

water & sanitation

Department: Water and Sanitation **REPUBLIC OF SOUTH AFRICA**

WATER RESOURCE INFORMATION MANAGEMENT LIMPOPO PROVINCE

GH4346

INTERIM STATUS ON MONITORING & SURFACE WATER LEVEL TRENDS Up to 07 December 2020



D Viljoen 10 December 2020

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1. EXECUTIVE SUMMARY

The information presented in this report is based on the status of all the major dams in the province up to 07 December 2020.

This is an interim report to indicate the effect of the current drought situation on the major dams falling within the Limpopo Province. **Please note that some dam levels are extremely low and give reason for concern!** Only the dams in the catchments of the middle to lower Limpopo, Levuvhu, Letaba Rivers as well as the lower part of the Olifants River are included in this report.

The reducing of WMA's from nineteen to nine has been taken into account, therefore the format of the report changed as all the dams in Limpopo Province now fall within the Limpopo and Olifants WMA's. Currently 21% of the dams in Limpopo Province have less water than the corresponding period last year and 10 dams are equal to and lower than 40%. The average storage capacity for the province is 56.1% comparing to 48.9% the previous year.

In the Limpopo WMA the following dam levels are equal to and lower than 40%:

DAM	%
Mokolo	40.0
Nwanedzi	26.0
Doringdraai	8.40
Glen Alpine	6.50

In the Olifants WMA the following dam levels are equal to and lower than 40%:

DAM	%
Nsami	29.50
Tours	28.00
Ebenezer	15.60
Tzaneen	9.50
Modjadji	9.30
Middel-Letaba	0.70

The average storage volume of the dams in the Limpopo WMA is 315.2 million cubic meters (61.5%) and is 3.4 million cubic meters less than the corresponding period last year (62.2%).

The average storage volume of the dams in the Olifants River catchment is 540.9 million cubic meters (53.4%) and is 114.5 million cubic meters more than the corresponding period last year (42.1%).

The challenge in both WMAs is that there are smaller dams, which supply water to communities that still need to be monitored. Resources need to be put in place before monitoring of these dams can be considered. Water level monitoring infrastructure at these dams are non existing or totally dilapidated, very little design, as built and survey information exists. This need to be addressed before any form of water level monitoring can be considered. The Thapane and Seshego Dams are examples of this.

Available water resources will have to be managed with great care and restrictions will have to be strictly adhered to as part of precaution measures.

The SAWS indicated the following:

"The El Niño-Southern Oscillation (ENSO) is currently in a La Niña state and the forecast indicates that it will most likely remain and strengthen towards a strong La Niña state during summer. With this strong likelihood of a strong La Niña during mid-summer, there are increased chances of abovenormal rainfall in the summer rainfall areas during the summer season.

However, the multi-model rainfall forecast for mid-summer (Dec-Jan-Feb) and late-summer (Jan-Feb-Mar) indicate drier conditions in the north eastern parts of the country. Since the forecasts are opposing the typical effect of the ENSO impact stated above, there is a certain amount of uncertainty with regards to the rainfall for the coming summer months over the summer rainfall areas."

2. MONITORING NETWORK

The hydrological monitoring network for the Limpopo Province consists of the following:

81 river flow gauging stations (excluding canals and pipelines)

23 dam gauging stations

16 evaporation stations

3. OVERVIEW

For information purposes following are attached:

- 1. Dam storage tables, pages 9, 10
- 2. Limpopo dam storage trend versus national dam storage trend, page 11
- 3. A table indicating the comparison of water storage percentage for the different provinces, page 12.

The following river flow conditions need to be highlighted:

A4 CATCHMENT

- Mokolo River at Dwaalhoek (A4H005), 0.14 m³/s inflow into Mokolo Dam.
- A4R001 (Mokolo Dam): 40.0%, No releases into the Mokolo River

A5 CATCHMENT

- Palala River at Vischgat 4 m3/s and no flow at Palala River at Sussendale
- Limpopo River at Sterkloop (A5H006) approximately 13 m³/s

A6 CATCHMENT

- No flow in Nyl River upstream of Sterk River confluence
- A6R001 (Doorndraai Dam) 8.4%: No River releases
- A6R002 (Glen Alpine Dam): 6.5% No releases into the Mogalakwena River.

A7 CATCHMENT

- A7R002 (Hout River Dam) 71.9%
- Sand River at Waterpoort, no flow.
- Limpopo River at Beit Bridge, structural damage, approximately 5 m³/s

A8 CATCHMENT

- The Nzhelele dam is at 63.1%: 0.9 m³/s water released into canal system for irrigation
- The Nwanedzi Dam at 26.0% and Luphephe Dam 78.3%: 0.6 m³/s released into Nwanedi River

A9 CATCHMENT

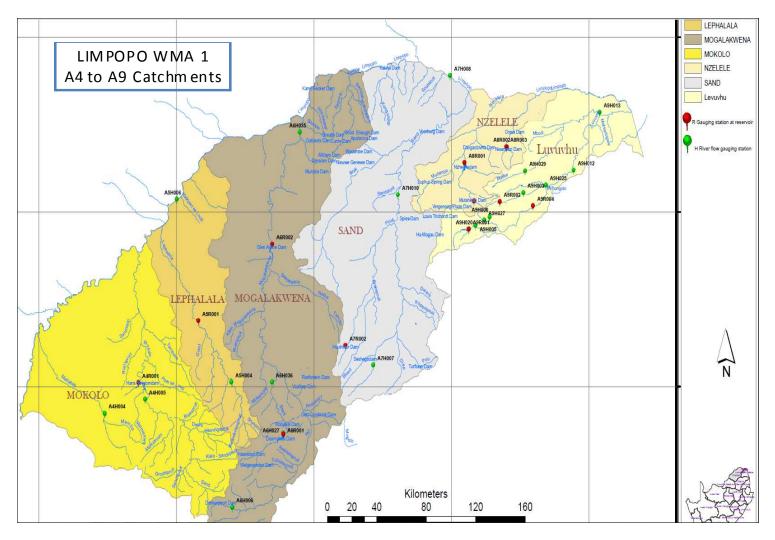
- Albasini Dam at 68.7%: No releases into Levuvhu River
- Vondo Dam is at 85.0%: No releases into Mutshindudi River
- Nandoni Dam is at 93.4%: 1.7 m³/s released into Levuvhu River
- Levuvhu River flowing at approximately 2.4 m³/s at Mhinga

B8 CATCHMENT

- B8R001 (Ebenhezer dam) at 15.6%: 0.6 m³/s released into Great Letaba River
- B8R003 (Magoebaskloof dam) at 100.7%: 1.6 m³/s measured at B8H046 W-component of Magoebaskloof Dam.
- B8R005 (Tzaneen dam) at 9.5% : 0.8 m³/s released from Tzaneen Dam
- B8R006 (Dap Naude Dam) at 105.2%. 0.2 m³/s released into Broederstroom
- B8R007 (Middel Letaba) at 0.7%: No releases
- B8R009 (Nsami) at 29.5%: No Releases
- Thabina Dam is at 99.48%
- Great Letaba River flowing at 13.5 m³/s at Letaba Ranch

4. LIMPOPO WATER MANAGEMENT AREA

The WMA consists of secondary drainage areas A1 to A9, of which A4 to A9 are addressed in this report.



4.1 A4 Drainage Area (Matlabas, Mokolo Rivers)

A graph of the Mokolo Dam (A4R001) is attached as no other dam exists in the A4 hydrological monitoring network.

4.2 A5 Drainage Area (Lephalala River)

Two small dams exists in the A5 hydrological network namely the Susandale Dam (A5R001) and the Vischgat Dam (A5R002). Owing to their relatively small storage volumes of approximately 0.6 million cubic meters in total, these dams have not been included in this report.

4.3 A6 Drainage Area (Nile, Sterk, Mogalakwena and Dorps Rivers)

Graphs of the Doorndraai Dam (A6R001) and Glen Alpine Dam (A6R002) are attached as no other dams exist in the A6 hydrological monitoring network.

It must be noted that the full capacity storage of Glen Alpine Dam is only 18.889 million cubic and therefore the dam fills and empties much faster than Doorndraai Dam!

4.4 A7 Drainage Area (Sand, Blood, Diep, Hout, Dwars and Brak Rivers)

There are no existing dam monitoring stations in the hydrological network for this drainage area!

Hout River Dam is the only dam equipped with gauge plates. Data capturing and real-time equipment has been installed at Hout River Dam. The dam is currently on 71.9% (4.8 million m³)

4.5 A8 Drainage Area (Nwanedzi and Nzhelele Rivers)

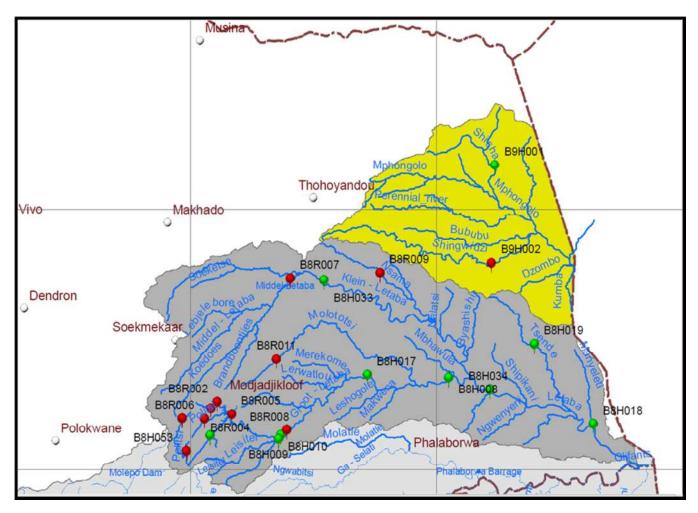
Graphs for the Nzhelele Dam (A8R001), Luphephe (A8R002), Nwanedzi (A8R003) and Mutshedzi (A8R004) Dams are attached.

4.6 A9 Drainage Area (Mutale, Luvuvhu Rivers)

Graphs for the Albasini Dam (A9R001), Vondo Dam (A9R002) and Nandoni (A9R004) Dams are attached.

5. OLIFANTS WATER MANAGEMENT AREA

The WMA consists of secondary drainage areas B1 to B9, monitoring sites in the B3 to B5 and B7 to B9 are also addressed.



B3 Drainage Area (Olifants, Elands, Bloed and Selons Rivers)

For information as well as operational matters a graph of Rust de Winter Dam (B3R001) has been included.

5.1 B4 Drainage Area (Steelpoort River)

For information as well as operational matters a graph of De Hoop Dam (B4R007) has been included.

5.2 B5 Drainage Area (Olifants River)

For information as well as operational matters the graph of Flag Boshielo Dam (B5R002) has been included in this report.

5.3 B7 Drainage Area (Klaserie and Olifants Rivers)

For information as well as operational matters the graphs of Klaserie Dam (B7R001) and Tours Dam (B7R003) have been included in this report.

5.4 B8 Drainage Area (Groot, Middle and Klein Letaba Rivers)

Graphs for the Ebenezer Dam (B8R001), Magoebaskloof Dam (B8R003), Tzaneen Dam (B8R005), Dap Naude Dam (B8R006), Middle-Letaba Dam (B8R007), Nsami Dam (B8R009) and Modjadji Dam (B8R011) are attached.

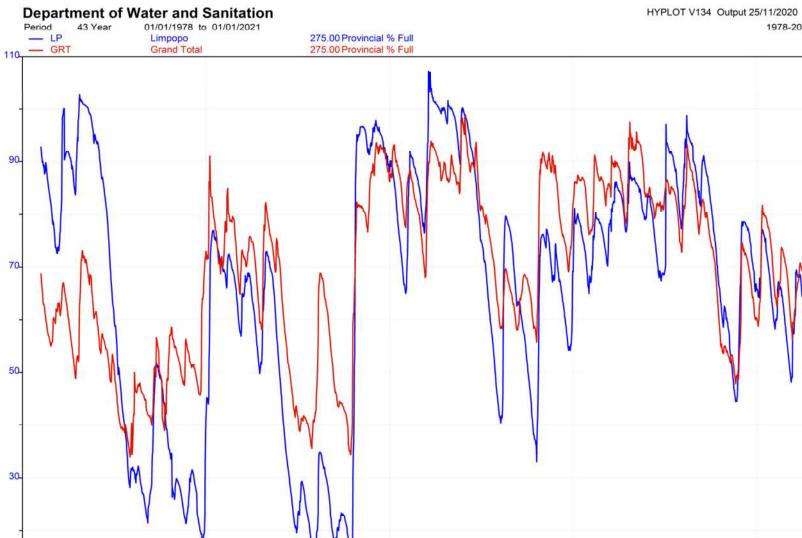
5.6 B9 Drainage Area (Shingwedzi, Phugwane and Mphongolo Rivers)

Only a limited part of this drainage area falls outside the Kruger National Park! There are no existing dam monitoring stations in the hydrological network for this drainage area!

Levels of dams in Limpopo falling in the Limpopo WMA 1 (07 December 2020)								
Full Supply Capacity Average for Limpopo WMA (%)	Dam	Full Supply Capacity in Millions ³ m	Current Capacity in Millions ³ m	Capacity in % Previous Year	Capacity in % Previous Week	Current Capacity in %		
	Mokolo	145.77	58.33	61.90	40.00	40.00		
	Doorndraai	43.76	3.66	8.20	8.40	8.40		
	Glen Alpine	18.89	1.22	47.40	6.90	6.50		
	Hout River	6.63	4.76	44.30	73.10	71.90		
	Nzhelele	51.23	32.34	46.10	64.20	8.408.406.906.5073.1071.90		
61.5	Luphephe	13.98	10.96	25.90	77.80	78.30		
	Nwanedzi	5.14	1.34	55.40	29.30	26.00		
	Mutshedzi	2.34	2.15	63.80	91.60	92.00		
	Albasini	28.20	19.36	62.90	68.70	68.70		
	Vondo	30.45	25.88	76.70	85.00	85.00		
	Nandoni	166.11	155.20	84.40	93.50	93.40		

Levels of dams in Limpopo falling in Olifants WMA 2 (07 December 2020)

Full Supply Capacity Average (%) Olifants WMA	Dam	Full Supply Capacity in Millions m ³	Current Capacity in Millions m ³	Capacity in % Previous Year	Capacity in % Previous Week	Current Capacity in %
	Rust de Winter	28.19	28.33	40.80	100.90	100.50
	Tonteldoos	0.19	0.15	61.30	78.10	Capacity in % 100.50 100.50 80.40 66.70 88.30 81.90 97.30 97.30 28.00 101.90 101.90 9.100.70 9.50 100.70 9.50 105.20 9.50 2.99.48
	Vlugkraal	0.44	0.30	77.80	71.10	66.70
	De Hoop	348.70	307.93	77.10	88.30	88.30
Flag Boshielo185.13Klaserie5.60	151.61	51.10	82.60	81.90		
	Klaserie	5.60	5.45	65.10	93.50	97.30
	Tours	6.08	1.70	20.50	24.60	28.00
/	Ebenezer	69.14	10.79	29.30	14.30	15.60
53.4	Hans Merensky	1.23	1.25	24.20	100.80	101.90
	Magoebaskloof	4.84	4.88	94.90	100.30	Capacity in % 90 100.50 10 80.40 10 66.70 30 88.30 60 81.90 50 97.30 60 101.90 30 97.30 60 97.30 60 97.30 60 97.30 60 97.30 60 97.30 60 97.30 60 97.30 60 97.30 60 97.30 60 97.30 60 97.30 60 97.30 60 97.30 70 0.70 70 9.50 70 0.70 70 0.70 70 99.48 40 29.50
	Vergelegen	0.25	0.26	65.90	93.60	100.70
	Tzaneen	156.53	14.80	4.90	8.00	9.50
	Dap Naude	1.94	2.04	75.20	99.10	in % 100.50 80.40 66.70 88.30 81.90 97.30 28.00 15.60 101.90 100.70 100.70 9.50 105.20 0.70 99.48 29.50
	Middle-Letaba	171.93	1.19	2.90	0.70	0.70
	Thabina	3.09	3.07	61.73	99.02	99.48
	Nsami	21.87	6.46	20.80	30.40	29.50
	Modjadji	7.20	0.67	3.10	9.50	9.30



1998-07

2008-17

1988-97

10

1978-87

1978-2020

Summary	Full Supply Capacity 10 ⁶ M ³	Water in Storage	Last Year %Full	Last Week	This Week 07/12/2020
Provinces		10 ⁶ M ³	70F UII	%Full	%Full
	1000.0		17.0		
EC Eastern Cape	1809.6	902.6	47.6	49.8	49.9
FS Free State	15657.4	11214.8	65.2	72.1	71.6
G Gauteng	128.1	117.4	89.4	92.2	91.7
KN Kwazulu-Natal	4784.0	2561.9	52.6	53.2	53.6
L Lesotho	2362.6	420.3	19.5	18.1	17.8
LP Limpopo	1522.3	853.4	48.8	56.0	56.1
M Mpumalanga	2538.6	1608.4	58.1	63.1	63.4
NC Northern Cape	146.3	128.4	76.1	88.8	87.7
NW North West	867.3	549.7	55.7	63.6	63.4
S Swaziland	333.8	132.4	58.2	41.4	39.7
WCo Western Cape - Other rainfall	268.9	67.4	18.4	25.5	25.1
WCw Western Cape - Winter rainfall	1596.8	1372.5	69.8	87.6	86.0
WC Western Cape - Total	1865.7	1439.9	62.4	78.6	77.2
GRAND TOTAL	32015.5	19929.2	57.2	62.5	62.2

