

DIRECTORATE  
ENGINEERING SERVICES

Water and Sanitation

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Date: 13 October 2016

**Cllr O Mlamleli**  
**Executive Mayor**  
**Mangaung Metropolitan Municipality**

Honourable Council Mayor

Council Item

### **CALEDON MODDER SUB-SYSTEM: IMPOSITION OF 30% WATER RESTRICTIONS AND INCREASE OF WATER USE RESTRICTION LEVEL FROM LEVEL 2 TO LEVEL 3**

#### **1. Purpose**

- 1.1 To inform Council about 30% water restrictions imposed by National Department of Water and Sanitation and to request that these water restrictions be approved and water consumption be monitored from 01 May 2016.
- 1.2 To inform Council of about the water use restriction level which has been recommended by Regional Department of Water and Sanitation (RDWS) to be increased from level 2 to level 3 and to request that this recommendation be approved and implemented.
- 1.3 To request Council to approve the proposed social and technical interventions and its associated budget aimed at reducing water consumption.
- 1.4 To request Council to increase water tariffs levels should MMM not be able to save sufficient water.

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AT THE HEART OF IT ALL

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## 2. Background

The Mangaung Metropolitan Municipality (MMM) is a Water Services Authority (WSA) that provides water to its residents in Bloemfontein, Botshabelo, Thaba Nchu, Dewetsdorp, Wepener, Van Stadensrus and Soutpan. MMM has a water services providers named Bloemwater (BW) and Orange-Riet Water User Association. BW supplies water to Bloemfontein, Botshabelo, Thaba Nchu, Dewetsdorp and Wepener. Orange-Riet Water User Association supplies water to Soutpan.

The state of dams supplying these areas are of such a nature that the water security to MMM is at risk. The National Department of Water and Sanitation (NDWS) during the annual operating analysis found that MMM should save 40% of its water consumption. Therefore, it has imposed 30% water restriction to MMM. The remaining 10% will be from the water that will be released from the Lesotho Highlands Water Project (LHWP). A volume of 50 million m<sup>3</sup> need to be released from the LHWP into the Caledon River for abstraction at Tienfontein pump station and the release should commence in June 2016 and not later than July 2016. MMM is required to meet 30% water saving (i.e. Bloemfontein, Botshabelo and Thaba Nchu-170 mega litres per day, Dewetsdorp-1.96 mega litres per day, and Wepener- 0.017 million m<sup>3</sup> per day).

The regional department of water and sanitation (RDWS) recommended that MMM should increase its water use restriction level from level 2 to level 3. Krugersdrift Dam supplies water to Soutpan, the Dam is managed by Orange-Riet Water User Association and is currently at 22.7%. The water in the dam is sufficient to supply Soutpan. Krugersdrift is not included in the Caledon-Modder Subsystem water restriction. The restriction is only for users on the Modder River upstream of Masselspoort. Krugersdrift Dam is downstream of Masselspoort. Mook Dam supplies water to Van Stadensrus, the dam does not impact on the Caledon-Modder System.

## 3. Root cause of the problem

- Drought which was experienced in the region of the Mangaung Metropolitan Municipality (MMM) and some parts of the country.
- MMM is experiencing infrastructural challenges (old infrastructure which need to be refurbished). This triggers water losses which further impose severe strain on availability of water resources. Under these challenges, the Water & Sanitation sub-directorate is continuously implementing water conservation and demand management programme to curb water losses.
- Consumers not utilising water in an effective and efficient manner.

#### **4. Proposed social and technical interventions**

MMM is required to meet 30% water saving (i.e. Bloemfontein, Botshabelo and Thaba Nchu-170 mega litres per day, Dewetsdorp- 1.96 mega litres per day, and Wepener- 0.017 million m3 per day). The following technical and social interventions are proposed;

##### **4.1 Reduction of pressure to achieve 15m at critical points from 22h00 until 06h00 in all existing PRVs**

- Reset Control in four Automatic Valve Control (i2O) for time control
- Rehabilitation of six Automatic Valve Control (i2O) to set for time control
- Installation of twelve Dual set Pressure Control Board

##### **4.2 Installation of new PRVs and reduction of pressure to achieve 15m at critical points from 22h00 until 06h00**

- Installation of ten new PRVs with Dual set Pressure Control Board
- Installation of PRV station with two valves in parallel on a trunk main from Longridge reservoir with automatic valve control (i20) on time modulation.

##### **4.3 Reduction of Reservoir Levels and Pumping System in 2 m**

- Installation of twenty three new Float Control System in all Reservoirs in Bloemfontein positioning them 2 meters below the level of the existing control.

##### **4.4 Continuous leak detection and repair in the entire pipe reticulation**

- Leak detection survey in all existing pipeline reticulation in Bloemfontein, Botshabelo and Thaba Nchu and repair of leaks found.

##### **4.5 Installation of water restrictors in all domestic properties in Bloemfontein, Botshabelo, and Thaba Nchu**

- Installation of one hundred thousand water restrictors in all domestic meters in Bloemfontein, Botshabelo and Thaba Nchu. The size of the orifice will be determined by the pressure loss on site.

##### **4.6 Consumer Awareness**

- Intensify the program of Water Conservation via media, radio, press conferences, street poles advertising and school awareness etc.

#### 4.7 Financial Implications

Work Package / Activities	Units	Planned	CAPEX	OPEX
Reduction of Pressure to achieve 15m at Critical Points from 22h00 until 06h00 in all exiting PRVs	No	22	R 454 351.10	
Installation of New PRVs and Reduction of Pressure to achieve 15m at Critical Points from 22h00 until 06h00	No	11	R 791 750.00	R 8 285 097.88
Reduction of Reservoir Levels and Pumps in 2 m	No	23	R 552 000.00	
Continuous Leak Detection and repair (Based on finding 3 Trickle Leaks averaging 5.5 L/h per Km Surveyed)	Km	17290		R 3 600 000.00
Installation of Water Restrictors in all domestic meters in Bloemfontein, Botshabelo and Thaba Nchu (expecting 8% Reduction)	No	100 014	R 1 100 154.00	R 8 001 120.00
Consumer Awareness (expecting 0.5% Reduction of total SIV)	Campaign	sum		R 4 500 000.00
	Total		R 2 898 255.10	R 24 386 217.88
			<b>Budget Total:</b>	<b>R 27 284 472.97</b>

#### 4.8 Expected water savings from social and technical interventions

The expected water savings from social and technical interventions will be 21 mega litres per day.

Work Package / Activities	Units	Planned	Target Volume MLD Saving
Reduction of Pressure to achieve 15m at Critical Points from 22h00 until 06h00 in all exiting PRVs	No	22	4.14
Installation of New PRVs and Reduction of Pressure to achieve 15m at Critical Points from 22h00 until 06h00	No	11	5.88
Reduction of Reservoir Levels and Pumps in 2 m	No	23	4.44
Continuous Leak Detection and repair (Based on finding 3 Trickle Leaks averaging 5.5 L/h per Km Surveyed)	Km	17 290	3.2
Installation of water restriction in all domestic meters in Bloemfontein, Botshabelo and Thaba Nchu (expecting 8% Reduction)	No	100 014	3.33
Consumer Awareness (expecting 0.5% Reduction of total SIV)	Campaign	24	0.09
	<b>Total</b>		<b>21.08</b>

In spite of the aggressiveness of the proposed interventions stated above, it is clear that MMM will still experience a **shortfall of 2.856 million m<sup>3</sup>**. Therefore, participation and cooperation of all water consumers and stakeholders is critical to the success of this initiative.

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## **5. Bloemwater's measures to mitigate against the risk of water security**

As it is clear that Groothoek dam which supplies water to certain areas of Thaba Nchu (rural and peri-urban) is currently at the level of 10.8%. Bloemwater is taking necessary steps to drill and equip boreholes to supply ground water to areas which are supplied by Groothoek dam and other affected areas. With regards to the Novo transfer scheme, the National Department of Water and Sanitation (NDWS) has installed two pumps at Tienfontein pump station to increase the pumping capacity. The challenge of existing power lines' capacity at Tienfontein and Novo pump stations need to be addressed as a matter of urgency to stabilise Knellpoort dam and the entire system.

## **6. Long term bulk water supply initiated by National Department of Water and Sanitation (NDWS)**

The National Department of Water and Sanitation (NDWS) completed the reconciliation strategy for the greater Bloemfontein water supply system and is updating the strategy on a yearly basis.

## **7. Conclusion**

- DWS has imposed 30% water restrictions to be implemented by MMM. MMM has to meet this target on a monthly basis.
- The RDWS recommended that MMM should increase its water use restriction level from level 2 to level 3.
- The state of water infrastructure in the area of MMM triggers water losses and impose strain on water resource.
- The proposed social and technical interventions actions aimed at reducing water consumption should be embraced.
- MMM has to accelerate Water Conservation and Demand Managements activities.

## **8. Recommendation**

It is recommended that;

8.1 The 30% water restrictions imposed by RDWS be approved by Council for implementation.

8.2 The water use restriction level as recommended by RDWS be increased from level 2 to level 3 be approved.

8.3 The 2016/2017 water tariffs as approved by Council be used to determine the applicable tariff for the consumption of water.

8.4 Tariff level 1 be applied to charge water consumption.

8.5 Tariffs be increased from water tariff Level 1 to Level 2 should MMM not be able to achieve the water savings target (30%). The monitoring of water consumption for the 30% savings be commenced from May 2016.

8.6 Tariffs be increased from water tariff Level 2 to Level 3 should MMM not be able to achieve the water savings target (30%). The monitoring of water consumption for the 30% savings be commenced from May 2016.


8.7 The proposed social and technical interventions as well as financial implications as be approved.

8.8 Funds for implementation of sub-item 8.7 be made available through the 2016/17 financial year's budget.

8.9 Law enforcement's human capital capacity and number of vehicles used to monitor water restrictions be increased as a matter of urgency.

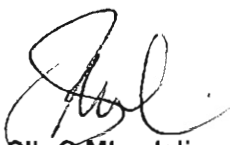
8.10 Water consumers be informed by Communications unit of the new water restrictions (30%) and water restriction level which has been increased to level 3.

Submitted by;

  
**L X Ntoyi**  
**HOD: Engineering Services**

  
**T Mea**  
**Acting City Manager**  
Recommended//Not recommended

20/10/2016

  
**G M Mlamleli**  
**Executive Mayor**  
Approved/Not approved

20/10/2016

## DEPARTMENT OF WATER AND SANITATION

NO. 959

26 AUGUST 2016

**CALEDON MODDER SUBSYSTEM - LIMITING THE USE OF WATER IN TERMS OF ITEM 6 OF SCHEDULE 3 OF THE NATIONAL WATER ACT OF 1998 FOR URBAN AND IRRIGATION PURPOSES FROM THE DAMS WITHIN THE CALEDON-MODDER SUBSYSTEM**

I, **Sifiso Mkhize**, in my capacity as **Director General of the Department of Water and Sanitation**, on reasonable grounds believe that a potential water shortage exists in the Caledon-Modder subsystem. This is due to insufficient rains and infrastructural constraint that is limiting transfer capacity from the Caledon to the Modder sub-system.

In terms of Item 6(1) of Schedule 3 to the Act, the Minister of Water and Sanitation may limit the use of water if on reasonable grounds the Minister believes that a water shortage exists within the area concerned. This power has been delegated to me in terms of section 63 (1) (b) of the Act.

Therefore in my capacity as the **Director General of the Department of Water and Sanitation**, I hereby under delegated authority in terms of item 6 (1) of Schedule 3 to the Act limit the taking of water from the Caledon-Modder subsystem by all users as follows:

- a) **30% restriction on water use for Domestic and Industrial supply to the Mangaung Metropolitan Supply area (including other small towns supplied from Caledon-Modder subsystem), and the towns of Ladybrand within the Mantsopa Municipality and Ficksburg within the Setsoto Municipality as well as Fouriesburg within the Dihlabeng Municipality.**
- b) **75% restrictions on the use of water for Irrigation purposes in the Modder River sub-catchment upstream of Maselspoort Dam.**
- c) **75% restrictions on the use of water for Irrigation purposes in the Caledon and Little Caledon River sub-catchment upstream of Welbedacht Dam.**
- d) **100% restriction on the use of water for Irrigation purposes in the Caledon and Little Caledon River sub-catchment upstream of Welbedacht Dam when water is released from the Lesotho Highlands Water Project.**

The limitations apply from the date of this notice until further notice.

In exercising the powers, I have given preference to the maintenance of the Reserve, treated all water users on a basis that is fair and reasonable, considered the actual extent of the water shortage, the likely effects of the shortage on the water users, the strategic importance of any water use and any water rationing or water use limitations by a water services institution having jurisdiction in the area concerned under the Water Services Act 108 of 1997.

Placing limitation on the taking of water use as set out in this notice is an administrative action affecting the rights of the public as contemplated in section 4 of the Promotion of Administrative Justice Act 3 of 2000 (PAJA). After I have taken into consideration all relevant factors, including those referred in section 4 (4) (b) PAJA, I have decided that it is reasonable and justifiable in the circumstances to depart from the requirements referred to in section 4

(1) (a) to (e), (2) and (3) of PAJA and instituted this limitation without allowing the water users affected and other role players to comment on the matter before I institute the limitation.

This notice overrides any other previous authorization on water restrictions issued by the Department relating to this area.

  
ACTING DIRECTOR-GENERAL:  
DATE: 21/8/2011