This includes watering gardens, washing cars, and filling swimming pools. Residents should find other ways to care for their landscaping and hygiene without using excess water.

Implementing Additional Conservation Measures: The municipality may put in place extra measures to manage water use. This could involve lowering the water pressure in the pipes to reduce flow rates and prevent waste. Also, restrictors may be added to household water meters to limit how much water households can use.

Preparing for Water Restrictions: It's important for residents to prepare for possible water supply interruptions. Households should safely store enough water for drinking, cooking, and hygiene. Communities are encouraged to create water conservation plans and share tips on saving water during the restriction period.

These steps will help Durban manage its water and ensure all residents have the essential supply they need for daily

Compiled by: Hulisani Mafenya, Nokulunga Biyase, Mirrander Ndhlovu, Thandekile Mbili and Joshua Rasifudi

For technical inputs and enquiries:

Sub-Directorate: Integrated Water Resource Studies:

Tel: 012 336 6856

Email: IntegratedWaterStudies@dws.gov.za

Accessible on the Website:

National State of Water Reporting Web page:

<https://www.dws.gov.za/Projects/National%20State%20of%20Water%20Report/default.aspx>

Department of Water and Sanitation

Private Bag X313

Pretoria

0001

Glossary

Term	Definition
EDCs	Endocrine Disrupting Compounds
ENSO	El Niño-Southern Oscillation
FSC	Full Storage Capacity
HY	Hydrological Year
SAWS	South African Weather Service
SPI	Standardized Precipitation Index (SPI) is a widely used index to characterise meteorological drought on a range of timescales. On short timescales, the SPI is closely related to soil moisture, while at longer timescales, the SPI can be related to groundwater and reservoir storage
WCWSS	Western Cape Water Supply System
WSS	Water Supply System
Water Supply System	A typical town/city water supply system consists of a gravity or pumping-based transmission and distribution system from a local or distant water source with a needed water treatment system

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