



Water supply levels of service

How often is it okay to run out of water?

Charlotte Reed
Tonkin + Taylor

Jon Reed
Beca

UN Sustainable Development Goals

Goal 6 – water and wastewater: by 2030



Achieve
universal and
equitable
access to safe
and affordable
drinking water
for all

Substantially
increase water-
use efficiency
across all
sectors...

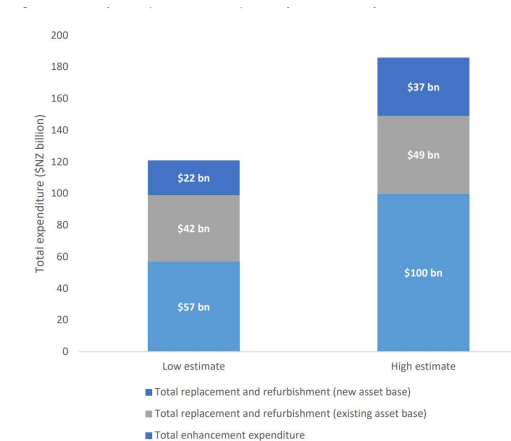
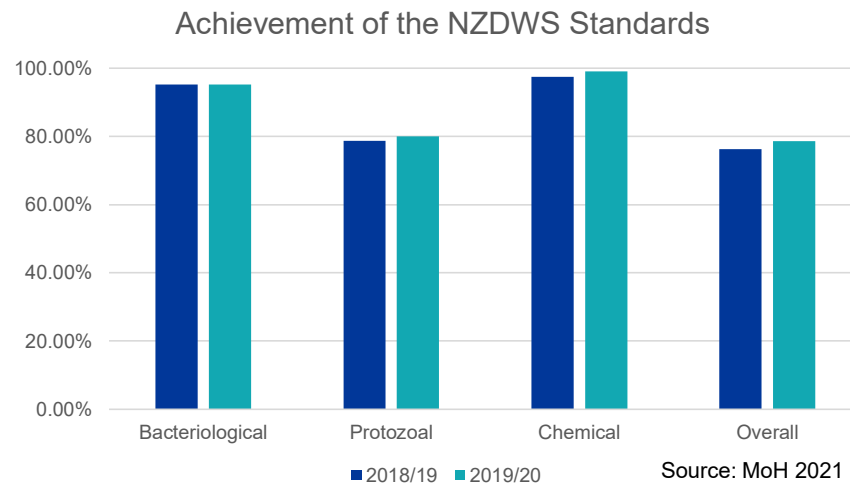
Implement
integrated
water
resources
management at
all levels

UN New Urban Agenda



Improved water resources management and access to safe water and sanitation for all is essential for eradicating poverty, building peaceful and prosperous societies, and ensuring that ‘no one is left behind’ on the path towards sustainable development.

Water Reform in NZ



Source: Water Industry Commission for Scotland, 2021

Te Mana o te Wai

Hierarchy of obligations

1. Health and well-being of water
2. Health needs of people
3. Ability of people and communities to provide for their social, economic and cultural well-being

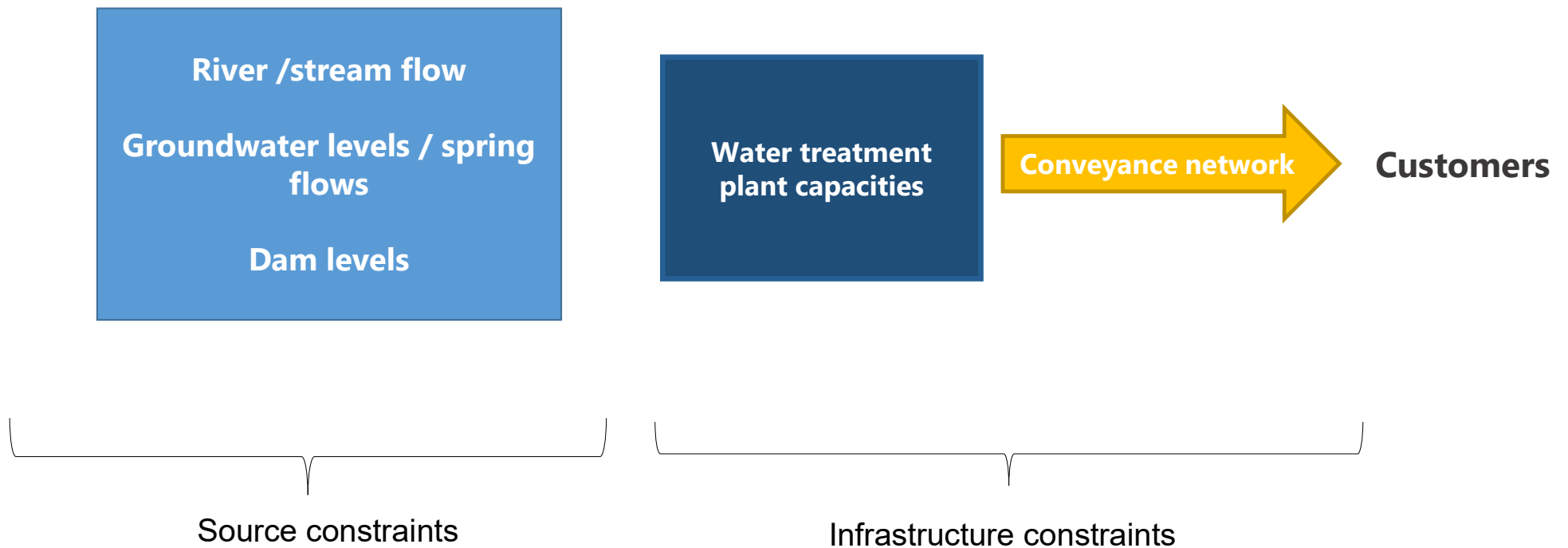


What do we mean by running out of water?

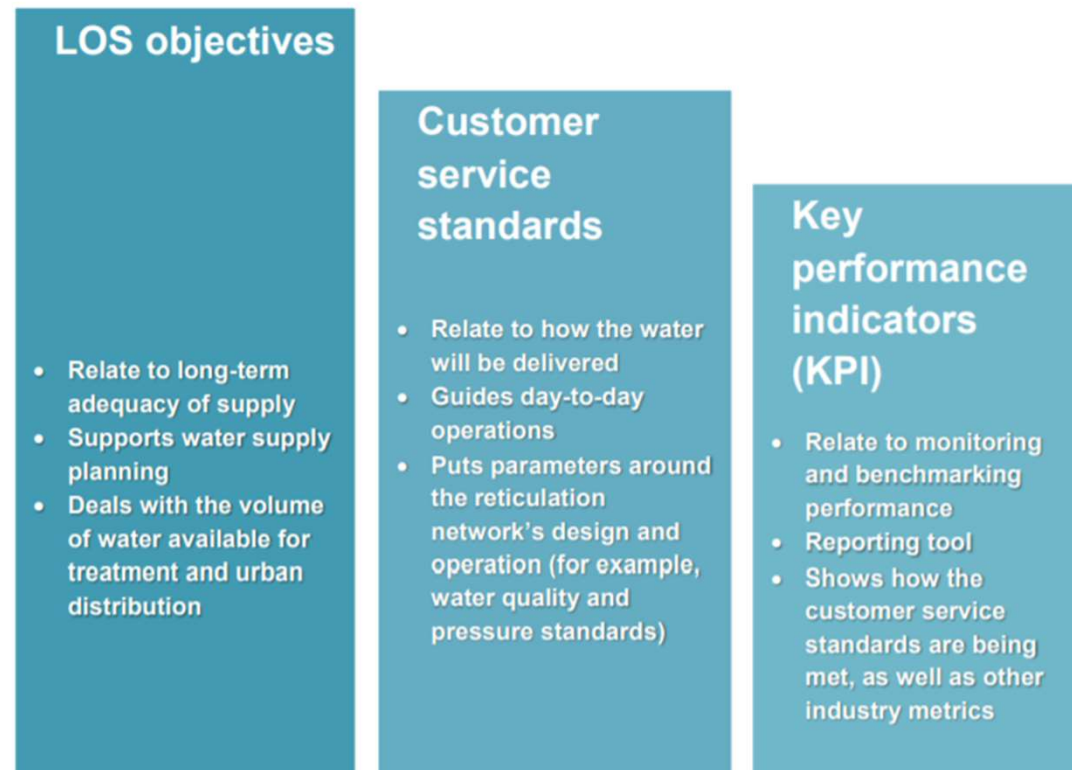
- Drought severity
- Restrictions



How can we run out of water?



Levels of service



Water supply standards in NZ

Office of the Auditor General (2010): *Because water is a basic survival need, the water supply network needs to be reliable, available, and of high quality, and must meet the needs of domestic, commercial, and industrial consumers.*

- Water Quality
- Continuous supply / interruptions
- Water conservation
- Fire fighting

Water Services Act 2021

Duty to provide sufficient quantity of drinking water

- A drinking water supplier (other than a water carrier) must ensure that a sufficient quantity of drinking water is provided to each point of supply to which that supplier supplies drinking water.

Version as at 15 November 2021



Water Services Act 2021

Public Act 2021 No 36

Date of assent 4 October 2021

Commencement see section 2

Level of Service for water supply

Queensland government

- Water security level of service (LOS) objectives are the water service provider's targets for long-term water supply security for a community.
- LOS objectives commonly include statements about:
 - How much water the water supply system will typically be able to supply
 - How often and for how long water restrictions might occur
 - The possibility of needing an emergency water supply due to a prolonged drought.



Level of Service for water supply

We think these should:

- Clearly communicate the reliability of the water supply
- Identify the type and frequency of restrictions that may be expected
- Balance the trade off between environmental, economic and cultural values
- Be agreed with the customers
- Be able to be monitored by future regulators



Examples of levels of service: South East Queensland

These should:

- Meet the projected regional average urban demand estimated by Seqwater, so that medium level water restrictions on residential water use will (on average) **not occur more than once every 10 years, be more severe than 140 litres per person per day, or last more than 1 year**
- Provide an essential **minimum supply volume of 100 litres per person per day in an extreme drought event (i.e. a 1 in a 10,000 year event)**, so that key storages (i.e. Baroon Pocket, Wivenhoe and Hinze dams) will not reach their minimum operating level more than **once in every 10,000 years on average**.

Examples of levels of service: Auckland (Watercare)

Average demand

- Certainty of supply in up to a 1:100-year drought with 15% residual dam storage

Peak demand

- Proactive demand restrictions are to be required for an event no more frequently than that with a 5% probability of occurring

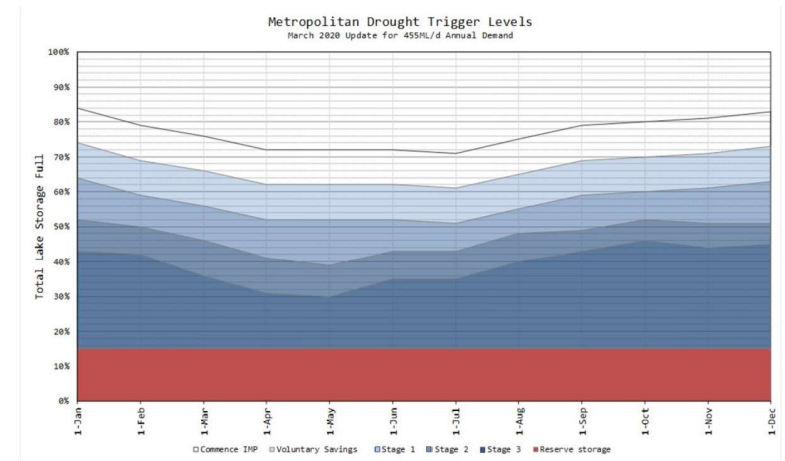


Figure 1: Drought Response Trigger Levels

Source: Watercare 2020

Examples of levels of service: Southern Water (UK)

Type of restriction or measure		Frequency of use
Customer levels of service	Advertising to influence water use	1 in 5 years
	Temporary Use Bans on different categories of water use	1 in 10 years
	Drought order to restrict water use for businesses (non-essential-use bans)	1 in 20 years
	Standpipes and rota cuts (supplies limited to a few hours a day) using an Emergency Drought Order	1 in 500 years (civil emergency)
Environment levels of service	Applying for drought permits and orders to increase supplies through relaxation of licence conditions or other measures	1 in 20 years (current)
		1 in 200 years (future)

Drought security metrics: regulation

Ofwat

- Security of supply index
- Common Performance commitment:
Drought risk metric
 - 1 in 200 year drought
 - Confidence grades

IPART

- No metric, ongoing hydrological monitoring

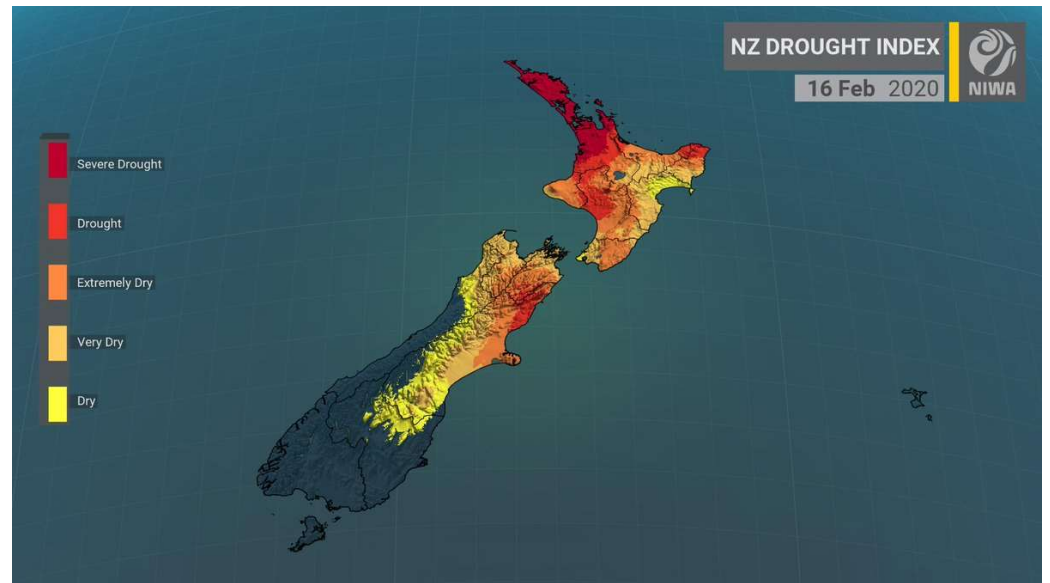
ESC

- Funds investment but no clear outcomes measure



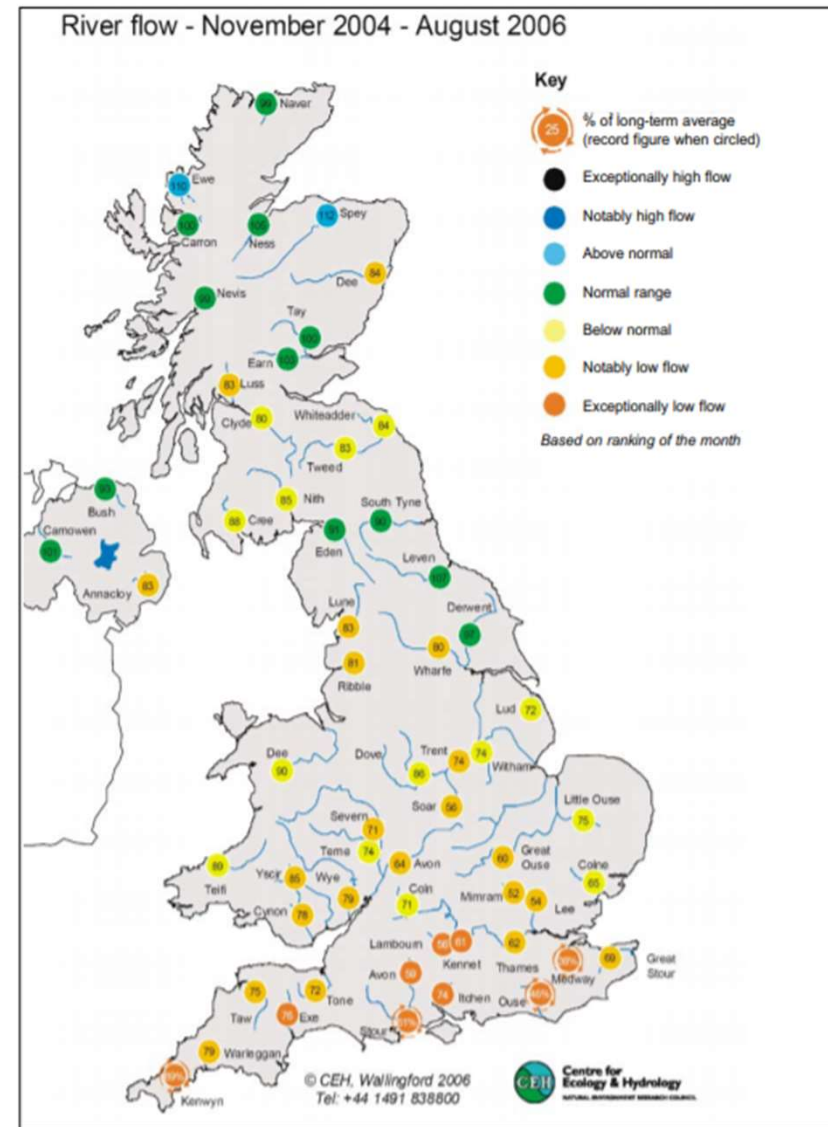
Some examples of recent droughts

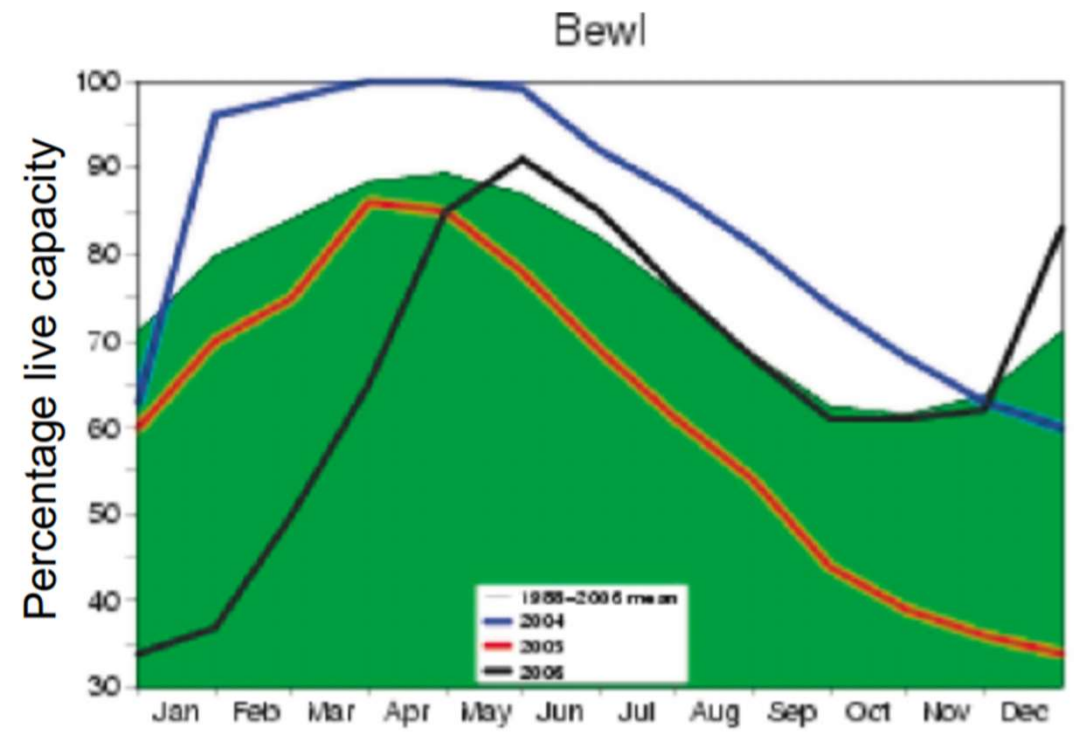
- South-East England 2004-06 and 2018
- Auckland NZ, 2020
- Cape Town 2017



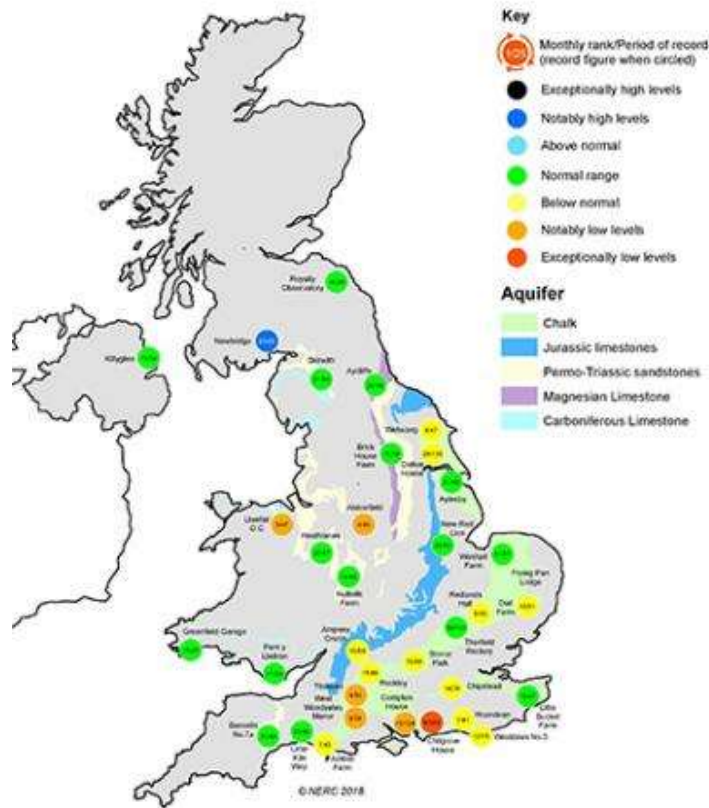
Some examples of recent droughts

South-East England 2004 – 06

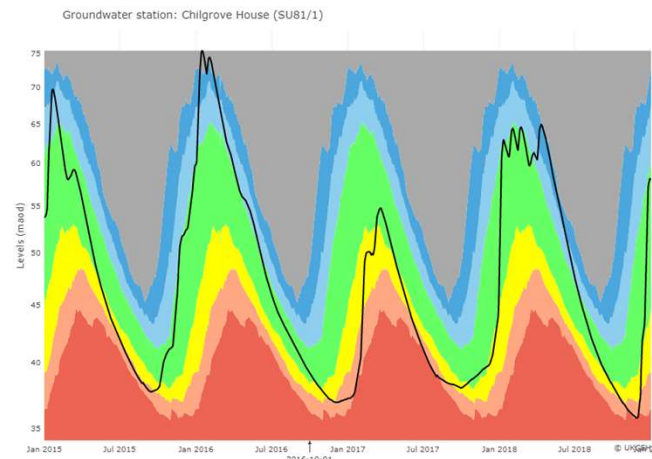
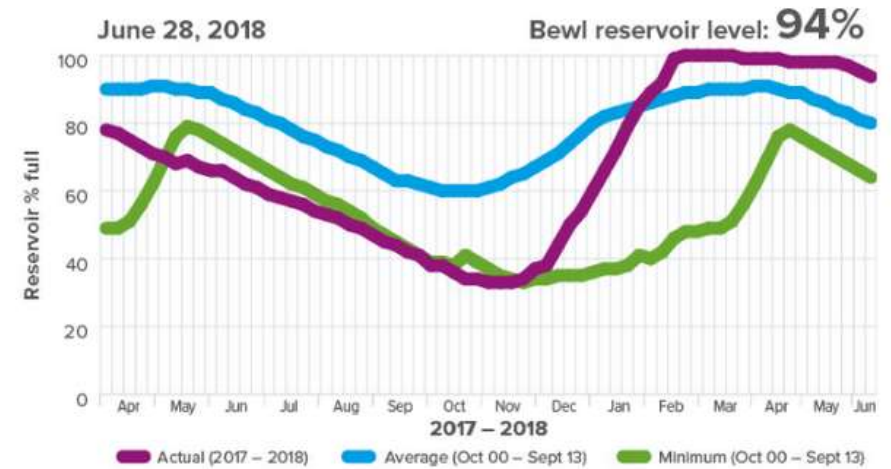




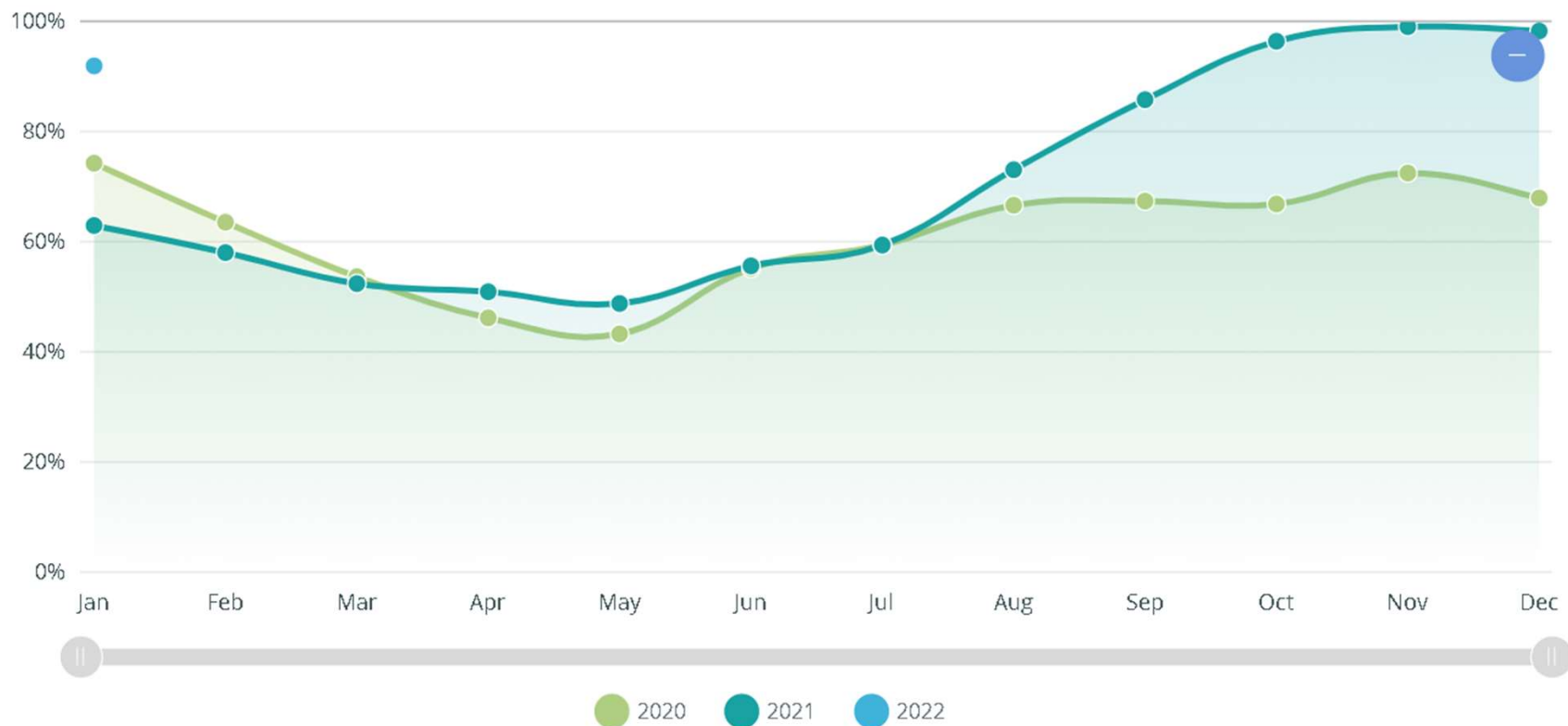
2018 drought



Bewl Water reservoir



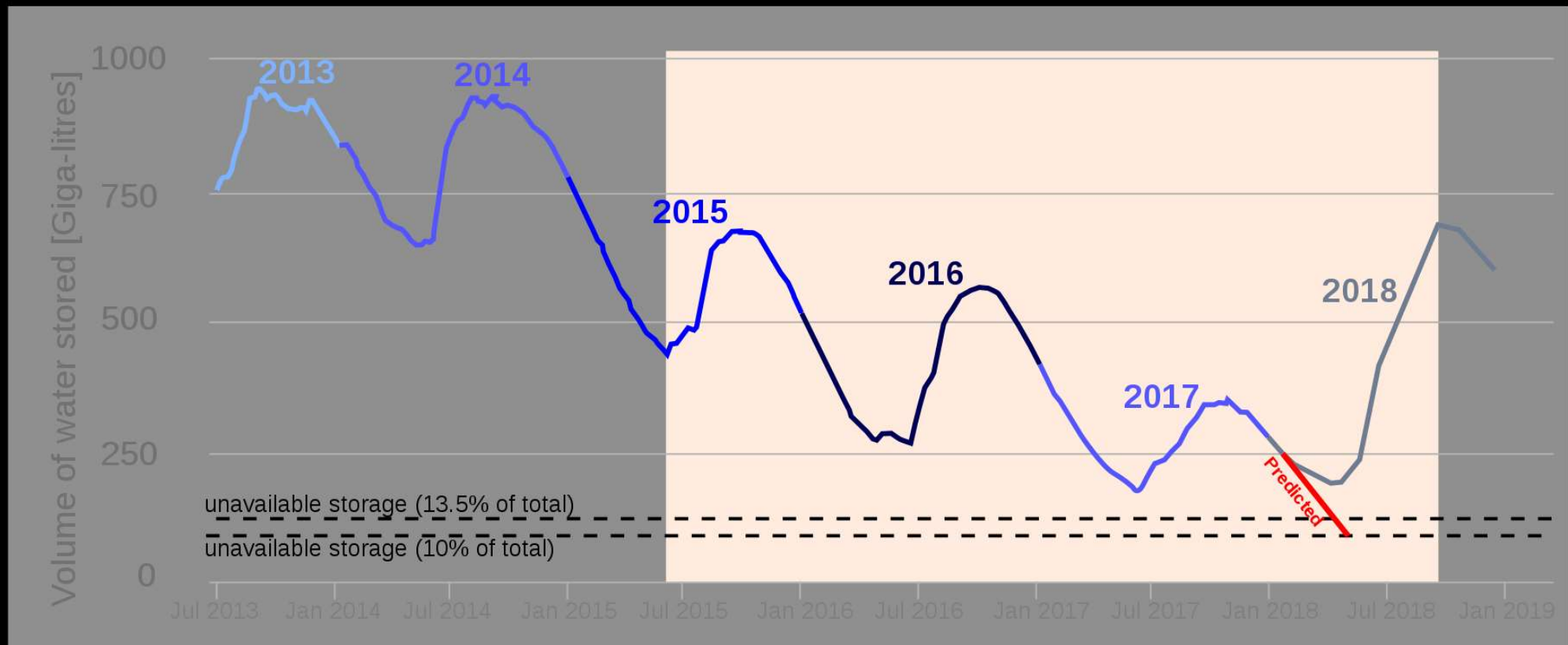
Some examples of recent droughts: Auckland 2020



Some examples of recent droughts: Cape Town

- Series of increasing restrictions
- 'Day zero' would mean Level 7 restrictions
- Residents would need to queue for water





What are the benefits of a stated Level of Service?

- Customer contract – enables a discussion about how often and how severe restrictions may be
- Framework for planning
- Deeper understanding of water supply sources

What do we think should be included?

- Identify the source yields for different drought severities
- Understand the impact of drought on demand and the savings of restrictions
- How frequently restrictions may be required
- What is the plan when more severe (or different) droughts occur
- What is the impact on the environment?

What next?

- Water industry is about to change significantly
- Climate change will affect our water supplies
- Opportunity now to discuss the reliability of our water supplies and frequency / severity of restrictions with our communities
- Then plan and invest for the agreed Level of Service

Questions?

