



**water & sanitation**

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

**WATER RESOURCE INFORMATION MANAGEMENT  
LIMPOPO PROVINCE**

**GH4328**

**STATUS ON MONITORING &  
SURFACE WATER LEVEL TRENDS  
Up to 30 September 2016**



Tzaneen Dam: Photo courtesy of Willie and Mariette Botha

**D Viljoen  
27 December 2016**

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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 30 September 2016.

**The reducing of WMA's from nineteen to nine has been taken into account, therefore the format of this report has also changed because all the dams in Limpopo Province now fall within the Limpopo and Olifants WMA's.**

Currently 93% of the dams in Limpopo Province have less water than the corresponding period last year and 11 dams are below 40%. The average storage capacity for the province is 47.8% comparing to 74.7% the previous year.

In the Limpopo WMA the following dam levels are below 40%:

DAM	%
Nzhelele	17.5
Luphephe	12.2
Mutshedzi	5.8
Glen Alpine	1.6

In the Olifants WMA the following dam levels are below 40%

DAM	%
Tours	32.3
Klaserie	30.3
Modjadji	21.9
Flag Boshielo	20.2
Middle Letaba	20
Tzaneen	19.2
Nsami	8.3

The average storage volume of the dams in the Limpopo WMA is 260 million cubic meters (50.8%) and is 157.3 million cubic meters less than the corresponding period last year (81.5%).

The average storage volume of the dams in the Olifants River catchment is 468.7 million cubic meters (46.3%) and is 253 million cubic meters less than the corresponding period last year (71.3%).

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 Sheshego Dams are examples of this.

River flows per catchment is discussed under Overview, page 5

Attached find the graph indicating Provincial cumulative annual rainfall since October 2010 and percentiles since October 1960, page 11.

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:

**Most key atmospheric variables indicate neutral ENSO conditions. Although most models indicate above-normal rainfall during spring in some places, the Indian Ocean appears to be inhibiting rainfall during this period. Most models indicate possible above-normal rain in early summer but forecast confidence is low.**

## 2. MONITORING NETWORK

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

- 81 river flow gauging stations (excluding canals and pipelines)
- 22 dam gauging stations
- 16 evaporation stations

## 3. OVERVIEW

For information purposes graphs depicting annual provincial rainfall since 2010 and storage trends for September since 1980, are attached, pages 11 and 12.

For information purposes a table indicating the comparison of water storage percentage for the different provinces is attached on page 13.

The following river flow conditions need to be highlighted:

### A4 CATCHMENT

- Very little flow at A4H008 Sterkstroom River, 0.11 m<sup>3</sup>/s
- No flow at A4H005 inflow into Mokolo Dam.
- A4R001 (Mokolo Dam): 68.2%, No releases into the Mokolo River

### A5 CATCHMENT

- No flows in the Palala River at Vischgat and Susandale

### A6 CATCHMENT

- No flow in Nyl River upstream of Sterk River confluence
- A6R001 (Doorndraai Dam ) 56.5%: No River releases
- A6R002 (Glen Alphine Dam): 1.5% No releases into the Mogalakwena River.

### A7 CATCHMENT

- River flowing at Sand River at Polokwane, 0.4 m<sup>3</sup>/s
- A7R002 (Hout River Dam) 53.2%
- River flowing at Sand River at Waterpoort, 0.2 m<sup>3</sup>/s
- Limpopo River at Beit Bridge, structural damage, flowing at 0.14 m<sup>3</sup>/s

### A8 CATCHMENT

- The Nzhelele dam is at 17.5%: 0.68 m<sup>3</sup>/s water released into canal system for irrigation
- The Nwanedzi Dam at 54.2% and Luphephe Dam 12.2%: No releases into the Nwanedzi River
- The Mutshedzi Dam is at 4.9% and no releases into Mutshedzi River

### A9 CATCHMENT

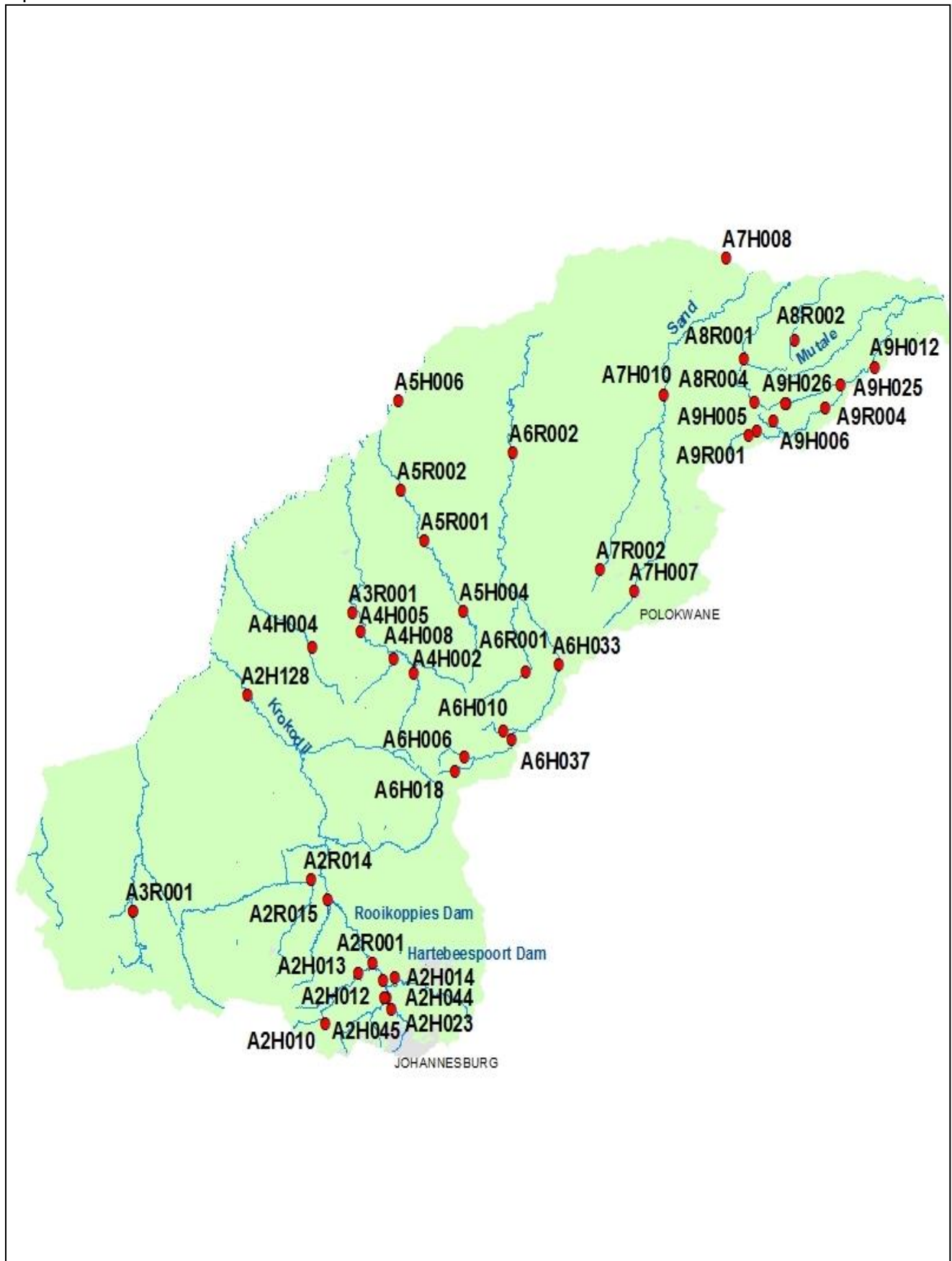
- Albasini Dam at 57.8%: No releases into Levuvhu River
- Vondo Dam is at 42%: No releases into Mutshindudi River
- Nandoni Dam is at 52.6%: 1.13 m<sup>3</sup>/s released into Levuvhu River
- Levuvhu River flowing at 0.7 m<sup>3</sup>/s at Mhinga

### B8 CATCHMENT

- B8R001 (Ebenhezer dam) at 65.5%: 0.61 m<sup>3</sup>/s released into Great Letaba River towards Tzaneen dam
- B8R003 (Magoebaskloof dam) at 99.4%
- B8R005 (Tzaneen dam) at 14.9% : 3.3 m<sup>3</sup>/s released from Tzaneen Dam
- B8R006 (Dap Naude Dam) at 77.2%
- B8R007 (Middel Letaba) at 19.7%: No releases
- B8R009 (Nsami) at 8.2%: No Releases
- Thabina Dam at 71.8%
- Great Letaba River flowing at 0.14 m<sup>3</sup>/s at Engelhardt Dam (Letaba Camp KNP)

#### 4. LIMPOPO WATER MANAGEMENT AREA

The WMA consists of secondary drainage areas A1 to A9, of which A4 to A9 were 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 exist 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. Both these dams are currently dry.

#### **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! The graph of Glen Alpine clearly indicates this!

#### **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 53.7% (3.6 million m<sup>3</sup>)

#### **4.5 A8 Drainage Area (Nwanedzi and Nzhelele Rivers)**

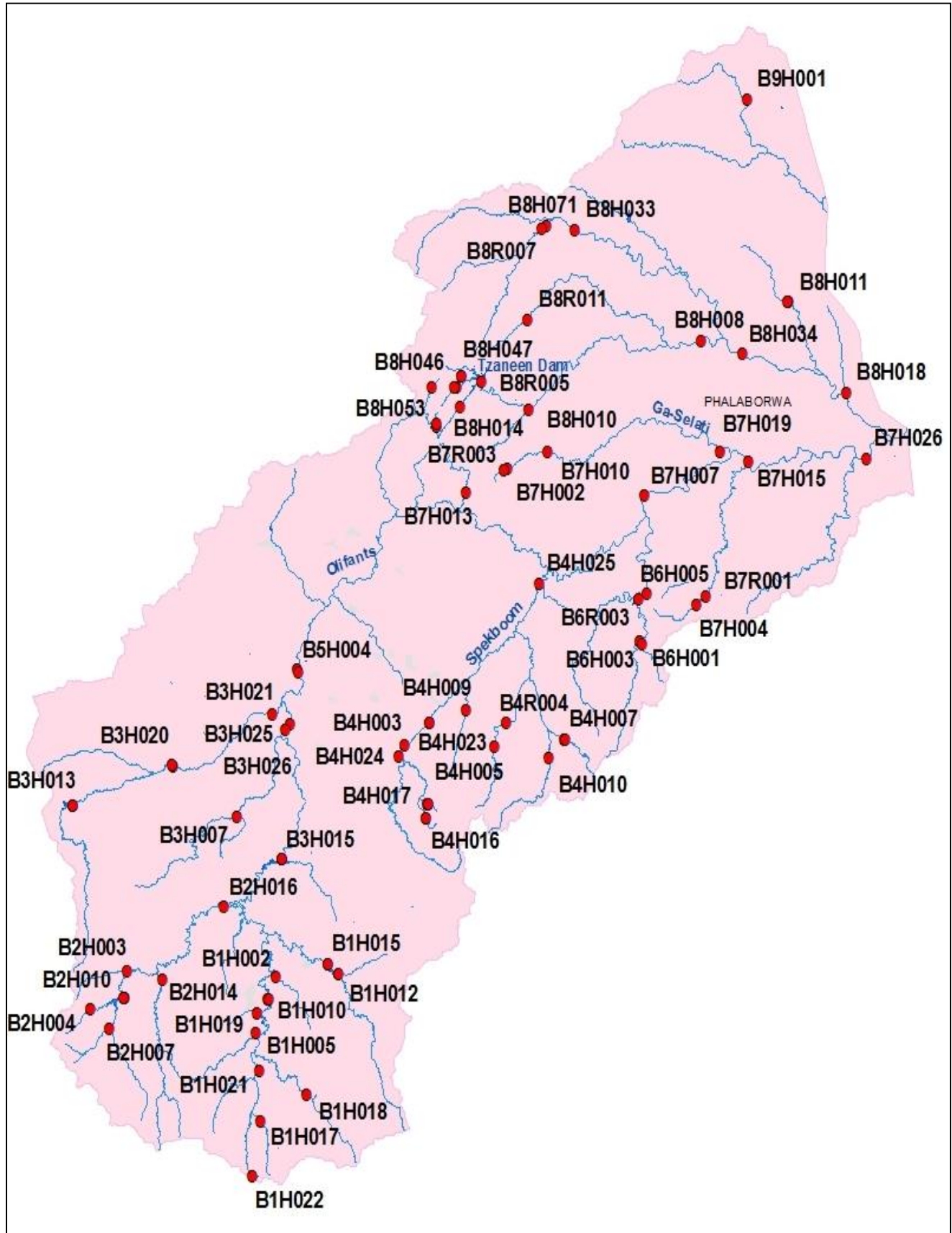
Graphs for the Nzhelele Dam (A8R001), Luphephe (A8R002), Nwanedzi (A8R003) and Mutshedzi (A8R004) Dams are attached.

#### **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, of which monitoring sites in the B3 to B5 and B7 to B9 were addressed.



### **5.1 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.

### **5.2 B4 Drainage Area (Steelpoort River)**

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

### **5.3 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.

### **5.4 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.

### **5.5 B8 Drainage Area (Groot, Middle and Klein Letaba Rivers)**

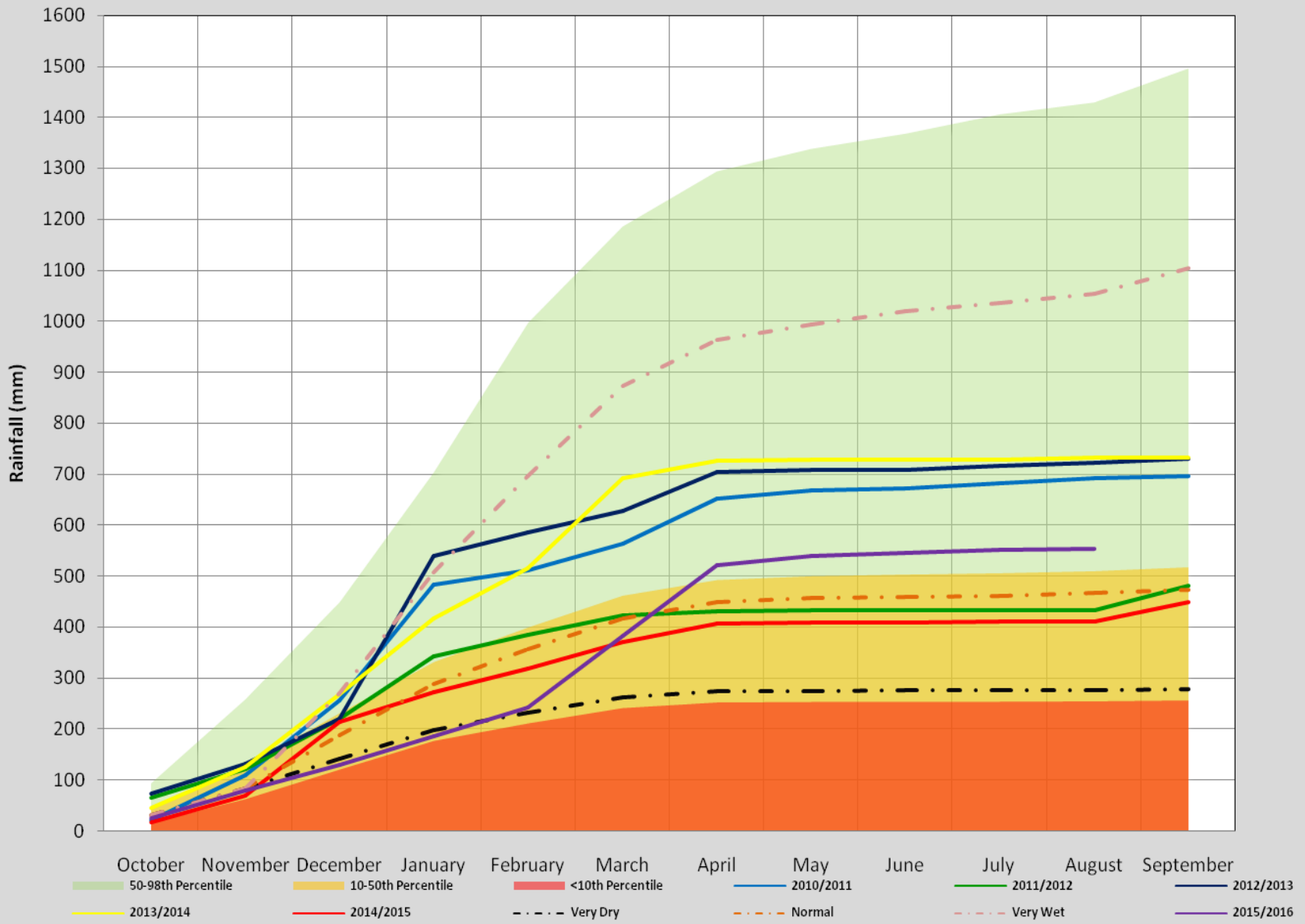
Graphs for the Ebenezer Dam (B8R001), Magoebaskloof Dam (B8R003), Tzaneen Dam (B8R005), Middle-Letaba Dam (B8R007), Nsami Dam (B8R009) and Modjadji Dam (B8R011) are attached.

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

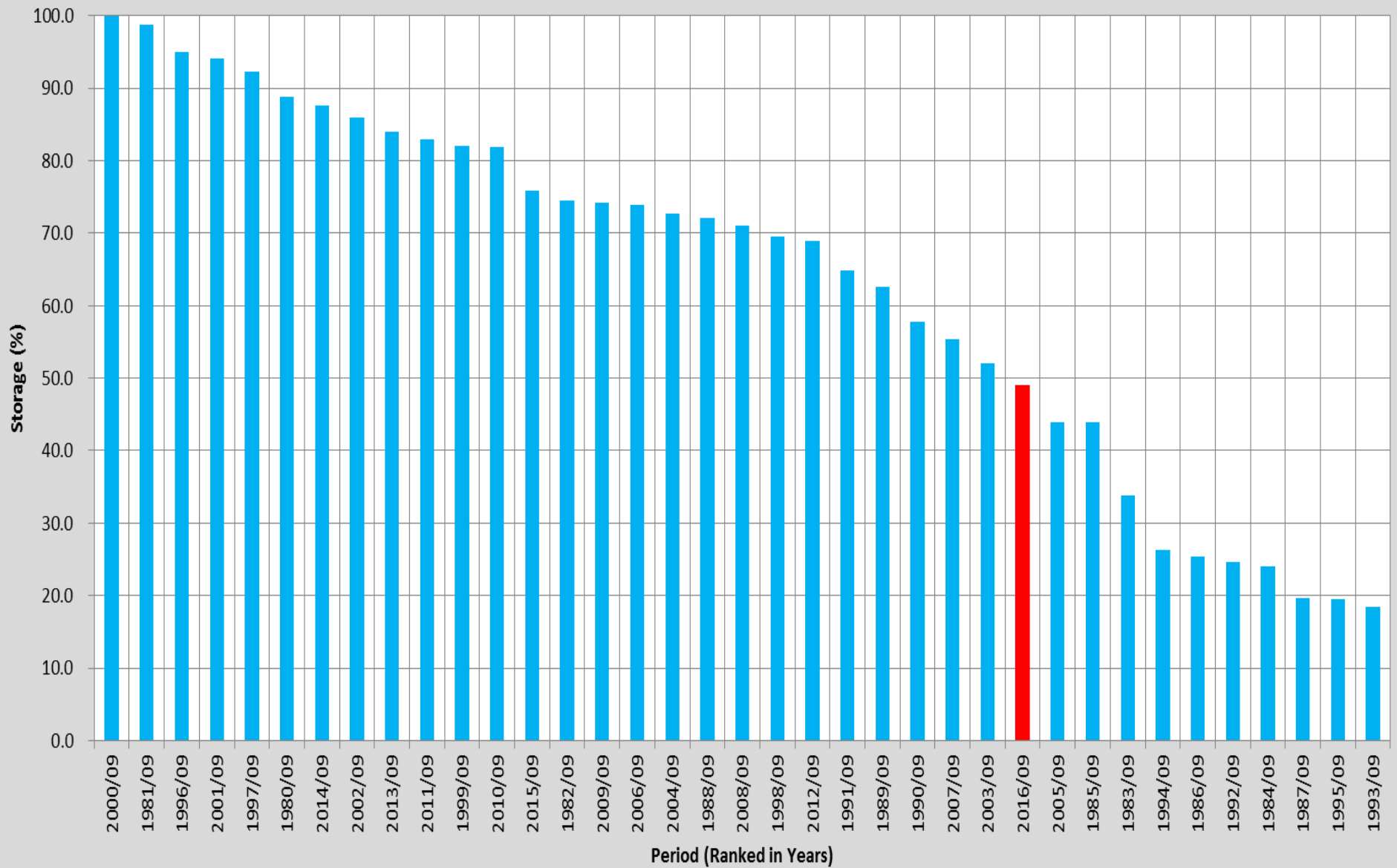
Only a limited part of this drainage area falls outside the Kruger National Park!

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

Limpopo: Cumulative Annual Rainfall Since 2009/10 and Percentiles Since October 1960



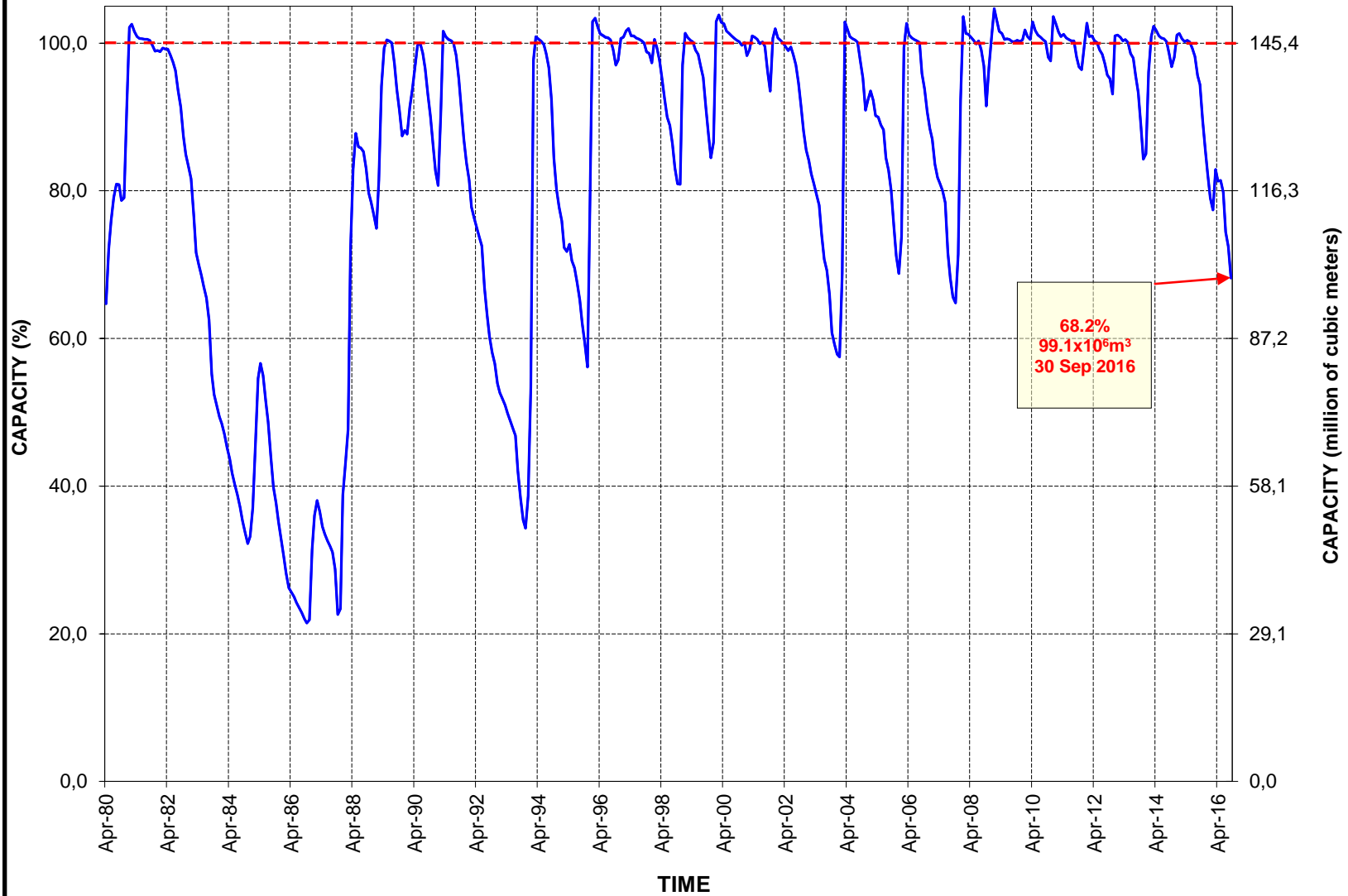
## Limpopo : Provincial Reservoir Storage for Trends September since 1980



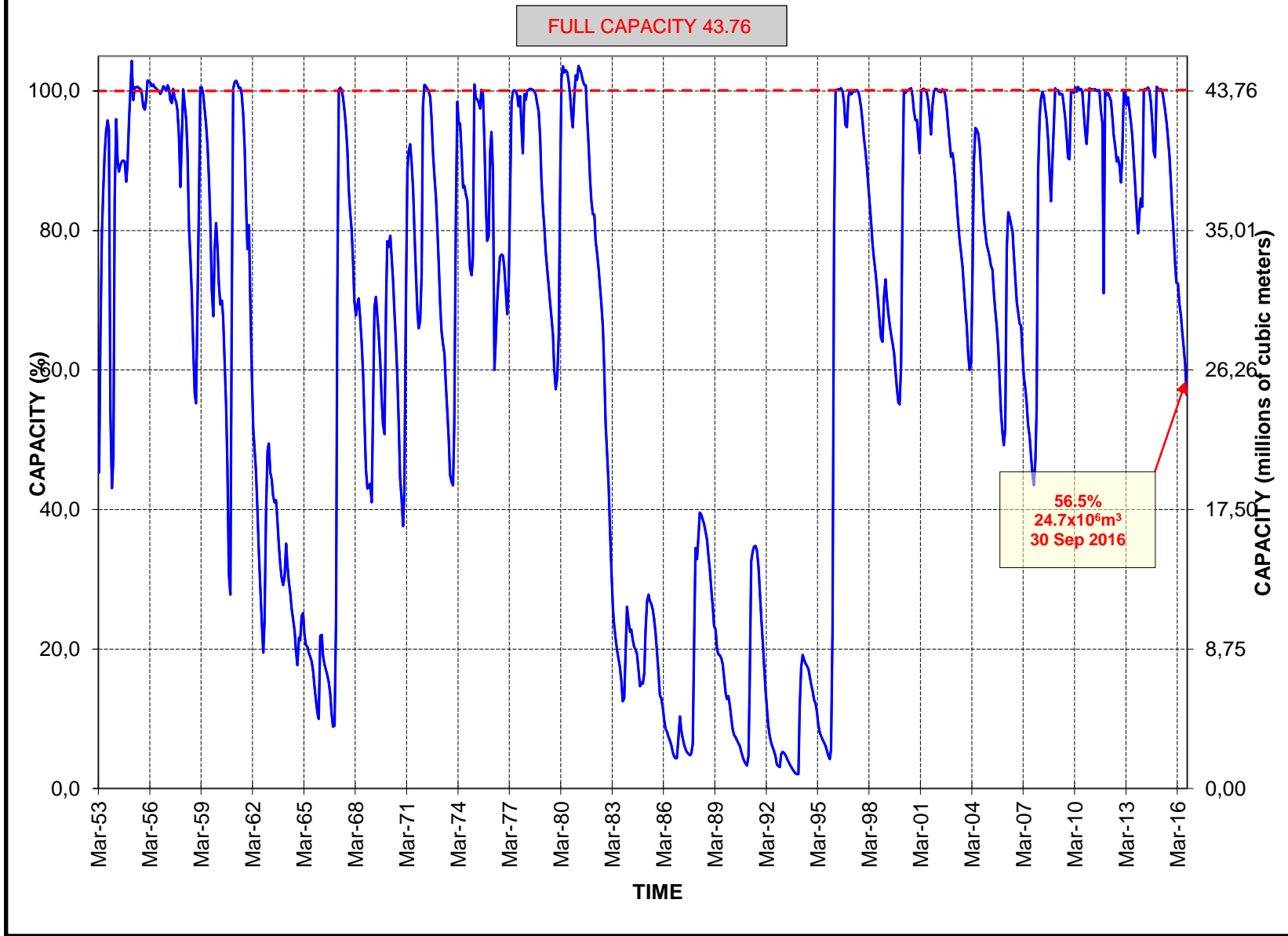
Summary Provinces	Full Supply Capacity 10 <sup>6</sup> M <sup>3</sup>	Water in Storage 10 <sup>6</sup> M <sup>3</sup>	Last Year %Full	Last Week %Full	This Week <small>26/09/2016</small> %Full
					%Full
EC Eastern Cape	1832.4	1184.6	80.0	65.0	64.6
FS Free State	15971.2	8543.0	72.2	54.1	53.5
G Gauteng	114.8	92.1	88.6	81.8	80.2
KN Kwazulu-Natal	4668.7	1994.5	61.5	43.2	42.7
L Lesotho	2376.2	889.8	60.0	37.6	37.4
LP Limpopo	1508.1	721.3	75.0	48.5	47.8
M Mpumalanga	2538.8	1277.8	75.1	51.2	50.3
NC Northern Cape	145.5	92.1	79.9	62.7	63.3
NW North West	886.7	536.5	60.5	61.8	60.5
S Swaziland	333.8	59.7	64.4	18.3	17.9
WCo Western Cape - Other rainfall	272.9	114.5	66.3	43.1	42.0
WCw Western Cape - Winter rainfall	1597.5	1053.1	73.1	65.8	65.9
WC Western Cape - Total	1870.4	1167.6	72.1	62.5	62.4
<b>GRAND TOTAL</b>	32246.5	16559.1	70.3	51.9	51.4

# MOGOL RIVER AT MOKOLO DAM

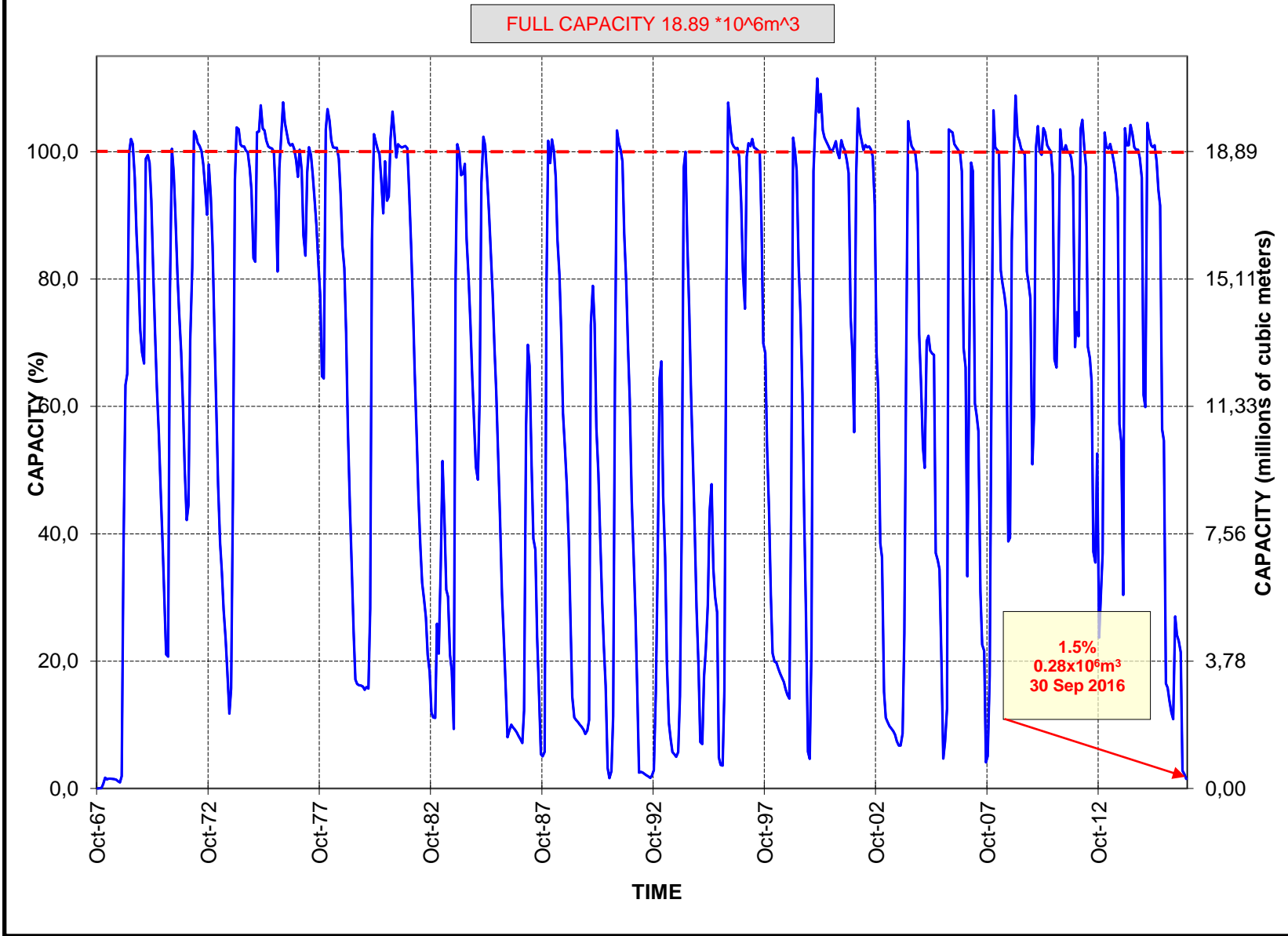
FULL CAPACITY 145.37



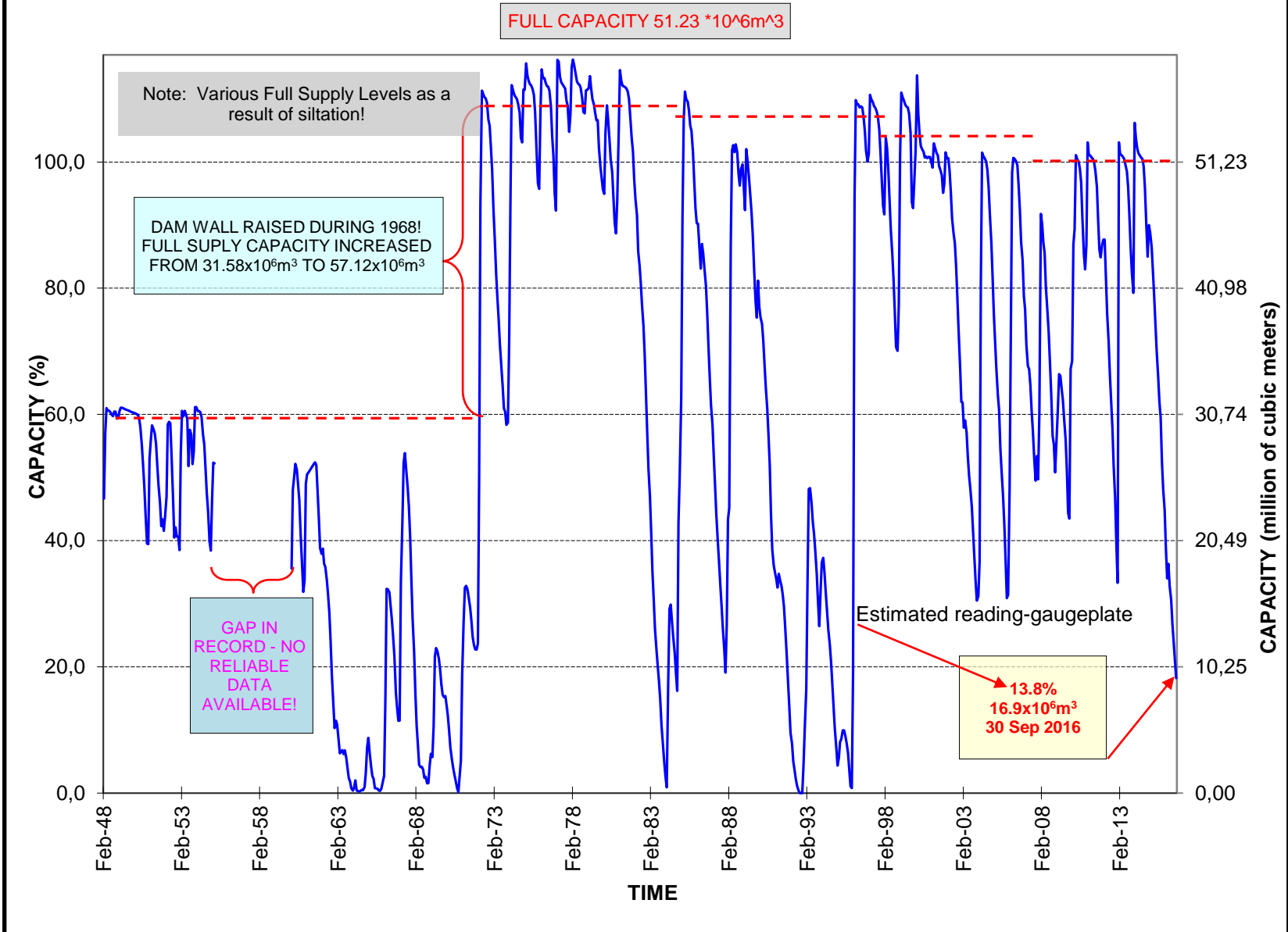
# STERK RIVER AT DOORNDRAAI DAM



# MOKGALAKWENA RIVER AT GLEN ALPINE DAM

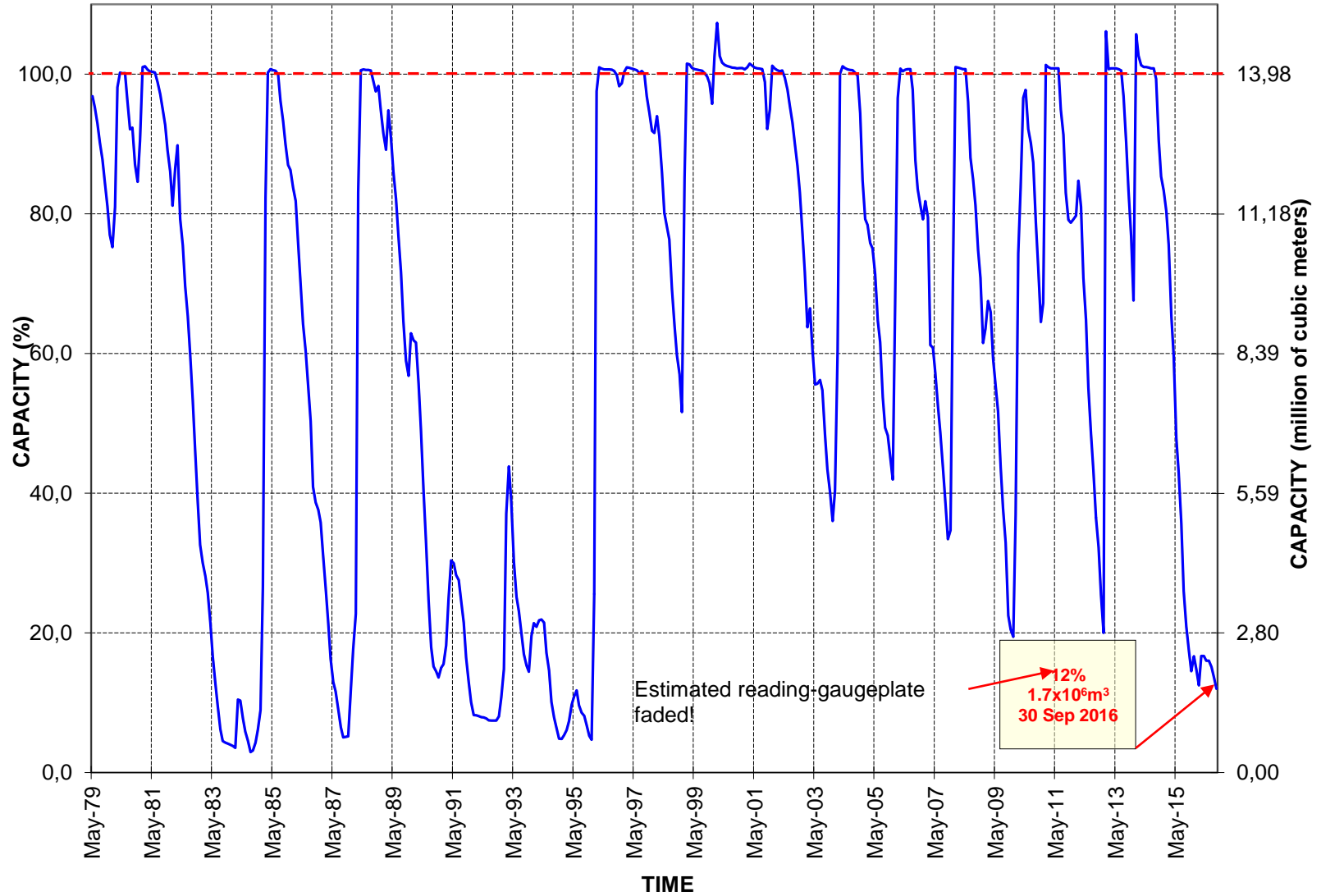


# NZHELELE RIVER AT NZHELELE DAM



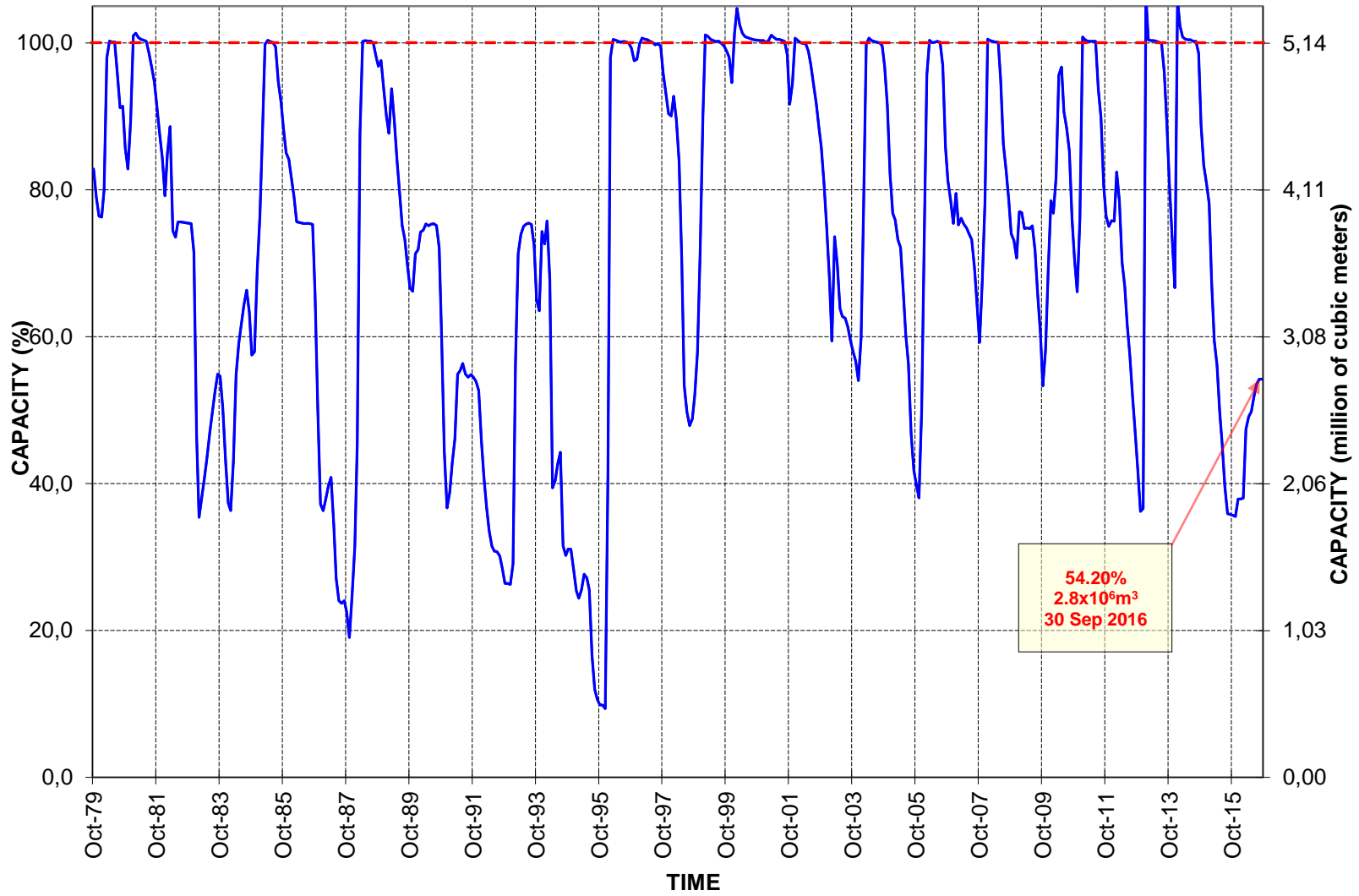
# LUPHEPHE RIVER AT LUPHEPHE DAM

FULL CAPACITY 13.984



# NWANEDZI RIVER AT NWANEDZI DAM

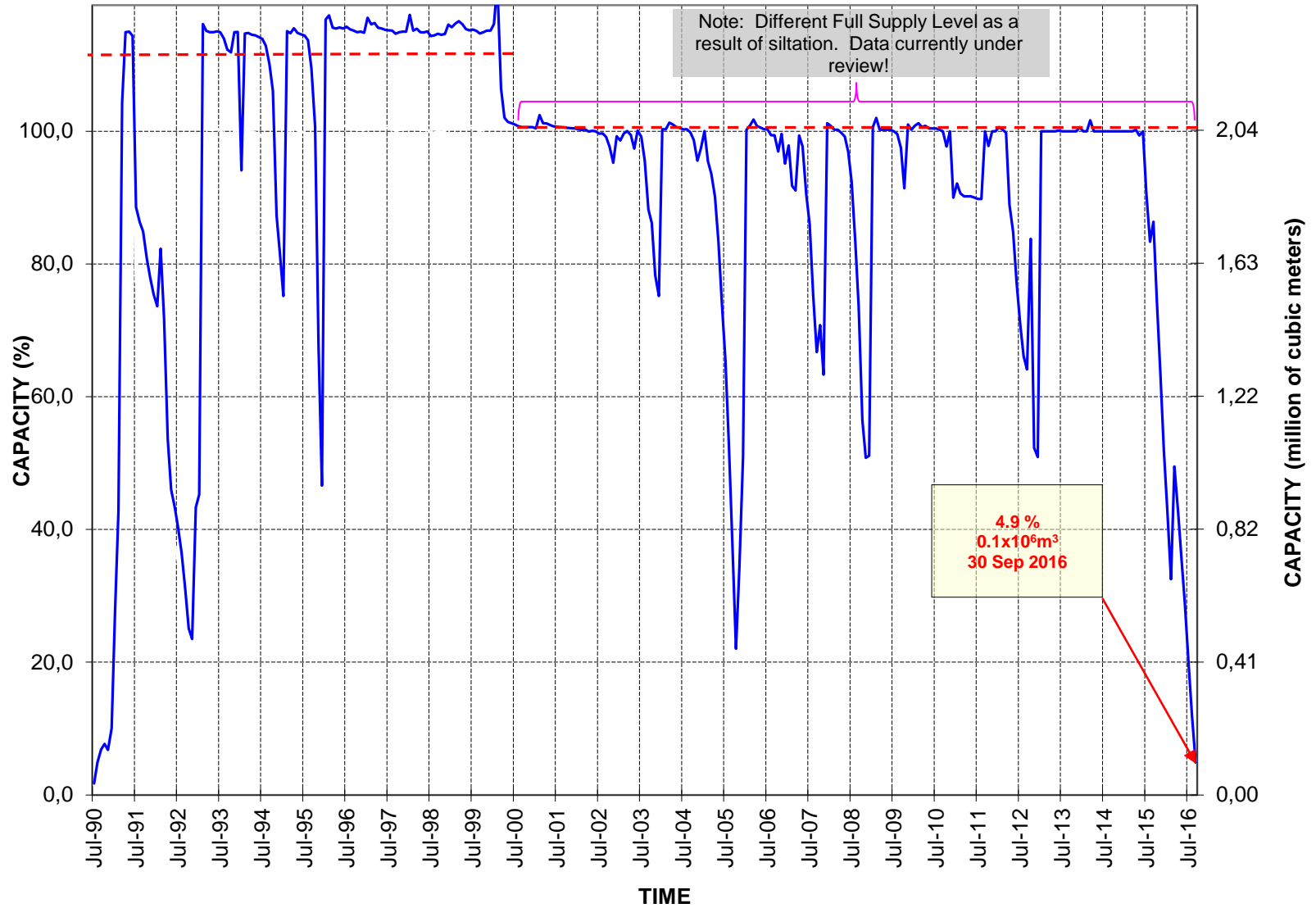
FULL CAPACITY  $5.14 \times 10^6 \text{m}^3$



# MUTSHEDZI RIVER AT MUTSHEDZI DAM

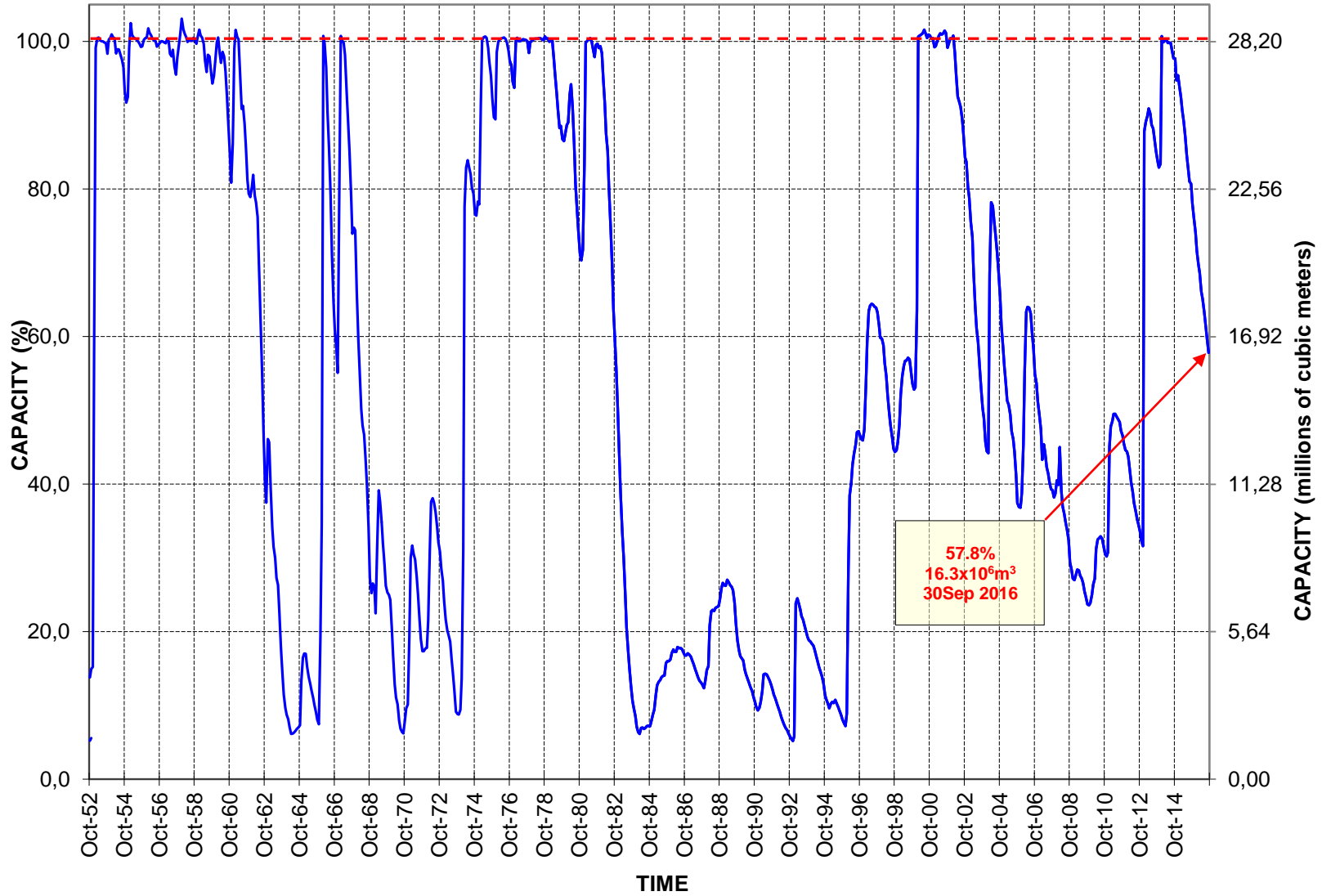
FULL CAPACITY  $2.037 \times 10^6 \text{m}^3$

Note: Different Full Supply Level as a result of siltation. Data currently under review!



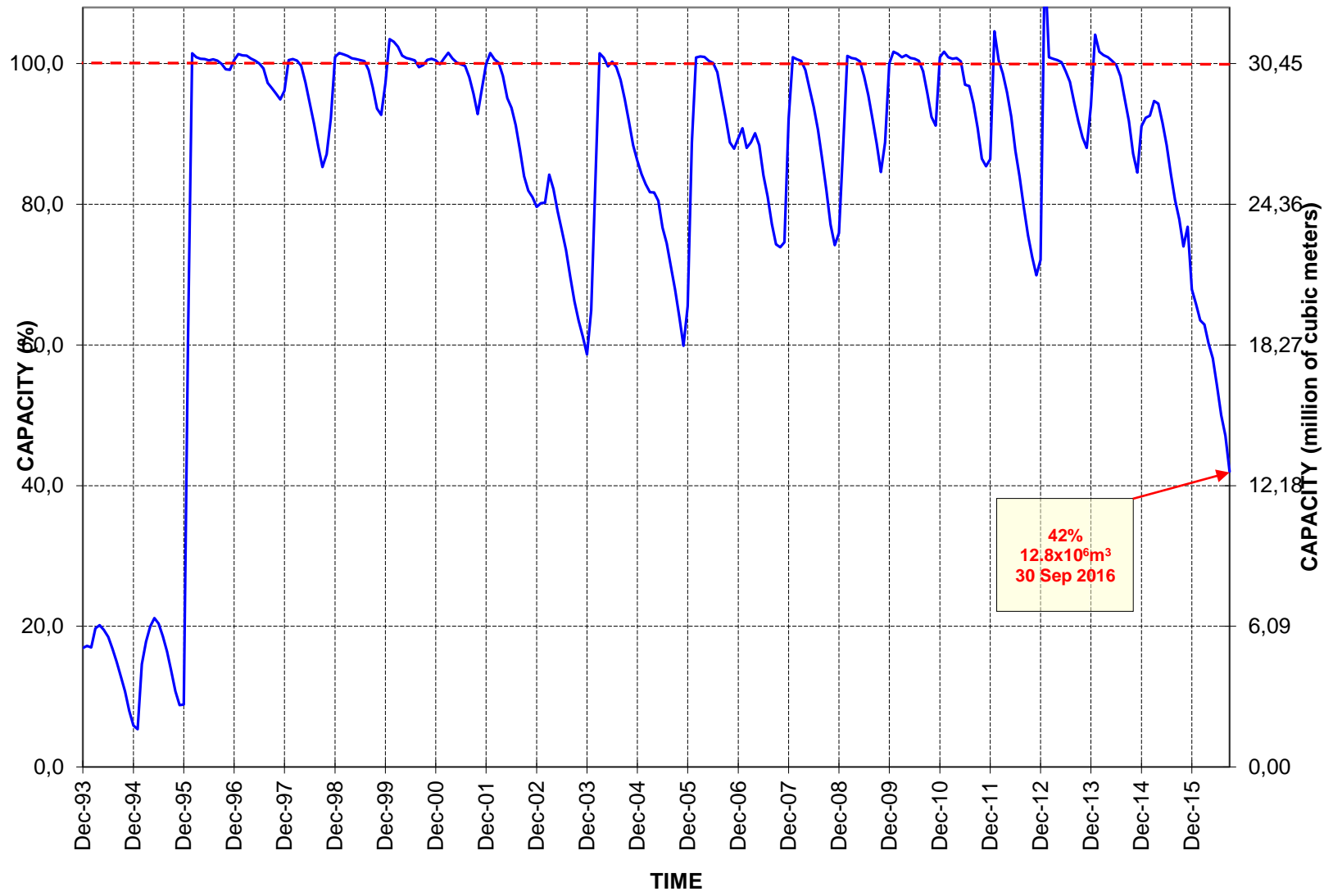
# LUVUVHU RIVER AT ALBASINI DAM

FULL CAPACITY



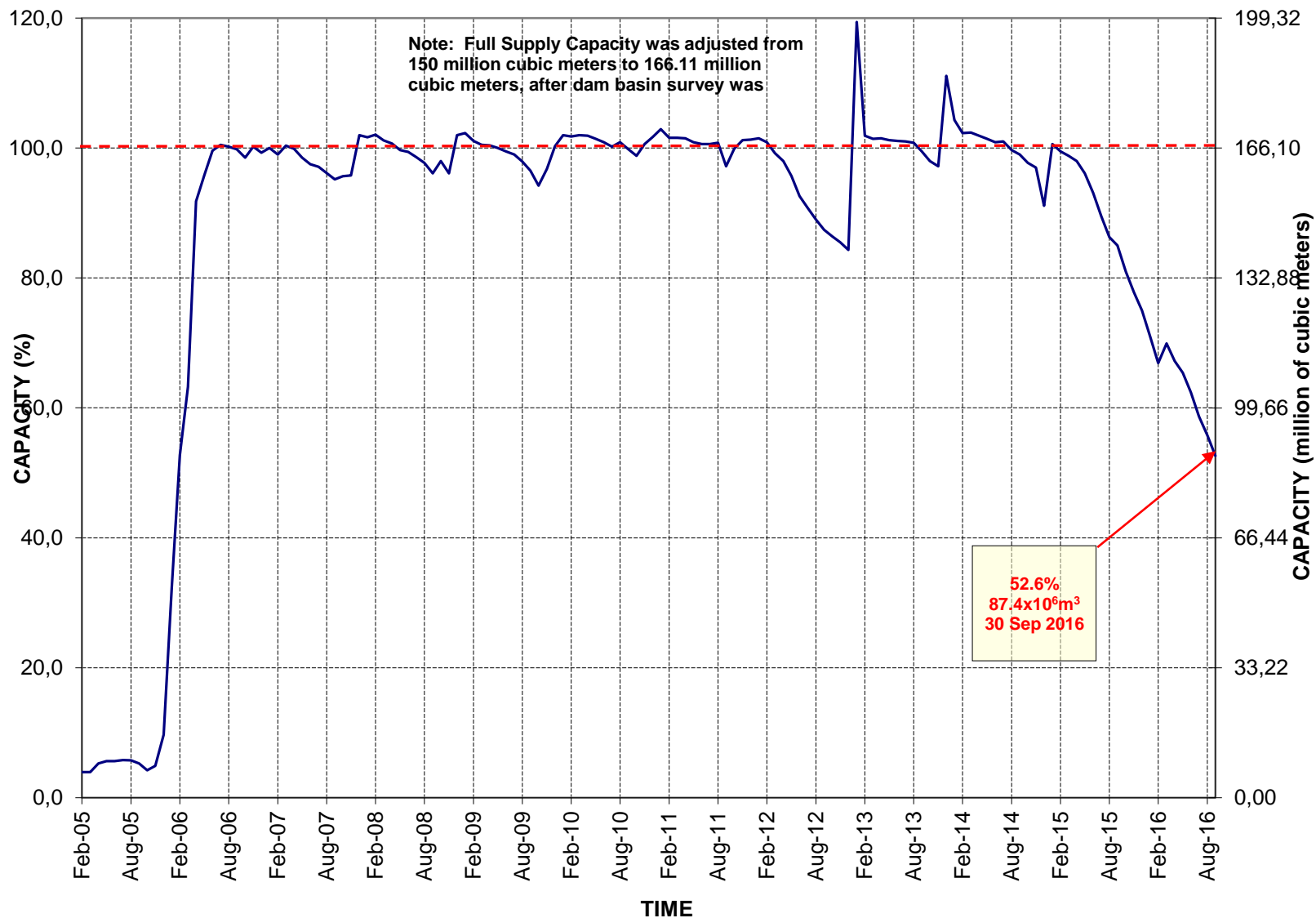
# MUTSHINDUDI RIVER AT VONDO DAM

FULL CAPACITY



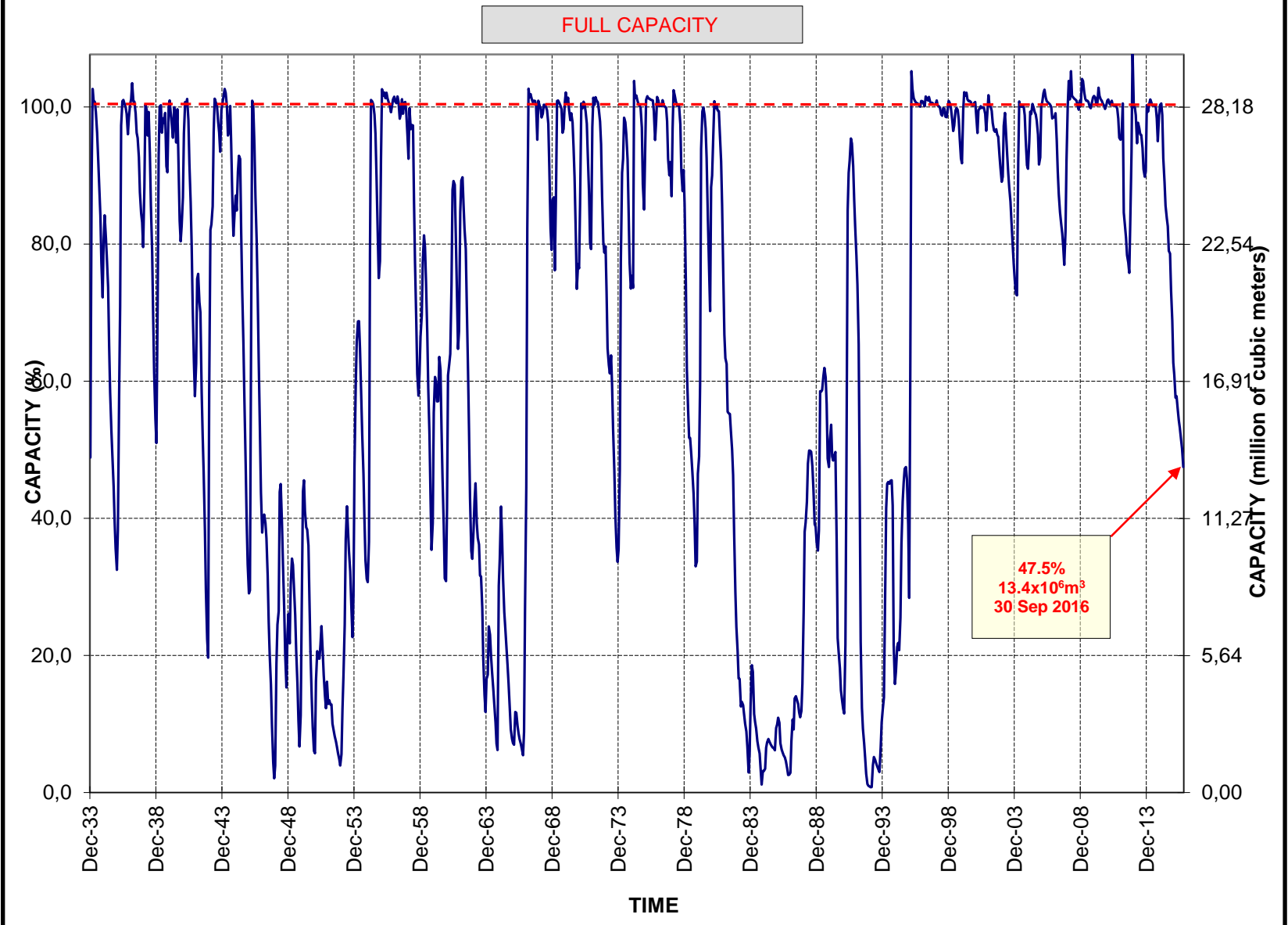
# LUVUVHU RIVER AT NANDONI DAM

FULL CAPACITY



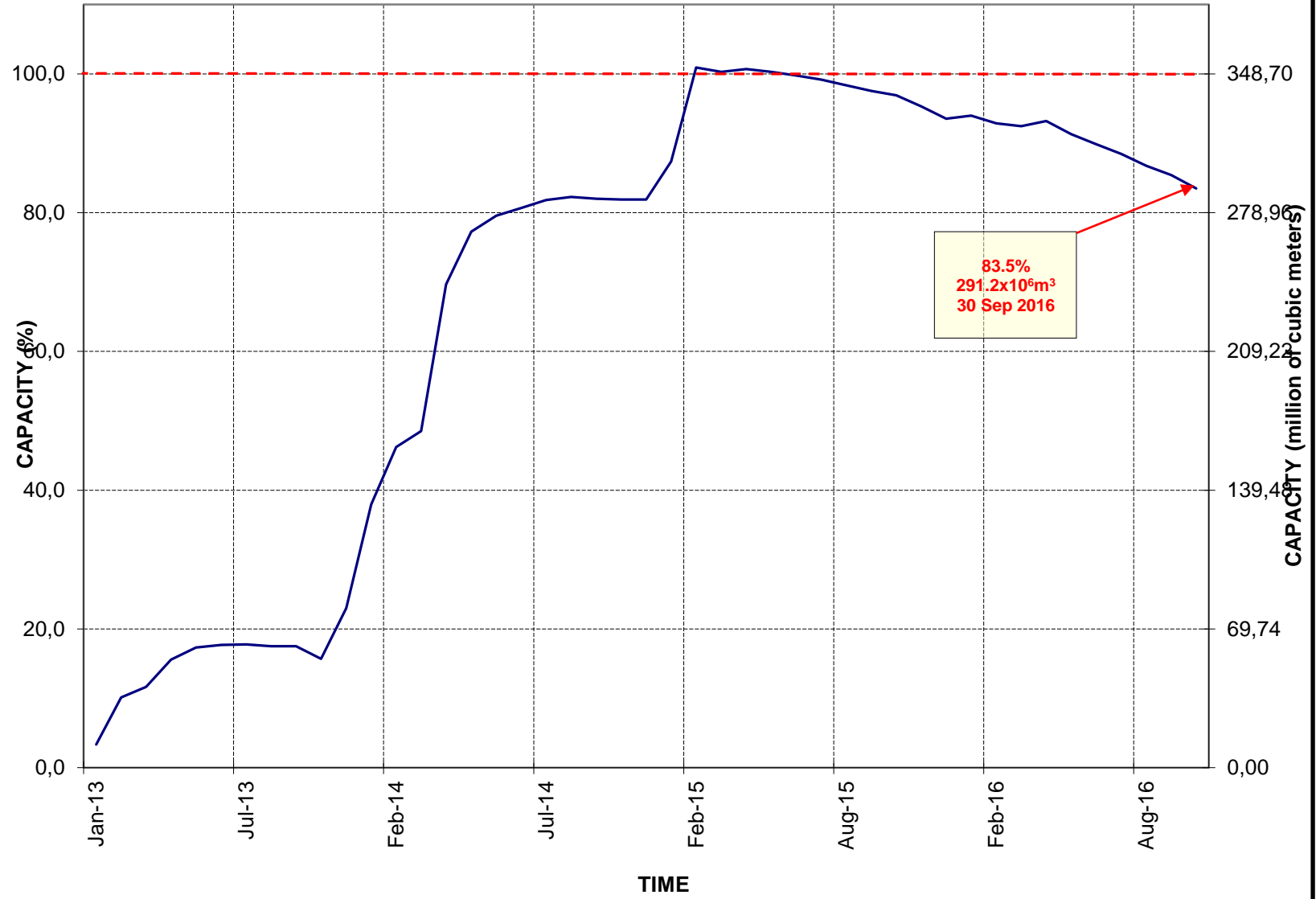
52.6%  
87.4x10<sup>6</sup>m<sup>3</sup>  
30 Sep 2016

# ELANDS RIVER AT RUST DE WINTER DAM

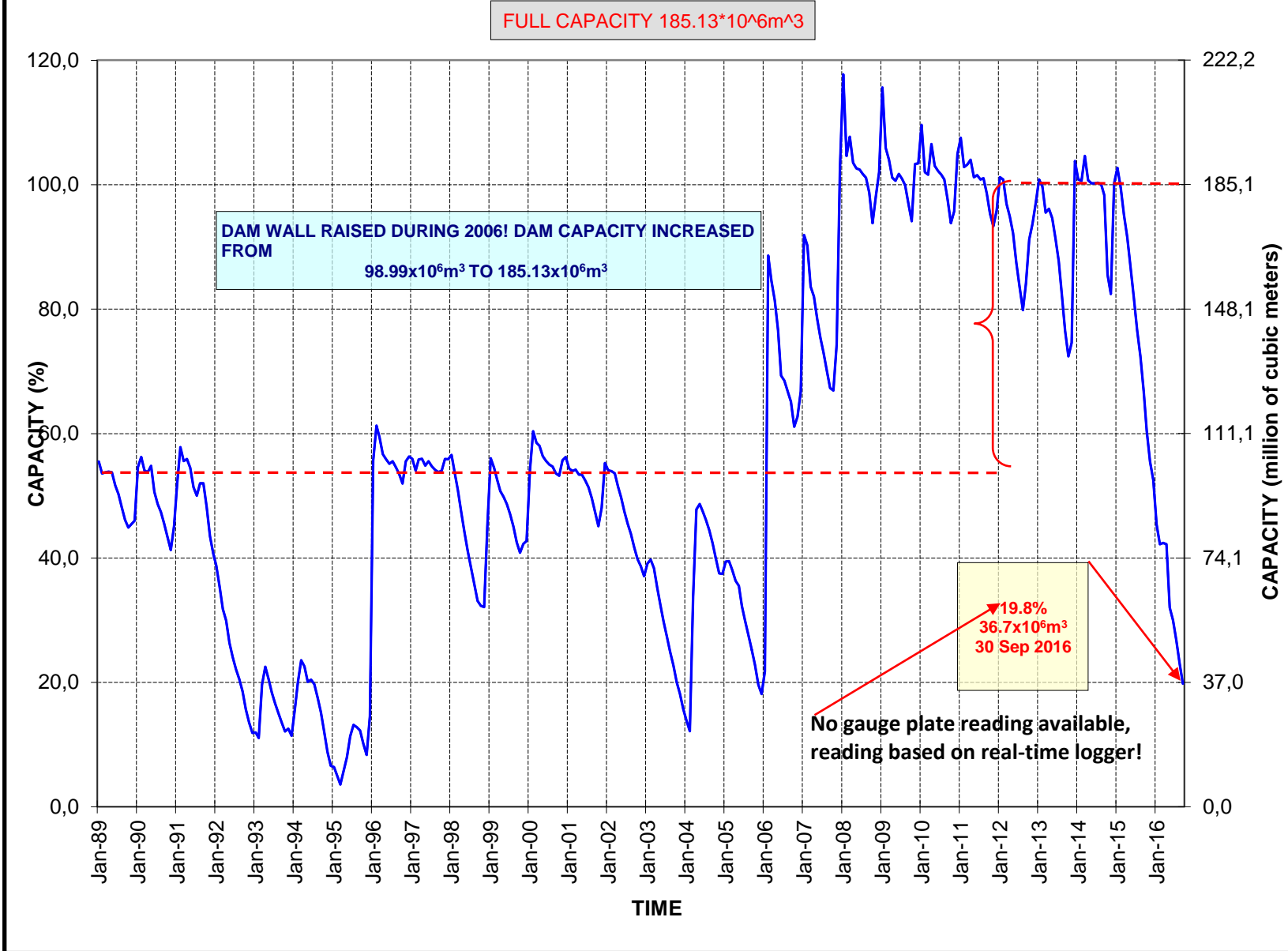


# STEELPOORT RIVER AT DE HOOP DAM

FULL CAPACITY 348.7\*10<sup>6</sup>m<sup>3</sup>

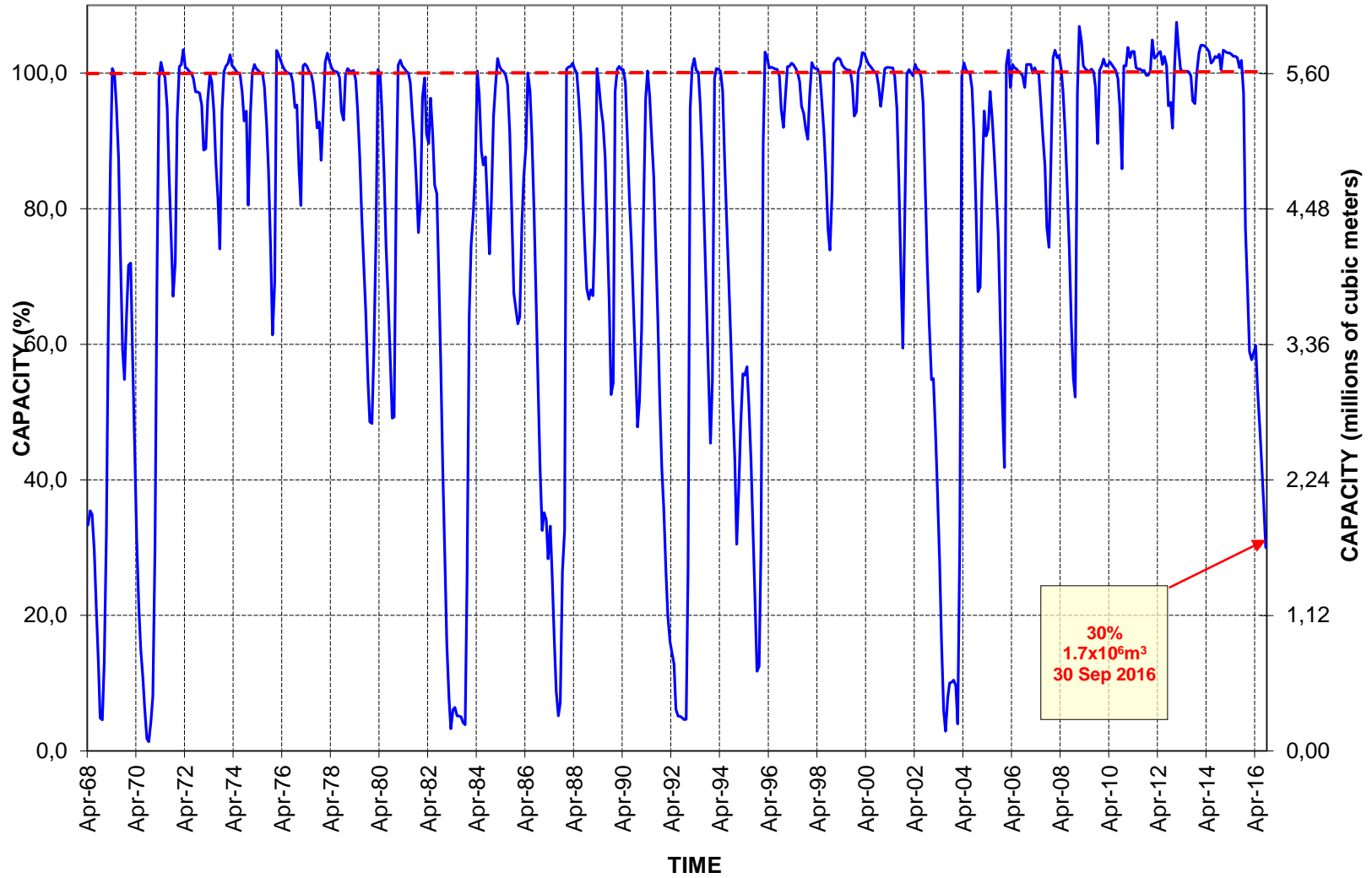


# OLIFANTS RIVER AT FLAG BOSHELLO DAM

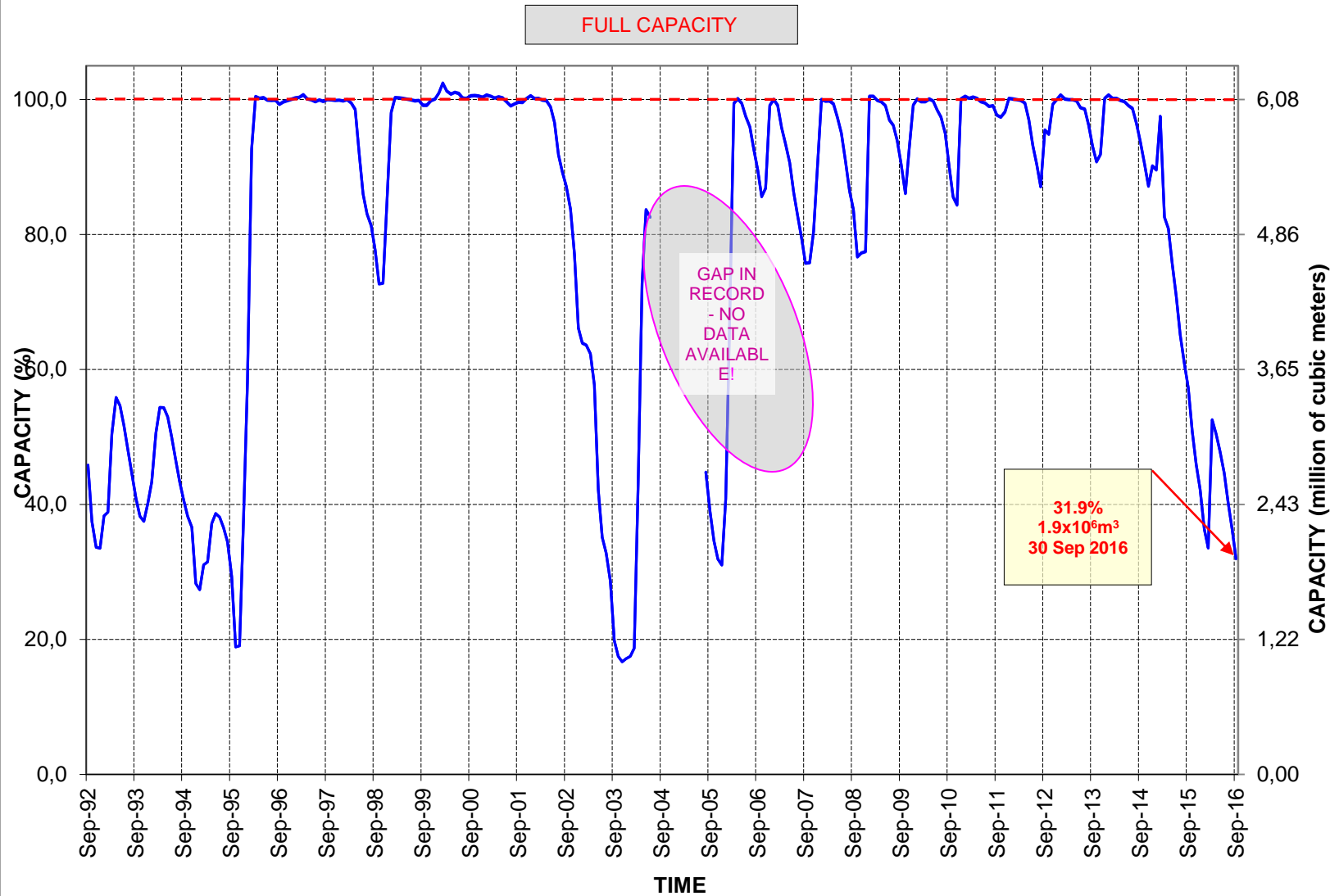


# KLASERIE RIVER AT KLASERIE DAM

FULL CAPACITY  $5.604 \times 10^6 \text{m}^3$

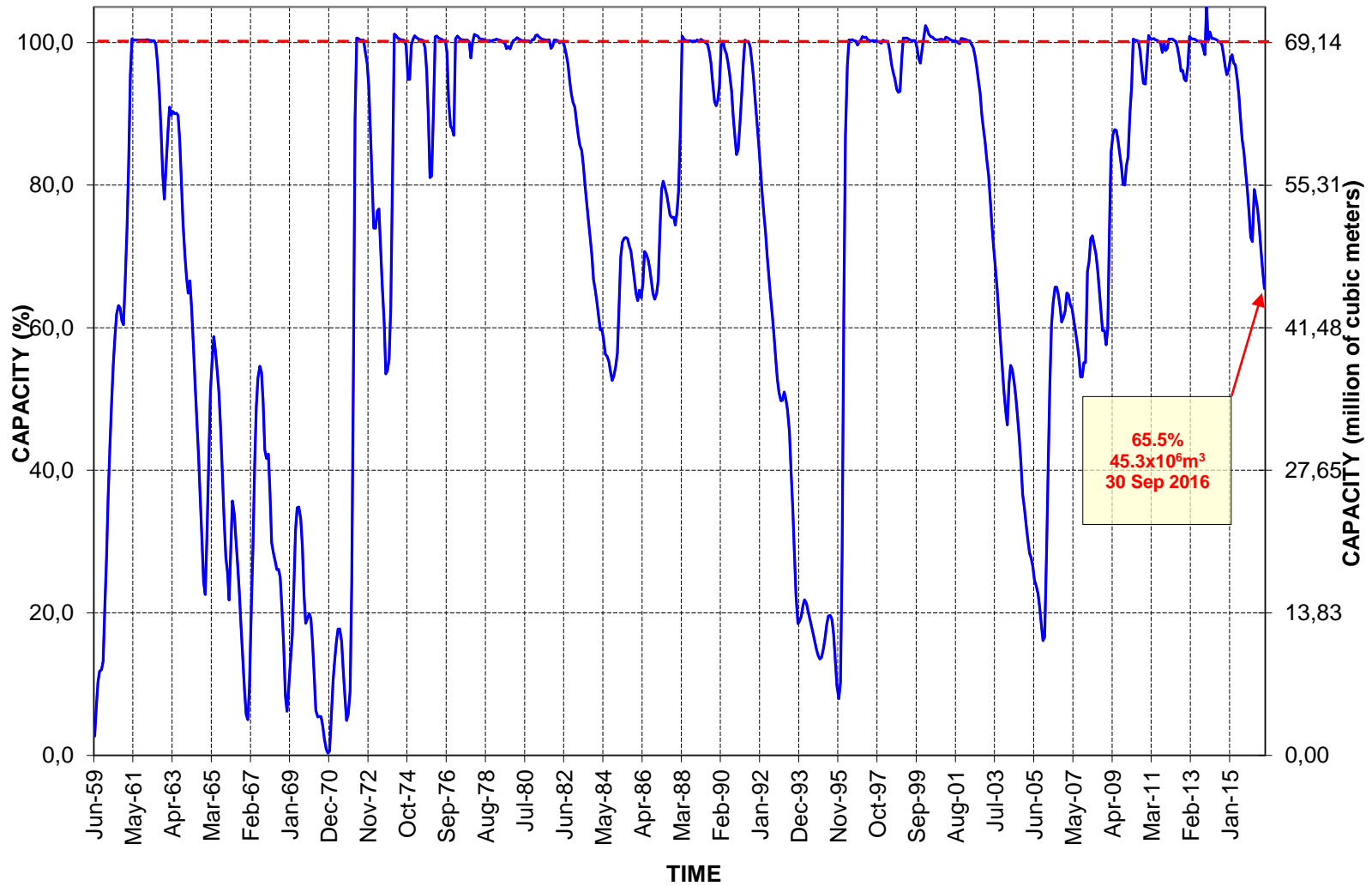


# NGWABITSI RIVER AT TOURS DAM

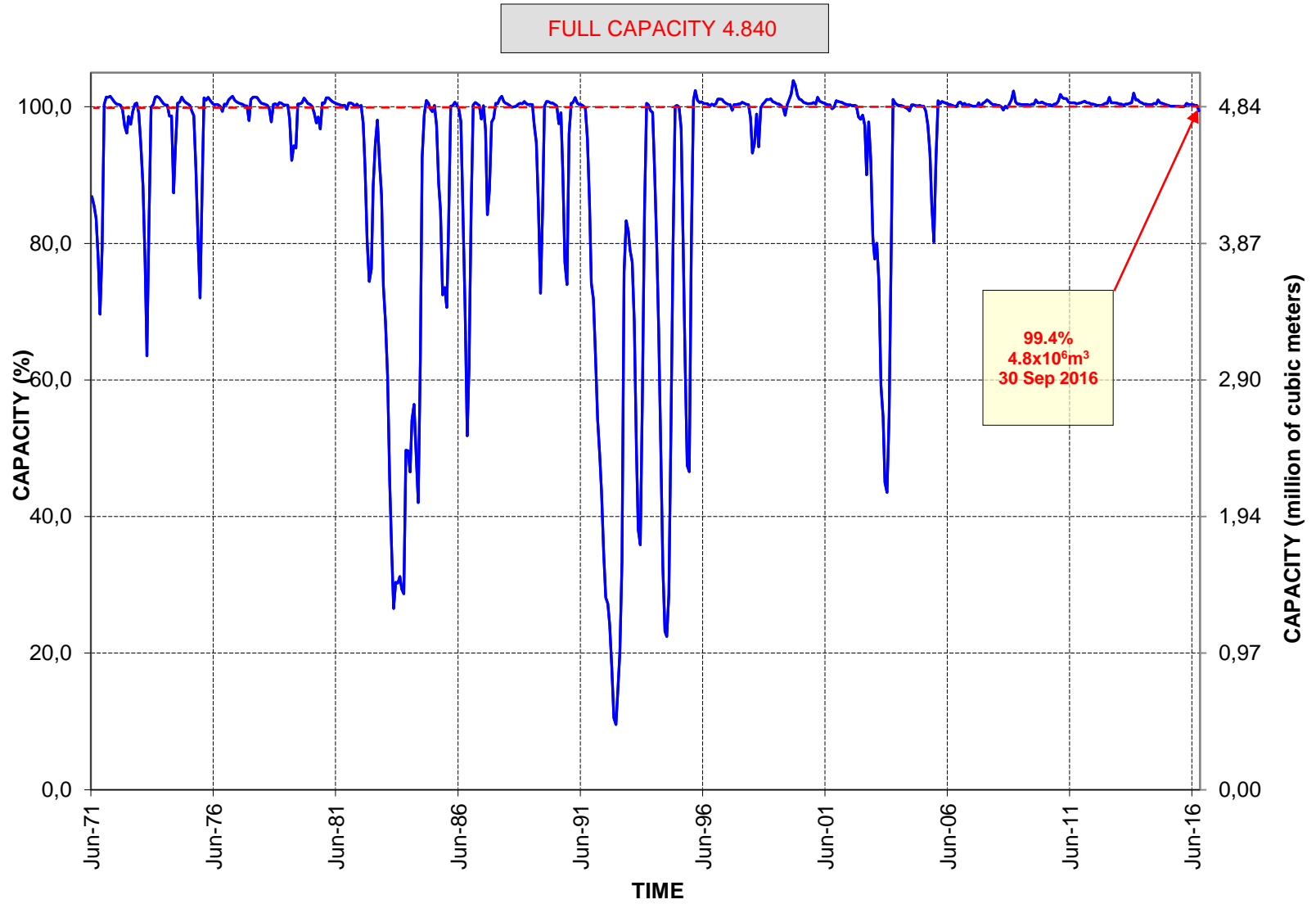


# GREAT LETABA RIVER AT EBENEZER DAM

FULL CAPACITY 69.139

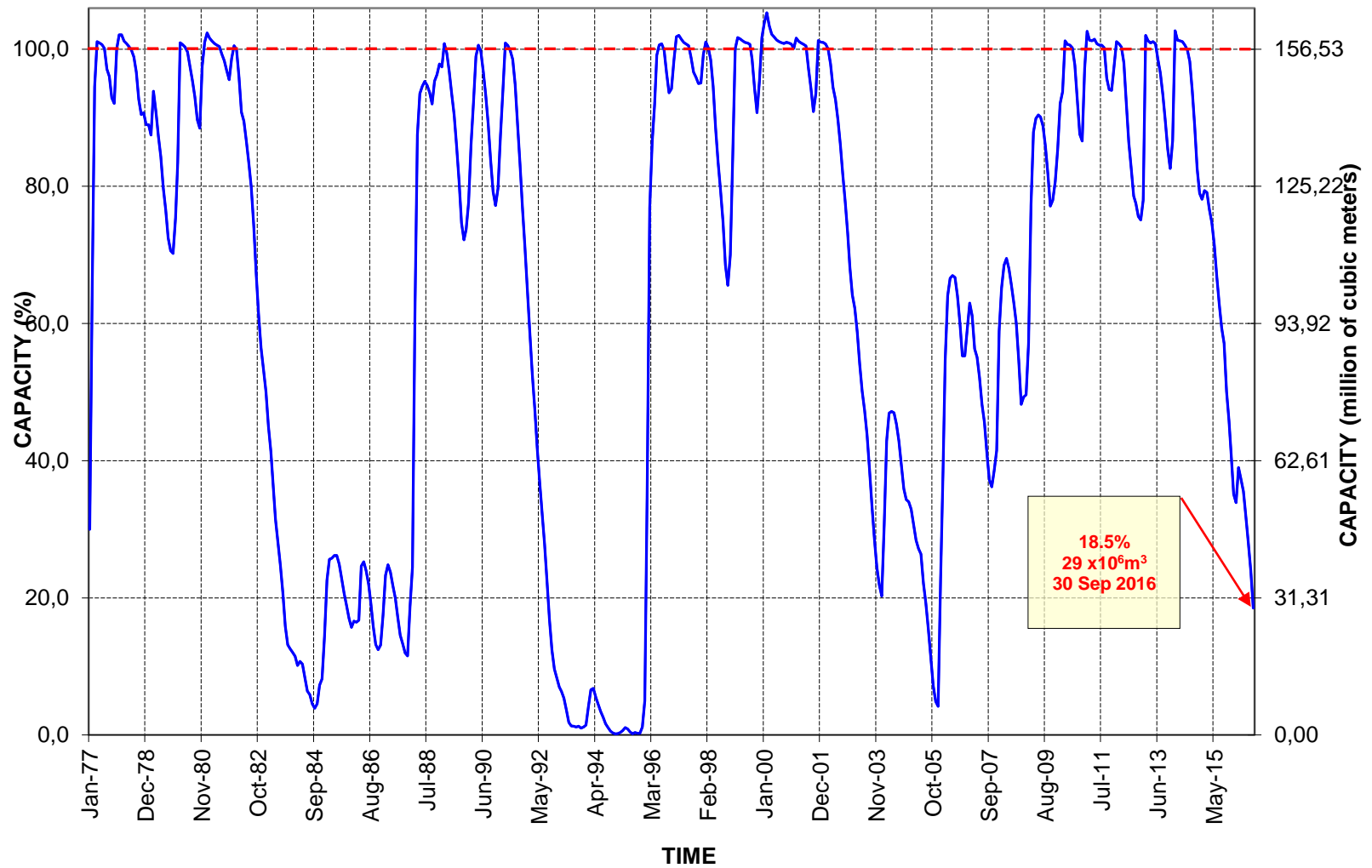


# POLITSI RIVER AT MAGOEBASKLOOF DAM



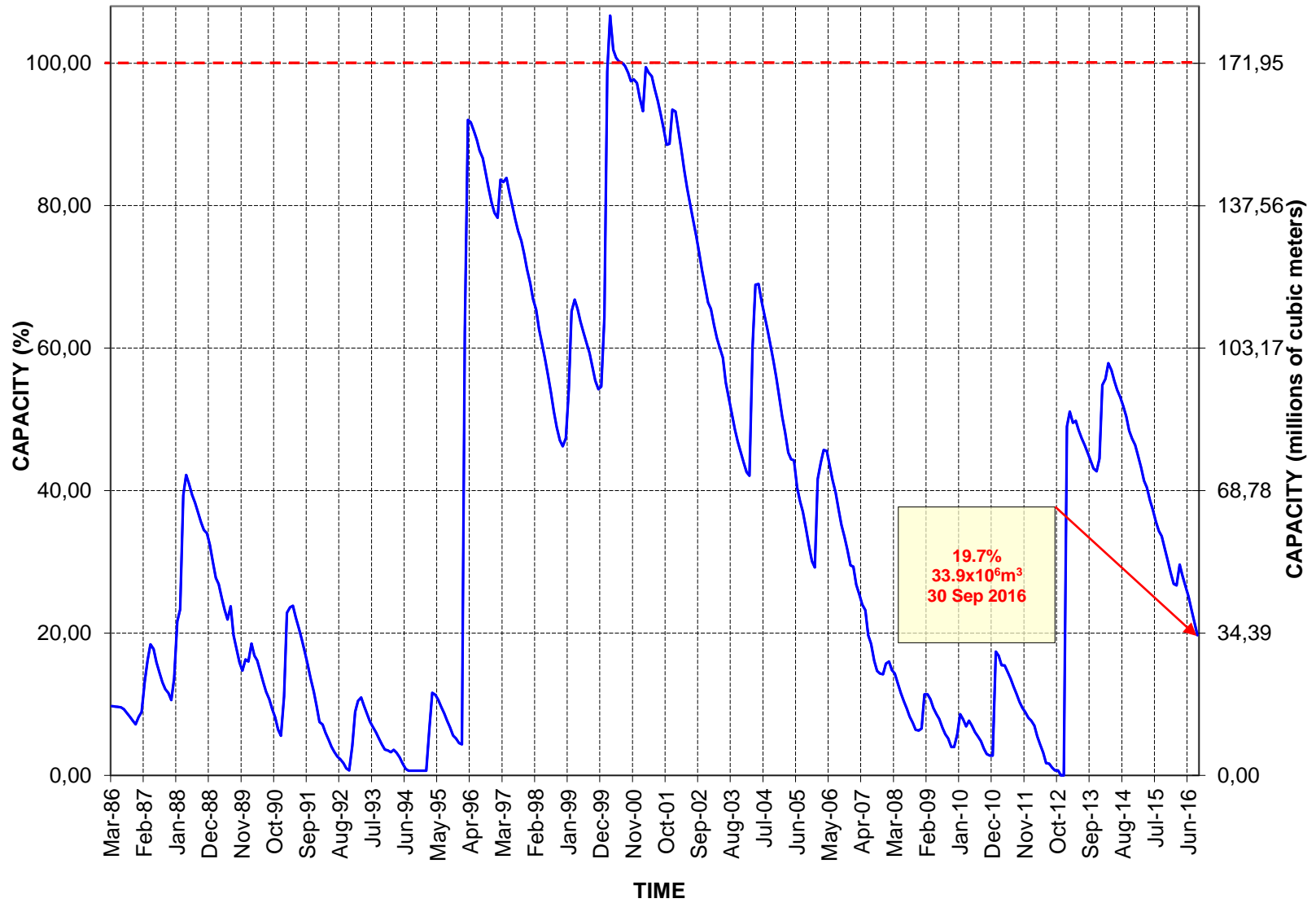
# GREAT LETABA RIVER AT TZANEEN DAM

FULL CAPACITY 156.53



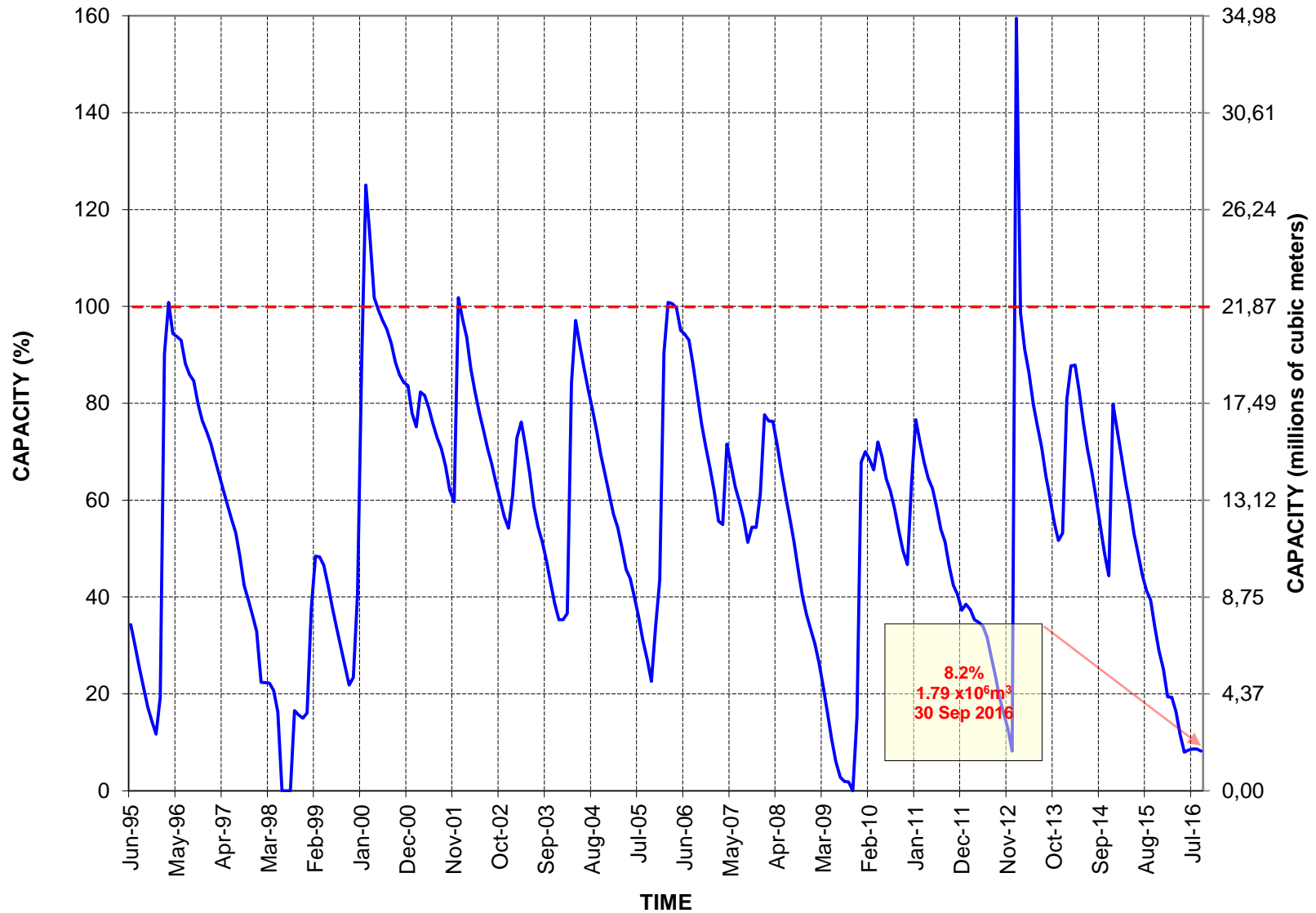
### MIDDLE LETABA RIVER AT MIDDLE LETABA DAM

FULL CAPACITY 171,95 \*10<sup>6</sup>m<sup>3</sup>



# NSAMI DAM AT NSAMA RIVER

FULL CAPACITY  $21.87 \times 10^6 m^3$



# MOLOTOTSI RIVER AT MODJADJI DAM

FULL CAPACITY 7.18

