Mastering Disaster in the Anthropocene: Reconciling DRR and Climate Frameworks

The story of Cape Town's Water

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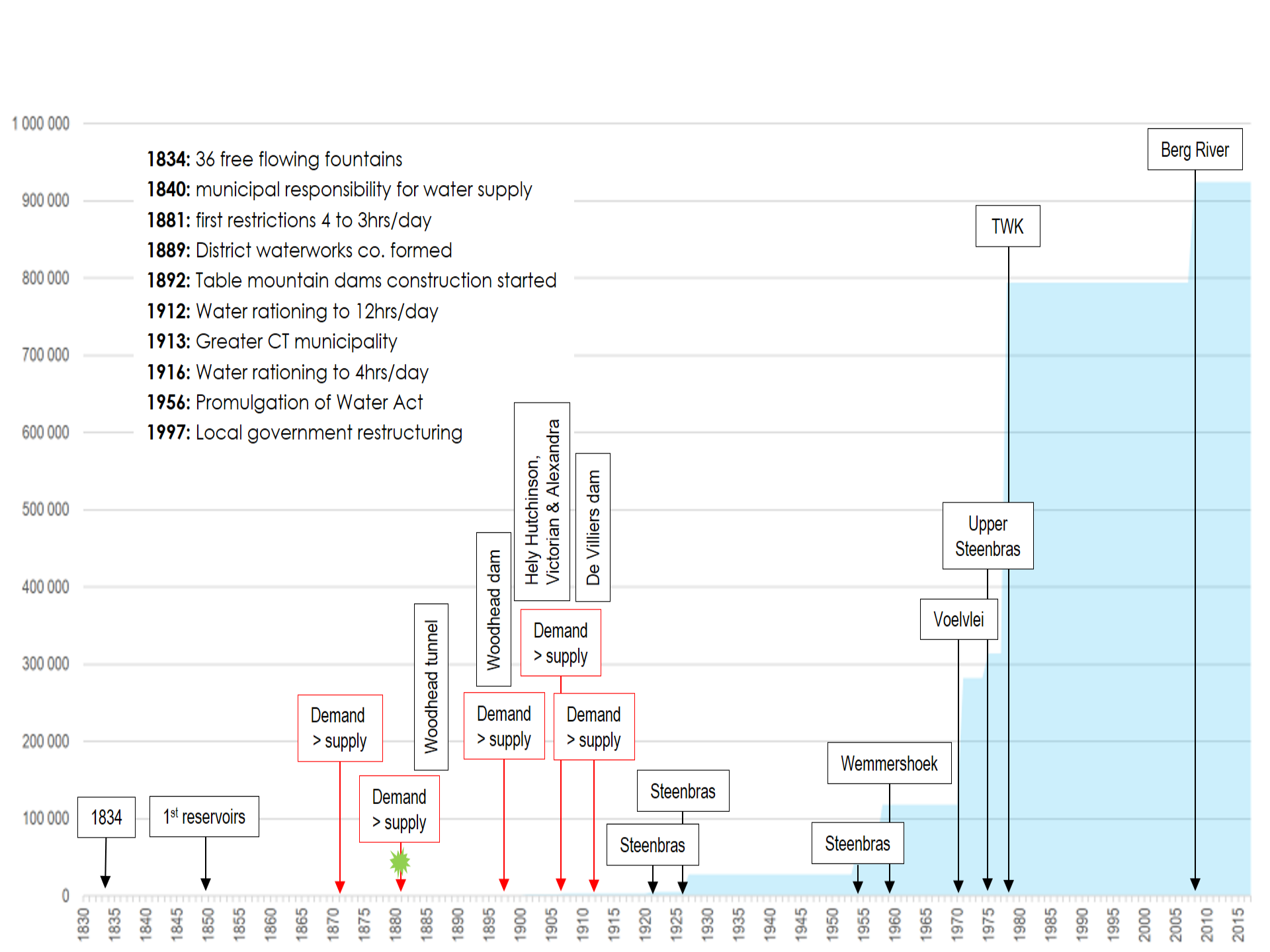
1 000 000
900 000
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1834: 36 free flowing fountains
1840: municipal responsibility for water supply
1881: first restrictions 4 to 3hrs/day
1889: District waterworks co. formed
1892: Table mountain dams construction started
1912: Water rationing to 12hrs/day
1913: Greater CT municipality
1916: Water rationing to 4hrs/day
1956: Promulgation of Water Act
1997: Local government restructuring
1834
1st reservoirs
Demand > supply
Demand > supply
Woodhead tunnel
Woodhead dam
Hely Hutchinson, Victorian & Alexandra
De Villiers dam
Demand > supply
Demand > supply
Demand > supply
Steenbras
Steenbras
Wemmershoek
Steenbras
TWK
Upper Steenbras
Voelvlei
Berg River
1830
1835
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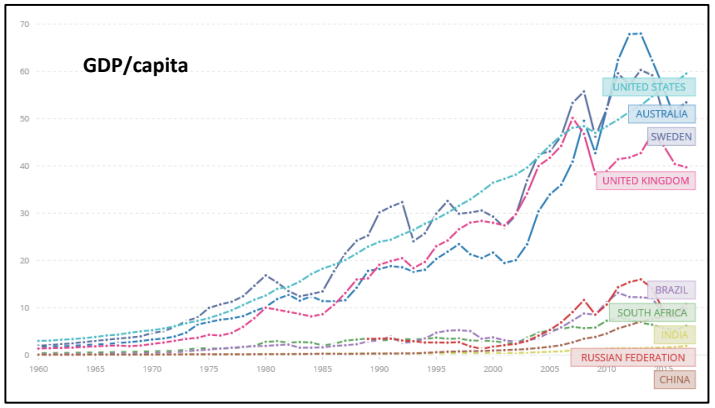
2010
2015

About Cape Town

Population ~4 million
Area ~2,500 km^2
GDP/capita ~$6,000
Gini 0.61

Unemployment 22.7%

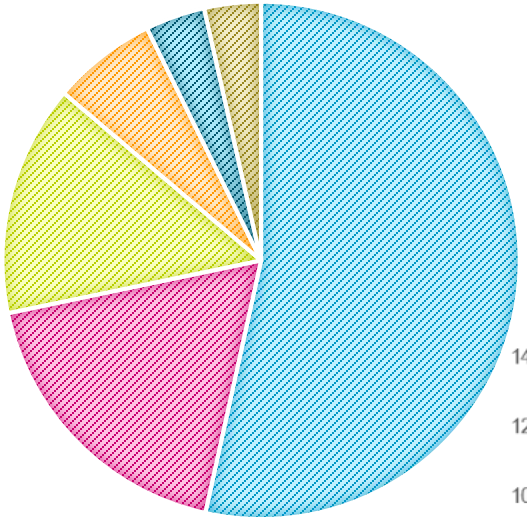


HOUSEHOLDS
Total ~1.1m
Informal ~250,000
Indigent ~270,000
Below poverty line 300,000

ACCESS TO SERVICES

Piped water	99.8%
Electricity	97.3%
Telephone	93.5%
Adequate sanitation	94.3%

Cape Town's water is part of an integrated surface water system

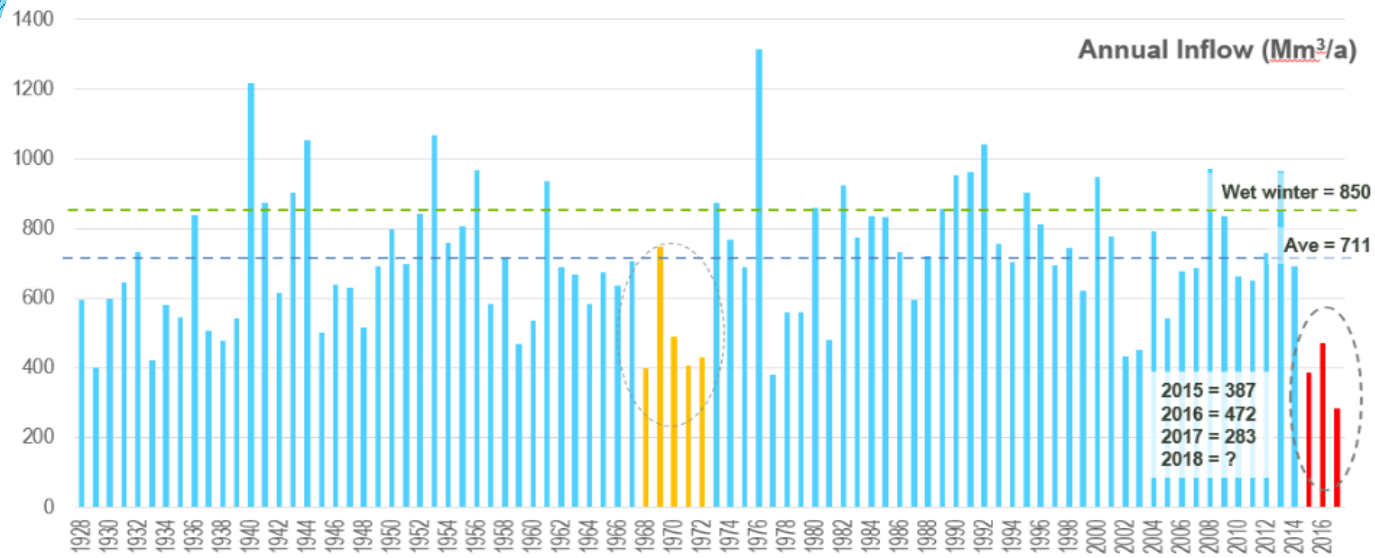


Cape Town gets its water from a system of dams that supply agriculture and other urban areas. The current system is heavily dependent on rainfall.

This complex system is managed by the national Department of Water and Sanitation together with the City of Cape Town.

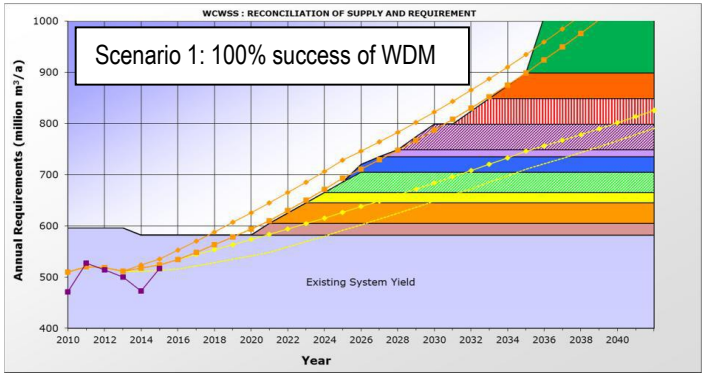
64% of water is allocated to Cape Town, about a third is used by agriculture and 7% by other urban areas (smaller towns).

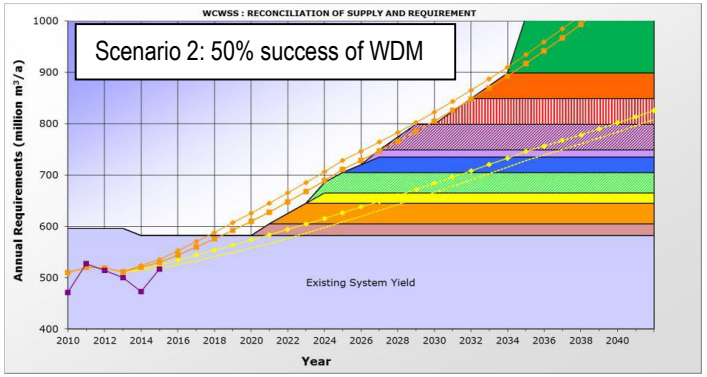
- Accountability tricky between 3 spheres of government
- Procurement reform towards empowerment;
- Legislation aimed to prevent corruption rather than enable development.



Water Supply

- Surface water - Dams currently over-allocated
  - capacity ~900MCM, yield ~500MCM
- Current restrictions – allocations reduced
  - current restricted allocation ~250MCM
- Alternative sources:
  - Groundwater
    - Table Mountain Group
    - Cape Flats
  - Re-use – triggered one temporary scheme
  - Desalination – triggered three temporary schemes
- Not possible or affordable to build way out of a drought



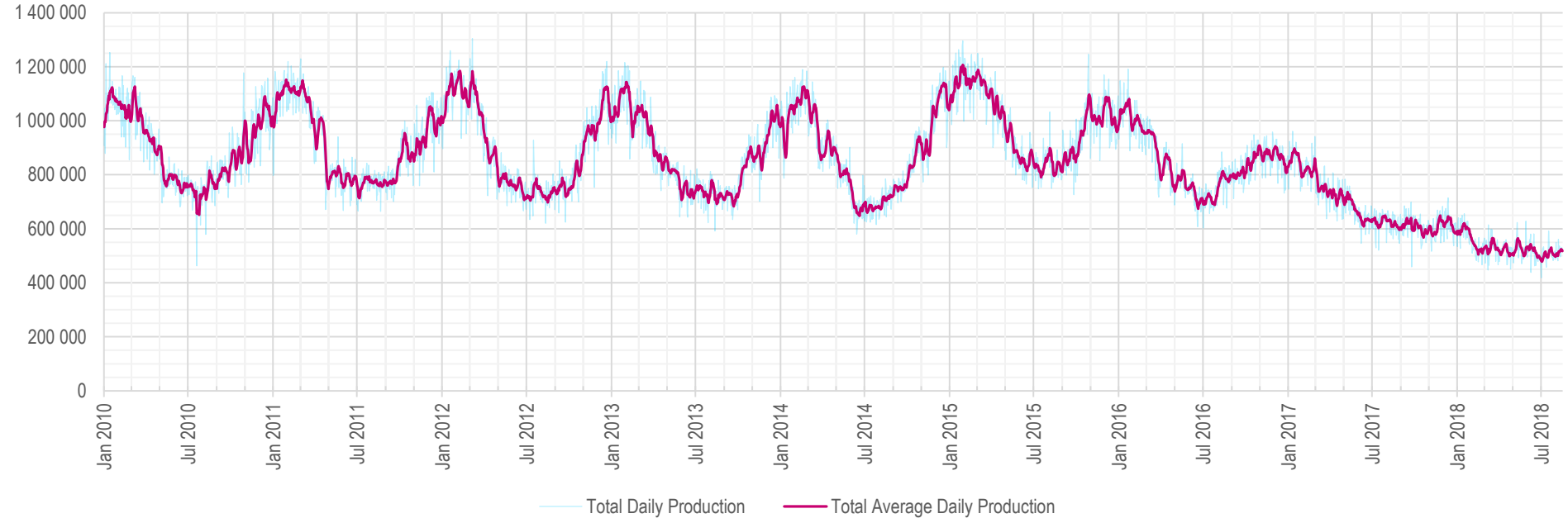


Water Demand management

- **Communication**
- **Restrictions & Tariffs**
- **Water flow restriction**
- **Pressure management**

Gross per capita use

- Summer 2014 - 300 lcd
- Summer 2015 - 250 lcd
- Summer 2016 - 225 lcd
- Summer 2018 - 150 lcd
- Now - 125 lcd

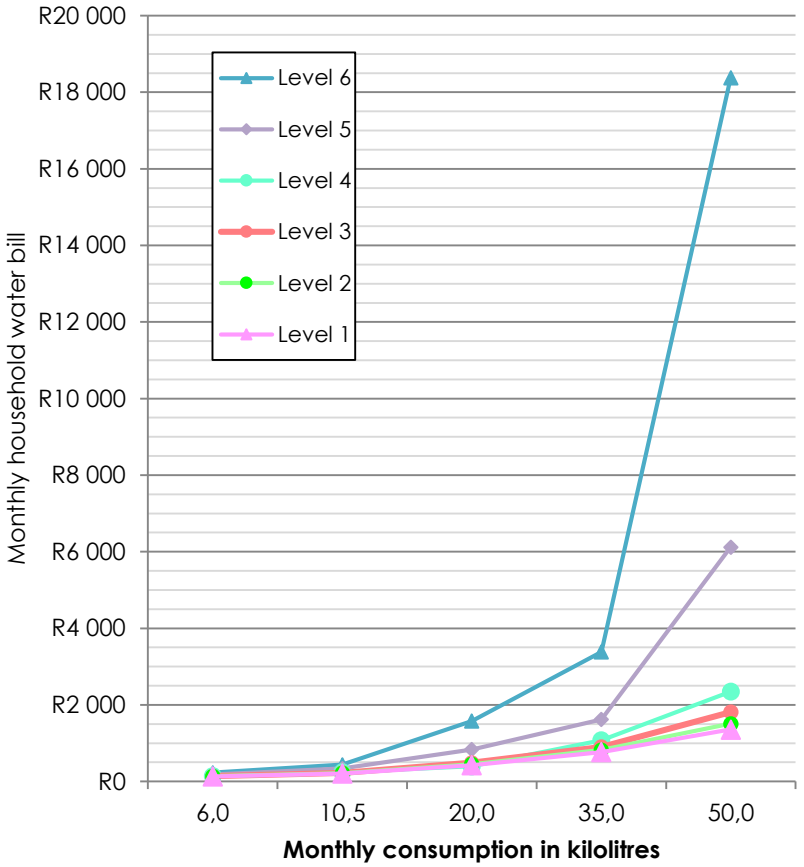


Water Demand management - Communication

- 4 million people
- Political environment
- Complexity
- Avenues
  - Printed press
  - Radio
  - Media engagement
  - Social media
  - Citizen engagement
  - Awareness & education

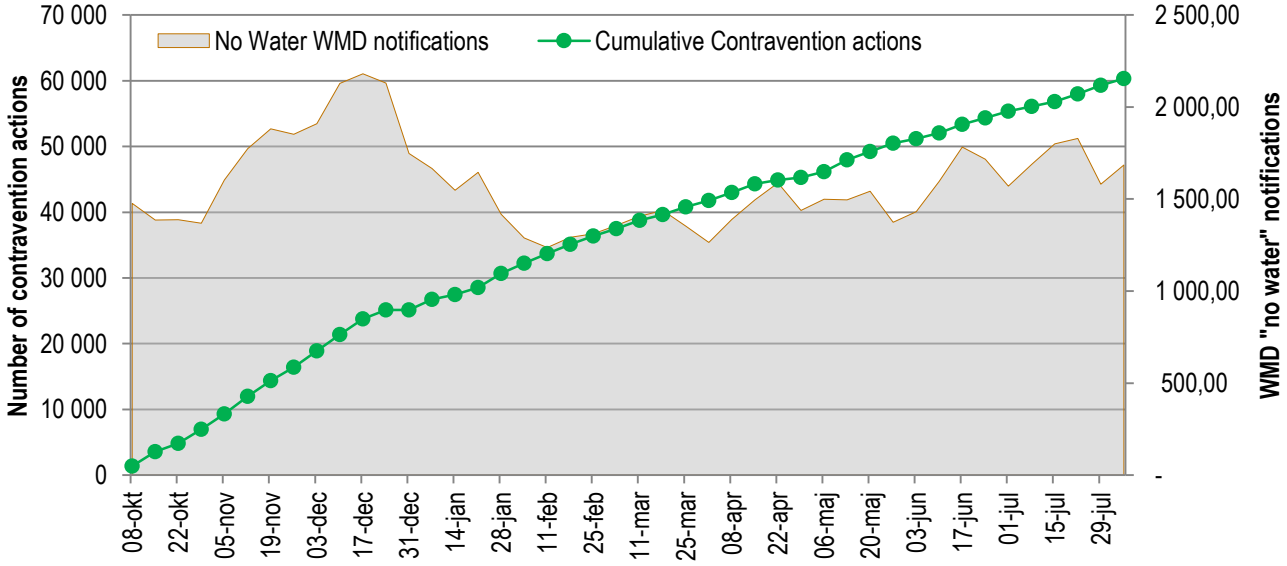
Water Demand management - Restrictions

- Progressively punitive tariffs – Ministerial approval required
- Moving from 3 to 7 levels of restriction
- Steep increases in price
  - 6kl free up to June 2017
  - Introduced at R4/kl in July 2017
  - Increased to R26/kl in Feb 2018
  - Increased to R29/kl in July 2018
- Enforcement rules



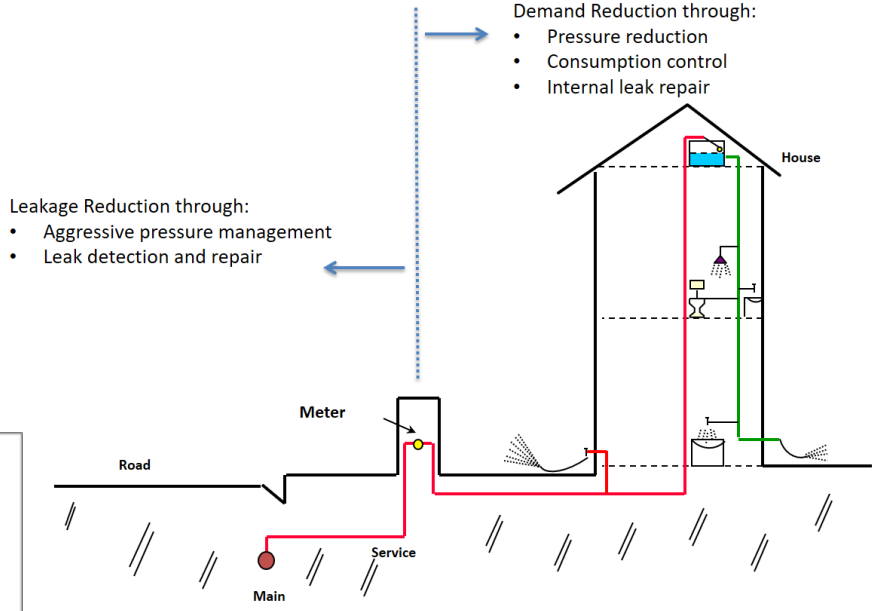
Water Demand management – Flow restrictors

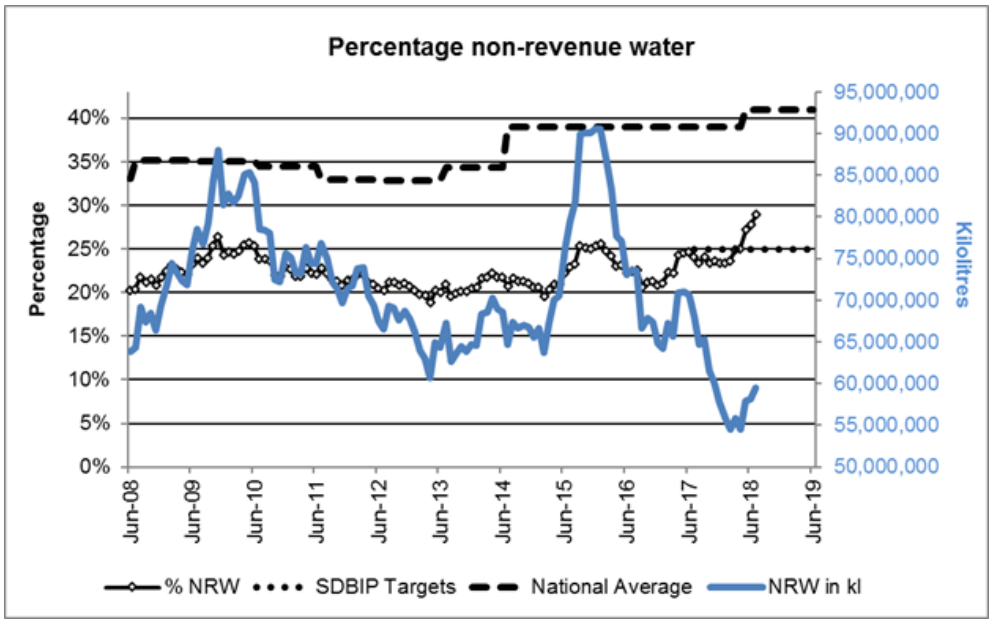
- Leak repair programme ~190,000 of 268,000 households done
- All meter replacements use these restrictors, but not set
- In September 2017 took decision to install at households using >20kl/month
- ~60,000 installed to date



Water Demand management – Pressure reduction

- ~160 pressure management zones
- Currently managing 99 (15m/25m – mainly residential
- Savings ~70MLD
- Leak repair at household level
- Leak detection & repairs
- Pressure managed reticulation 4,800/10,600km
- High user meter issues

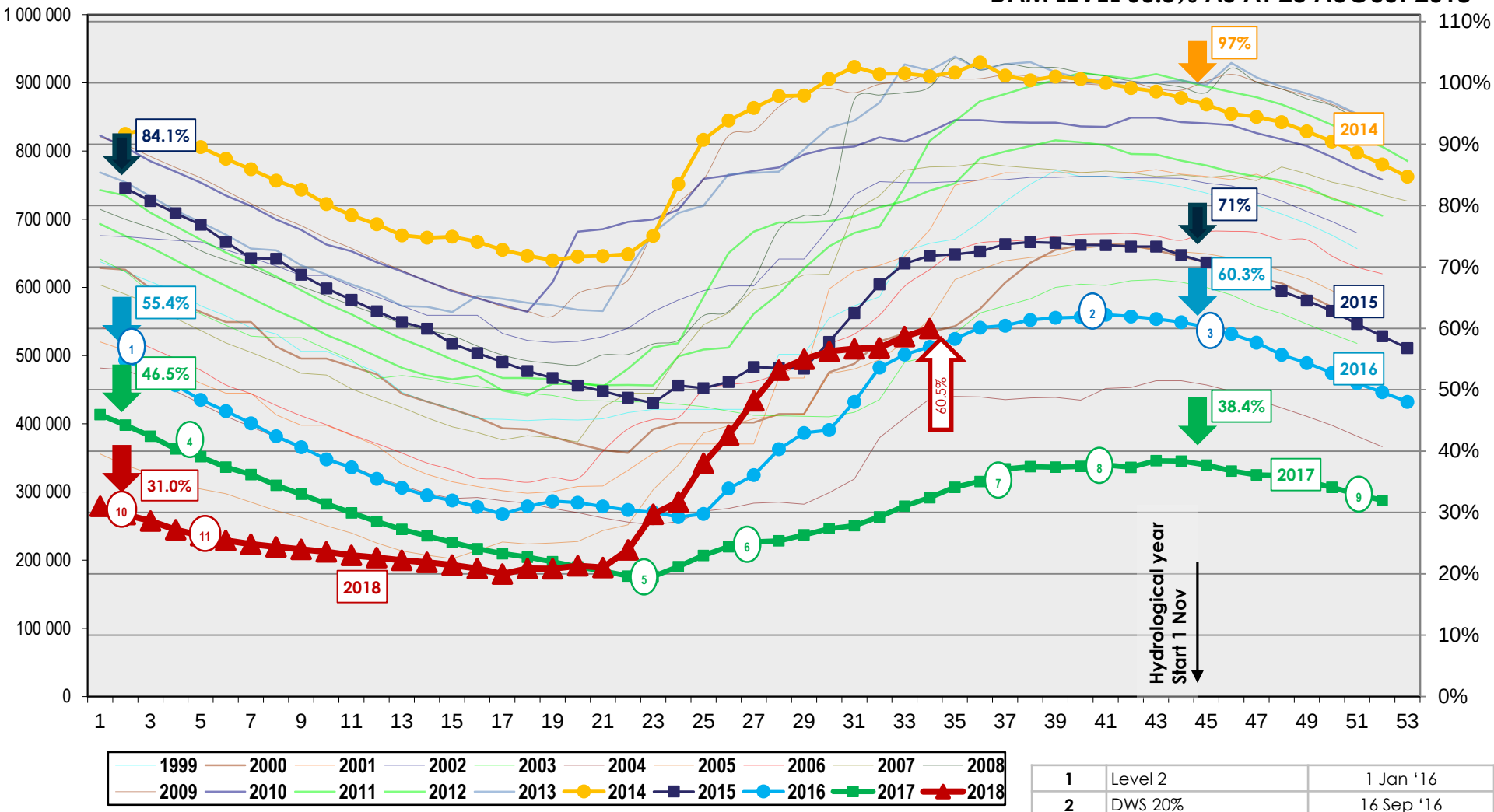




Impact of holistic Water Demand Management

IWA recognition for a 55% reduction in water demand between 2015 – 2017 without resorting to intermittent supply

DAM LEVEL 60.5% AS AT 23 AUGUST 2018



1	Level 2	1 Jan '16
2	DWS 20%	16 Sep '16
3	Level 3	1 Nov '16
4	Level 3B	1 Feb '17
5	Level 4	1 Jun '17
6	Level 4B	1 Jul '17
7	Level 5	3 Sep '17
8	DWS 40/50%	28 Sep '17
9	DWS 45/60%	12 Dec '17
10	Level 6	1 Jan '18
11	Level 6B	1 Feb '18

2017

- **Unprecedented low rainfall**
- **Political environment**
- **Financial impact**

2018

- **Very aggressive demand management**
- **Early rainfall**
- **Apply learnings**
- **Not out of the woods**

THANK YOU