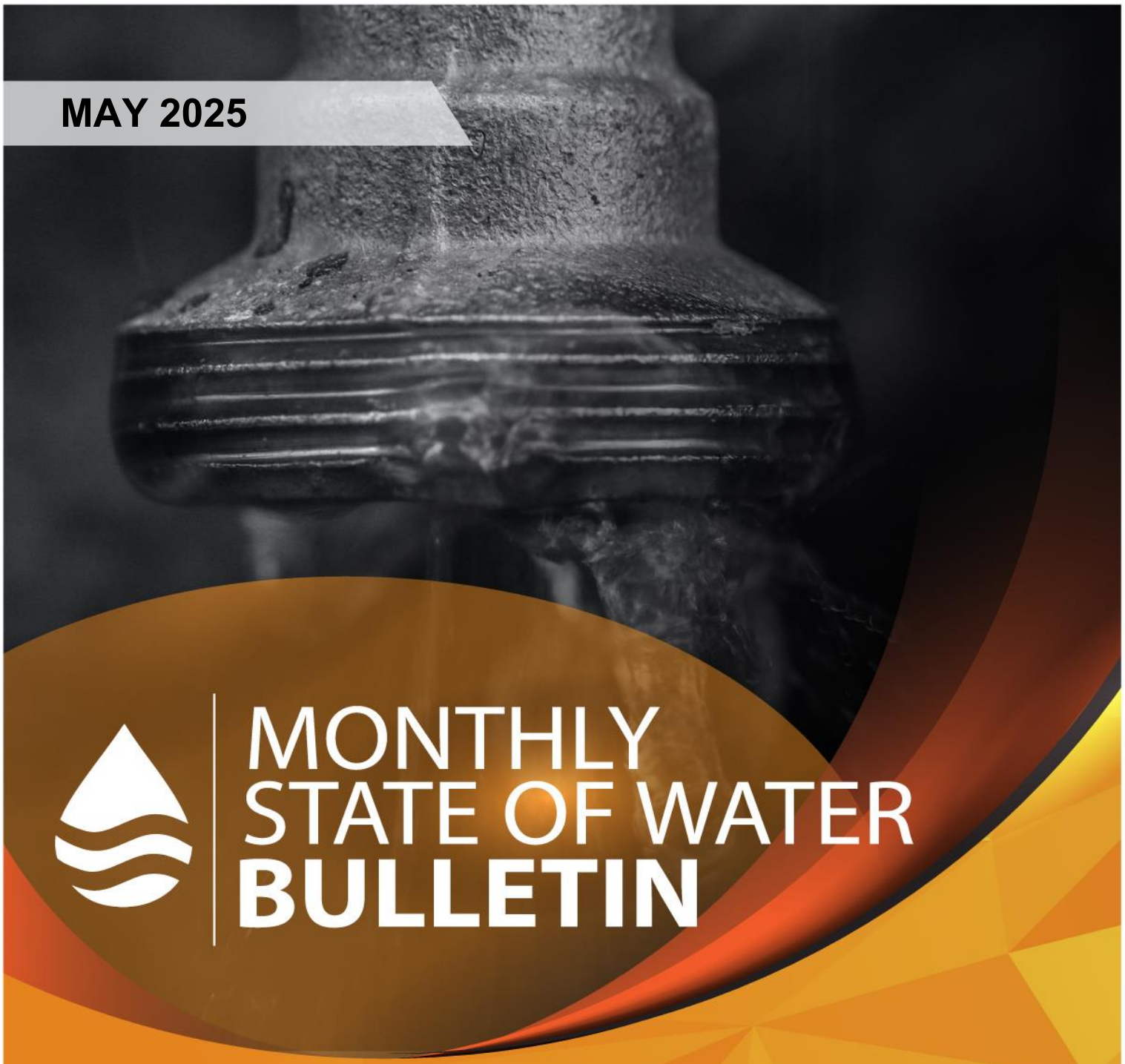
MAY 2025



MONTHLY STATE OF WATER BULLETIN

WATER IS LIFE - SANITATION IS DIGNITY

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

2030 NDP

Overview

South Africa experiences varying weather conditions with different rainfall seasons due to its unique geographical location and long coastline spanning 2,800 kilometres. The cold Atlantic Ocean on the west coast and the warmer Indian Ocean on the south and east coasts significantly influence both the climatic and weather conditions. The country's southwestern tip features a Mediterranean climate characterised by hot, dry summers and cool, wet winters. Winter rainfall is prevalent in the southwestern parts of the country, while summer rainfall is more common in the eastern parts.

The South African Weather Service (SAWS) recently described the El Niño-Southern Oscillation (ENSO) as having returned to a neutral state and predicted it will stay neutral for the foreseeable future. At the end of May 2025, the national dam levels were 96.0% of Full Supply Capacity (FSC). This level is 11.5% higher than last year when the overall storage level was 84.5% of FSC.

At least 104 dams were above 100% of FSC, and only one was below 10% of FSC (critically low). Also remarkable are the seven dams from Gauteng and Lesotho, which are all above 100% of FSC. A significant decline in the average dam levels from the Northern Cape, from 133.5% down to 88.7%, is noted. The Vaal Dam, one of the country's largest dams between Gauteng and the Free State, dropped to 24.1% in January 2025, nearing the 18% minimum operational level, compelling water release from Sterkfontein Dam. Opportunely, persistent heavy rains, which started in February 2025, brought incredible volumes of water, which pushed Vaal dam levels to over 119% FSC by the end of April 2025. At the end of May 2025, the Vaal dam was at 107.6% FSC, which is 50% more than last year at the same time.

The persistent rainfalls also improved the 24-month Standardised Precipitation Index (SPI) across South Africa, resulting in no indications of significant drought. Only a few District Municipalities (DMs) indicated a moderate drought status.

Rainfall

SAWS (2025) indicated that the South African climate is currently in a neutral El Niño-Southern Oscillation (ENSO) and is predicted to be in a neutral state for the foreseeable future. During winter and early spring, the areas that receive significant seasonal rainfall are limited to the southwestern parts of the country and the southern and eastern coastal areas. The weekly rainfall for the three weeks of May 2025 is presented in Figure 1. Significant rainfall was recorded in some parts of the country during the last week of May, with Western Cape province receiving more than 50 mm.

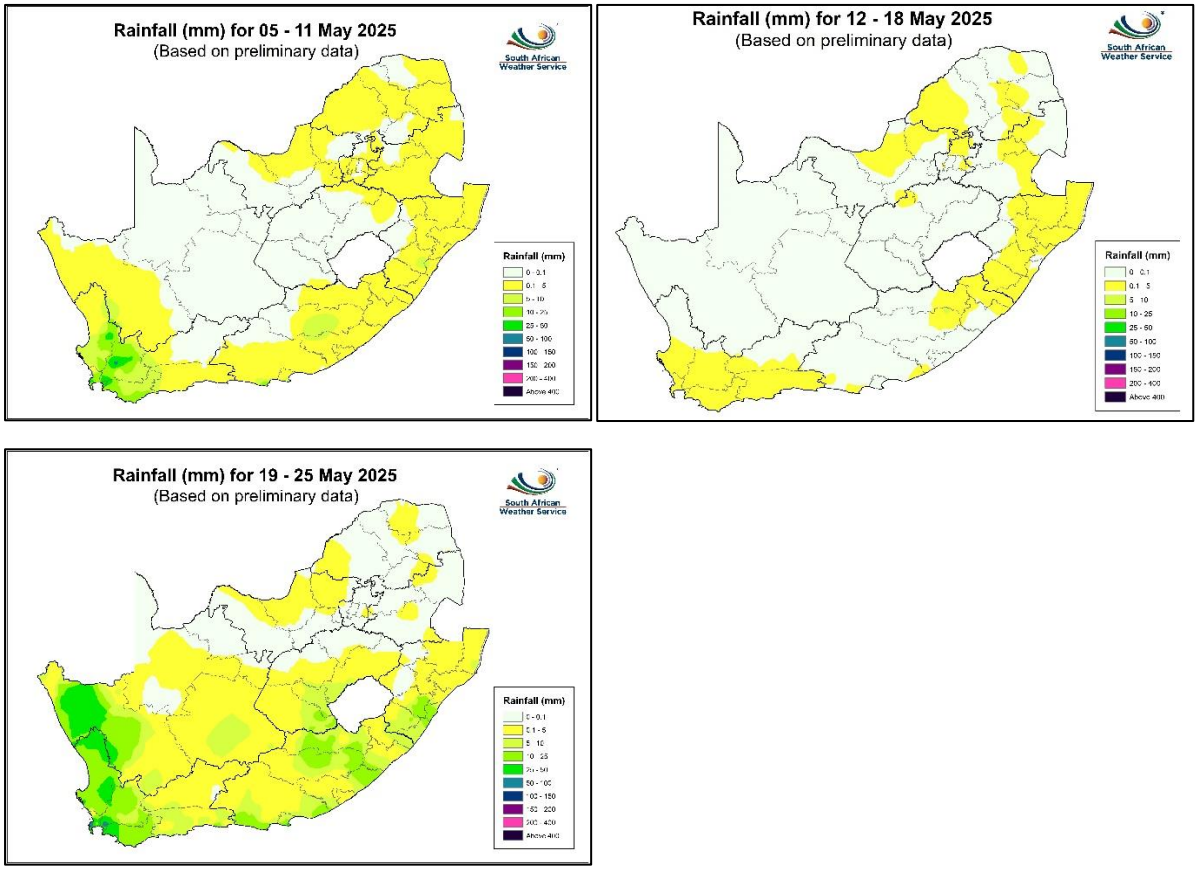


Figure 1: Weekly rainfall distribution for May 2025

Weather Forecast and Early Warning

The weather has a significant impact on water resources. Rising temperatures increase evaporation, reducing water availability and negatively impacting water quality, while extreme weather events, such as droughts and floods, exacerbate water scarcity and pollution, respectively. Changes in precipitation patterns also affect water availability.

The El Niño-Southern Oscillation (ENSO) is firmly in a neutral state and is predicted to be in a neutral state for the foreseeable future. ENSO, however, has limited influence on South Africa during the winter seasons and is not expected to have a significant impact.

During winter and early spring, the areas that receive significant seasonal rainfall are limited to the southwestern parts of the country and the southern and eastern coastal areas. In May, the SAWS rainfall forecast showed that during mid-winter, the southwest and eastern coastal areas are expected to receive above-normal rainfall; however, during late winter and early spring, only the eastern coastal

areas' expected rainfall remains above-normal, with the southwest's outlook changing to below-normal rainfall (Figure 2).

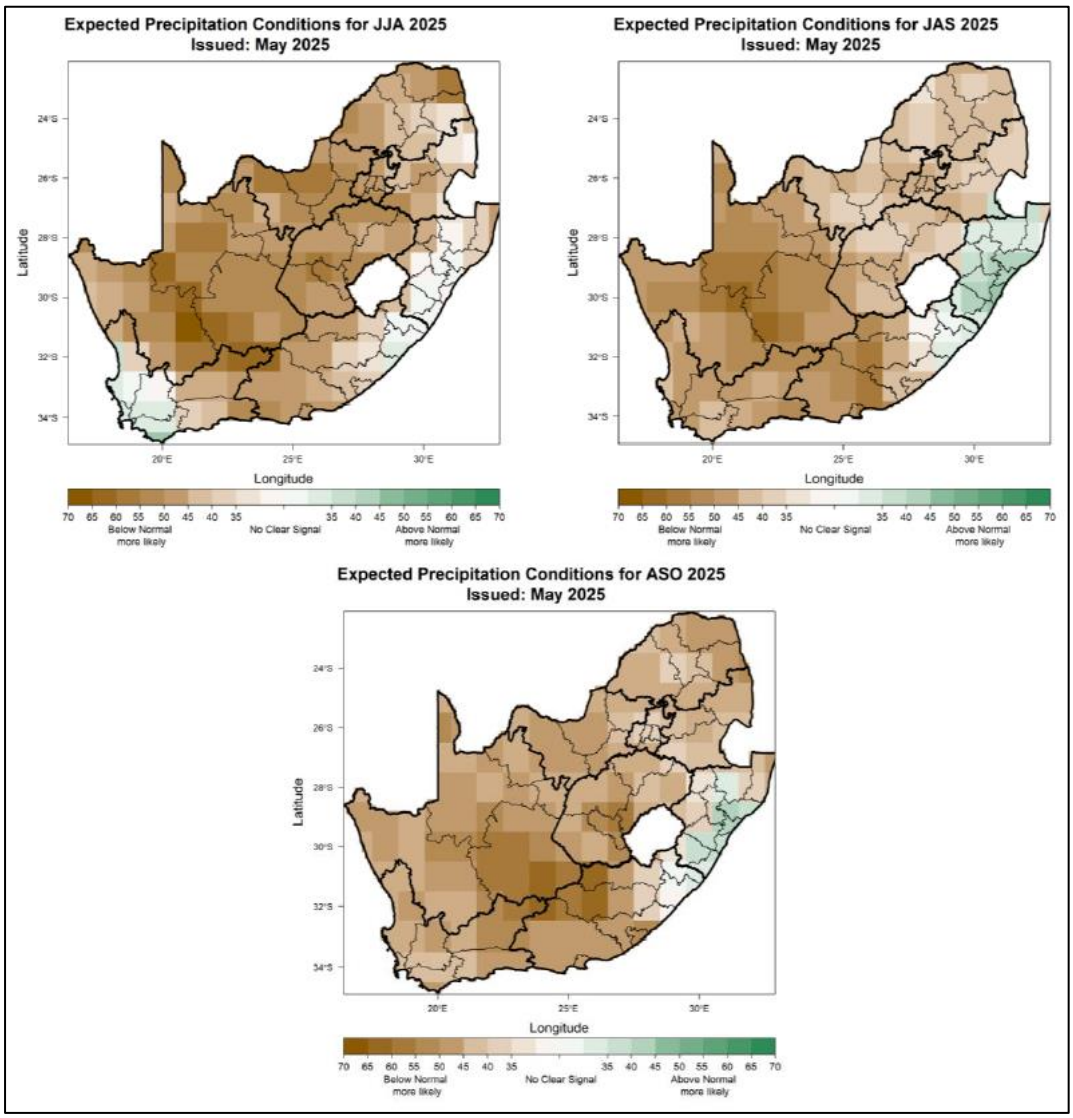


Figure 2: June-July-August 2025 (JJA; left), July-August-September 2025 (JAS; right), August-September-October 2025 (JAS; bottom) seasonal precipitation prediction.

In May, the SAWS temperature forecast showed that minimum temperatures are anticipated to remain predominantly above-normal throughout the majority of the forecast period (Figure 3). The maximum temperatures are also expected to be above normal.

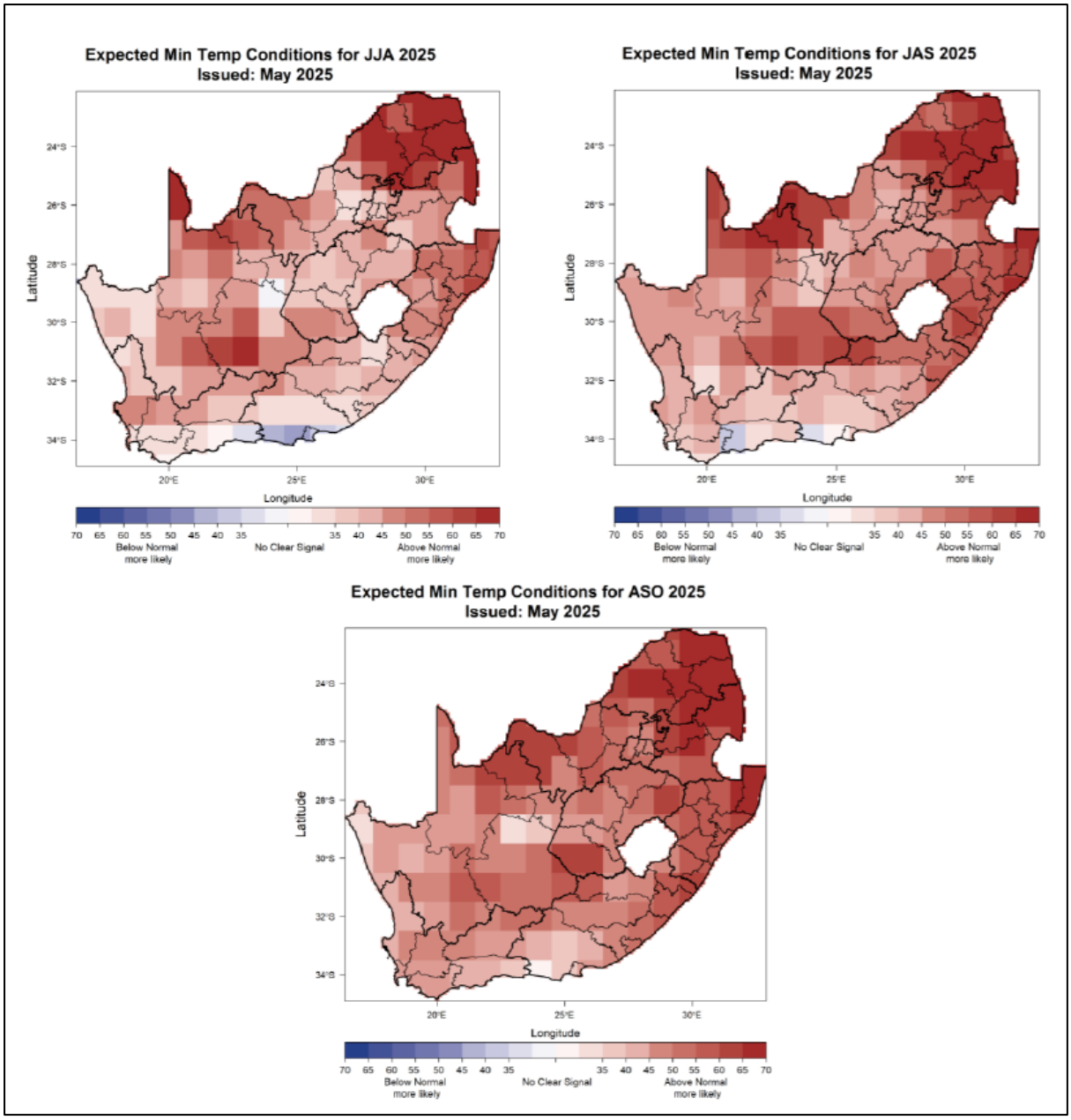


Figure 3: June-July-August 2025 (JJA; left), July-August-September 2025 (JAS; right), August-September-October 2025 (ASO; bottom) seasonal minimum temperature prediction.

National Dam Storage

The national water storage trends for the current hydrological year (2024/25) against the past four hydrological years are graphically presented in Figure 4: Weekly National Dam Storage at the end of May 2025, for five hydrological years. Table 1 summarises the status of **222** South African dams and the Kingdoms of Eswatini and Lesotho. Based on 26 May 2025 dam data, the Western Cape is the only province with less than 80% average dam levels. It is normal for the Western Cape dam levels to be low at this time of the year since it receives winter rainfall. Notably, at least **104** (**47%)** dams were above 100% of FSC, only **one** (<1%) dam was below 10% of FSC (critically low). Also remarkable are the seven dams from Gauteng and Lesotho, which are all above 100% of FSC. A significant decline in the average dam levels from the Northern Cape from 133.5% down to 88.7%, is noted.

The spatial distribution of the 222 dams, showing their respective storage levels as of 26 May 2025, is presented in Figure 5. Most of the dams above 100% of FSC are located in the eastern half of South Africa, including dams in Eswatini and Lesotho. In the Western Cape, 10 out of 44 dams (22%) had levels below 50% of FSC. This is consistent with the summer rainfall patterns of the western parts of the country.

. The graph shows that at the end of May 2025, the national dam levels were 96.0% of Full Supply Capacity (FSC). This level is 11.5% higher than last year same time when the overall storage level was at 84.5% of FSC (Table 1).

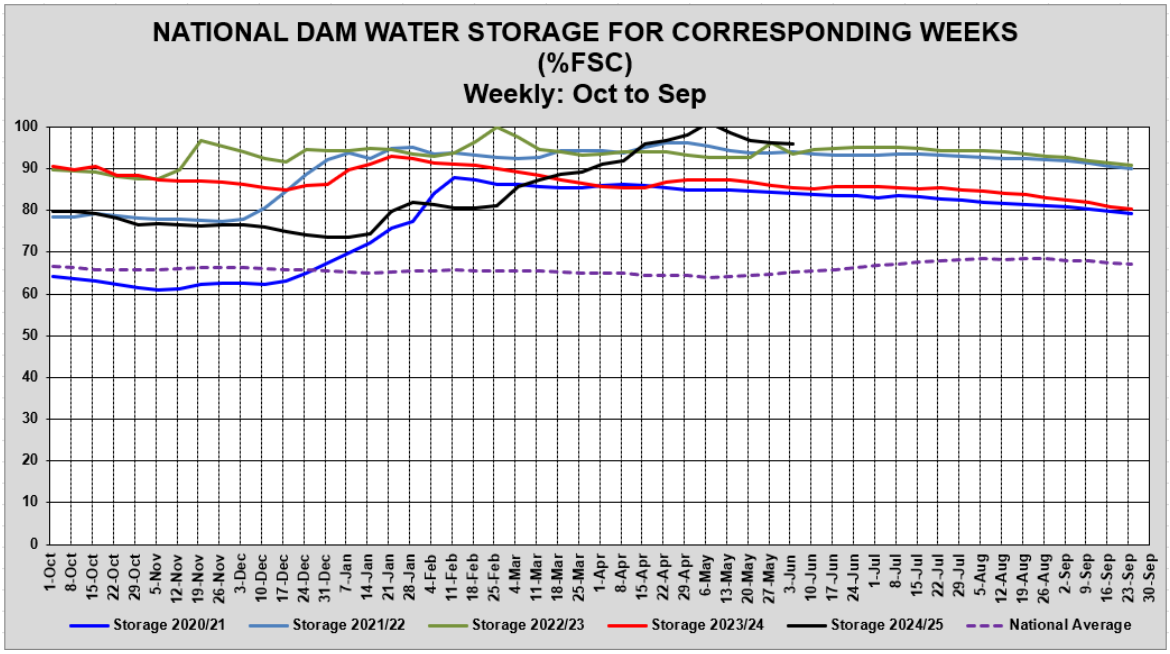


Figure 4: Weekly National Dam Storage at the end of May 2025, for five hydrological years. Table 1 summarises the status of **222** South African dams and the Kingdoms of Eswatini and Lesotho. Based on 26 May 2025 dam data, the Western Cape is the only province with less than 80% average dam levels. It is normal for the Western Cape dam levels to be low at this time of the year since it receives winter rainfall. Notably, at least **104** (**47%)** dams were above 100% of FSC, only **one** (<1%) dam was below 10% of FSC (critically low). Also remarkable are the seven dams from Gauteng and Lesotho, which are all above 100% of FSC. A significant decline in the average dam levels from the Northern Cape from 133.5% down to 88.7%, is noted.

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Table 1: National Surface Water Storage – 26 May 2025

Provinces/ Countries sharing Water Resources with RSA	FSC million m^3	Total Number of Dams	Number of Dams per FSC category				% of Full capacity		
			<10%	10 - <50 (% of FSC)	50 - <100 (% of FSC)	>=100 (% of FSC)	Last Year 26/05/2024	Last Week 19/05/2025	This Week 26/05/2025
Kingdom of Eswatini	333.75	1			1		99.2	99.9	99.9 =
Eastern Cape	1 727.7	46		5	26	15	81.8	83.5	82.9 ↓
Free State	15 656.9	21			11	10	85.5	101.2	101.0 ↓
Gauteng	128.08	5				5	89.6	102.5	101.6 ↓
KwaZulu-Natal	4 909.66	19			4	15	84	97.3	97.6 ↑
Kingdom of Lesotho	2 362.63	2				2	92.1	100.7	100.7 =
Limpopo	1 484.64	29	1	2	12	14	83.6	88.5	88.3 ↓
Mpumalanga	2 538.20	22			6	16	95.9	100.2	100.0 ↓
Northern Cape	146.33	5		1	1	3	72.2	93.6	88.7 ↓
North West	866.23	28			8	20	74.5	101.1	100.4 ↓
Western Cape - Other Rainfall	269.55	22		2	18	2	85.3	72.7	72.4 ↓
Western Cape - Winter Rainfall	1 596.80	22		8	12	2	52.4	51.7	51.9 ↑
Western Cape - Total	1 866.35	44	0	10	30	4	57.2	54.7	54.9 ↑
Grand Total:	**32 020.47**	**222**	**1**	**18**	**99**	**104**	**84.5**	**96.2**	**96.0 ↓**

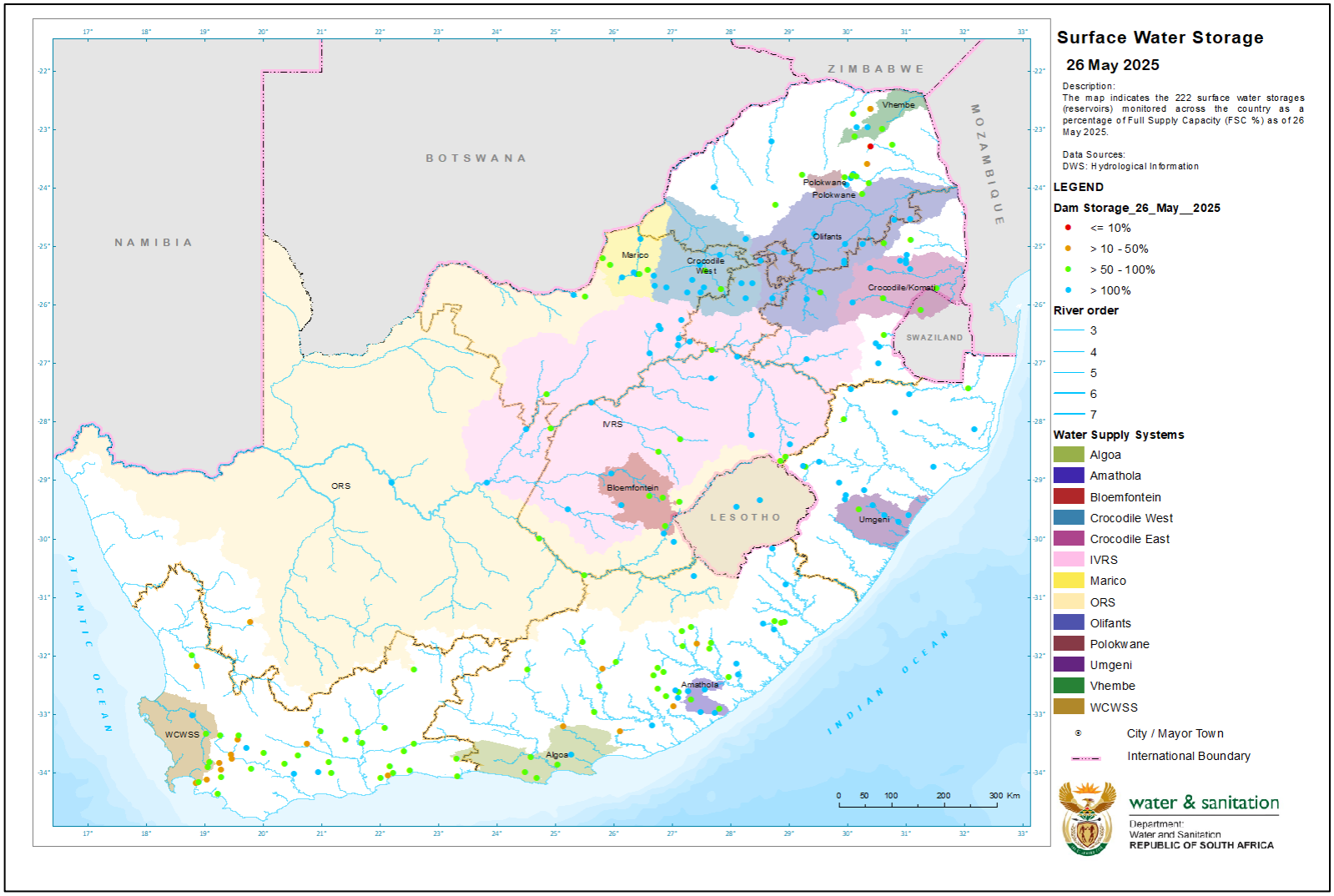


Figure 5: Surface Water Storage Levels – May 2025

The comparison of the storage levels per province (plus the Kingdoms of Eswatini and Lesotho) for May 2024 and May 2025 is graphically presented in Figure 6. Only the Western Cape showed a decline in dam storage at -2.7%, while the North West is showing the most significant increase at +25.9% FSC, year-on-year. The increase in the overall dam storage indicates higher-than-normal stream flows from above-normal rainfall received since the beginning of 2025. The other notable increases were observed in Gauteng (+12%), Northern Cape (+16.5%), Free State (+15.5%), and KwaZulu-Natal (+13.6%). The Kingdoms of Eswatini and Lesotho experienced relatively lower increases of 0.7% and 8.6%, respectively, compared to the previous year.

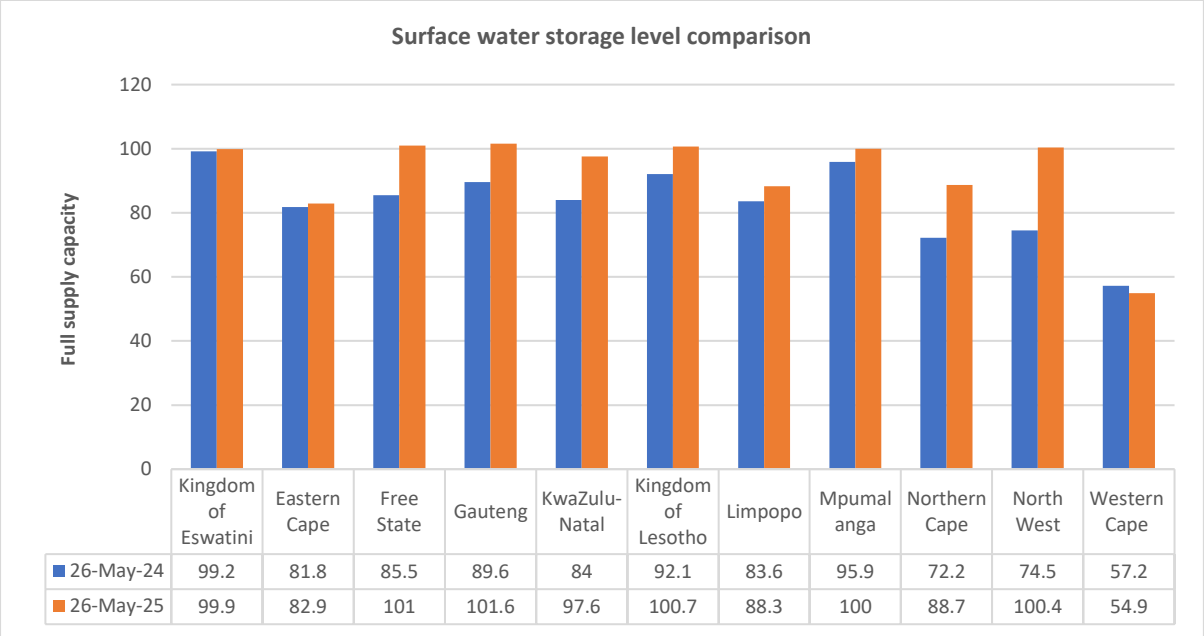


Figure 6: Water Storage Levels May 2024 vs. May 2025

The comparison between May 2024 and May 2025 of the country's five largest dam storage is presented in Table 2.

Table 2: Storage Levels comparison for the Five Largest storage dams (by volume).

Reservoir	River	Province	Full Supply Capacity (Mm^3)	26 May 2024 (% FSC)	26 May 2025 (% FSC)	Difference (%)
Gariep Dam	Orange River	Free State	4 903.45	82.8	99.1	+16.3
Vanderkloof Dam	Orange River	Free State & Northern Cape	3 136.93	99.2	99.7	+0.5
Sterkfontein Dam	Nuwejaarspruit River	Free State	2 616.90	99.4	100.1	+0.7
Vaal Dam	Vaal River	Free State	2 560.97	56.8	107.6	+50.8
Pongolapoort Dam	Phongolo River	KwaZulu-Natal	2 395.24	85.7	94.7	+9

The Vaal Dam, one of the country's largest dams, located between Gauteng and the Free State, dropped to 24.1% in January 2025, nearing 18% critical levels, compelling water release from Sterkfontein Dam. Opportunely, persistent heavy rains since February 2025 brought incredible volumes of water, which pushed Vaal dam levels to 119% FSC by the end of April 2025. At the end of May 2025, the Vaal dam was at 107.6% FSC, which is 50% more than last year.

Another significant year-on-year storage improvement was observed in the critical level space at the Middle-Letaba Dam in Limpopo, which rose 6% to reach 7.6% of FSC (Table 3).

Table 3: Dam currently below 10% of FSC compared to last year

Reservoir	River	Province	Full Supply Capacity (Mm^3)	26 May 2024 % FSC)	26 May 2025 (% FSC)	Difference (%)
Middel-Letaba Dam	Middel-Letaba River	Limpopo	171.93	1.6	7.6	+6

Figure 7 presents the 24-month Standardised Precipitation Index (SPI) analysed at the end of May 2025. The persistent rainfalls also improved the 24-month Standardised Precipitation Index (SPI) across South Africa, resulting in no indications of significant drought. Only a few District Municipalities (DMs) indicated a moderate drought status. These include parts of Thabo Mofutsanyana DM in North West, ZF Mgcawu in the Northern Cape, City of Cape Town in Western Cape, Ehlanzeni DM in Mpumalanga, Capricorn DM in Limpopo, and Sarah Baartman, Chris Hani, and Alfred Nzo DMs in the Eastern Cape.

District Municipalities

The year-on-year comparison of water storage levels per district municipality is presented in Figure 8. Only the Ngaka Modiri Molema DM experienced the largest increase (>60%) in dam storage levels compared to the same time last year. Two other district municipalities indicated a significant increase (>40%) in dam storage over the last year. Central Karoo is the only district municipality that experienced significant declines (>-20%) in dam levels. Based on the 24-month SPI discussed in the previous section, some of these district municipalities have indicated moderate drought.

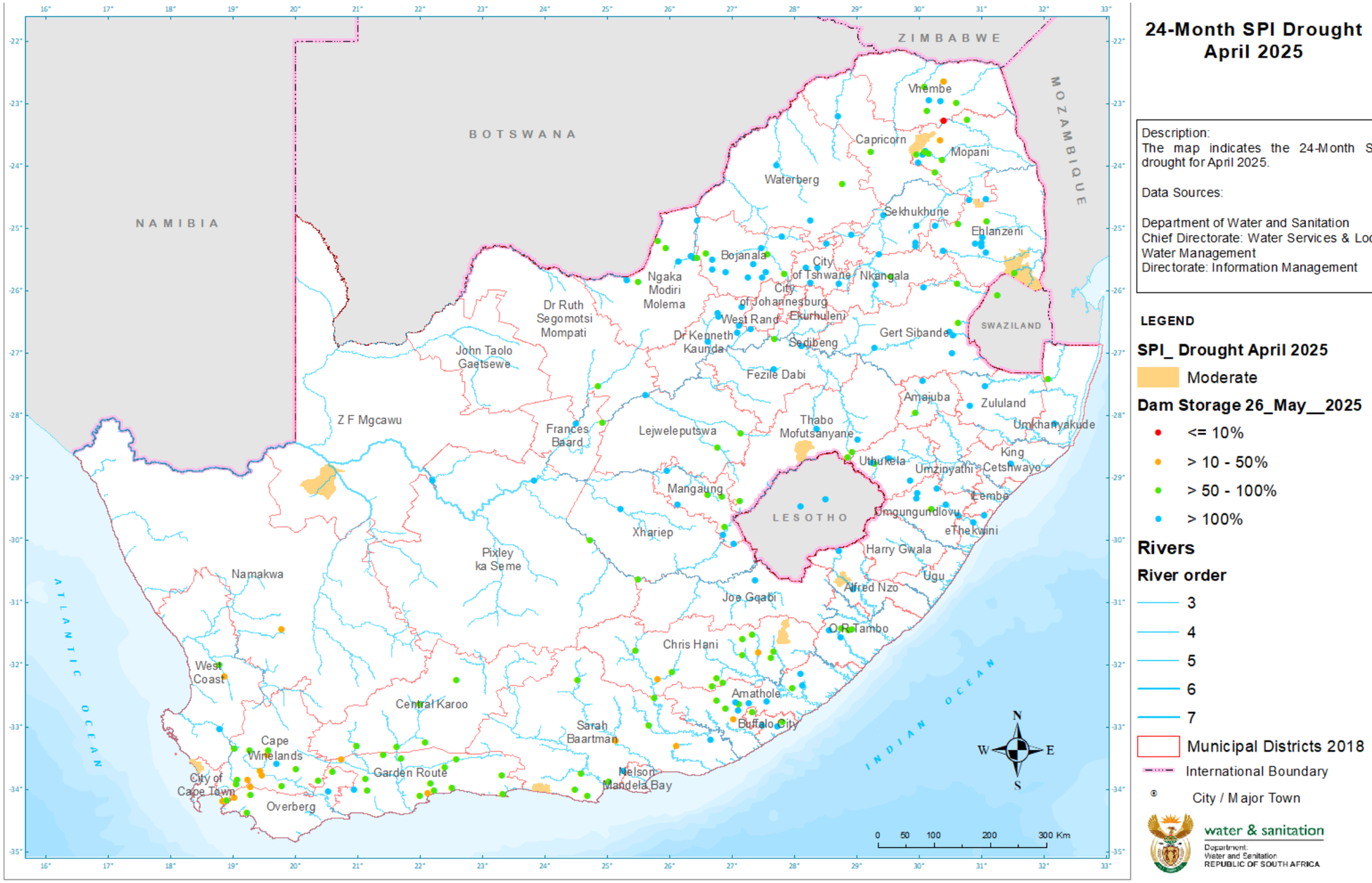


Figure 7: 24-Month Standardised Precipitation Index (SPI) – April 2025, including dam levels - May 2025

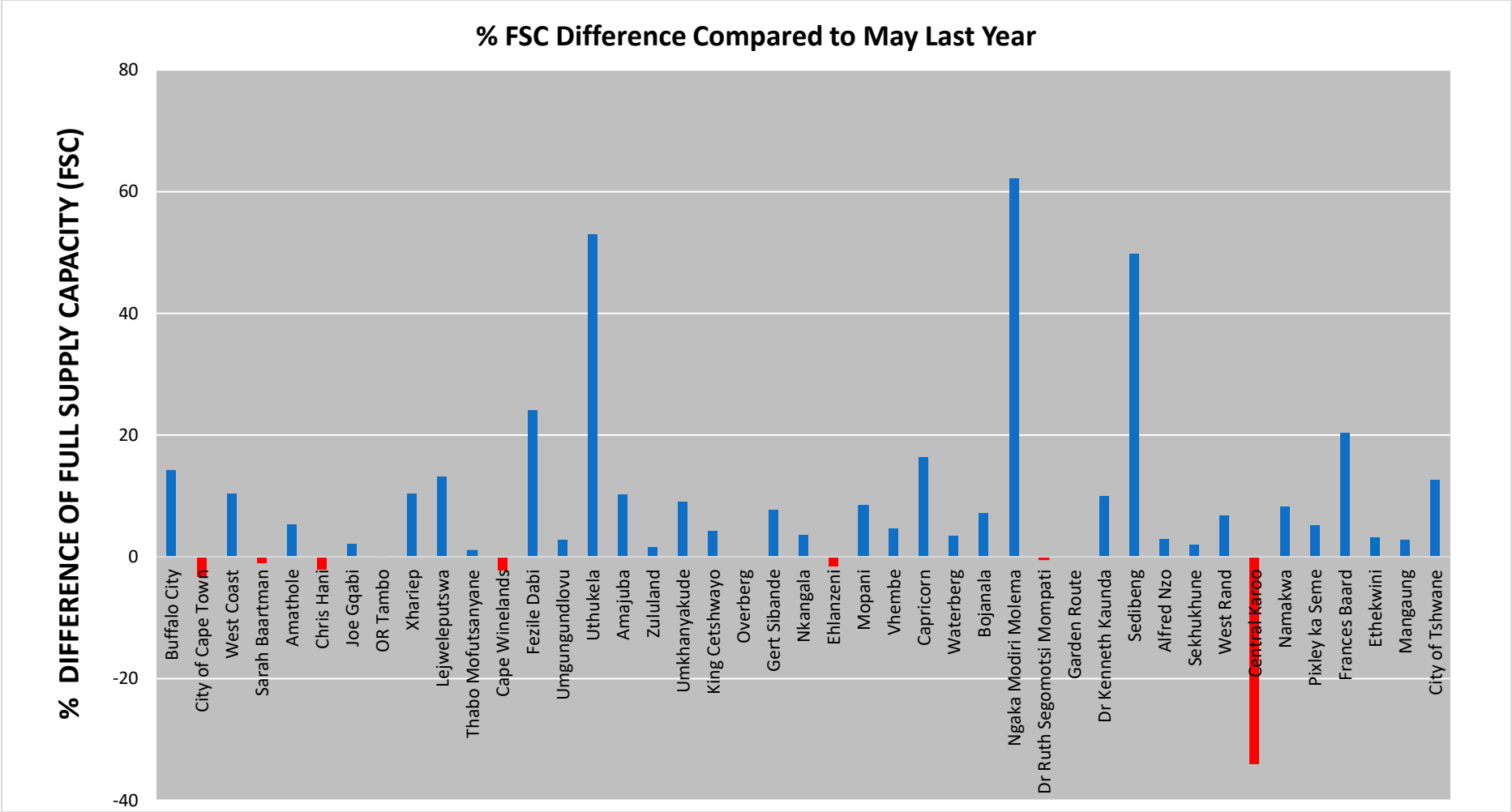


Figure 8: Comparison of water storage levels per District Municipality May 2024 vs May 2025

Water Supply Restrictions

The water supply systems and their respective restrictions are given in Table 4. Due to infrastructure limitations, permanent restrictions are applicable for the Polokwane and Bloemfontein Water Supply Systems. The National Water Supply Systems' dam storage levels are presented in Table 5. The Integrated Vaal River System (IVRS) is the largest and most economically significant system, with over 14 dams totalling over 10 546 Mm^3. The second biggest system is the Orange with only two big dams, totalling over 7 996 Mm^3.

Table 4: Water Supply Systems with Restrictions

System Name	Areas	Water Users	% Restrictions	Gazette Information	Next Review
Algoa WSS	Kromme subsystem	NMBM & Kouga LM Irrigation	23% domestic & industrial 43% irrigation	Recommended but not gazetted	Nov' 2025
Mangaung WSS	Caledon-Modder	Mangaung Metro	25% domestic & industrial when below 95%	13 Sep' 2024 Gazette no.5200	May 2025
Liebensbergvlei River	Run-off River abstractions Free State towns and irrigation	Towns of Bethlehem, Reitz, Tweeling within Dihlabeng, Mafube and Nketoana Local Municipalities	Irrigation users to abstract water on an alternative day basis Municipalities to use water sparingly	20 Sep' 2024 Gazette no.5223	Once off until the end of the LHWP tunnel shutdown for the planned maintenance
Middle Letaba/ Nsami	Middle Letaba/ Nsami	Irrigation Mopani Municipality	100% irrigation 25% domestic	28 Jun' 2024	May 2025
Mutshedzi Dam	Mutshedzi Dam	Makhado Municipality	35% domestic		May 2025
Nzhelele	Nzhelele	Nzhelele Government Irrigation Scheme Nzhelele Regional Scheme	20% domestic 20% irrigation	28 Jun' 2024	May 2025
Nwanedi/ Luphephe	Nwanedi/ Luphephe	Mutale Local Municipality Irrigation	20% D&I 45% irrigation	28 Jun' 2024	May 2025
Polokwane Water Supply System Letaba System	Seshego, Mashashane, Houtrivier and Chuniespoort Dams Ebenezer and Groot Letaba System	Capricorn District, Polokwane Local Municipality Groot Letaba Water Users Association, Mopani Municipality	30% domestic & industrial water uses 27% agricultural use	28 Jun' 2024	May 2025

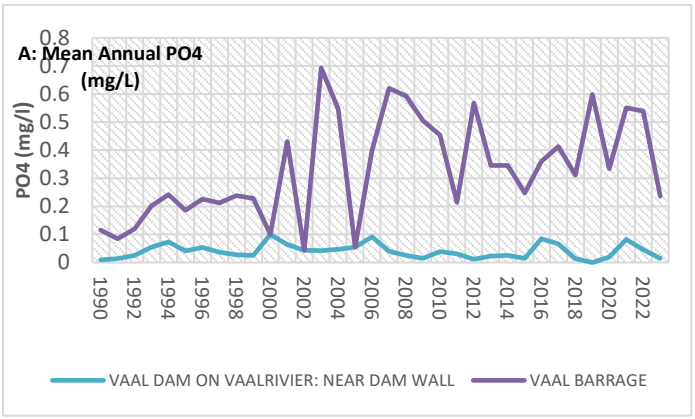
Table 5: Water Supply Systems storage levels May comparisons

Water Supply Systems/ Clusters	Capacity in 10^6m^3	26 May 2024 (% FSC)	19 May 2025 (% FSC)	26 May 2025 (% FSC)	System Description
Algoa System	282	71.1	70.2	69.8	5 dams serve the Nelson Mandela Bay Metro, Sarah Baartman (SB) DM, Kouga LM and Gamtoos Irrigation: 1. Kromrivier Dam 2. Impofu Dam 3. Kouga Dam 4. Loerie Dam 5. Groendal Dam
Amathole System	241	92.9	101.6	101.4	6 dams serve Bisho & Buffalo City, East London: 1. Laing Dam 2. Rooikrans Dam 3. Bridle Drift Dam 4. Nahoon Dam 5. Gubu Dam 6. Wriggleswade Dam
Klipplaat System	57	92.8	94.5	94.7	3 dams serve Queenstown (Chris Hani DM, Enoch Ngijima LM): 1. Boesmanskrantz Dam 2. Waterdown Dam 3. Oxkraal Dam
Butterworth System	14	90.5	100	100	Xilinxa Dam and Gcuwa weirs serve Butterworth
Integrated Vaal River System	10 546	82.3	102.9	102.6	14 dams serve Gauteng, Sasol, and ESKOM: 1. Vaal Dam 2. Grootdraai Dam 3. Sterkfontein Dam 4. Bloemhof Dam 5. Katse Dam 6. Mohale Dam 7. Woodstock Dam 8. Zaaihoek Dam 9. Jericho Dam 10. Westoe Dam 11. Morgenstond Dam 12. Heyshope Dam 13. Nooitgedacht Dam 14. Vygeboom Dam
Luvuvhu	225	99.2	100.2	99.9	3 dams serve Thohoyandou etc. : 1. Albasini Dam 2. Vondo Dam 3. Nandoni Dam
Bloemfontein	219	89.8	87.7	87.4	4 dams serve Bloemfontein, Botshabelo and Thaba Nchu: 1. Rustfontein Dam 2. Groothoek Dam 3. Welbedacht Dam 4. Knellpoort Dam
Polokwane	254.27	99.1	102.7	102.4	2 dams serve Polokwane 1. Flag Boshielo Dam 2. Ebenezer Dam

Water Supply Systems/ Clusters	Capacity in 10^6m^3	26 May 2024 (% FSC)	19 May 2025 (% FSC)	26 May 2025 (% FSC)	System Description
Crocodile West	444	96.4	99.9	98.7	7 dams serve Tshwane up to Rustenburg: 1. Hartbeespoort Dam 2. Rietvlei Dam 3. Bospoort Dam 4. Roodeplaat Dam 5. Klipvoor Dam 6. Vaalkop Dam 7. Roodekopjes Dam
uMgeni System	923	98.2	100.7	100.5	5 dams serve Ethekwini, iLembe & Msunduzi: 1. Midmar Dam 2. Nagle Dam 3. Albert Falls Dam 4. Inanda Dam 5. Spring Grove Dam
Cape Town System	889	58.8	58.6	58.8	6 dams serve the City of Cape Town: 1. Voelvlei Dam 2. Wemmershoek Dam 3. Berg River Dam 4. Steenbras-Lower Dam 5. Steenbras-Upper Dam 6. Theewaterskloof Dam
Crocodile East	159	100.2	100.6	100.5	Kwena Dam supplies Nelspruit, Kanyamazane, Matsulu, Malelane and Komatipoort areas & Surroundings
Orange	7 996	89.2	99.2	99.3	2 dams service parts of the Free State, Northern and Eastern Cape Provinces: 1. Gariep Dam 2. Vanderkloof Dam
uMhlathuze	301	95.8	100.1	100	Goedertrouw Dam supplies Richards Bay, Empangeni Towns, small towns, surrounding rural areas, industries and irrigators, supported by lakes and transfer from Thukela River

Contribution of the Vaal Dam, Klip, Rietspruit and Suikerbosrand Rivers to Increased Nutrient Levels at the Vaal Barrage: A Historical Overview

The section of the Vaal River between the Vaal Dam and the Vaal Barrage is known for high nutrient levels, which have resulted in excessive growth of algae and aquatic plants. Figure 9 indicates that phosphate and nitrate concentrations are significantly higher at the Vaal Barrage than at the Vaal Dam. This disparity between the two locations has become even more pronounced since the early 2000s.



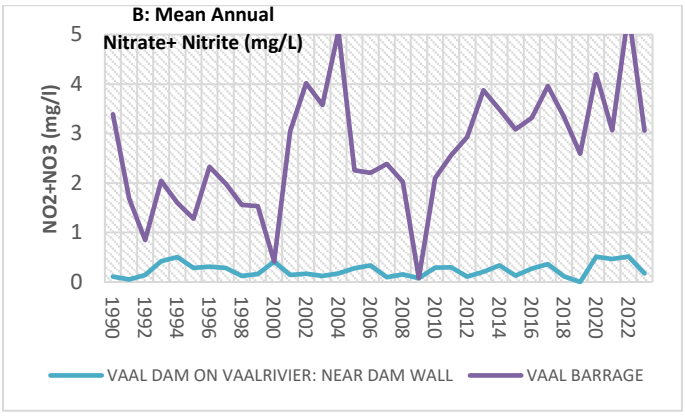


Figure 9: A) Ortho Phosphate and B) Nitrate Levels in the Vaal Dam and Vaal Barrage from 1990 to 2023.

The Vaal Barrage is primarily supplied by flows from the Vaal Dam, along with the Klip, Suikerbosrand, and Rietspruit rivers. These three rivers drain large urban areas, both formal and informal, as well as mining and industrial zones located to the east and southwest of Johannesburg. Consequently, there is an increased pollution load in the waters upstream of the Vaal Barrage. The long-term nutrient levels in these three tributaries, measured before they converge with the Vaal River, are illustrated in Figure . For reference, the nutrient levels in the Vaal Dam and the Vaal Barrage are also shown.

Although the nutrient levels shown in the graphs indicate high pollution levels in these tributaries, it's essential to consider that differences in catchment size and characteristics affect the flow rates and volumes entering the Vaal River. The amount of nutrients (nutrient load) flowing into the Vaal from these tributaries depends on both the concentration of nutrients and the volume of water.

Comparing the general flow rates, the Klip River averages between 15-35 m^3/s, while the Rietspruit and Suikerbosrand range from 2-4 m^3/s and 2-15 m^3/s, respectively. This suggests that, with similar nutrient levels, the nutrient loads from the Klip River could be significantly higher than those from the Rietspruit and Suikerbosrand. From Figure 10, it is *evident that the Klip and Rietspruit rivers are the main contributors to nutrient loads*.

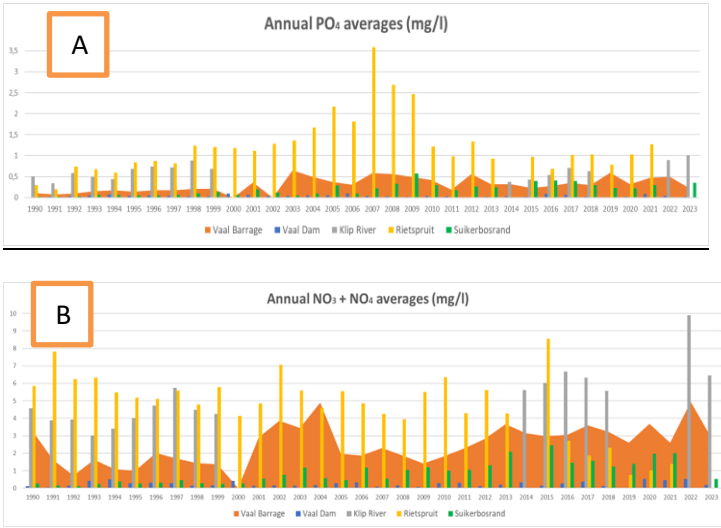


Figure 10: *Ortho Phosphate, B) Nitrate annual average levels in the Klip, Rietspruit, and Suikerbosrand rivers from 1990 to 2023.*

Water Returns: The Reopening of the Lesotho Highlands Water Project Tunnels

The Department of Water and Sanitation has accomplished an important milestone with the successful resumption of operations for the Lesotho Highlands Water Project (LHWP) following an extensive maintenance program. This collaborative initiative between South Africa and the Kingdom of Lesotho is essential for transferring water from the Lesotho Highlands to the Vaal River System, greatly benefiting millions of people and key industries.

On the South African side, the Trans-Caledon Tunnel Authority (TCTA) effectively completed maintenance on the Delivery Tunnel North in March 2024. By 10 Apr, 2025, the adit doors at the Little Caledon and Caledon Rivers were securely sealed, ensuring the tunnel's structural integrity and its readiness for renewed water flow. At the same time, the Lesotho Highlands Development Authority (LHDA) successfully wrapped up its maintenance efforts in early May 2025, overcoming earlier delays.

The refill process for the tunnel commenced on 8 May, with Muela Dam filling scheduled from 13 May to 17, followed by the Delivery Tunnel North from 18 May to 22. By 22 May, 2025, water began flowing back into South Africa, signifying the successful restoration of this critical water supply route.

During the six-month maintenance period of the Lesotho Highlands Water Project, the Ash River, which is typically a consistent and vital outflow from the system, experienced a complete suspension of flow. However, this changed on 22 May, when water began to flow again (Figure 11).

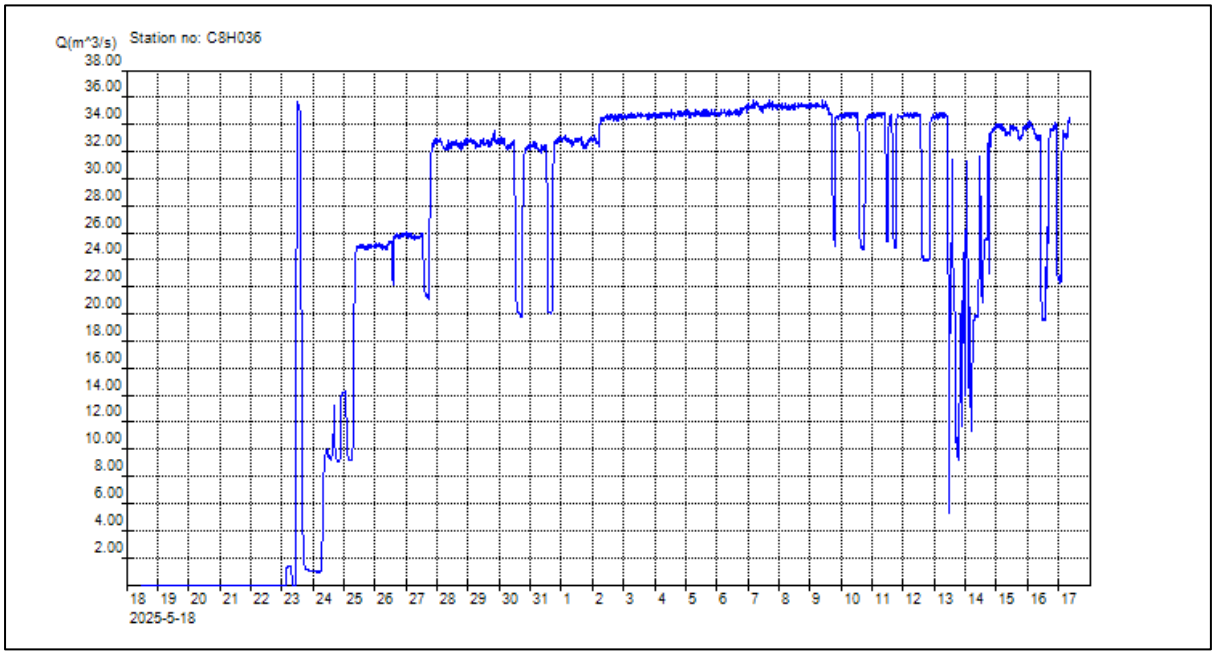


Figure 11: Ash outlet from Katse Dam showing flows

Following the successful completion of tunnel refilling operations flows through the Ash River resumed. Notably, on 23 May 2025, the river recorded its highest flow rate at 35.649 m^3/s, marking a strong return to operational capacity.

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

For technical inputs and inquiries:
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/MonthlyBulletin.aspx

Department of Water and Sanitation
Private Bag X313
Pretoria
0001

Glossary

Term	Definition
DM	District Municipalities
DWS	Department of Water and Sanitation
ENSO	El Niño-Southern Oscillation
FSC	Full Storage Capacity
IVRS	Integrated Vaal River System
LHDA	Lesotho Highlands Development Authority (LHDA)
SANS:241	South African National Standard for drinking water quality
SAWS	South African Weather Services
SPI	Standardized Precipitation Index. 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
WSS	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

References

SAWS, (2025). South African Weather Service. Seasonal Climate Watch: June to October 2025. Centurion, South Africa.