

#### water & sanitation

Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA

#### **Status of Drought in KZN**

#### 3 March 2016

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### Content

- Rainfall trends
- Status of reservoirs
- Mitigation measures Most critical large systems
- Support to Municipalities
- What to expect





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#### **Standard Precipitation Index**



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Rainfall

#### **3 Month Forecast**

50

45

40

- 33

50

45

40

33

#### Temps

MARCH-APRIL-MAY Above-Normal Rainfall



45

40

33

295

305

315

325

335

345

355

16E 1BE 20E 22E

40

33

50

45

40

APRIL-MAY-JUNE Above-Normal Rainfall



MAY-JUNE-JULY Above-Normal Rainfall



Below-Normal Rainfall 229 235 245 255 265 275 285 295 305 315 325 335 345 355 20E 22E 24E 26E 28E 30E 165 18E 32E APRIL-MAY-JUNE Below-Normal Rainfall 22 239 249 255 265 275 285

MARCH-APRIL-MAY

24E

285 28E 30E 32E

MAY-JUNE-JULY Below-Normal Rainfall





#### Forecast in summary

- Growing uncertainty on the late autumn and winter seasons.
- This means below average rainfall for the autumn.
- Some changes probable for early winter in some parts.
- Paradox is low rain for the Western Cape and above average rain for the interior and eastern parts. (Note: above winter average for the summer rainfall areas)
- Temperatures will also remain high for the immediate future, dropping towards mid-winter.

#### **Status of DWS reservoirs**

Dam Name	Pivor Namo	FSC in	% Capacity							
	River Name	10 <sup>6</sup> m³	Feb-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	End Feb
Midmar	Mgeni	235.4	73.8	60.81	56.27	53.16	49.7	48.06	46.83	46.28
Nagle	Mgeni	23.26	85	68.6	83.75	69.76	67.09	83.23	82.5	75.79
Albert Falls	Mgeni	288.4	71.8	54.55	50.17	46.57	42.25	39.37	37.89	37.49
Inanda	Mgeni	237.4	89.6	89.2	89.2	85.43	82.52	81.44	80.9	79.25
Hazelmere	Mdloti	17.66	37.6	30.63	29.96	27.32	25.87	32.65	35.39	35.11
Spioenkop	Tugela	270.4	101.1	72.8	66.22	60.47	56.29	55.59	58.99	63.08
Driel Barrage	Tugela	8.694	95.9	93.46	102.03	91.82	91.82	98.37	105.04	101.69
Woodstock	Tugela	373.5	97.4	86.74	84.06	71.42	71.42	64.01	70.94	81.46
Craigie Burn	Mnyamvubu	22.46	88.3	88.1	81.96	71.26	62.57	62.64	65.43	66.92
Mearns	Mooi	5.163	101.2	65.29	54.73	62.74	62.35	65.29	103.21	87.96
Spring Grove	Mooi	139.2	93.9	95.54	95.11	88.61	80.18	74.61	78.58	84.86
Ntshingwayo	Ngagane	194.6	81.6	67.84	65.28	62.12	57.1	53.75	55.54	56.38
Zaaihoek	Slang	184.3	93.5	75.73	72.96	69.6	64.89	61.7	58.98	58.93
Wagendrift	Boesmans	55.9	100.8	94.88	90.39	82.77	74.85	70.32	98.98	100.47
Goedertrouw	Mhlatuze	301.26	51	37.93	36.86	34.5	31.07	30.07	27.1	25.03
Klipfontein	Wit Mfolozi	18.08	85	39.71	34.38	28.59	21.2	19.94	19.82	20.51
Hluhluwe	Hluhluwe	25.89	60	35.69	33.28	30.18	26.84	23.52	19.48	18.06
Pongolapoort	Phongolo	2 267	62	55.39	54.27	52.8	50.9	50.13	48.35	46.91
Total Capacity in 1	0 <sup>6</sup> m³	4 669	3 399	2 930	2 837	2 673	2 542	2 459	2 458	2 472
Percentage		100	72.8	62.7	60.8	57.3	54.4	52.7	52.7	52.9

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#### Status of DWS reservoirs – Mgeni System

Albert Falls







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#### **Status of DWS reservoirs - Mlhathuze**



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#### **Status of DWS reservoirs - Klipfontein**



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#### **Status of DWS reservoirs - Hluhluwe**



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## Status of larger dams

**NB!!** 

System / Dam	Water Services	Users	Full Water	Dam level	Dam Level	July 2015	Status	New Restriction
	Authority		Requirement	Jan 2015	Jan 2016	restriction		· · · · ·
			(MI/day)	%	%			
Mgeni WSS	Ethekwini,	Howick, PMB, Durban,	1140	78	59	None		15% domestic, 50% irrigation
(Spring Grove,	Ilembe, Ugu,	Upper South Coast						On Mgeni River System, Mooi River and
Midmar Albert Falls,	Umgungundlovu							Little Mooi to Mearns Weir
Nagle and Inanda)								
Mhlathuze WSS	Uthungulu &	Richards Bay, indistry	700	54	30	15% domestic,		40% domestic, 15% Industrial, 80%
(Goedetrouw Dam	City of	and irrigation				10 Industry		irrigation
and local lakes)	Mhlathuze					and 70%		On Goedetrouw Dam and Mhlathuze River
						irrigation		System
Ntshingwayo Dam	Amajuba and	Newcastle Dundee,	190	76	54	None		30% domestic, 100% irrigation
	Umzinyathi DM	Glencoe, Nquthu						On Buffalo River system downstream of
								the Driel Barrage and Spioenkop Dam, the
								Mooi River downstream of Mearns Weir
								and the Bushmans River downstream of
								Wagendrift Dam
Klipfontein	Zululand	Vryheid, Ulundi and	50	95	19	20% domestic		50% domestic, 100% irrigation
		Irrigation				50% irrigation		On Klipfontein and White Mfolozi
Hluhluwe Dam	Umkhanykude	Hluhluwe and irrigation	40	62	23			50% domestic, 100% irrigation
								On Hluhluwe Dam and river system
Hazelmere Dam	Ilembe and	Ballito, Ndwedwem	40	37	33	30% domestic		50% domestic, 100% irrigation
	Ethekwini	Tongaat and irrigation				100% irrigation		on Hazelmere Dam, Mdloti River system,
								and oThongathi River system
Umzinto WSS	Ugu DM	Umzinto, Pennington	30			30% all users		30% domestic, 100% irrigation
(Umzinto and EJ		and surrounds						On Ej Smith and Umzinto Dams, the
Smith Dams)								Umzinto River system and the
								Mpampanyoni River system
Crystal Springs	Harry Gwala	Kokstad	12.5		10	None		50% domestic
Lake Merthley	Umzinyathi	Greytown and	4.2		10	30% all users		50% domestic
		surrounds						

## **Mitigation measures**

- Reduce losses
  - Active leak detection and pressure reduction
  - War on leaks programme underway
- Drought operating rules
  - Determine the time and level at which water users need to be restricted in order to "stretch water" until the dams can recover
- Implement and enforce restrictions
  - Voluntary restrictions
  - Mandatory restrictions and rationing by limiting water production, fitting restrictors and fines
- Augment supplies
  - Implement schemes to augment supplies from boreholes, desalination and reuse, and transfer schemes from neighbouring catchments
- Provide emergency level of service Water tankers and tanks

## **Mitigation measures**

- Focus on systems in deficit
- Save or "stretch water" through restrictions
- In systems supplied from direct abstraction from rivers restrict where downstream users are impacted
- Develop mitigation plans for systems abstracting from rivers for winter when most rivers are expected to be dry
- Utilise ground water and maximise water reuse

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## **Drought Management**

- Provincial Disaster declared and KZN Provincial Disaster Management
  Centre is the coordinating Hub for all sector departments
- DWS leads District and Supply System Joint Operating Committees (JOCs) which are established to monitor critical systems, develop interventions and monitor implementation of interventions Viz.:
  - 1. North Coast JOC Hazelmere, Maphumulo, KwaDukuza
  - 2. Ugu JOC including Umzinto, Harding Weza, Umzimkhulu
  - 3. Mhlathuze JOC Uthungulu, City of Mhalthuze, Chamber of Business, Irrigators
  - 4. Mgeni JOC Umsunduzi, Ethekwini, Ugu, Ilembe, Irrigators
  - 5. Zululand JOC Vryheid, Ulundi, Paulpietersburg
  - 6. Umkhanyakude JOC All areas
  - 7. Hluhulwe JOC Umkhanyakude, rate payers and irrigators
  - 8. Umzinyathi JOC Greytown, Dundee, Glencoe, Nqutu
  - 9. Amajuba JOC Amajuba & Newcastle

## **Drought Management**

- Restrictions Gazetted in July 2015
- Stricter and more widespread restrictions in process of being Gazetted
- Restriction require enforcement and behavioural change

**Forced restrictions** have been implemented in the following areas through installation of flow restrictors

- Ethekwini Hazelmere and oThongathi systems 20 000 restrictors
- Umzintathi Greytown system 3500 restrictors
- Ilembe DM Hazelmere system 15 000 restrictors
- Ethekwini Mgeni system starting the roll out of restrictors

**Emergency augmentation** from boreholes and transfer schemes in Hazelmere, Umzinto, Maphumulo, Paulpieterberg, Greytown

- Umkhanykude DM
  - Hluhluwe NWRI implementing a booster pump to get water to WTW, restrictions to be reviewed
  - Mthubathuba and other run of river systems have water due to recent rainfall, 4 boreholes equipped, 1 new borehole drilled and abstraction wells 60% complete, 3 boreholes drilled and equipped in KwaMsane
  - Assessment and repairs done by Umgeni Water for CoGTA (R40m)
  - Awaiting approval to reallocated funding between drought intervention projects.
  - Ugu DM
    - Umzinto System recovered
    - Harding Weza remains critical although rains have allowed the re-commissioning of 3 water works
    - The Umtwalume supply system is a concern with low river flows
    - Awaiting approval of Variation Order for drought intervention projects to utilise savings on the berm required for the Mzimkhulu supply system

Zululand DM

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- Vryheid Klipfontein Dam at 20%. Water only supplied for a few hours per day. Tanks provided in town, boreholes being drilled and existing boreholes re-commissioned. Investigating augmentation from nearby dam.
- Edumbe Drill boreholes at Mahloni and eDumbe, refurbish 5 standpipes at Mhlangeni
- Ulundi White Mfolozi is currently flowing. 7 boreholes being equipped for the dry months, erecting 8 static tanks and stand pipes and construct 2 tanker filling poitns
  - Nongoma Drill 3 boreholes and erect 5 static tanks, drill 2 boreholes at Khenana equip with diesel engines and install static tanks, equip exisiting boreholes and install water tanker filling poitns and static tanks at Lindizwe
- R12 million MIG reprioritised to support required interventions

- Ugu DM
  - Umzinto System recovered
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  - The Umtwalume supply system is a concern with low river flows
  - Awaiting approval of Variation Order for drought intervention projects to utilise savings on the berm required for the Mzimkhulu supply system
- **U**mzinyathi
  - Greytown water supplied for 5 hours a day since last year. Draw off Lake Methley stopped from Nov when lake reached 10% to Feb. 600kl draw off allowed due to boreholes not yielding sufficient water. Additional boreholes to be drilled from reprioritised MWIG funding
  - Awaiting approval of variation order for utilisation of savings on drought tankering project for additional interventions done in Greytown

- Uthungulu and City Of Mhalthuze
  - Melmoth

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- Water available and infrastructure modifications planned to address functionality issues
- Eshowe
  - Limited by infrastructure, water supplied for few hours a day
- Mhlathuze Supply system Goedertrouw Dam dropping and restrictions need to be enforced. Mhalthuze Water considering augmentation options – increasing the capacity of the Tugela emergency transfer
- llembe DM
  - Rivers are running and areas such as KwaDukuza which experienced problems currently have water. Plans are being developed to address anticipated shortages in the dry season
  - Restrictions and augmentation stabilizing the Hazelmere system
- Umgeni Supply System
  - Levels in the upper Mgeni System of concern and restrictions introduced in December, however domestic / commercial sector not showing savings. MEC held press briefing yesterday

## **DWS Support Per WSA**

SUB-PROJECTS	Budget	Amount Invoiced	Spent	% Spent
HARRY GWALA	R 23 312 279.20	R 13 119 167.69	R 11 188 838.81	48%
ILEMBE	R 39 393 279.20	R 35 551 147.48	R 33 129 439.84	84%
UMKHANYAKUDE	R 112 811 395.00	R 82 384 286.81	R 79 458 038.01	70%
UMZINYATHI	R 79 920 224.00	R 72 922 576.37	R 67 629 786.95	85%
UGU	R 31 913 122.20	R 29 337 046.04	R 28 445 676.28	89%
UTHUNGULU	R 46 038 213.80	R 21 278 438.22	R 21 278 438.22	46%
ZULULAND	R 39 693 000.00	R 30 659 937.42	R 29 322 324.43	74%
UMGUNGUNDLOVU	R 25 000 000.00	R 20 295 956.87	R 20 295 956.87	81%
UTHUKELA	R 23 503 197.60	R 31 348 063.52	R 13 386 837.60	57%
AMAJUBA	R 10 500 000.00	R 7 957 977.83	R 7 957 977.83	76%
UMGENI WATER	R 56 847 971.00	R 56 838 878.74	R 46 780 454.49	82%
PROGRAMME MANAGEMENT	R 4 388 868.09	R 1873964.69	R 1873964.69	43%
MHLATHUZE WATER	R 8 982 876.24	R 9812425.15	R 7 942 786.90	88%
Grand Total	R 502 304 426.33	R 413 379 866.83	R 368 690 520.92	73%



## **Tanker Purchase**

Additional rented tankers deployed 23 December

- 5 Umkhanykude DM
- 3 Zululand DM, Abaqulisi LM

WSA	Number	Budget	Tankers	Drivers	Water Delivered	Average hh
			Delivered		to date	served per
						month
Ugu DM	8	11 899 411	8	10	25 656 000	486
Uthukela DM	9	13 386 838	9	9	42 209 000	878
<mark>Umkhanyak</mark> ude DM	15	22 311 396	15	19	49 336 000	544
Uthungulu DM	7	10 411 985	7	5	16 752 000	463
Ilembe DM	3	4 462 279	3	3	14 509 000	486
Harry Gwala	3	4 462 279	3	3	15 552 000	375
1 West		66 934 188	45	49	164 014 000	3 233

#### Water tank installations







WSA	Number of	Budget	Tanks	Storage	Progress
	Tanks		installed	(I)	
Ugu DM	144	2 160 000	114	720 000	Complete - 30 tanks
					temporarily utilised in the
The second se					Mzimkhulu emergency
and the second se					situation
Umkhanyakude DM	81	2 000 000	95	405 000	Complete
llembe DM	350	4 724 000	350	1 750 000	Complete
Harry Gwala	30	400 000	30	150 000	Complete
And the second se	605	9 284 000	589		

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### **Refurbishment and Upgrades**

PROJECTS		APPROVED		AMOUNT		ent	% Spent
	BU	DGET	IN	VOICED			
Refurbishment & Upgrade	R	168 484 511.00	R	122 877 328.00	R	98 012 546.16	58%
HARRY GWALA	R	9 800 000.00	R	1 522 102.41	R	1 522 102.41	16%
ILEMBE	R	3 199 000.00	R	1 037 713.40	R	-	0%
UGU	R	8 340 000.00	R	8 272 604.04	R	8 272 604.04	99%
UMGUNGUNDLOVU	R	25 000 000.00	R	25 000 000.12	R	20 295 956.87	81%
UMKHANYAKUDE	R	51 746 827.00	R	42 781 592.89	R	28 749 814.72	56%
UMZINYATHI	R	24 845 000.00	R	27 419 296.09	R	23 487 113.00	95%
<b>UTHUKE</b> LA	R	1 162 800.00	R	1 159 063.93	R	-	0%
UTHUNGULU	R	24 690 884.00			R	-	0%
ZULULAND	R	19 700 000.00	R	15 684 955.12	R	15 684 955.12	80%

- Uthungulu allocation to now be funded from unspent MWIG allocation
- Umkhanyakude contracts awarded late
- Projects not completed by mid March will be funded from WSAs grants

### **Spring protection**

Zululand DM	Planned	Budget	Complete	Under construction
Ugu DM	100	2 500 000	80	80 Springs complete
Uthukela DM	16	1 395 360		Materials procured for the selected springs to be done in-house and current in a processes of appointing a service provider to implement in order to fasttrack the progress on site
Zululand DM	18	4 320 000	To be complete by end Jan and End Feb	The majority of the springs will be finished by end of January 2016. And Makhwela, Obivane and Tholakele will be finished by Mid February 2016. Planned numbers of households to be served: 206 Planned number of jobs to be created: 88
Ilembe DM	9	837 000		JOAT carrying out Spring protection at the following areas: Ndwedwe - Shaka, Mayekeni, Edamini, Kwadeda, Enkivane, Kwadukuza - Ashville, Maphumulo - Mambedweni, Nombokojwana, Ntombiyehlulunina, Esiqhoqhweni. This works is undertaken as part of the WCDM contract by JOAT
Harry Gwala	19	5 100 000	90% complete	15 spring protection projects are currently underway. 14 of these schemes are more than 95% complete. The remainng Ohlabeni Spring under Ingwe is due to be completed at the end of January 2016. Communities are already benefiting from these schemes 90 % completion is the overall progress.
	162	14 152 360	80	

• Ilembe, Uthukela and Zululand have shown their commitments

#### **Boreholes**





WSA	Planned	Approved Budget	Sited	Drilled	Equipped	Repaired
Uthukela DM	21	7 558 200	95	12		86
Zululand DM	77	11 550 000	51	51	20	
Umkhanyakude DM	70	17 101 900	70	70		
llembe DM	9	2 250 000	4	4		
Harry Gwala DM	12	3 550 000	12	12	12	
	189	42 010 100	232	149	32	86

- Uthukela pumps on order
- Zululand equipping commenced 25 November
- Harry Gwala busy with snagging
- Umkhanyakude and llembe equipping to be complete by end February – awaiting end feb reports

## What to expect



Based on the below average forecast rainfall



- Rivers may recover for a month or two but likely to be very low by mid winter
- High probability of starting winter with very low levels in the dams

Should be planning how we are going to stretch the available resources for the next 10 months

Without successful restrictions further systems will fail

Larger systems are unlikely to recover in 1 season

# Thank You





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