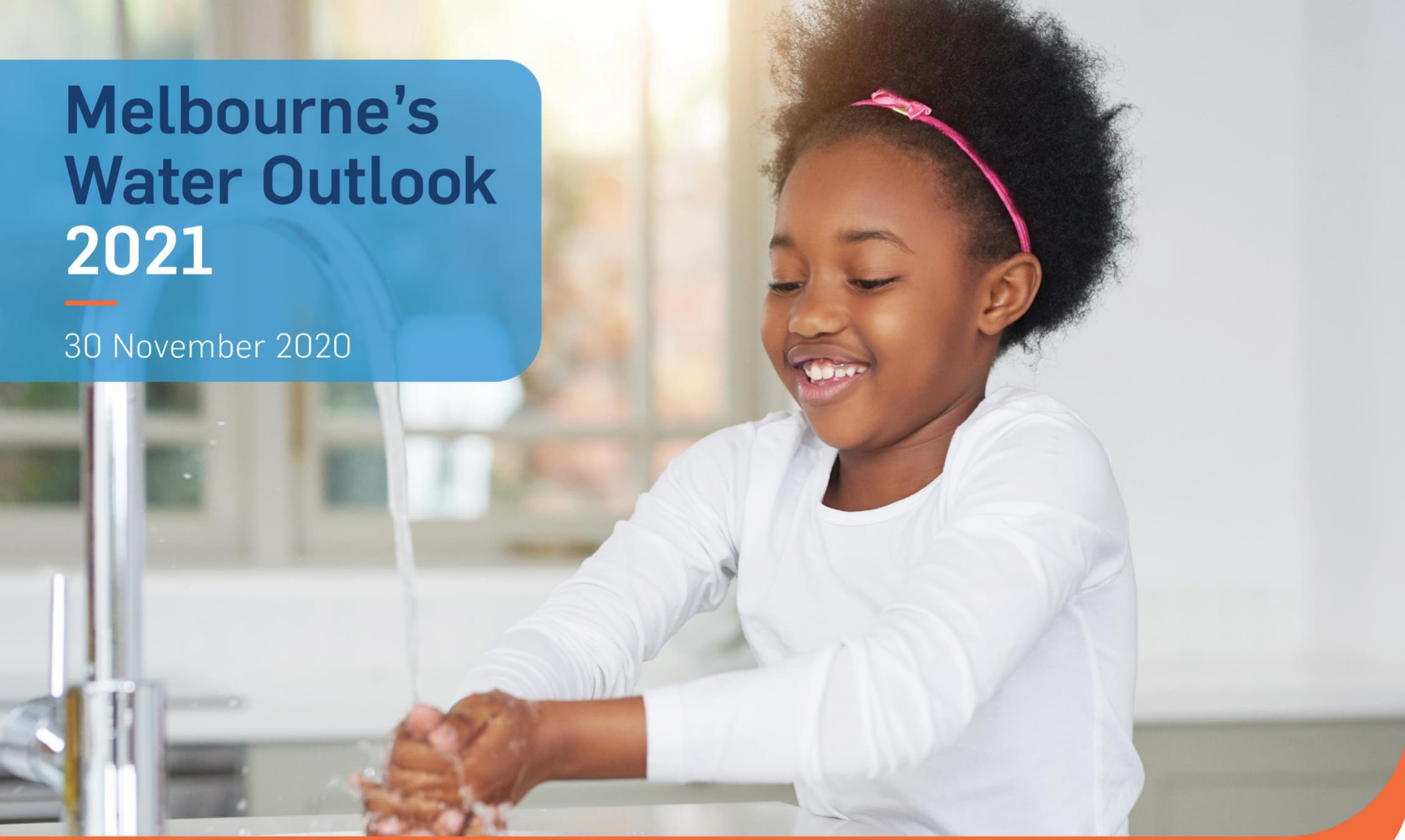
Melbourne's Water Outlook 2021

30 November 2020



Melbourne Water
Enhancing Life and Liveability

City West Water™

Yarra Valley Water

South East Water

It's important that we all play our part in securing Melbourne's water storages.

TARGET 155

We proudly acknowledge the Traditional Custodians of the land and waters where we work and live, and pay respect to their Elders past, present and emerging. We acknowledge the ongoing cultural, social and spiritual connections that Aboriginal and Torres Strait Islander peoples have with land and waterways and we recognise and value that they have cared for and protected them for thousands of generations

Melbourne's water supply availability for the coming year

Our water storage levels are secure, but growing challenges mean we all have a part to play in protecting supplies for the future.

Our water security depends on a range of factors including rainfall, water storage levels, the amount of water delivered from the Victorian Desalination Project (VDP) and our customers' water use and conservation behaviours. A resilient, adaptive and flexible approach to managing our water supplies is more important than ever in the face of challenges like bushfire, extended dry and drought conditions and greater weather variability. Greater variability in our weather has recently been experienced across much of Victoria and Australia.

2019 was Australia's driest and warmest year on record (Bureau of Meteorology-BOM). 2020 to date has seen above average rainfall and streamflow, and combined with a continued focus on efficient water use and the delivery of water from the VDP, has provided a welcome boost to Melbourne's water storages. The current La Niña event, along with other climate drivers, is expected to bring above average summer rainfall to most of Australia.

This mean's we'll be better placed to respond to events such as bushfires, drought, and the volatility of rainfall patterns. Dry or extremely dry conditions, as experienced during the Millennium Drought, can see storages fall quickly again.

The VDP makes an important contribution to Melbourne's water supply. Since 2017 it's delivered 260 billion litres of desalinated water. Total storage volume would be around 14.4% lower without this extra water. For the 2020-21 year, the VDP is delivering 125 billion litres of desalinated water.

This year our Make Every Drop Count campaign supported the Victorian Government's Target 155 (T155) voluntary water efficiency program. Alongside Permanent Water Use Rules, the campaign aims to increase community awareness of water availability challenges and actions being taken to secure supplies and promote efficient household water use. While many people's water usage habits have changed with an increase in working and schooling from home as a result of coronavirus (COVID-19) this year, Melburnians are still being conscious of the water they use.

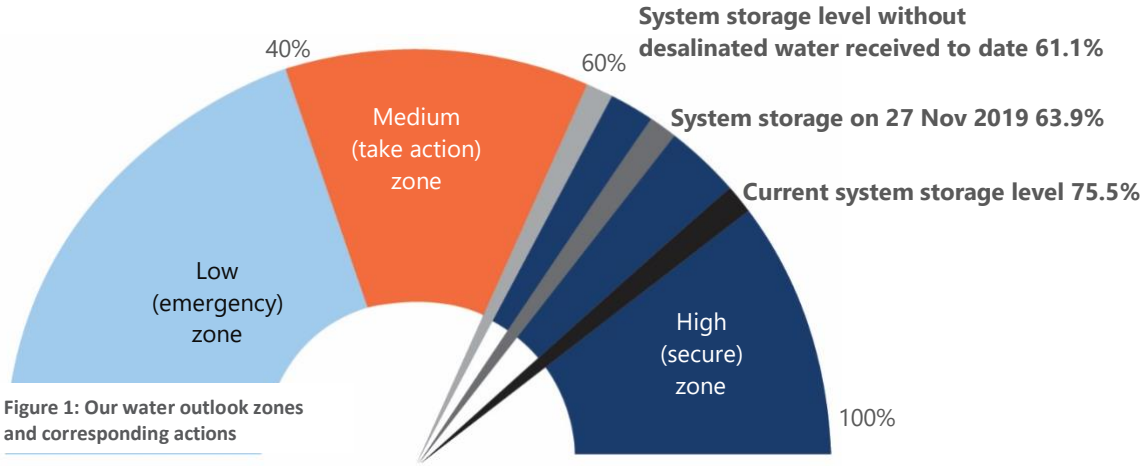


Figure 1: Our water outlook zones and corresponding actions

75.5%

Current system storage level at 25 November 2020

(storage level is inclusive of water provided from the desalination order to date)

This year's desalination order: **125 billion litres**

ZONE	ACTIONS PER ZONE
High (secure) zone	Water efficiency programs (eg Target 155, Permanent Water Use Rules)
	Use of Victorian Desalination Project as required to maintain and manage water security
	Continued investment in alternative water sources (eg recycled water)
	Ongoing planning for water availability
	Ongoing engagement with customers
Medium (take action) zone	Increased use of the Victorian Desalination Project
	Start planning for augmentation
	Increased use of customer behaviour and efficiency programs
	Further water saving measures including possible Stage 1 and 2 restrictions
Low (emergency) zone	Expanded use of customer behaviour and efficiency programs
	Implementation of augmentations
	Stage 3 and 4 restrictions
	Investment in emergency supply options
	Maximise use of the Victorian Desalination Project

Melbourne's water supply system

Melbourne's retail water corporations - City West Water, South East Water and Yarra Valley Water - deliver water to the community. Melbourne Water provides wholesale water services to the retail water corporations (see Figure 2). About half of the water stored in Melbourne's water supply system is available for Melbourne, with the rest allocated to other entitlement holders.

Melbourne Water also supplies water to Southern Rural Water and regional water corporations including Barwon Water, Gippsland Water, South Gippsland Water, Western Water and Westernport Water (Figure 3). Each regional water corporation has its own Water Outlook, but all are considered along with other Melbourne Water customers when planning for Melbourne's water security. Water is also allocated to the environment to contribute to the health of waterways.

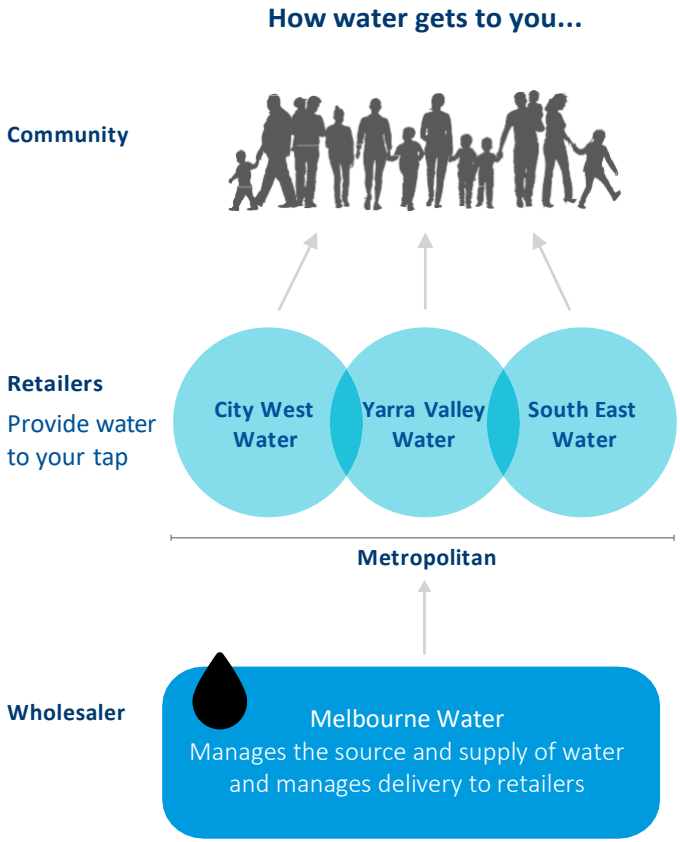


Figure 2: How water is supplied

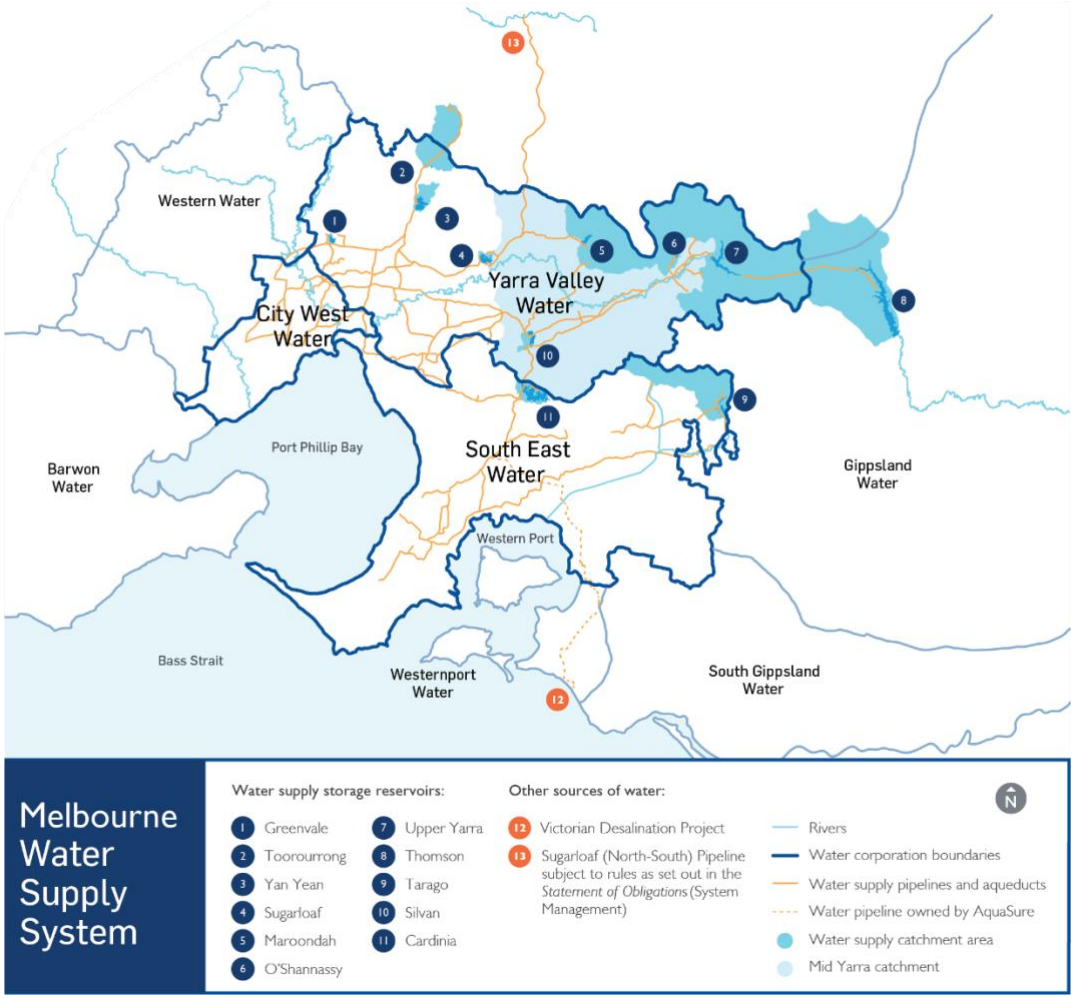


Figure 3: Melbourne water supply system

Long-term outlook

Greater climate variability, population growth and other factors influence long-term supply and demand for water.

In June 2017, each retail water corporation released its five-year Urban Water Strategy, coupled with Melbourne Water's release of the Melbourne Water System Strategy. We work collaboratively to develop and implement these strategies and review them every five years to ensure we have enough water to meet future demand.

These strategies align with the Victorian Government's Water for Victoria plan. A joint summary of our actions is outlined in Water for a Future-Thriving Melbourne. We work with government, business and community partners to implement these actions, finding innovative and sustainable ways to secure our water supplies. We're implementing water efficiency measures, investing in recycled water initiatives and harvesting more stormwater for irrigation and other fit-for-purpose uses. We're also working with government to review options to provide additional supplies for the Melbourne system when required.

Alongside these strategies, we have Drought Preparedness Plans which set out actions to prepare for, and respond to, periods of water shortage.

Impacts on our long-term outlook, which drive demands above forecast, are:

- rapid population growth, increasing water usage
- steady rather than declining average per-person water consumption over recent years
- a warming and drying climate over recent decades, in Victoria.

A warming and drying climate also impacts our long-term outlook for water supply. In comparison to historical conditions we're already experiencing:

- higher temperatures
- reductions in rainfall in autumn and winter
- in many catchments, less streamflow is being generated from the same amount of rainfall.

Melbourne's water corporations have started working together on a combined Melbourne Metropolitan Urban Water and System Strategy that will be finalised in 2022. This strategy will review and build on our 2017 strategies to ensure we can continue delivering secure water services to Melbourne and connected regions. Figure 4 shows projected long-term water supply and demand trends for Melbourne, assuming full use of the Victorian Desalination Project (noting that there will be variability in specific years). The cooler, wetter year in 2019-20 and the short-term impacts of coronavirus on population growth in Melbourne has contributed to improved water security this year.

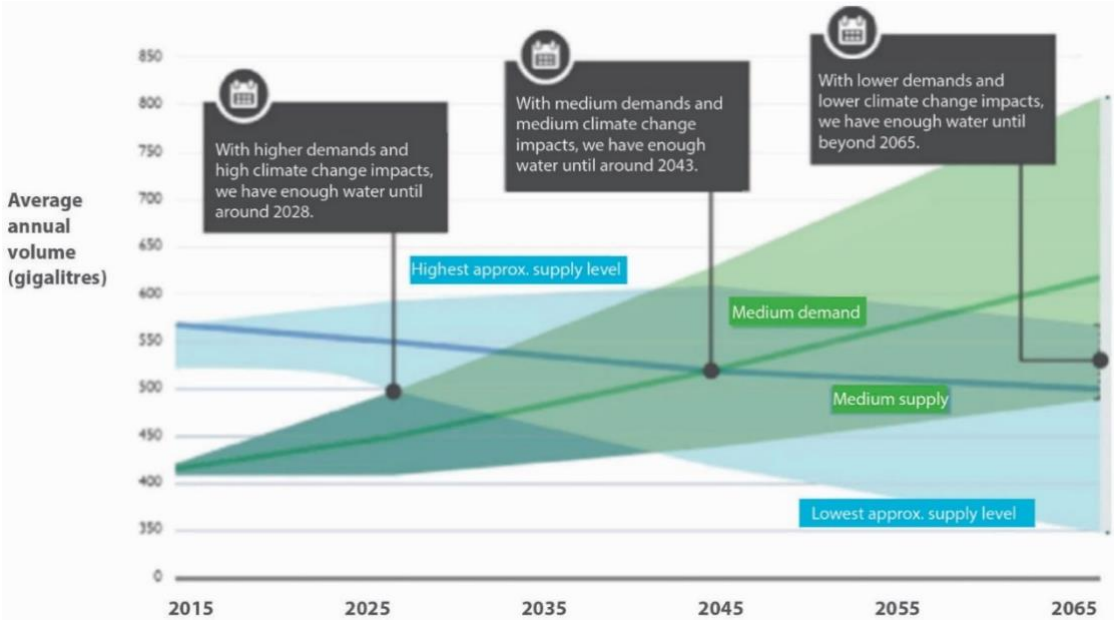


Figure 4: Long-term water supply and demand (Source: Water for a Future-Thriving Melbourne, 2017)

Melbourne's water use in 2019-20

Higher rainfall and the impact of coronavirus saw a decrease in Melbourne's overall demand for water.

Melbourne's total water use in 2019-20 decreased by 5% or 20 billion litres compared to the previous year (Figure 5), primarily due to above average rainfall, a cooler than average summer and coronavirus impacts. Residential water use comprised 68% of Melbourne's total water use in 2019-20 (Figure 6). Coronavirus saw a shift in the way we live, work and use water and, with more people staying at home, there was less commercial use this year.

Melburnians have established great water habits and together we've reduced our water use over the last year to an average of 157 litres per person per day (Figure 7). This is lower than previous years, in large part due to a cooler summer, with people using less water at home. Working with the community to make every drop count and aim for Target 155 remain essential to boosting our resilience.

Since 2011-12 (Figure 8), the Victorian Environmental Water Holder, an independent statutory body responsible for holding and managing Victoria's environmental water entitlements, has released water to the Thomson, Yarra and Tarago rivers to improve environmental outcomes and the health of water ecosystems. Higher than average rainfall and streamflow resulted in more environmental flow requirements being met by natural river flows, requiring lower environmental flow releases from storages in 2019-20.

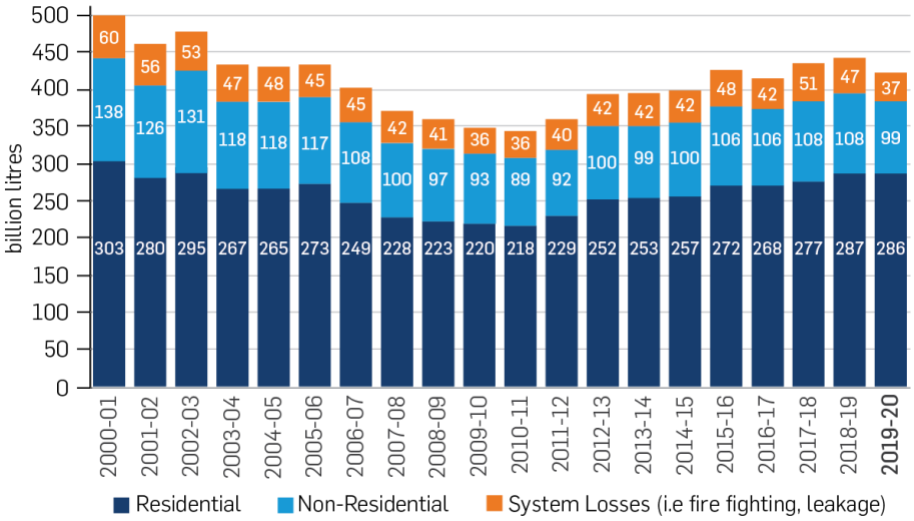


Figure 5: Melbourne's total water use by segment

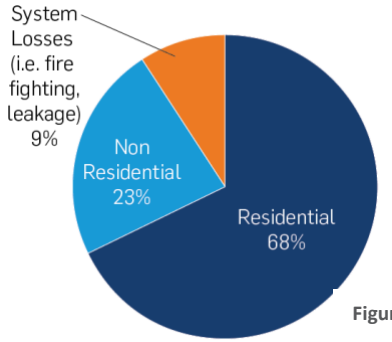


Figure 6: Water use breakdown 2019-20

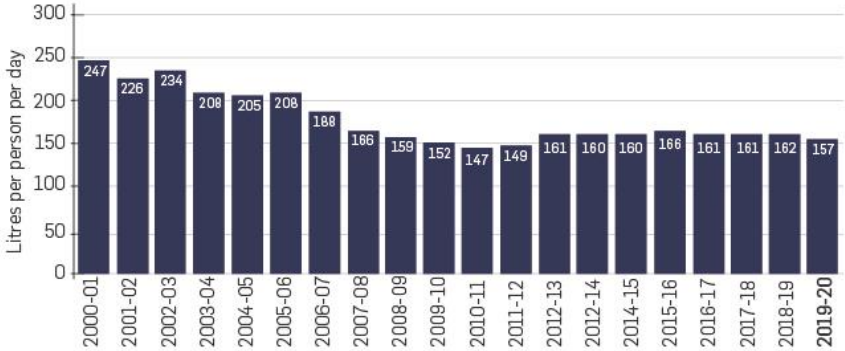


Figure 7: Melbourne's per capita residential consumption

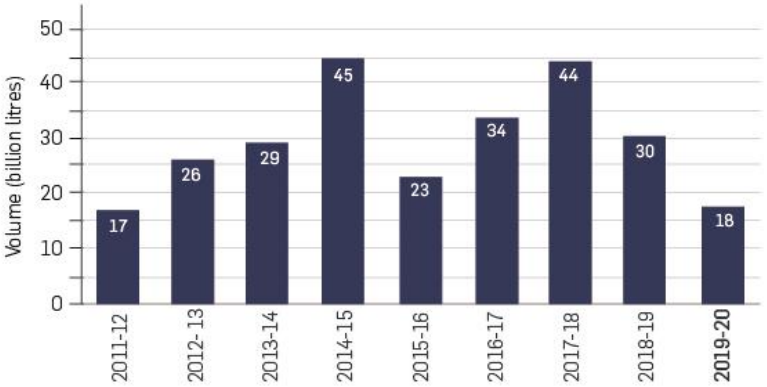


Figure 8: Environmental flow releases

A wetter, warmer season ahead

The Bureau of Meteorology outlooks show above average rainfall and warmer weather is likely for Melbourne over the coming months.

Temperature and rainfall influence water use, particularly during summer periods when larger quantities of water are used for watering gardens, parks, and sportsgrounds. Rainfall and temperature also influence inflows to Melbourne's storage reservoirs.

The latest Bureau of Meteorology climate outlook (26 November 2020) indicated that there is a higher likelihood of above average rainfall and warmer-than-average day time temperatures for the Melbourne region for December 2020 to February 2021.

This is consistent with the latest Bureau of Meteorology climate driver update (24 November 2020) which indicates that the El Niño-Southern Oscillation (ENSO) Outlook remains at La Niña and is likely to continue to at least February 2021. The Bureau of Meteorology's advisory is that the current La Niña conditions, along with other climate drivers such as the warmer than average waters to the north of Australia, are contributing to the increased chances of rainfall over Australia in the coming months.

We continually monitor storage conditions and the Bureau of Meteorology's seasonal climate outlooks.

For further information, please refer to the Rainfall and Temperature Outlooks and Climate Driver Update on the Bureau of Meteorology's website at: http://www.bom.gov.au/climate/ahead/

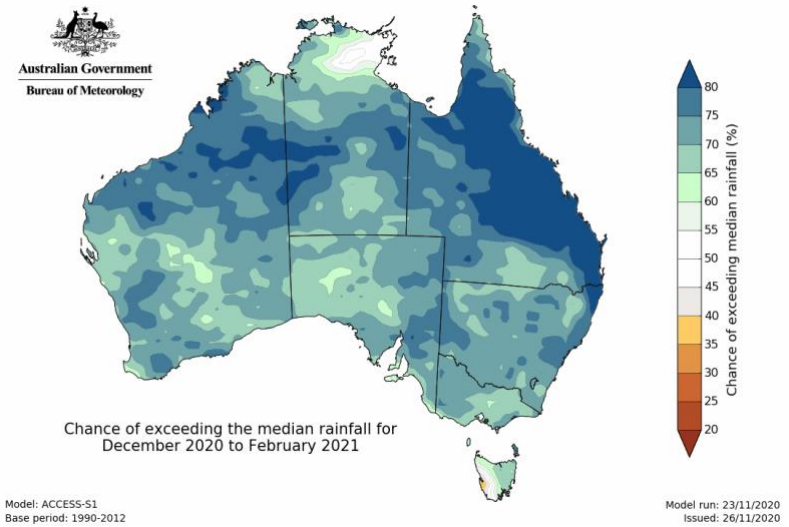


Figure 9: Seasonal rainfall outlook for December 2020 – February 2021

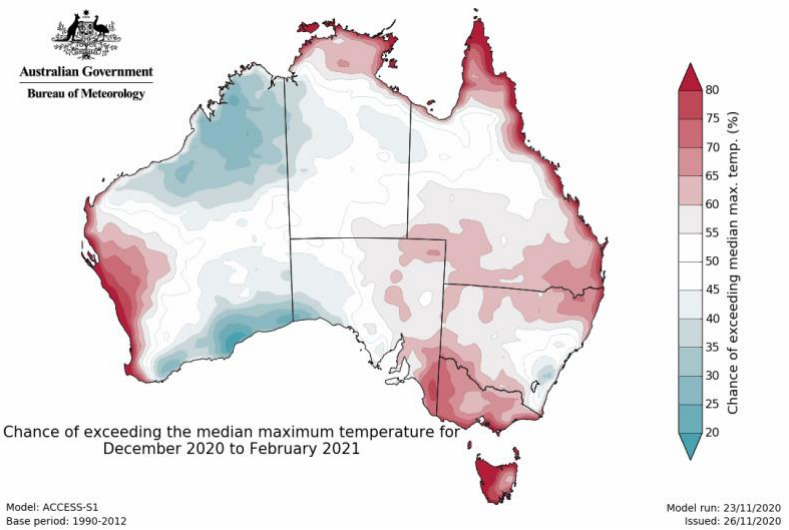


Figure 10: Seasonal temperature outlook for December 2020 – February 2021

What this means for Melbourne

We need to keep Permanent Water Use Rules, increase our efforts to achieve T155 and use water from the Victorian Desalination Project to ensure we keep supplies secure for the future.

As of 25 November 2020, the total system storage level is 75.5% which is 11.6% or approximately 210 billion litres higher than the same time last year. As a result of the Victorian Government's desalinated water orders since 2017, storage levels are 14.4% or 260 billion litres higher than they otherwise would have been.

Higher than average rainfall and inflows into storages during 2020, higher desalinated water orders, and ongoing water efficiency and conservation programs have all increased storage levels and improved our water security. However, while storage levels have increased and are likely to remain above 60% at 30 November 2021, they could be close to the medium (take action) zone if very dry conditions occur during 2021 (Figure 11).

Increasing climate variability, as recently experienced in parts of Victoria and eastern Australia, underlines the importance of having high levels of water in our storages to safeguard against future extreme climate events.

Water delivered through the Victorian Desalination Project, supported by increasing community awareness of the need for efficient water use, improves our ability to respond to unexpected events. It also reduces the risk of us entering the medium (take action) zone and helps keep Melbourne's water supply safe and secure for the future.

Water efficiency and conservation remain a key part of ensuring water security, and Permanent Water Use Rules (PWURs) will continue to apply to ensure sensible water use. These common-sense rules help ensure we use our water stocks more efficiently and encourage all Victorians to value this precious resource for the long term. Water restrictions are unlikely for Melbourne over the next 12 months.

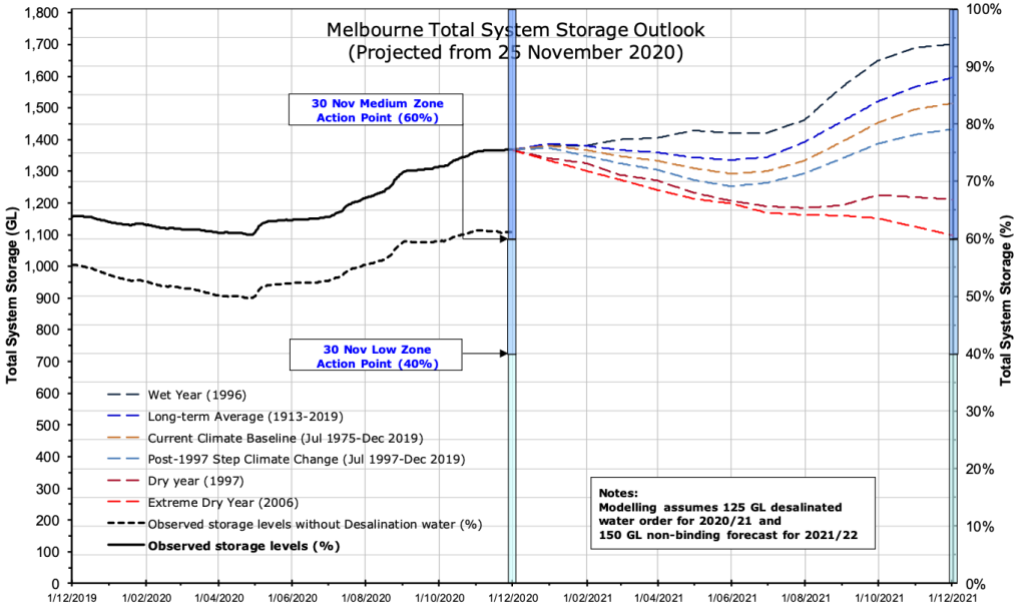


Figure 11: Melbourne total system storage outlook (projected from 25 November 2020)

We've outlined actions in our Urban Water Strategies and the Melbourne Water System Strategy and worked collaboratively to deliver results through Water for a Future-Thriving Melbourne.

Here's a summary of key actions we're working on both together and individually to enhance water availability:

Integrated Water Management (IWM)	Integrated Water Management (IWM) is a collaborative approach to water planning and management to support sustainable, connected communities. We will continue with catchment-scale IWM Strategies and work with organisations with an interest in all aspects of the water cycle including metropolitan water corporations, Councils and Traditional Owners. Outcomes include the use of stormwater and recycled water.
Community Rebates Program	This part-government funded program supports vulnerable customers to undertake plumbing improvements at home so they can avoid unnecessary and inefficient water usage. This includes engaging a plumber to do a water audit, and subsequently carry out minor plumbing works (e.g. replacement washers, dual-flush toilets, fixing leaking taps, replacement showerheads).
Digital Metering Joint Program	We're working collaboratively on a program to explore digital metering and understand the benefits that could be delivered through water efficiency, leak detection and informing behaviour change. Pilots have already resulted in identification and rectification of customer leaks in more than 5% of properties with digital meters installed.
Network efficiency	Undertaking active leak detection, reticulation mains renewals, district metering and trialing intelligent network technologies to minimise system losses.
Key Achievements	**Schools Water Efficiency Program (SWEP):** Over 1200, including nearly 750 across Melbourne, schools have now participated in the program which helps them identify leaks, faulty appliances and inefficient practices. Approximately 4.5 billion litres has been saved since inception of the program in 2012. **Make Every Drop Count:** The metropolitan Melbourne water corporations have developed a water security community awareness campaign in a renewed focus on working together with the community to manage our precious water resources for future generations. The campaign has been developed to help Melburnians conserve water and specifically to support the Victorian Government's overarching Target 155 (T155) objective. More than 60% of Melburnians said they would act to reduce their water use after seeing our Make Every Drop Count Campaign. **Recycled Water:** Over 84,000 Recycled Water customers across Melbourne households and businesses. Retailers and Melbourne Water are investigating the feasibility of a recycled water ring main being incorporated into the suburban rail loop. **Desalinated Water Order advice:** With desalinated water playing an important role in maintaining security of Melbourne's water supply system, desalinated water order volumes are reviewed annually and advice is provided to the Minister for Water to decide on the volumes required to provide ongoing water security. Our water supplies would be 14.4% lower without desalinated water provided since 2017.

City West Water programs and projects

City West Water™

Altona and West Werribee Recycled Water Schemes	We operate and continue to develop schemes to supply recycled water to commercial, industrial and residential customers and for the irrigation of open spaces. City West Water supplies 8,220 residential properties and 64 non-residential properties with Class A recycled water delivering over 2500 ML/yr and reducing demand on drinking water.
Western Area Recycled Water Expansion	We have received $2 million dollars in government funding to support the expansion of the recycled water supply network in the Werribee catchment. This recycled water scheme in partnership with City West Water will support the Werribee Open Range Zoo, grow and enhance the public open space in the City of Wyndham, and help restore the Werribee River. The program will also reduce the use of valuable drinking water supplies and helps protect Port Philip Bay from wastewater discharge.
Stormwater Harvesting Partnership Fund	We are continuing to implement the Stormwater Harvesting Partnership Fund through completion of a number of projects in 2020, including the Melbourne Olympic Park and Tennis Centre, Balmoral Park, Arndell Park, Edinburgh Gardens, Woodlands Park and Laverton Baseball Centre.
Arden Macaulay Alternative Water Plan	We're currently developing an infrastructure plan to supply alternative water to the Arden Macaulay precinct. This plan will see supply of alternative water for use in all homes and businesses within the Arden Central area around the future North Melbourne station and also for irrigation of open space throughout Arden Macaulay. We are working with our stakeholders to understand all costs, benefits and funding mechanisms to enable the supply of alternative water to this important precinct.
Digital Metering	We now have over 1,400 customers with digital meters installed across two suburbs in our service area. We continue to successfully identify potential leaks on residential and non-residential properties, leading to water savings and lower bills for customers. We are also trialing new ways of engaging with our customers by presenting their water usage through an online portal to help them better understand their water usage.

South East Water programs and projects

Creating water efficient homes at Aquarevo	At Aquarevo, our partnership development with Villawood Properties in Lyndhurst, more than 135 homes are built and another 74 under construction as of August 2020. Residents enjoy the benefits of having three different types of water - drinking water, recycled water and rainwater - connected to their homes, so they can reduce their reliance on drinking water for things like flushing the toilet and watering the garden. Early data shows that houses in Aquarevo use on average 46% less drinking water than a standard home, with several properties reducing household reliance on drinking water by up to 70%.
Installing smart rainwater tanks in Knox City Council	We're working with Knox City Council, Melbourne Water and the local community to reduce flooding, manage storm water flows, and make better use of rainwater by installing smart rainwater tanks in the Knox area. Our TankTalk® rainwater tanks use innovative technology to connect to weather forecast data so they can automatically drain if heavy rain is expected. This means the tanks have space to capture as much rain as possible, helping to prevent storm water run-off into our bays and rivers – as well as helping to reduce the risk of flooding and the damage this can cause.
Continuing our digital meter trials	We're continuing our digital meter trials, and by July 2021 we'll have installed 20,000 digital meters. The meters take readings every 30 minutes, so customers can see their hourly, daily, weekly and monthly water use in the mySouthEastWater customer portal. In May 2020, we set up automated alerts to quickly let our customers know about anything out of the ordinary that may indicate a leak – like continuous water flowing through their pipes – so they can take action. Since launching the alerts, we've notified 51 customers about potential leaks in their homes, collectively saving our customers close to $20,000 and 4.6 million litres of water – that's enough to fill 46,000 bathtubs.
Integrated Water Management (IWM) in the City of Casey	We're partnering with the City of Casey and Melbourne Water on the Fountain Gate IWM project to deliver Class A treated storm water to a Narre Warren activity centre, where it will be used to supply sports ovals, the aquatic centre, commercial areas and residential properties. This project has benefits of drinking water substitution as well as flood management and local economic stimulus.
Connecting our customers to recycled water	We're on our way to connecting 100,000 homes in Melbourne's south-east to Class A recycled water, with more than 42,650 homes already connected. We also supply recycled water to businesses like vineyards, golf courses, market gardens, nurseries, turf growers and food producers. In 2021, we're planning to expand the recycled water network in Cranbourne, Pakenham and Clyde.

Yarra Valley Water programs and projects

Recycled Water	We're working to provide recycled water to more than 100,000 homes in Melbourne's fast-growing northern growth corridor. We're also investigating the feasibility of a recycled water scheme to irrigate farms in Coldstream.
Integrated Water Management	Collaboration with our Integrated Water Management forum will deliver a range of initiatives including a project to reimagine Tarralla Creek in Croydon and a sub-catchment plan for the Upper Merri Creek to help create more resilient communities.
Recycled Water at Doncaster Hill	We're building an underground recycled water treatment plant to service more than 5000 properties in Doncaster, supplying new homes with water for gardens, toilets and laundries and water for local parks and sportsgrounds.
Digital metering	Our digital water meter trials in Vermont South are helping customers identify leaks and make significant savings on their water bills. We're now expanding our trial area and testing an online portal which would allow customers to monitor and compare daily use and set water saving targets.
Network efficiency	We're continuing to establish District Metered Areas across our network to build intelligence to proactively identify leaks and bursts and develop targeted initiatives and programs to minimise them.
Whittlesea Community Farm	We're working with community partners to establish the Whittlesea Community Farm, a showcase for sustainable agriculture systems and a food hub where people can connect, learn and prosper.
Community Water Conservation Grants	Our Community Water Conservation Grants Program supported 27 community organisations - from scout groups to community gardens, disability centres and food charities, to help save thousands of litres of precious water.