

Drought: Why Wait Till It's Too Late?



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DROUGHT: WHY WAIT TILL IT'S TOO LATE?

This thought piece offers a way to remain in control, and avoid the negative publicity that lies in store, when drought conditions persist



Unmistakably 1976: the clothes, the hue of the picture, the bedding plants, the standpipe



The Water Board meets to review the drought risk mitigation plan

Spring 2017 and Affinity Water has hit the headlines in the UK for “encouraging customers to save water to help preserve supplies and minimise the possibility of restrictions this summer.” It was a good opportunity to dig out the archive of pictures from 1976, the last time restrictions on usage included the widespread use of standpipes.

The approach that water utilities take to drought follows a predictable pattern:

PREPARE	The Water Resource Management plan is designed to ensure continuity of supply long-term. Contingency plans assess the needs of different customers and ensure that alternative supply (tanker, bowser, bottles etc.) is available in extremis.
HOPE	Once the planning is done, it is typical for utilities to hope. The chances of adequate levels of precipitation are good.
ASK	If reservoirs run low and hope is dwindling, then utilities typically ask customers to reduce demand voluntarily. As customers will have been experiencing local weather conditions it isn't difficult for them to recognise the challenge and sympathise.
PRAY	“At the state capitol in Georgia, the governer tried something different. On a partly cloudy warm fall day, hundreds of people from the region came to join Governer Sonny Perdue in a prayer for rain.”
TELL	As supplies become ever more critical, increasing tiers of mandatory restriction are applied to customers.

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There are two big challenges with this well-established approach:

1. RESPONSIBILITY WITHOUT CONTROL

For the majority of the time there is almost nothing that the utility can do to improve the situation. It develops at a rate determined by rainfall and customer usage. Responsibility without control is a major source of stress.

2. BAD PUBLICITY

The risk of adverse media coverage increases exponentially as the situation unfolds. The worse things get, and the more restrictions are placed on customers, the more they and the media turn on the water utilities. Criticism is generally levelled at their not having done enough to plan for drought, and particularly to reduce leakage further even though they may believe that they are already operating below the Economic Level of Leakage, known as the ELL.

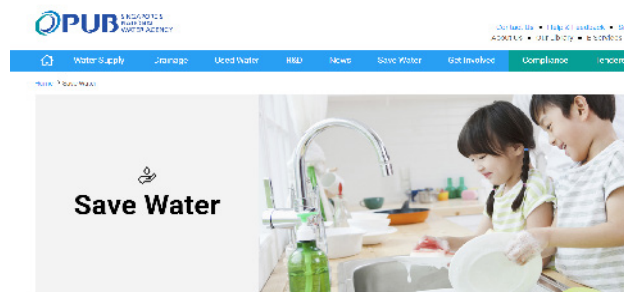
Cape Town, June 2017, is currently experiencing bad publicity having followed the standard approach. The Union is calling for the Mayor to step down and warning of the risk of social unrest.

i2O suggests that there is one further step that utilities should be taking: **mitigate**.

MITIGATE

Mitigation buys time. Time for hope to triumph over adversity, time for prayers to be answered. It allows utilities to defer the need to prevail on customers to use less, to impose restrictions and ultimately to execute on their contingency plans for alternative supply. It provides an opportunity to exercise control and reduce stress.

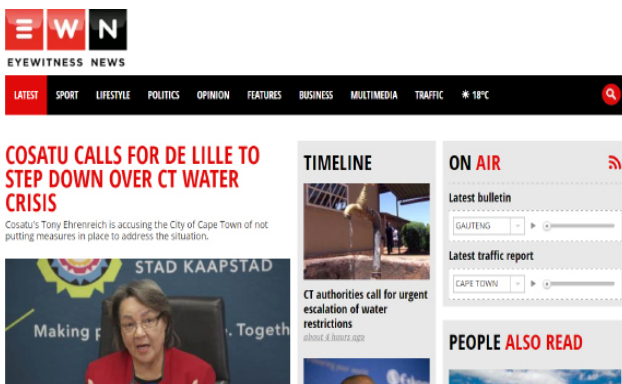
Mitigation can take two forms, one of which has clear advantages.

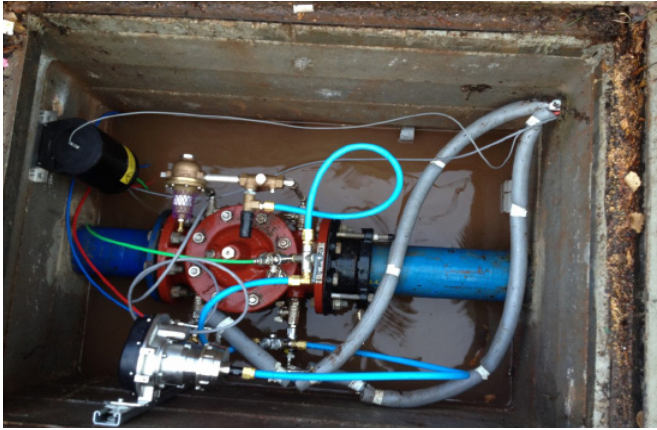


1. CUSTOMER ENGAGEMENT

The first form of mitigation is customer engagement to achieve demand reduction. PUB in Singapore is exhorting its customers to reduce water consumption from the current 148 litres per day to 140 litres by 2030. Between 2003 and 2016, average consumption has already been reduced from 165 litres to 148 litres. However, Singapore experienced a bounce in average usage last year, and it is not yet clear whether this signalled that the potential for average usage reduction has now been maximised. Southern Water in the UK has a Water Efficiency plan aimed at delivering an even more aggressive 15 litres per day reduction in average water use by 2020 from 148 litres to 133 litres per day.

Customer-led demand reduction has the benefit of improving satisfaction but it comes at a cost: it is expensive per ML/d; it is a threat to revenue; and there is a limit to the amount of reduction that is possible.





At PRVs



At Pumping Stations

2. ADVANCED PRESSURE MANAGEMENT

The second form of mitigation is Advanced Pressure Management. Advanced Pressure Management is a system that enables you to remotely control and optimise pressure across the whole of a water distribution network.

There are four simple components:

- Pressure/flow sensors
- Software
- Controllers
- Actuators

Sensors gather accurate data from the network. Software allows you to set parameters and instruct changes; it uses algorithms to optimise settings for you. Controllers and actuators carry those instructions out on PRVs or provide set points to existing control systems for pumping stations.

You can use Advanced Pressure Management at different stages of supply risk owing to drought:

HOPE	Further reduce leakage levels
ASK	Reduce pressure to reduce open tap demand, without the need to ask customers to change behaviour
TELL	Deliver intermittent supply reliably and with minimal effort

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What makes Advanced Pressure Management a compelling risk mitigation investment is that it delivers ongoing business benefits as soon as it is installed in contrast with almost all other drought risk mitigation alternatives. These ongoing benefits include reduced leakage and bursts, reduced energy and operating costs, extended asset life and reduced customer complaints.

Over the last decade, one of i2O's clients in Asia has increased its use of i2O's oNet solution until it is deployed network-wide. For several years this has been used to manage intermittent supply. The territory experiences regular rainfall, but excessive precipitation and dry spells make water supply difficult to manage. Water supply is rationed around March/April time most years for around $\frac{3}{4}$ million homes or 3.5 million people. i2O's Advanced Pressure Management solution was originally deployed to help achieve a reduction in NRW. But subsequently it has also been used to help manage intermittent supply effectively. Previously there was a labour intensive process with engineers going out to multiple sites to turn valves. It was not always possible to meet the advertised availability times for customers (traffic can be a real problem) and naturally customers complained when they expected water and didn't get it. Bursts also occurred as a result of engineers turning valves too quickly. With i2O's solution intermittent supply can be managed reliably and changes made smoothly, minimising complaints and bursts.

CAPE TOWN

Cape Town is belatedly issuing a tender for Advanced Pressure Management. But you don't have to wait till it's too late and people are calling for your resignation. After one dry season, water utilities should be considering additional risk mitigation in the form of Advanced Pressure Management. Mitigate the risk to delay asking and telling customers to use less with the bad publicity this is bound to precipitate. The longer you can extend this period, the more chance there is that hope and prayer will work and it will rain.



The network manager adjusts pressures to mitigate the risk of drought

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