

Stretching water further on the driest country on earth

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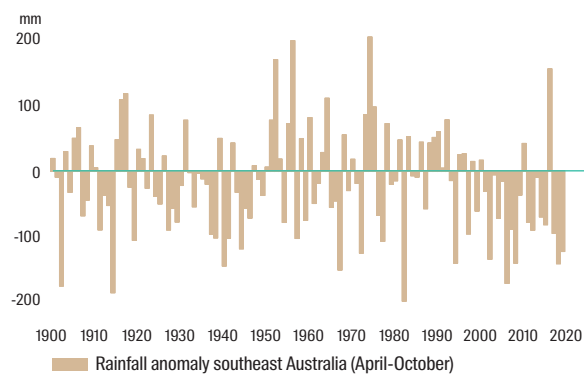
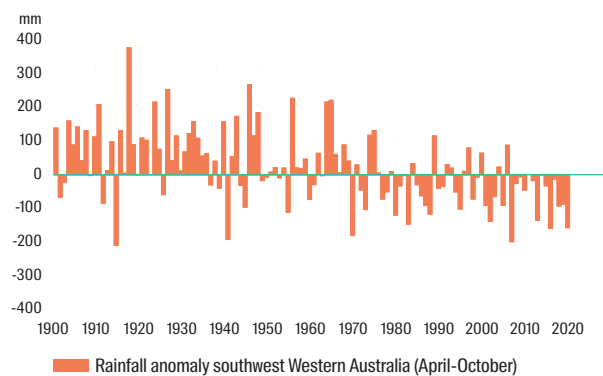
November 2020

Characterised by periods of drought, fire and flood, the Australian climate is becoming drier over the long term. A growing population is almost completely reliant on a single, unpredictable source of water – rainfall. First Sentier Investors Unlisted Infrastructure explores the opportunities for private investment in Australia’s water sector.

The supply challenge

Australia’s water supply is primarily sourced from surface water and groundwater, which relies heavily on rainfall.

Australia is already the driest inhabited continent on earth¹. Climate change is posing unprecedented risk to Australia’s surface water and groundwater supply. As Australia’s climate continues to warm, rainfall has declined. There has been increased occurrence of below-average rainfall in southwest and southeast Australia (where most of the population resides) over the past half century, and becoming more noticeable in the last 20 years², that cannot be explained by normal weather fluctuations.



Anomalies of April to October rainfall for southwestern (southwest of the line joining the points 30S, 115E and 35S, 120E) and southeastern (south of 33S, east of 135E inclusive) Australia. Anomalies are calculated with respect to 1961 to 1990 averages.

Source: Bureau of Meteorology and CSIRO, State of the Climate 2020

Warm, dry weather also drives higher water consumption and evaporation, reduced catchment run-offs to storages, and the potential for over-extraction of groundwater by communities and growers during times of surface water shortage³.

It is also observed that a higher proportion of annual rainfall in recent decades has come from shorter duration, heavy rain days⁴. In other words, just as Australia is getting drier, its rainfall pattern is getting more variable.

A snapshot of drought in New South Wales

In 2019, NSW experienced its driest, hottest drought conditions in living memory – 120 years⁵. The NSW EPA reports that climatic conditions and surface water availability have entered a significantly drier climate phase⁶, and yet 85% of Greater Sydney’s water supply depends on rainfall⁷.

Water storage in Greater Sydney dropped from 90% in early 2017 to 43% in early 2020⁸. The State was declared 100% in drought in August 2018⁹. The worst impacts of the drought were felt in regional NSW. By September 2019, the towns of Dubbo and Cobar were expected to run out of water within two months without rainfall or government intervention, and the towns of Forbes, Cowra and Parkes were expected to run out of water within six months¹⁰.

Increasing pressure on the State’s water supply, Australia experienced its worst bushfire season on record in late 2019 – early 2020¹¹. In December 2019, bushfire ash contaminated the water supply for the small town of Tenterfield, with its 4,000 residents losing access to clean drinking water for over 72 days¹².

This time, the drought was relatively short lived. Heavy rain in February meant that entering the spring of 2020, Greater Sydney’s water storage levels swelled back to 95%¹³ and only 13% of the State remains in drought¹⁴. But Australia is not always the ‘lucky country’; the Millennium Drought lasted more than 10 years (1996–2010)¹⁵. The drought and steep decline in dam levels during 2017 to 2019 highlighted the vulnerability of Australia’s water supply and were a wake-up call for State and Federal Governments to find a long term water solution.

The demand challenge

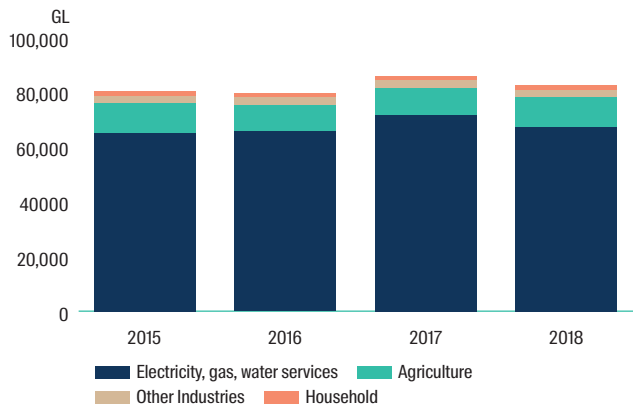
Australia used enough water to fill Sydney Harbour 165 times in 2018, which broken down on a per person basis, equates to each person using approximately 210 litres every day¹⁶. Water consumption typically grows in line with population growth, which in the state of New South Wales alone, is expected to surge from 7.7 million people to 9.9 million between 2017 and 2036¹⁷. While the longer term impact of the COVID-19 pandemic is not yet known, in the short term population growth has stalled, however it is expected to recover. In major cities there may be more pressure to decentralise from the main CBDs to smaller centres across the city, which will exert further pressure on water supply and water and wastewater infrastructure.

Urbanisation and improved liveability in city design e.g. more lakes, rivers, fountains and green space to reduce urban heat and improve general well-being etc will put pressure on water demand for major cities.

Across the major cities, it is estimated that only 8% of water is sourced from recycled water (excluding desalination)¹⁸.

Beyond household consumption, water is primarily used to support infrastructure, goods and services critical to maintaining life; major water consumers are the electricity and gas generation, water services and agricultural sectors.

Australia Water Use (Gross Volume)



Source: ABS, Water Account, Australia, 2017-18, First Sentier Investors analysis

Improving water supply and security

A number of options are available to improve water supply and security. Apart from new storage, the rest are non-rainfall dependent.

1. New storage

No major public dams have been built in Australia for 30 years. In 2019, the NSW Government announced \$1.1 billion funding to build and upgrade dams¹⁹.

2. Desalination

Major city desalination plants were built between 2007 to 2012 in response to the Millennium Drought. At the height of the drought in 2019, state governments ordered the operation of these desalination plants to be ramped up. The NSW Government was working on expansion of the Sydney Desalination Plant during 2019 but following the heavy rain in February 2020 the plan was put on hold. Desalination is an expensive form of water recycling due to its energy intensity. It generally operates as a peak resource.

3. Wastewater recycling

This includes sewer mining, stormwater harvesting and wastewater treatment. It operates as a base load resource and can be an effective substitute for potable water for non-drinking purposes e.g. gardening, toilet flushing, washing machines, 'greening' cities to improve liveability.

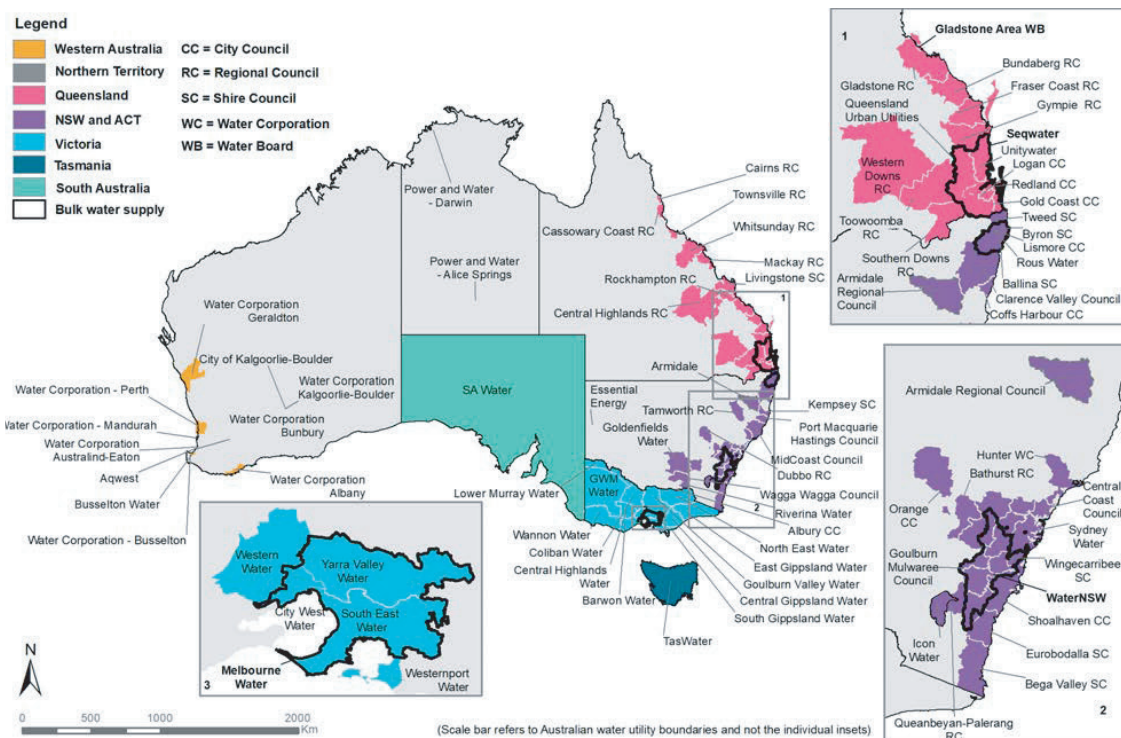
4. Potable reuse

Very highly treated, purified water is blended with clean water for drinking purposes. For indirect potable reuse, treated wastewater is injected into water bodies, called an environmental buffer, such as rivers, reservoirs and aquifers before the water is treated at a drinking water treatment plant. For direct potable reuse, the treated wastewater is either blended with raw water immediately upstream of the water treatment plant or drinking water downstream without an environmental buffer. Potable reuse has been adopted in many cities globally, including two small schemes in Perth, and has been shown to be a reliable, hygienic and safe source of drinking water.

Ownership of Australia's water assets

From storage to distribution, treatment and disposal, Australian water assets are predominantly government owned, with ownership structures ranging from vertically integrated providers to separation of bulk and retail services. Ownership in most States and Territories tends to be by a handful of State water utilities, whereas NSW, VIC and QLD states have more fragmented ownership between state and local councils.

Government ownership of Australian water assets



Source: Bureau of Meteorology, Urban National Performance Report 2018-19

The ownership model reflects the political perception that potable water should remain under state control, notwithstanding positive privatisation experiences overseas. To date, private sector ownership in potable water assets is limited to water desalination and discrete water treatment and schemes, while private sector ownership in non-potable water is more common, particularly in the agriculture, resources and mining sectors.

There are a few emerging issues faced by Governments:

1. Ageing infrastructure now requires significant amounts of investment

Many infrastructure networks were designed and built decades ago for smaller cities. State utilities are expected to require an increasing level of investment to replace ageing assets, putting pressure on household water bills. For instance, the NSW regulator IPART approved a \$4.6billion capital expenditure program for 2020-24 in its latest price determination for Sydney Water, \$1.4billion increase from the last 4 years²⁰. Melbourne Water capital expenditure program for 2018-22 is \$2.5billion²¹ whereas WaterCorp WA capital expenditure program for 2017-2023 is \$3.8billion (in 2016 real dollars)²².

2. Finding long term, sustainable water solutions

Rather than taking a 'bandage approach', State Governments increasingly recognise the need for longer term, sustainable water solutions to address the supply challenges aforementioned, as well as growing community expectations on liveability standards and environmental outcomes. These objectives can create further funding pressure.

We see a growing recognition by the Government of the benefits of recycled water in displacing potable water for non-drinking purposes, thereby avoiding or deferring more expensive investment in the drinking water supply chain. Recycled water also reduces the high levels of stress on the ocean outfall infrastructure as the reclaimed water is diverted into recycling and reuse instead of clogging up the capacity of the discharge pipelines. With community education, an expansion of potable reuse may also be explored as a long term water solution in Australia.

3. Regional Australia faces unique challenges

Regional utilities and councils typically serve relatively small customer bases, dispersed over large areas. Their systems tend to be isolated with no back-up supply, making them more vulnerable to climate change. In some remote communities water services can fall below the standard of their urban counterparts, not meeting United Nations' Sustainable Development Goal (SDG) 6: Clean Water and Sanitation For All, further widening the health and economic gap between urban and regional Australia. Retaining the very large amounts of capital and expertise required to maintain, improve and operate these assets are unique challenges for regional Australia.

Going forward, the private sector can play a more important role in solving Australia's water problem. Lessons need to be learnt from the recent drought. It is also particularly timely for the public and private sectors to work together in building infrastructure in a post COVID environment.

Creating investment opportunities in the water sector

Identifying the need for private infrastructure investment, First Sentier Investors created Water Utilities Australia to establish a platform to invest in water infrastructure ranging from water and wastewater treatment plants, stormwater harvest, pipe networks and storage facilities.

Water Utilities Australia provides approximately 10 GL of recycled water annually to 1,719 residential customers, 216 agricultural customers, 8 industrial customers and 3 council customers. Increasing the utilisation of recycled water achieves an extra environmental benefit. Harvesting water for reuse from flow paths that would otherwise go to the ocean reduces or even eliminates polluting discharges to the marine environment.

From the cellar door to households' front doorstep

The McLaren Vale wine region is a firm favourite among sommeliers and South Australian locals. Over 200 vineyards and farms now benefit from recycled water from our portfolio company, the Willunga Basin Water Company. Currently supporting 45% of growers in the region, we are expanding our network to farms in the surrounding areas. Closer to Adelaide's CBD, all 3,000 homes within the Lightsview housing development will be connected to recycled water from our portfolio company, Lightsview ReWater. It owns the pipes in the streets and provides water for non-potable uses such as toilet flushing, garden irrigation and car washing. Extending the pipes into the adjacent suburbs is saving local councils around \$100,000 on irrigation costs every year.

Removing the waste from wastewater

Water Utilities Australia acquired the Rosehill Recycled Water Scheme in 2019. The scheme, known as AquaNet, was established when Sydney was in the grip of a prolonged drought in 2008 to recycle wastewater that would ordinarily be discharged into the ocean. The AquaNet infrastructure comprises reclaimed effluent supply pipelines, an advanced water treatment plant, delivery pipelines to customers and related storage, pumping and metering equipment. The NSW Government has introduced planning and building requirements to ensure major new commercial and residential developments utilise high quality recycled water for enhancing liveability, greening open space and protecting the environment.

Water Utilities Australia strives to make every part of its sustainability strategy align with the United Nations Sustainable Development Goals (SDGs); in 2019 pledging support of the SDGs and beginning the process of identifying areas where it can more actively contribute to improved SDG outcomes.

Private sector opportunities

Water assets tend to exhibit core infrastructure investment characteristics, such as high barrier of entry, long asset life, and stable and predictable revenue supported by regulation or long term contracts.

Any functioning society requires a well-funded and well-maintained water infrastructure, not just addressing water needs of today but also into the future. Private investment in Australian water sector has been limited to date. However, the sector is ripe for change and a number of opportunities are expected to arise in the short to medium term.

We expect private investment opportunities will come from the agriculture, resource and local government sectors, as well as being part of a locally embedded multi-utility network (e.g. multi-utility offering to a mixed-use precinct). While we do not expect State utilities to be privatised in the foreseeable future, there may be scope for private sector involvement in the recycled water space. We are optimistic about Water Utilities Australia's ability to make further quality investments and expand its platform.

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