



**CITY OF CAPE TOWN**  
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**THINK WATER**  
THINK 87¢ A DAY

Water Resilience Programme  
Briefing to PC Water & Sanitation

25 October 2017

Making progress possible. **Together.**


### HIGH LEVEL STRATEGY: WAY FORWARD

City of Cape Town

- Bring online up to 500Ml/day of new non-surface water
- Provide tools and messaging to assist citizens and sectors to reduce water use
- Prepare contingency measures for worst case scenario

Citizens and Sectors

- Doing everything possible to reduce water consumption collectively to 500Ml/day
- Advocate for visitors to our city and fellow citizens / sectors to join the saving efforts
- Prepare contingency measures for worst case scenario



State of rainfall and dam levels




### WATER DASHBOARD (23 OCTOBER 2017)

DAM STORAGE (%)	WEEKLY DAM LEVEL CHANGE (%)	AVERAGE DAILY PRODUCTION (Ml/d)
38.5	1.1 ↑ Increase since last week	585 (Target 500Ml/d)

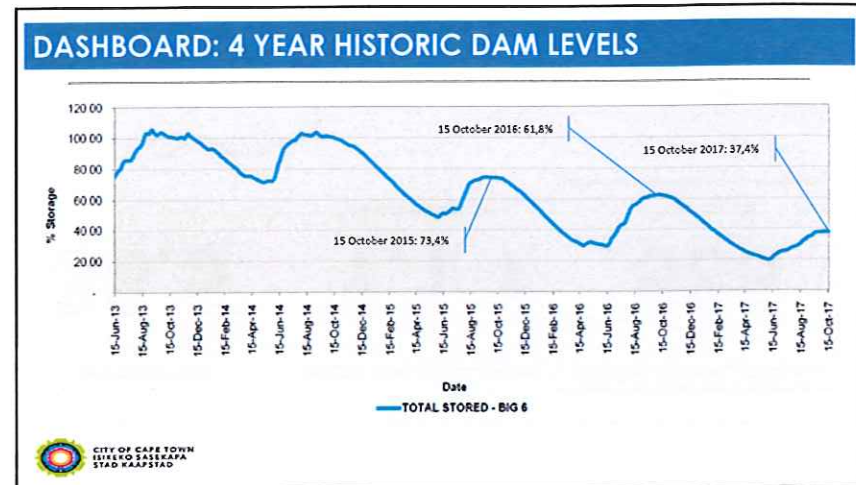
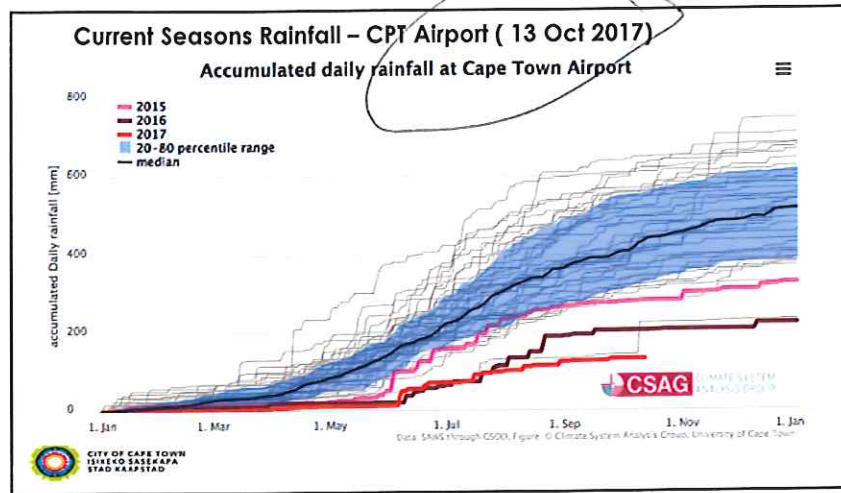
H1 storage

ave daily consumption lowest for year

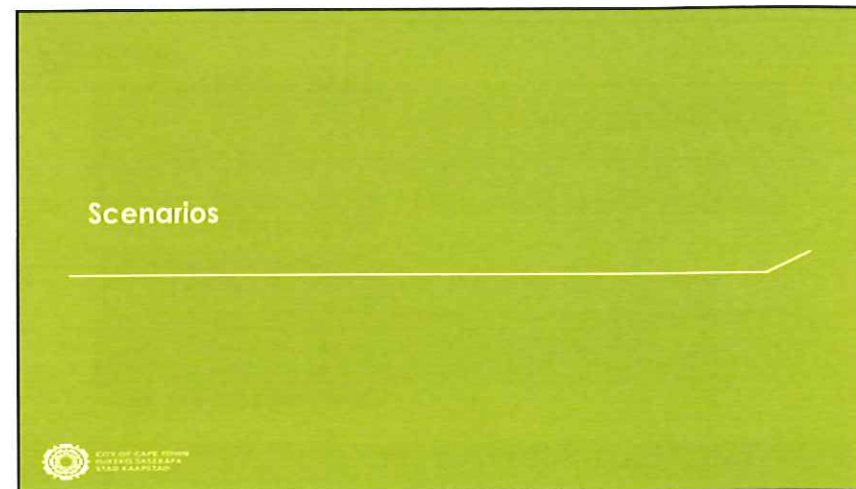
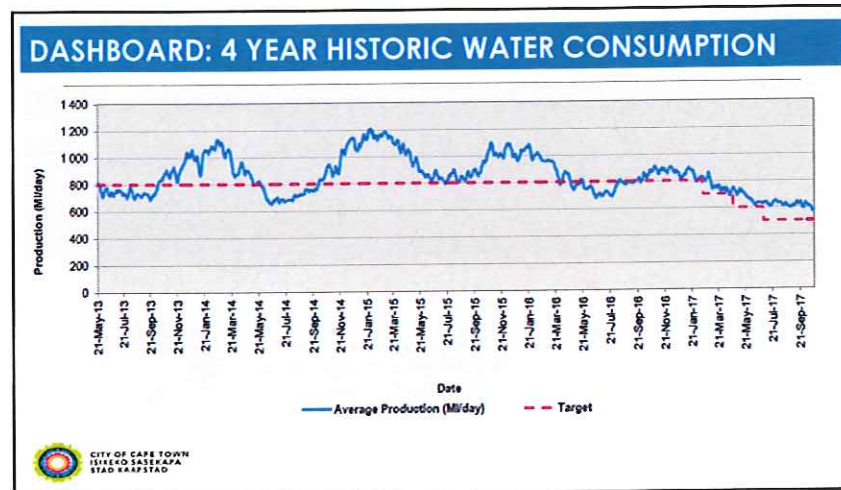
1,100 start of year




every Monday



Hydrologues  
Jen  
1 Nov.




**Scenarios developed end of May**




**Grind it Out**

- The drought is temporary in nature, and will break. There will inevitably be some amount of rain in the winter of 2017.



**Ramp it Up**

- The 2017 winter rainfall will be substantially lower than the historical record. The drought continues for at least one more year.



**The New Normal**

- Previous climate models cannot be relied upon. We are experiencing the harsh impacts of climate change. Over reliance on surface water is a risk.

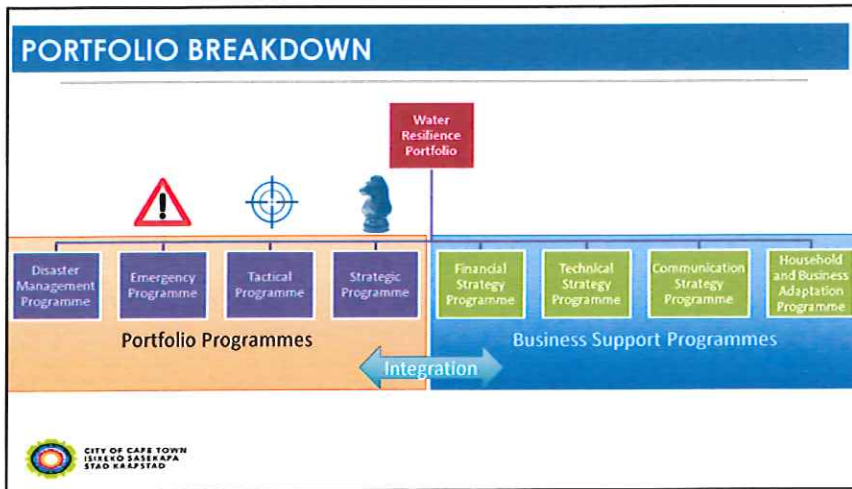
*Handwritten notes:*  
 ↓ Demand with winter rain  
 X (over Grind it Out)  
 → (from Ramp it Up to The New Normal)

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**Institutional Structures**

*Handwritten notes:*  
 Perseus's Scenario  
 climate system in flux  
 ↓ uncertainty  
 advances interventions  
 for permanent security

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**WATER RESILIENCE: SECTION 80 COMMITTEE**

- Mandate for creation by Council in May 2017
- Mandate is to provide advisory services to the City's Water Resilience Programme
- Includes co-opted external experts
- 17 members
  - Reps from 4 universities
  - Rep from DWS *Balzer*
  - Reps from W.Cape Provincial Government
  - Reps from Business
  - Reps from civil society
  - Reps from neighbouring municipalities
- Meets once a month – has met 3 times thus far

*Handwritten notes:*  
 minus structures Act  
 Agrie Egon Ennro

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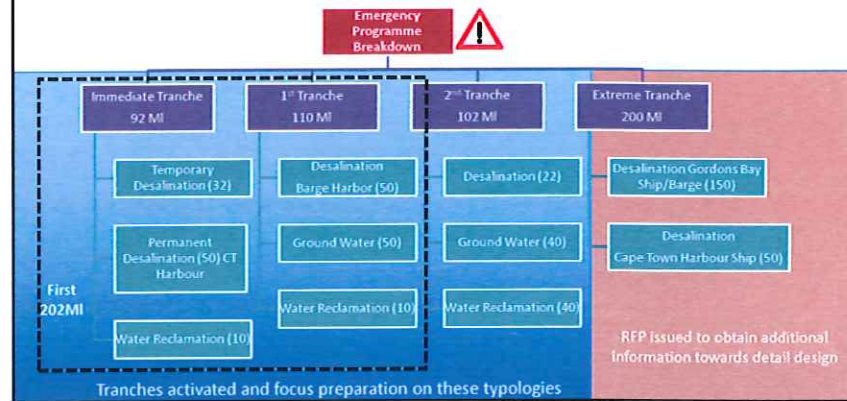
*Peter Flower*

*1 of 2 legs*

What the City is doing?  
Bringing online up to 500MI of non-surface water



## EMERGENCY PROGRAMME BREAKDOWN

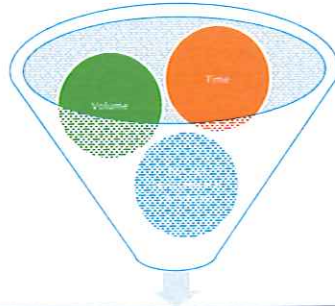


*accelerated Build program*

*GW Desal Reuse Reclamation*

## SITE DESIGN CRITERIA

- What Volumes – Existing Network capacity
- Quick Wins – Temp vs Permanent opportunities
- Site Constraints – City owned land, Injection point, Electricity availability, discharge points, Intake points, sea depths, water quality, location to marine areas, land use rights and zoning, wave heights, wayleaves, Pipe routes (above ground), Large vehicle access
- Environmental Impacts – Coastal protection Area



Max Volumes in Min Time Frame within Constraints

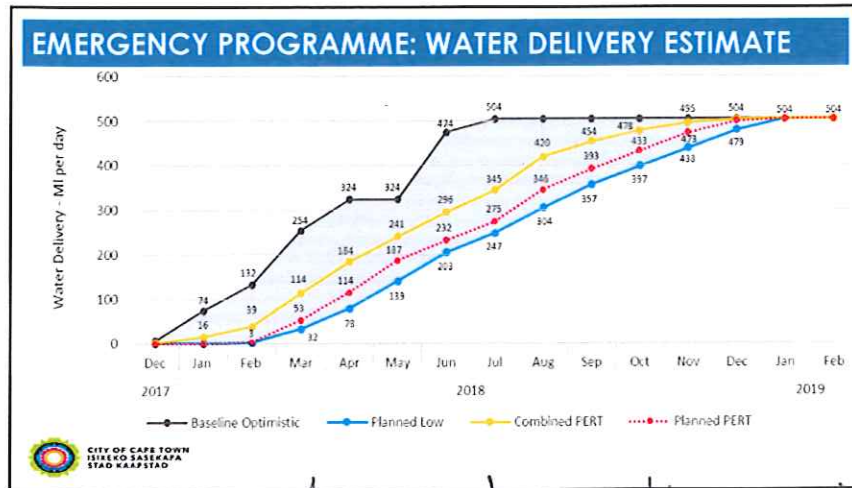


## EMERGENCY PROGRAMME: TECHNICAL PROJECT LIST

Tranche	Solution Type	Sites	Supply (Ml)	Solution Total (Ml)	Tranche Total (Ml)	Total (Ml)
Immediate	Desalination	Hout Bay	4	82	92	504
	Desalination	Granger Bay	8			
	Desalination	Red Hill/Dido Valley	2			
	Desalination	Strandfontein	4			
	Desalination	Monwabisi	4			
	Desalination	Harmony Park	33			
Tranche 1	Desalination	Cape Town Harbour	50	130	130	
	Water Reclamation	Randvliet WWTW	33			
	Desalination	Cape Town Harbour (Barge)	50			
	Ground Water	Atlantis & Silverboom Aquifers	25			
	Ground Water	Cape Flats Aquifer	25			
	Water Reclamation	Fisherskraal WWTW	33			
Tranche 2	Desalination	Universal Sites x 3	20	102	102	
	Desalination	Malden Cove	2			
	Ground Water	Cape Peninsula Aquifer	20			
	Ground Water	Heidevelds-Holland Aquifer	20			
	Water Reclamation	Potlatch WWTW	33			
	Water Reclamation	Cape Flats WWTW	33			
Extreme	Water Reclamation	Belville WWTW	33	200	200	
	Water Reclamation	Macassar WWTW	33			
	Desalination	Gordons Bay Ship/Barge	150			
	Desalination	Cape Town Harbour (Ship)	50	200	200	



*Multi billion per year  
R5b. this year*



timescale opt. → person

### DISASTER ALLOCATION FROM NATIONAL GOVERNMENT

- R20.8m allocated by National Disaster Management Centre
- These funds have to be spent on emergency relief initiatives
- Allocated to TMG Aquifer project
- Tender has been awarded
- Contractor will be onsite imminently

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another lunberg lunberg MEC

### Financial Considerations

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costed modelling exercises

### FINANCIAL CONSIDERATIONS

- Awaiting approval from National Treasury for a special adjustments budget. Will require meeting of Council
- Considerable efforts have been made in recent weeks to secure the required funding for the WRP and perform modelling exercises for future tariffs.
- Sources include:
  - Cash
  - Existing Water Department budget, including reprioritization therein.
  - Concessionary funding, bonds and other finance options
  - Reprioritization of capital projects elsewhere in the City
- The operational model of water as a trading service will be considerably impacted upon by a number of considerations related to the WRP actions, including:
  - loss of revenue from decreased water sales and
  - inability to cover new operational spend, particularly from 2018/19 onwards
- There will inevitably need to be an entirely new approach to the water service going forward, with consequence for tariffs in future years, and consequently collection rates from consumers. Ongoing modelling required.

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green bond

not a special adjustment budget meeting

not XT approval not received yet  
will have multiple impacts on water many services shift how WDS operates (if 1 tariff ↓ collections)



official of CTC  
1 water demand survey

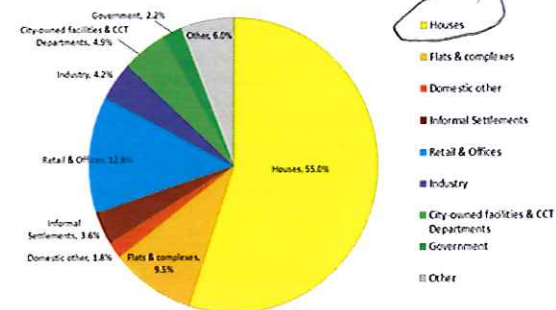
## What citizens and sectors are doing? Reducing collective consumption to 500MI/day

Craig.kesson@capetown.gov.za



## CONSUMPTION BY USE CATEGORY

Potable water consumption by use category  
(01.07.2016 - 30.06.2017)



## RESTRICTIONS & DROUGHT-RELATED MEASURES

### Progressively increased restrictions

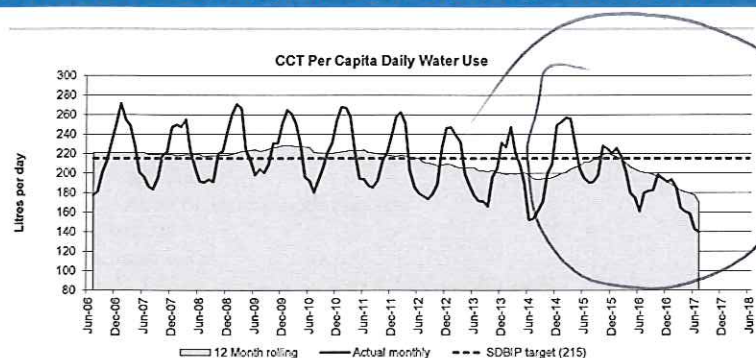
Level	Date	Restriction	Target
Level 1	2005	<ul style="list-style-type: none"> <li>No irrigation 10:00-16:00</li> <li>Spray nozzles for hosepipes</li> <li>No hosing down hard surfaces</li> <li>No dampening of building sand</li> </ul>	10% savings
Level 2	2016 Jan 01	<ul style="list-style-type: none"> <li>Irrigation for 1 hour on Tue, Wed, Thur</li> <li>No irrigation 9:00-16:00</li> </ul>	20% savings
Level 3	2016 Nov 01	<ul style="list-style-type: none"> <li>Buckets only</li> <li>Pool covers</li> </ul>	30% savings
Level 3B	2017 Feb 01	<ul style="list-style-type: none"> <li>No private car washing</li> </ul>	30% savings
Level 4	2017 June 01	<ul style="list-style-type: none"> <li>No irrigation</li> <li>No topping up of private pools</li> </ul>	100 litres/person/day
Level 4B	2017 July 01	<ul style="list-style-type: none"> <li>No topping up of public pools</li> </ul>	87 litres/person/day
Level 5	2017 Sept 03	Fines: <ul style="list-style-type: none"> <li>Residential &gt; 20kl/m</li> <li>Commercial: 20% less than same month previous year</li> </ul>	87 litres/person/day

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## LEVEL 5 WATER RESTRICTIONS

CONSUMPTION PER PERSON	87 litres/person/day
LIMIT FOR INDIVIDUAL RESIDENTIAL UNITS	100 litres/person/day
COMMERCIAL PROPERTIES	100 litres/person/day
IRRIGATION WITH MUNICIPAL DRINKING WATER	Prohibited
IRRIGATION WITH BOREHOLE / WELLPOINT WATER	Prohibited
BATHROOM	Prohibited
WATER FEATURES	Prohibited
SWIMMING POOLS (public and private)	Prohibited
WASHING VEHICLES (privately or at a formal/informal car wash)	Prohibited
FACILITIES	Prohibited
INDIGENT WATER ALLOCATION	2000 litres/person

## CHANGE IN CONSUMPTION DURING DROUGHT



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## TREATED EFFLUENT RE-USE

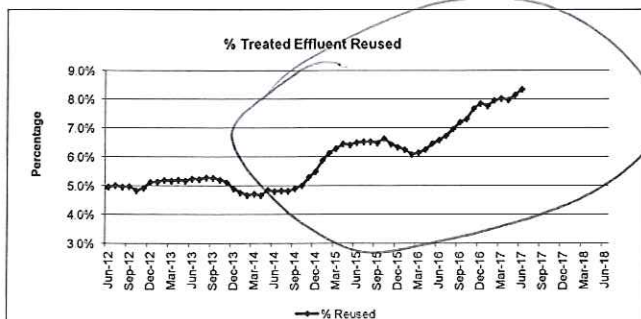
- More than 200 users have permanent connections
- More than 70 Industries are collecting treated effluent at WWTW and standpipe points
- Mostly used for irrigation and industrial purposes
  - Golf courses
  - City Parks
  - Schools



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## TREATED EFFLUENT RE-USE



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What the City is doing to further enable decreased consumption?



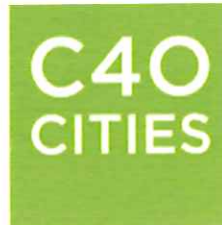
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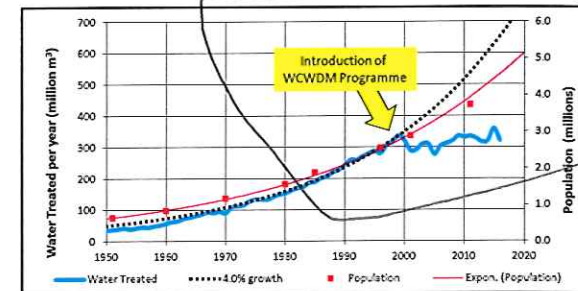
## WATER CONSERVATION & DEMAND MANAGEMENT

- Education and awareness
- Pipe replacement
- Pressure management
- Active leakage control (Leak Detection)
- District metering (and zoning)
- Leak response time and repair quality
- Leak repair (indigent households)
- Water management devices
- Treated effluent re-use
- Water meter management

Awarded C40 Award for  
Adaptation in 2015



## EFFECTIVENESS OF WCWM – 2000 TO PRESENT



Water demand growth delinked from population growth  
Current water demand lower than 20 years ago – population increased by 1 million

## EDUCATION AND AWARENESS

- Intensified education and awareness campaign ✓
- EPWP workers doing door-to-door campaigns – currently 393 EPWP workers on this project. Will rise to 820 EPWP workers in coming weeks.
- Engagements with:
  - Car washes
  - Commuters at transport interchanges
  - Hospitality industry
  - Hair salons
  - Swimming pool and spa sector
  - Business forum
  - Nurseries
  - Government facilities



## Education and Awareness Campaigns



Schools campaign





## WATER LOSSES

METRO	DWS 2017-18 (2015)	SAS 64 v. MBI (2015)
City of Cape Town	15.2	14.7
City of Johannesburg	39.5	24.6
Ekurhuleni	35.3	38.2
Edenburg	31.8	33.9
Edenburg	22.9	22.4
Nelson Mandela Bay	32.4	38.2
Buffalo City	37.1	38
Mangaung	35.7	28.5
Mamodeni		32.9
Average of above	30.9	30.2
DWS & MBI Average	29.7	27.9

National average for water losses as per the DWS "Strategic Overview of the Water Sector in South Africa 2017" puts national average for water loss across municipalities at 37%.



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## PRESSURE MANAGEMENT



- More than 116 pressure management zones have been created
- Design underway for further 29 pressures management zones
- Throttling of bulk water valves is being done where benefits are identified
- These zones are being optimised during this current drought
- They are spread throughout the City



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## ACTIVE DETECTION & REPAIRS

- Dedicated leak detection team (Includes EPWP and Rand Water graduates)
- Creation of 75 new positions to reduce response times to burst pipes and meter faults / leaks.
- Injection of R22m into this programme this year to improve response time



Vandalized hydrants and dumping in chambers



Leak Detection in progress



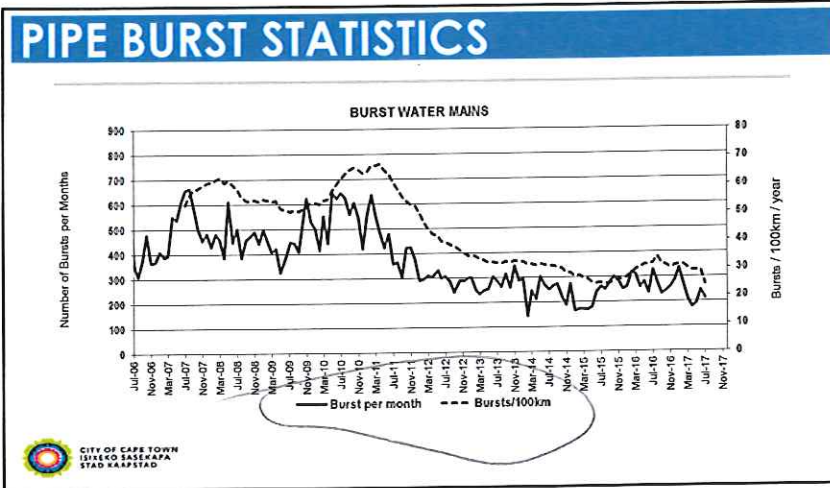
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## PIPE REPLACEMENT

- About 27400 km of potable water pipelines were replaced in 2016/17 financial year



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## WATER MANAGEMENT DEVICES

- Up until end of 2016/2017 220 000 WMDs had been installed
- Approximately 7000 WMDs installed since mid-September 2017 focused on high water users
- Now being installed at rate of 2000 per week
- Water users using in excess of 20kl a month have dropped from approx. 50 000 in August to 28 500 as of mid October





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## ENFORCEMENT

Over 400 fines issued (February – August)

Most common contraventions:

- Washing of vehicles
- Wasting of water
- Hosing down of paved surfaces
- Dampening of building materials

18 permanent water inspectors  
20 EPWP law enforcement officers

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## Critical Water Shortages Disaster Plan

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## ENSURING THE CITY IS ADEQUATELY PREPARED

**RISK MANAGEMENT:** the plan adopts a **pessimistic approach** and assumes no additional supply until the next rainy season.

**PLANNING APPROACH:** ensures the City is adequately prepared for a worst-case scenario by considering risks and impacts of possible scenarios. This is not a reflection on the City's confidence in the water supply augmentation programme.

**MULTI-SERVICE:** the plan is an **actively managed set of preparedness and implementation plans for sectors**, as well as various other critical and supporting services, communication protocols and decision processes.

**ADAPTABLE:** the plan is designed to account for changing conditions over time, particularly those relating to the available supply of the Western Cape Water Supply System (WCWSS) including water use by agriculture and other municipalities from the main supply dams.



## PHASES



## PHASE 1: PRESERVATION RESTRICTIONS

(current phase – rationing)

**Purpose – To avoid escalation to Phase 2: Disaster Restrictions**

- Water rationing through limiting supply and advanced pressure management which severely limits available water supply in the system per day
- Some areas will experience short periods of limited to no water supply
- Critical services, such as clinics and hospitals, will be largely unaffected
- Definitive timetables of the outages will not be provided, as the water systems need to be managed flexibly to avoid damage to critical infrastructure
- Intensified installation of water management devices to limit the consumption of users who are exceeding the water restriction levels



## PHASE 2: DISASTER RESTRICTIONS

**Purpose – Avoid escalation to Phase 3 (Full-scale disaster implementation)**

- Water rationing aimed at maintaining human life and critical services.
- City will more actively assume control over the daily water supply available to households and businesses.
- **Many households and businesses will be unable to access drinking water in their homes and places of work**
- **Water collection sites to be established across the city**
- Strategic commercial areas, high-density areas with significant risk of increased burden of disease, and critical services, where possible, will continue to receive drinking water through normal channels
- The City's law enforcement and policing resources, as well as resources from intergovernmental partners, will be deployed to ensure that general safety is maintained.
- Maintenance of the sewage system – infrastructure and health considerations



## PHASE 3: FULL-SCALE DISASTER IMPLEMENTATION

**Purpose - Minimise Impact** on human life, dignity and property

- **Extreme scenario** – occurs if the Western Cape Water Supply System no longer has surface water supply which the City can access
- **Can be avoided with progressive rationing in phases 1 and 2.**
- Necessary that the City and its residents and stakeholders plan for such a situation
- **Limited drinking water supplies sourced within the city**
- **Households and businesses will be unable to access drinking water in their homes and places of work**
- Drinking water will be distributed, supplemented by bottled water, to residents through **water distribution points**
- Critical services dependent on reticulation supply will be significantly reduced
- The City's law enforcement and policing resources, as well resources from intergovernmental partners, will be deployed to ensure that general safety is maintained.

Resources to drive awareness



## RESOURCES

Resources available for download from City's website: <http://cct.gov.za/0byva>

Posters include:

- How Far Can 87 Litres a Day Go?
- Find and Fix Leaks (Eng, Afr, Xho)
- Top Ways to Save Water Indoors (Eng, Afr, Xho)
- Level 5 Overview (Eng, Afr, Xho)
- Level 5 Guidelines (Complete)
- Water Crisis Warning red poster



Other;

- Offline Water Use Calculator – zipped

As material is made available the resource packs will be updated.

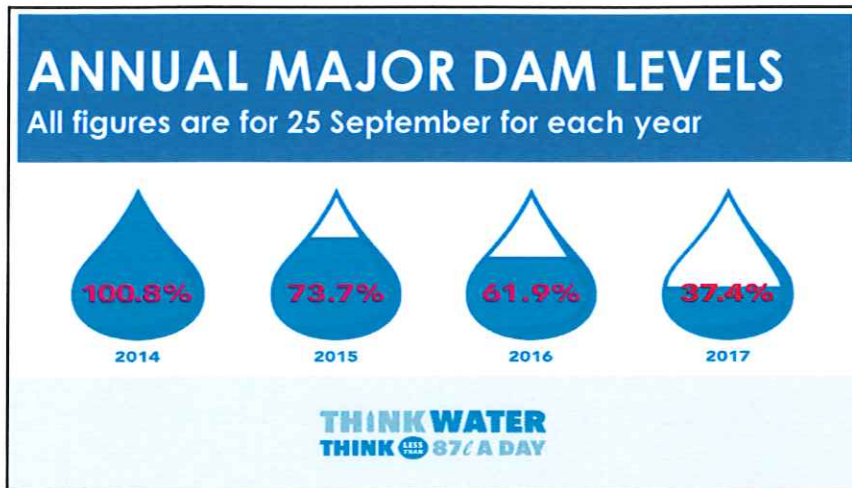
[www.capetown.gov.za/thinkwater](http://www.capetown.gov.za/thinkwater)

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CARE A LITTLE. SAVE A LOT.

## Calculate your daily water usage

<http://bit.ly/ThinkWaterCalculatorCT>





# THINK WATER

## THINK LESS THAN 87ℓ A DAY

For more information visit our website  
[www.capetown.gov.za/thinkwater](http://www.capetown.gov.za/thinkwater)

Making progress possible. Together.

## What does 87ℓ per day mean to you?

 <b>DRINKING</b> 2 LITRES	 <b>COOKING</b> 4 LITRES	 <b>DAILY HYGIENE</b> 4 LITRES	 <b>2 MINUTE SHOWER</b> 20 LITRES
 <b>DISHES &amp; LAUNDRY</b> 23 LITRES	 <b>3 FLUSHES</b> 27 LITRES	<b>=</b>	 <b>SAVING</b> 7 LITRES

## USEFUL CONTACTS / INFORMATION

Apply for supply of treated effluent	<a href="http://cct.gov.za/INPx2">http://cct.gov.za/INPx2</a>
Commercial water restrictions explained	<a href="http://cct.gov.za/OIU1g">http://cct.gov.za/OIU1g</a>
Apply to sink a borehole or wellpoint or use an alternative source of water	<a href="http://cct.gov.za/CBzOc">http://cct.gov.za/CBzOc</a>
Register a borehole or wellpoint	<a href="http://cct.gov.za/juF&amp;0">http://cct.gov.za/juF&amp;0</a>
Water and sanitation education resources	<a href="http://cct.gov.za/QpD2V">http://cct.gov.za/QpD2V</a>

Report contraventions of water restrictions: [water@capetown.gov.za](mailto:water@capetown.gov.za) or SMS 31373

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## Summer season drought campaign



## SAVE LIKE A LOCAL

- The "Save like a local" campaign will commence end of October.
- Cape Town is ready to welcome tourists
- Messaging is intended to be inspirational
- Various forms of delivery now being finalised
  - Airport billboards in multiple languages
  - Inflight announcements
  - Signage at toll gates
  - Mobile billboards for destinations with high tourist traffic
  - Branded flags
- Online toolkit developed for all of us to drive drought messaging



## Way Forward



## WORKING WITH DWS

- Continued engagements between City and DWS through Western Cape Water Supply System (WCWSS) to ensure consumption within restriction boundaries, and associated monitoring of usage.
- DWS rep. serves on Section 80 Water Resilience Advisory Committee
- Fast tracking of Water Use Licences and review of system allocations
- Assistance with land management in catchment areas
- Fast tracking of Berg River to Voëlvlei augmentation scheme
- Funding support

