



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Cape Town Water Outlook 2018

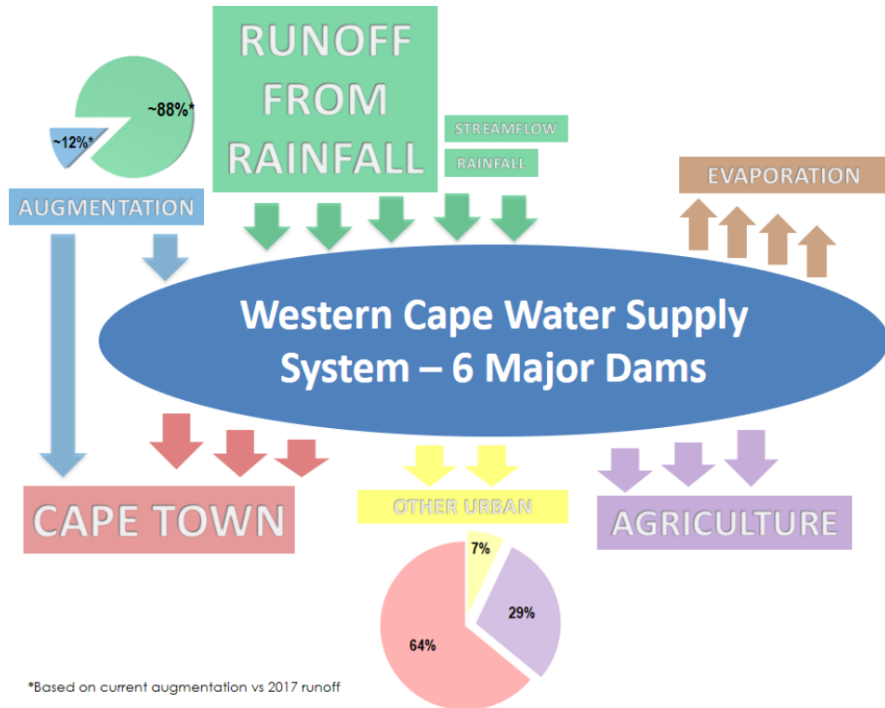
Updated 15 February 2018

Department of Water and Sanitation

City of Cape Town

Making progress possible. **Together.**

Cape Town's water is part of an integrated system

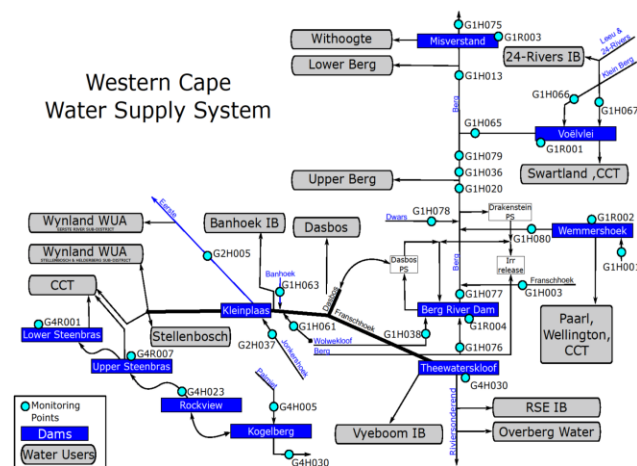


*Based on current augmentation vs 2017 runoff

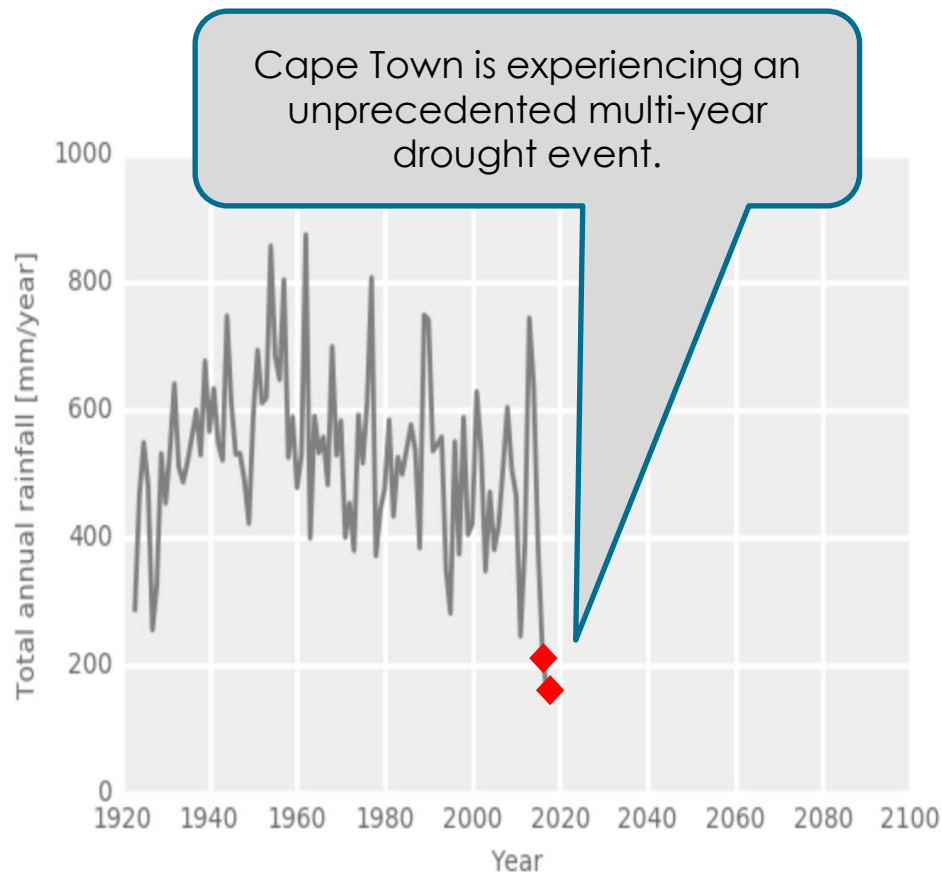
Cape Town gets its water from a system of dams that supply agriculture and other urban areas. The current system is heavily dependent on rainfall.

This complex system is managed by the national Department of Water and Sanitation.

About a third of the water in this system is used by agriculture and 7% by other urban areas (smaller towns).



Why is there a shortage of water in Cape Town?

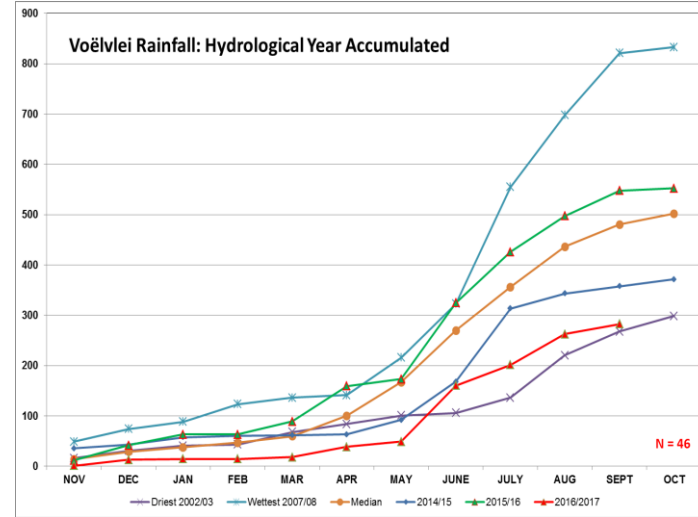
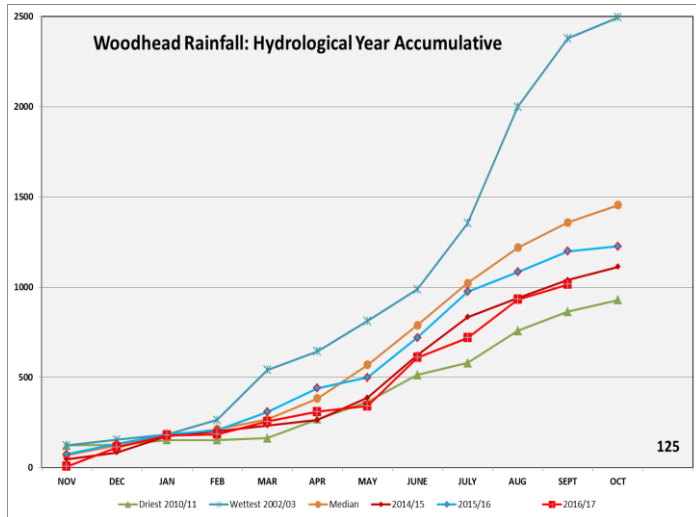
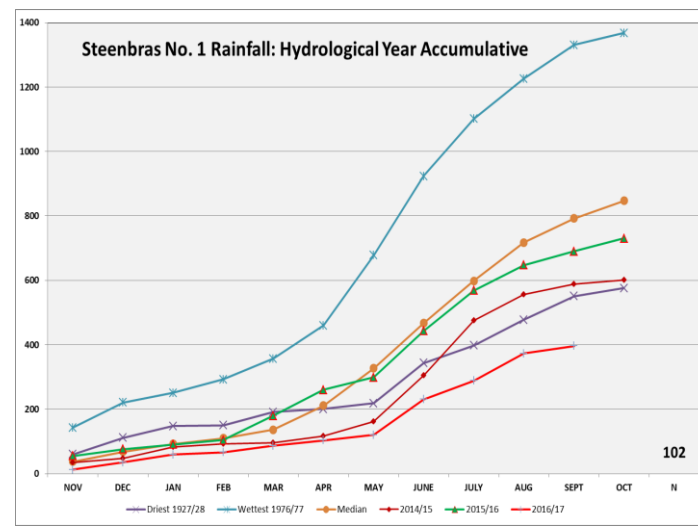
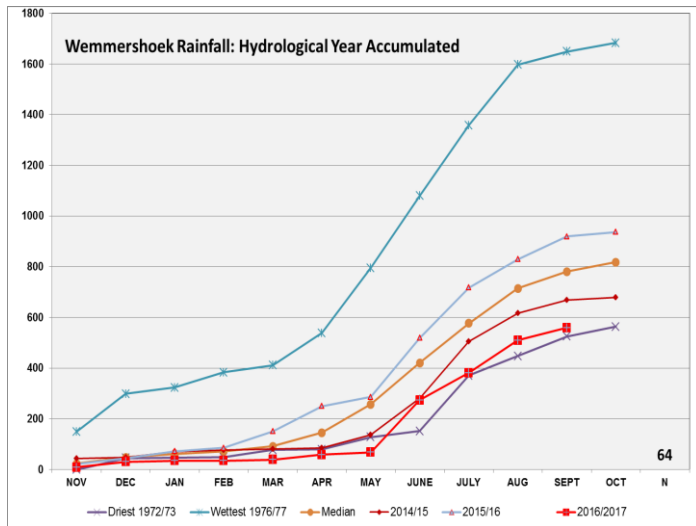


The National Department of Water and Sanitation is responsible for planning and implementing water resources schemes to meet water demand for cities, industries, mining and agriculture.

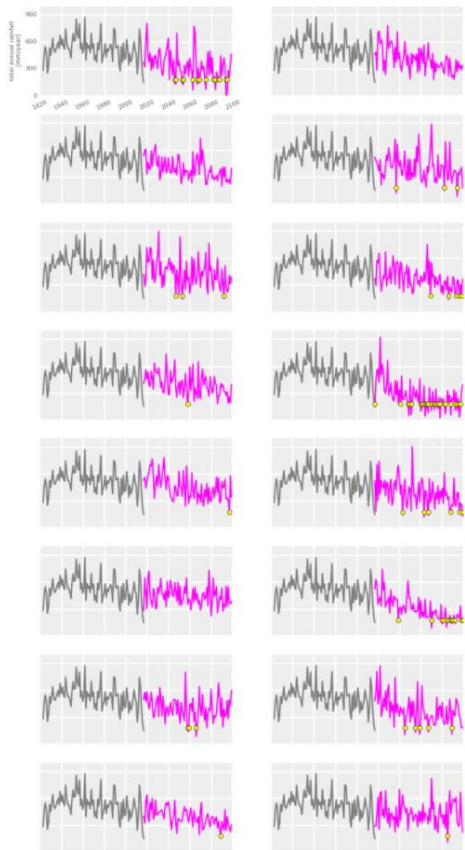
The Department plans at a 1 in 50 year level of assurance. This means that during droughts with a severity of 1:50 years or more, restrictions need to be imposed to reduce demand.

The current drought is much more severe than a 1 in 50 drought event. *The best estimate of the return interval of the meteorological drought in the region of WCWSS dams is 311 years, with 90% confidence that it actually falls between 105 and 1280 years.*

The next augmentation scheme for Cape Town was planned for 2022/3 and is being accelerated by the national Department. This scheme (augmentation of Voelvlei Dam) is unlikely to be ready before 2021.



Will it rain again? Yes.



Historical (grey) and predicted (pink) annual rainfall for Cape Town, according to 16 global climate models.

Yellow dots indicate rainfall incidents equal to or lower than 2017 rainfall.

Rainfall in the Cape Town area is variable. Wetter and drier years are common.

16 global climate models predict an overall decline in rainfall for Cape Town in the future with more dry years and fewer wetter years.

A scenario in which it does not rain the future or in which it only rains at 2017 levels is unrealistic.

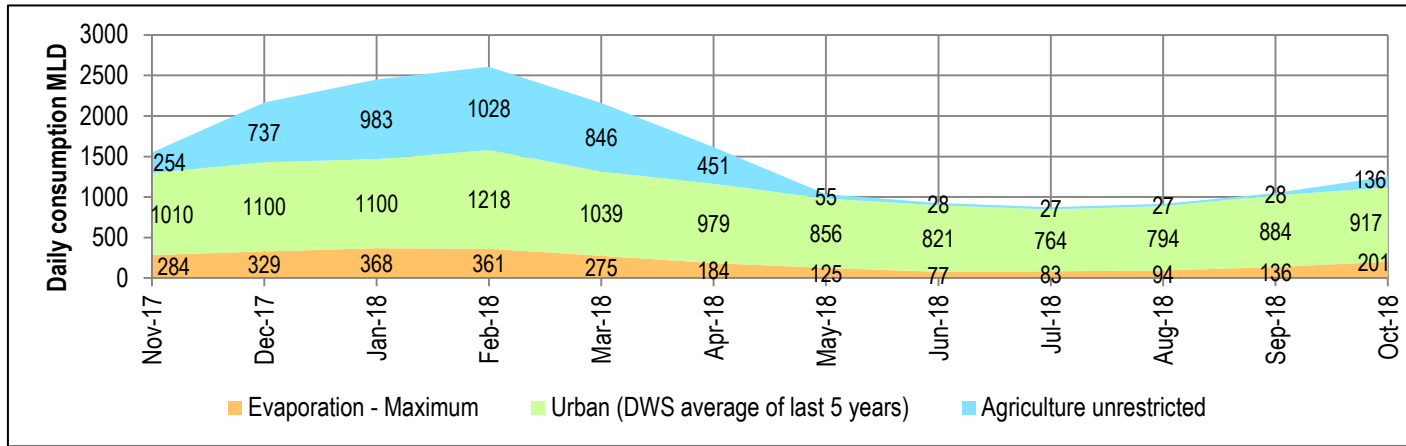
Sources:

Facts are few, opinions plenty... on drought severity again (January 2018)

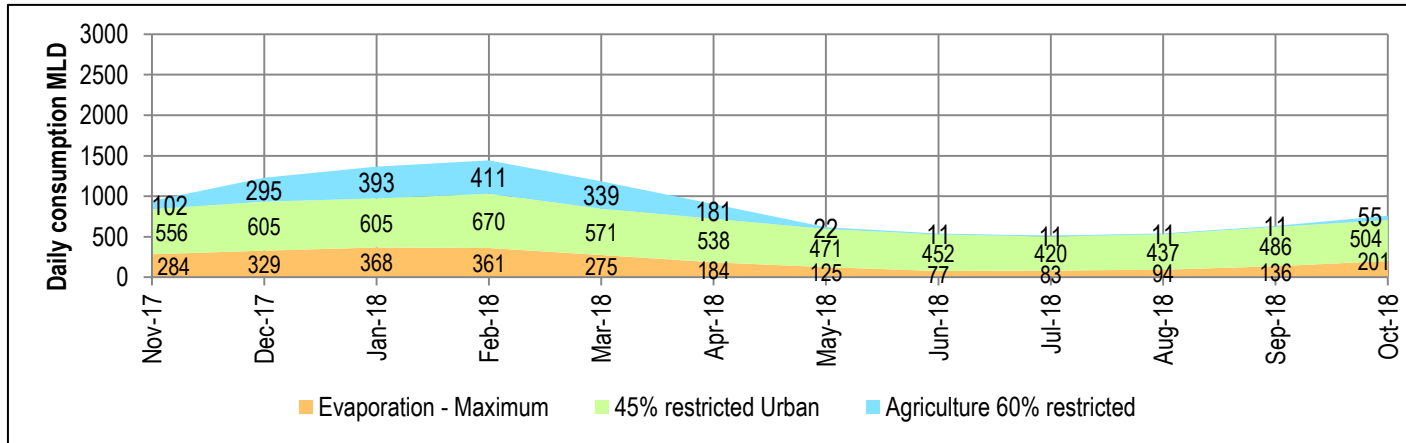
Is Cape Town's drought the new normal? (1 November 2017)

Why Cape Town's drought was so hard to predict (19 October 2017)

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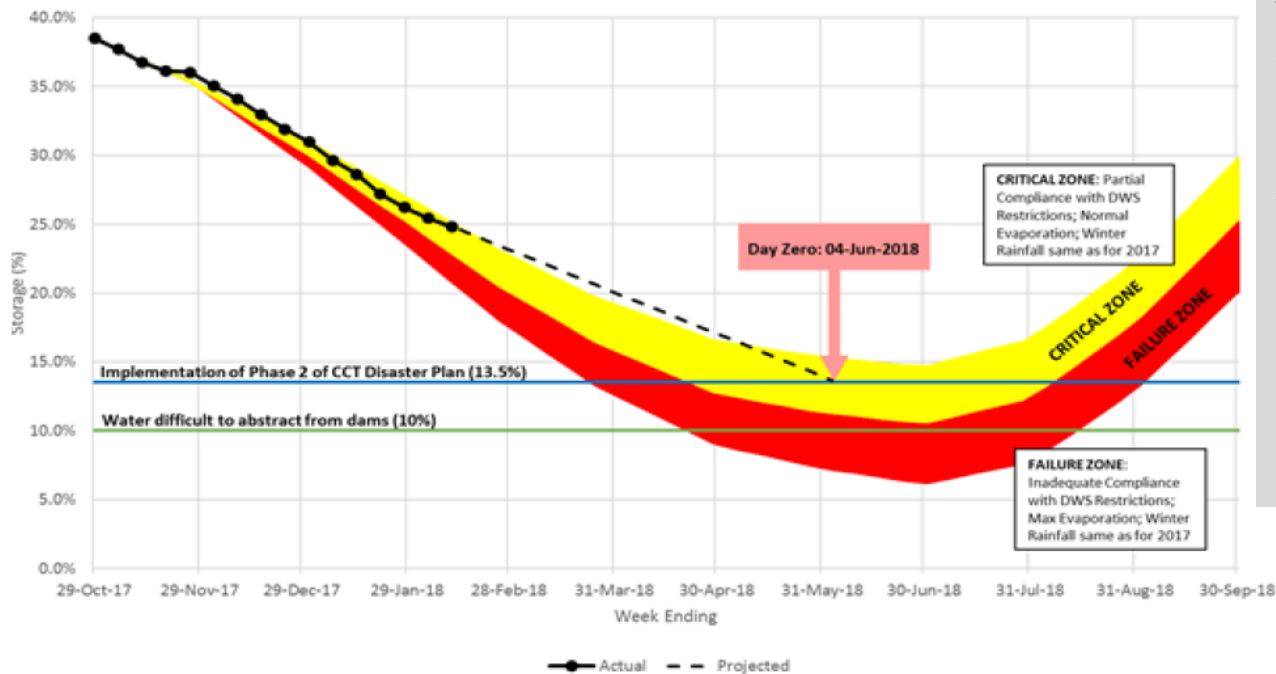


RESTRICT TO



Cape Town will get through the drought IF restrictions on dam withdrawals are enforced

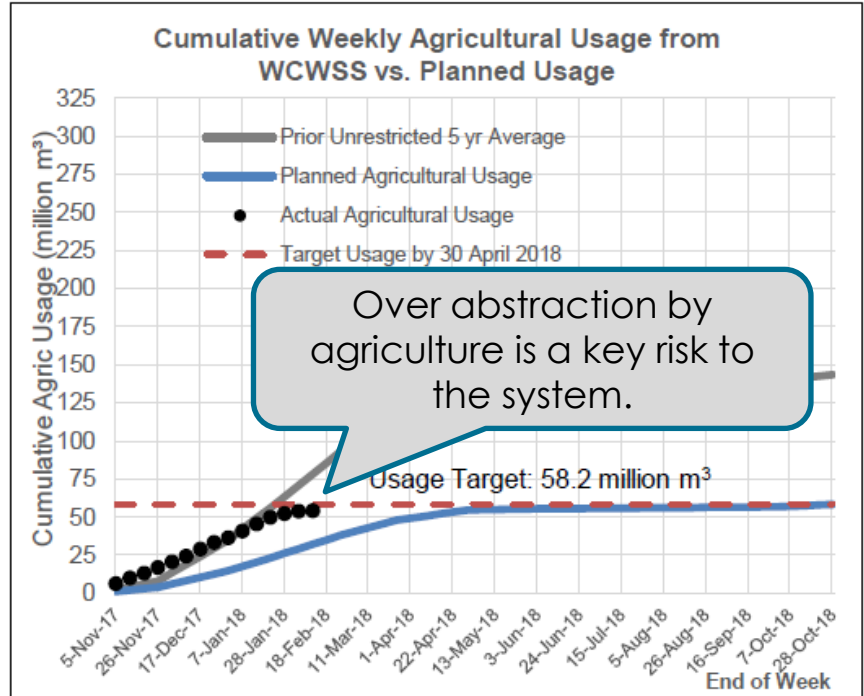
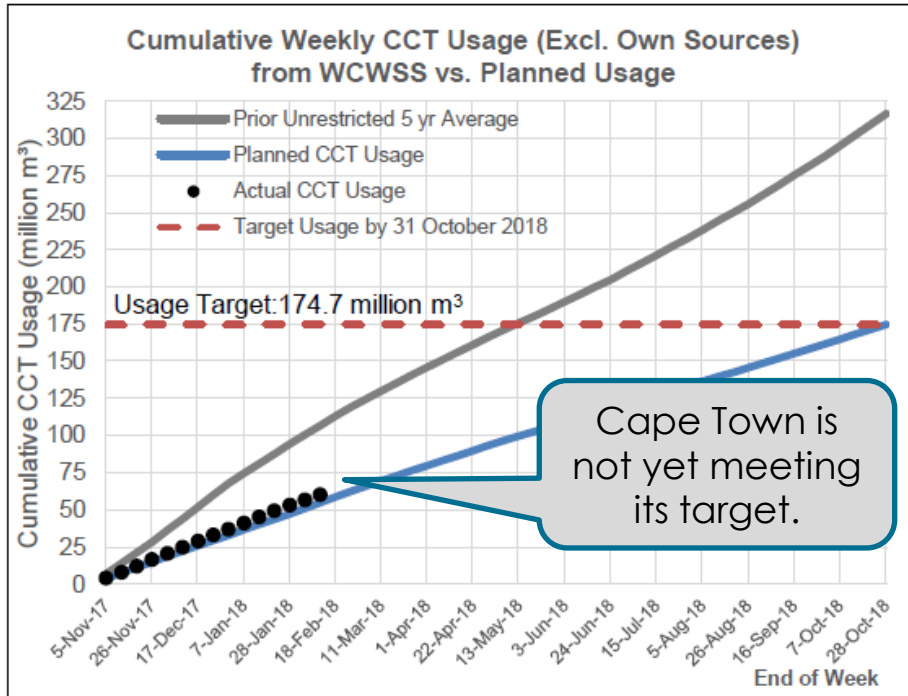
Western Cape Water Supply System (WCWSS) Weekly Dam Drawdown Tracker



The level of water in the dams supplying Cape Town will not drop below 10% this year if restrictions are adhered to and assuming another low rainfall year.

Monitoring dam levels (inflow, evaporation and withdrawals) and managing dam withdrawals is a key to maintaining the integrity of the system and getting through the drought.

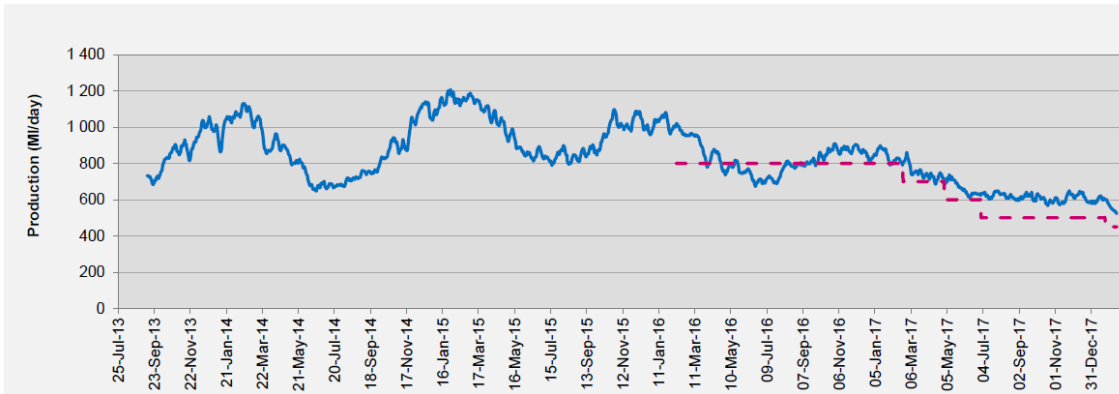
Both the City and agriculture MUST adhere to the restrictions imposed on the system.



For Cape Town, this means that demand must now be managed down to below 450 MI/day.

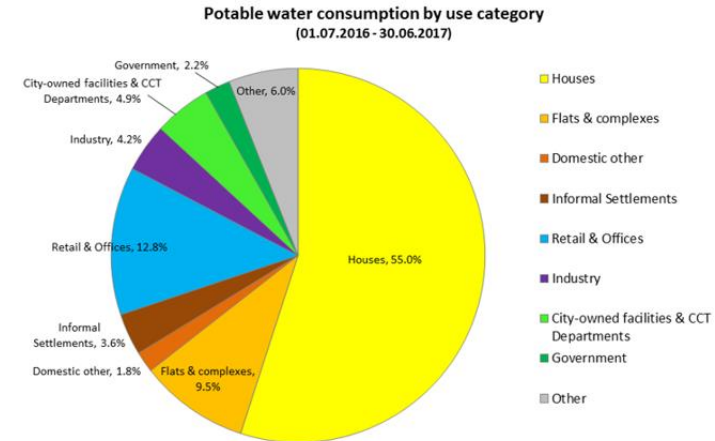
While Cape Town has significantly reduced its demand (measured here as production from the treatment works), from a peak of 1200 MI/day in 2015 down to below 600 MI/day, a further reduction in demand is needed to below 450 MI/day immediately due to not meeting the 500 MI/day target.

CCT Daily Average Water Production (7 Day Avg)

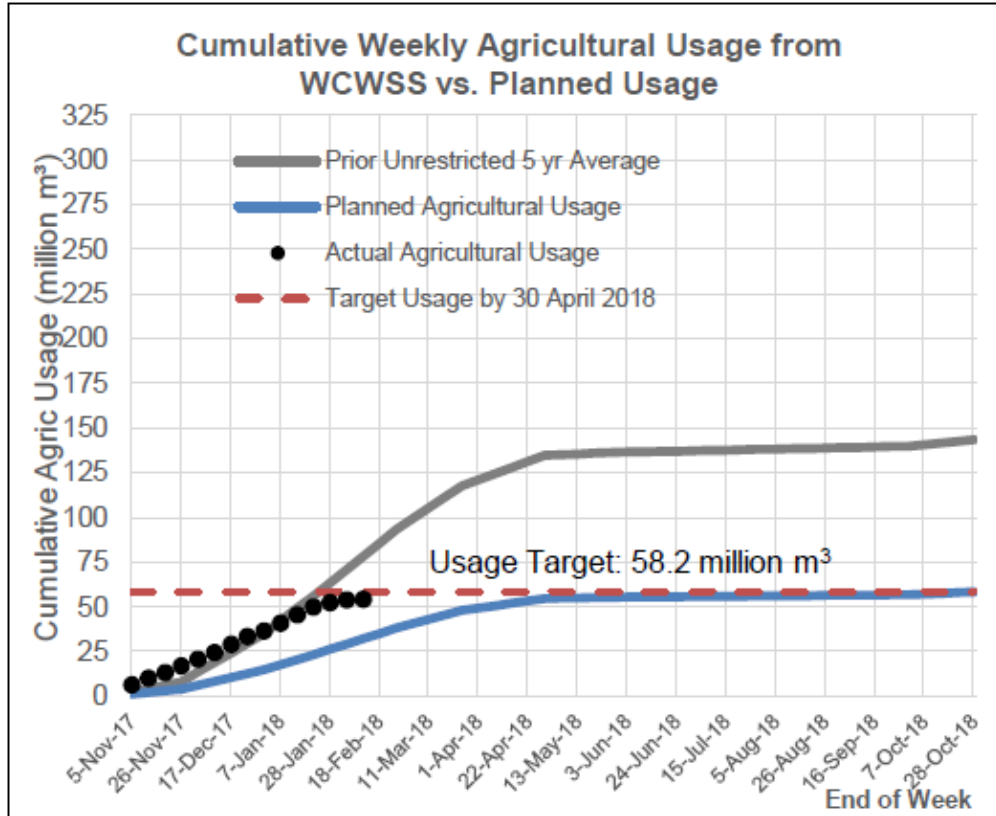


Further measures are being put in place to reduce demand, including:

- punitive drought tariffs
- demand management devices & flow restrictors
- more aggressive pressure management



For agriculture, this means that releases from the dams will need to be curtailed.



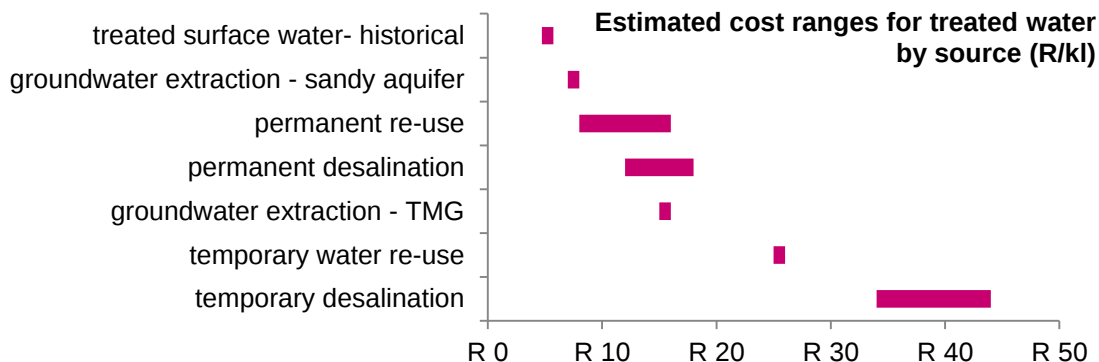
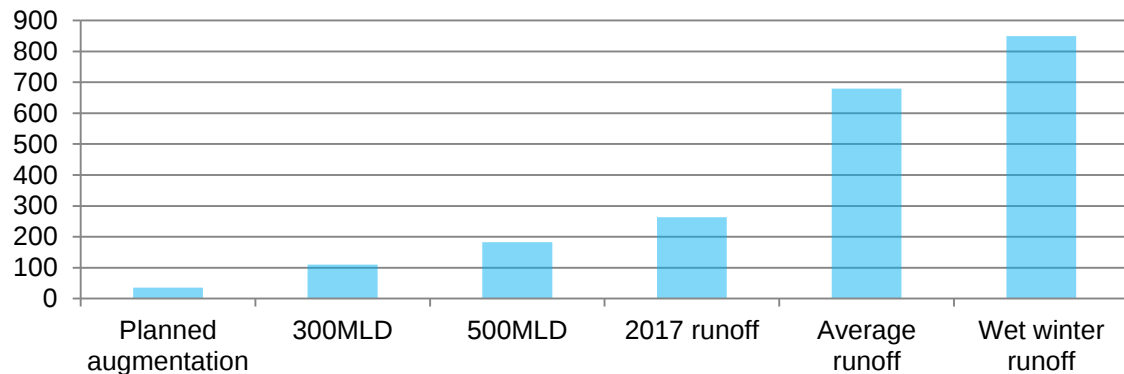
By 31 January, agriculture had already used 90% out of its total allocation for the year of 60 million kl.

It is imperative that agricultural use is restricted to the allocated amount.

This requires urgent attention on the part of the Department of Water and Sanitation to enforce the restrictions by managing, reducing and cutting releases from the dams.

What about new water supplies?

Equivalent annual inflow (millions of m³)

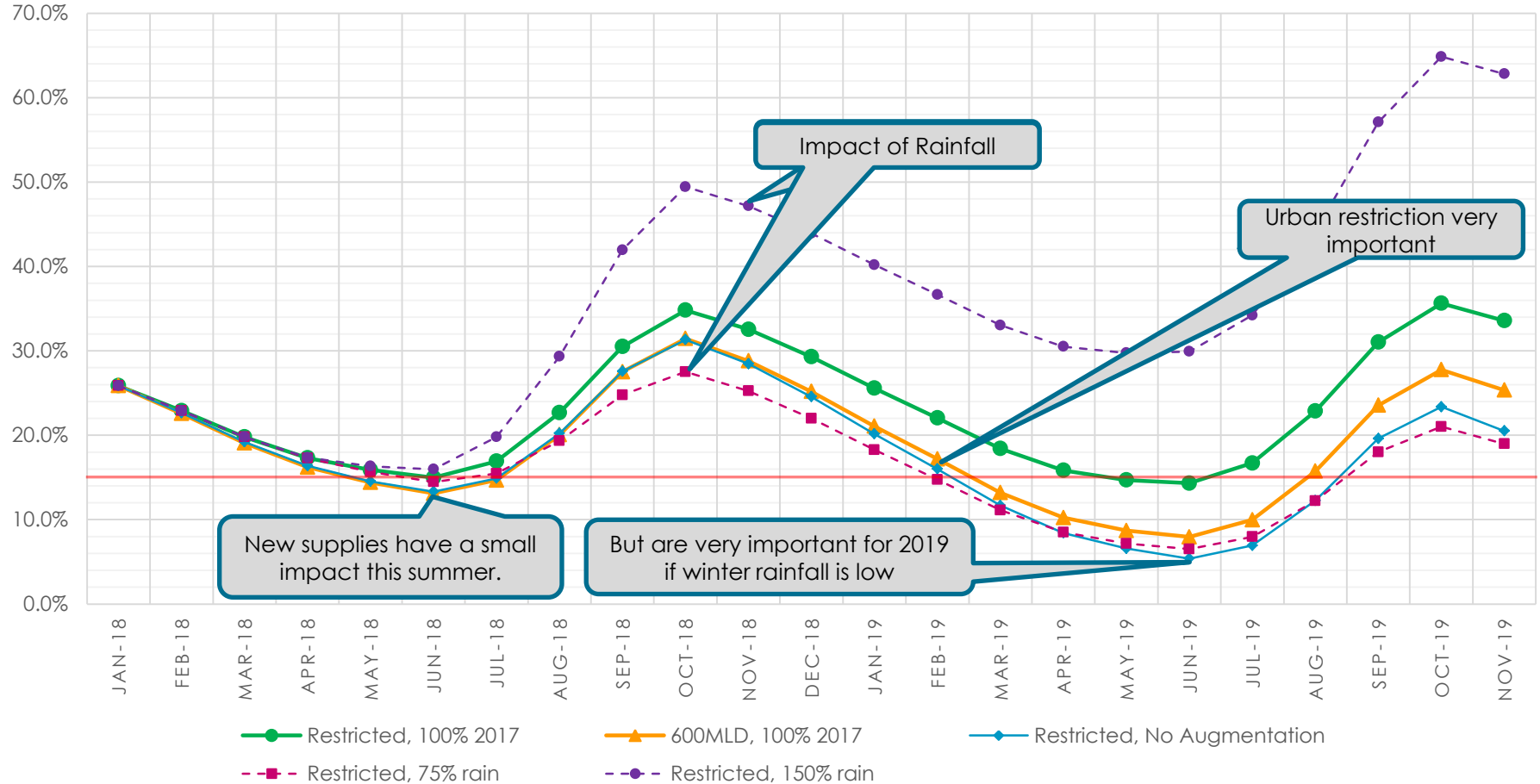


AUGMENTATION

Augmentation schemes are a far more expensive source of water than runoff from rainfall. The volume of runoff cannot be easily augmented in short time periods and is dependent on rainfall patterns. Under poor rainfall conditions like 2017 we would require augmentation of ~720MLD to match the volume of runoff. Despite all augmentation efforts, the supply scheme is vulnerable to poor rainfall.

As can be seen below the cost per kl of water from other sources vary considerably. The cost of bulk water, waste water and reticulation is common so the costs below can be compared to the cost of runoff which is **R5.20/kl** vs temporary desalination at >R40/kl.

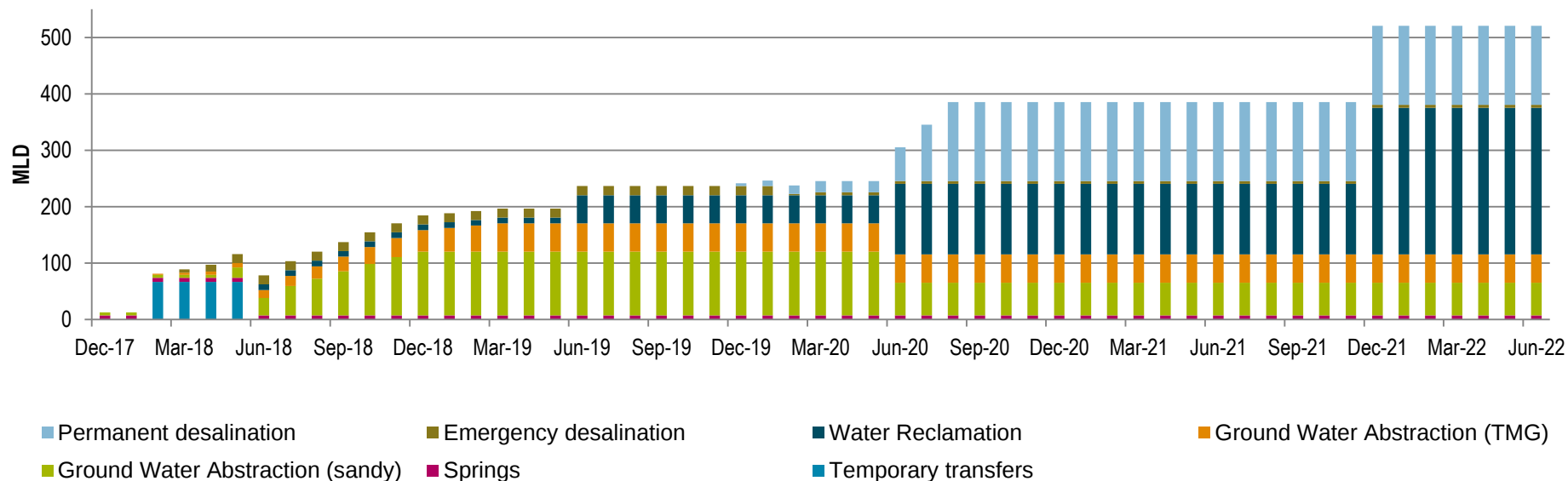
New water supplies are important for water security going forward but these will have little impact this summer.



Augmentation programme

Cape Town is actively pursuing opportunities to increase the supply of water available to Cape Town including ground water, reuse, desalination (temporary and permanent), swaps/purchase of water from agriculture and other (typically) small sources such as springs.

(Program subject to change as new information comes to light and due to contingencies)



Financial implications of the drought

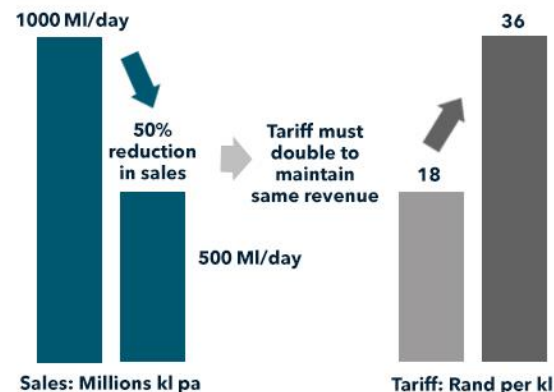
The drought affects the city's finances in two primary ways:

- 1. Reduced sales means that city income is reduced** because tariffs are volume based.
- 2. Additional expenditure** is required to increase availability of water. New sources of water are more costly than the water obtained from the existing dams. This increases both capital and operating costs.

	Existing Restriction Tariffs (Water)					
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Step 1 [0-6kl]	4.00	4.00	4.00	4.00	18.75	26.25
Step 2 [6-10.5kl]	15.57	15.57	15.57	15.57	26.25	46.00
Step 3 [10.5-20kl]	18.22	20.04	21.87	22.78	46.00	100.00
Step 4 [20-35kl]	26.99	32.65	36.43	38.32	100.00	300.00
Step 5 [35-50kl]	33.33	45.00	61.66	99.99	300.00	800.00
Step 6 [+50kl]	43.97	97.71	209.29	265.12	800.00	800.00
Commercial	19.63	21.59	23.55	24.54	37.50	50.00

Impact of reduced sales on tariff

(without any increase in expenses - this is illustrative)



Primary goals in responding to challenges:

- 1. Recover full costs** including cost of water resilience program and adequate depreciation. It is a legal requirement to balance budget
- 2. Retain affordability** for poor people and improve payment levels
- 3. Increase resilience** of tariff to shocks (greater revenue stability in face of drought conditions which the city is currently facing and is likely to face again in the future)
- 4. Tariff reflects value of water and supports sustainability** (including adequate cash-backed depreciation to replace assets)

Summary

1. Day zero **CAN** be avoided by reducing demand
2. For City of Cape Town, move to level 6B restrictions and introduce punitive drought tariffs (level 6) from 1 February to comply with NDWS restriction
 - Continue all demand management initiatives
 - Physically restrict demand to Cape Town to meet restriction target of 450 MI/day
3. Influence agricultural restrictions to stay within allocation as agreed to in line with NDWS restriction
4. Improve communications and have consistent messaging across government
5. Engage stakeholders into active citizenry – we're part of a bigger system, the City can't do it alone, we're in this together!



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Thank You

Making progress possible. Together.