With warmer, drier climatic conditions and a growing population, it’s important that we all play our part in securing Melbourne’s water storages.

Melbourne’s Water Outlook 2020
29 November 2019
Melbourne’s water supply availability for the coming year

Our water system storages are secure, though real and growing challenges to supply availability and demand require us all to act.

Our water security is dependent on how much water we have in storage. At the end of November each year, Melbourne’s metropolitan water corporations review our system storage position based on water outlook zones and corresponding actions (Figure 1).

Melbourne’s water supplies are currently secure for the coming year, however it’s important we all continue working together to protect them for the future. Challenges such as our increasing population and a warming, drying climate have contributed to Melbourne’s storages decreasing by an annual average of 61 billion litres over the last five years.

Modelling indicates that in some scenarios, storages may continue to decline over the next few years. Under severe dry conditions, storage levels could approach the low zone. More action is required to decrease demand and increase supplies to build storage volumes.

Melbourne’s average per-person water consumption has increased slightly to about 162 litres per day. With community input, we have developed the Make Every Drop Count campaign, in support of Victorian Government’s Target 155 (T155) voluntary water efficiency program. Alongside Permanent Water Use Rules, the campaign aims to increase community understanding of our water availability challenge and actions we are taking to secure supplies and to promote efficient residential water use.

The Victorian Desalination Project makes an important contribution to our supply system. Since 2017 the Victorian Desalination Project has contributed around 150GL of water and total storage volume would be around 8% lower without this volume. With rainfall and streamflow trends suggesting less water will be available from surface water sources in the future, we will increasingly use desalinated water to maintain water supply resilience. For the 2019/20 year, Melbourne is being supplied with 125 billion litres of desalinated water, the largest annual volume to date.

<table>
<thead>
<tr>
<th>Zone</th>
<th>Actions per zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (secure) zone</td>
<td>Water efficiency programs (eg Target 155, Permanent Water Use Rules)</td>
</tr>
<tr>
<td></td>
<td>Use of the Victorian Desalination Project as required</td>
</tr>
<tr>
<td></td>
<td>Continued investment in alternative water sources (eg recycled water)</td>
</tr>
<tr>
<td></td>
<td>Ongoing planning for water availability</td>
</tr>
<tr>
<td></td>
<td>Ongoing engagement with customers</td>
</tr>
<tr>
<td>Medium (take action) zone</td>
<td>Increased use of the Victorian Desalination Project</td>
</tr>
<tr>
<td></td>
<td>Start planning for augmentation</td>
</tr>
<tr>
<td></td>
<td>Increased use of customer behaviour and efficiency programs</td>
</tr>
<tr>
<td></td>
<td>Further water saving measures including possible Stage 1 and 2 restrictions</td>
</tr>
<tr>
<td>Low (emergency) zone</td>
<td>Expanded use of customer behaviour and efficiency programs</td>
</tr>
<tr>
<td></td>
<td>Implementation of augmentations</td>
</tr>
<tr>
<td></td>
<td>Stage 3 and 4 restrictions</td>
</tr>
<tr>
<td></td>
<td>Investment in emergency supply options</td>
</tr>
<tr>
<td></td>
<td>Maximise use of the Victorian Desalination Project</td>
</tr>
</tbody>
</table>

System storage level without desalinated water received to date 55.5%

Current system storage level 63.9%

This year’s desalination order: 125 billion litres
Melbourne’s water supply system

Melbourne’s retail water corporations, City West Water, Yarra Valley Water and South East Water deliver water to the community. Melbourne Water provides wholesale water services to the retail water corporations (see Figure 2). As at 31 October 2019 about half of the water stored in the Melbourne water supply system is available for Melbourne, with the remaining 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 their own Water Outlook but are considered along with other Melbourne Water customers when planning for Melbourne’s water security. Water is also allocated to the environment to ensure the health of waterways.

How water gets to you...

Wholesaler
Melbourne Water
manages the source and supply of water
and manages delivery to retailers

Retailers
Provide water to your tap

City West Water
Yarra Valley Water
South East Water

Metropolitan

Community

Figure 2: How water is supplied

Figure 3: Melbourne water supply system

Water supply storage reservoirs:
1. Greenvale
2. Toorourong
3. Yan Yean
4. Sugarloaf
5. Maroondah
6. O’Shannassy

Other sources of water:
1. Upper Yarra
2. Thomson
3. Tarago
4. Silvan
5. Cardinia

Victorian Desalination Project
Sugarloaf (North-South) Pipeline subject to rules as set out in the Statement of Obligations (System Management)

Rivers
Water corporation boundaries
Water supply pipelines and aqueducts
Water pipeline owned by AquaSure
Water supply catchment area
Mid Yarra catchment
Long-term outlook

Population growth, the potential impacts of climate change and other factors influence the long-term supply and demand for water.

In June 2017, each retail water corporation released its Urban Water Strategy, coupled with Melbourne Water’s release of the Melbourne Water System Strategy. We work collaboratively to inform the development of these strategies and review them every five years, to ensure ongoing water availability.

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 are implementing water efficiency measures, investing in recycled water initiatives and harvesting more stormwater for irrigation and other fit-for-purpose uses. We are also working with Government to review options to provide for additional supplies for the Melbourne system when it is required.

Alongside these strategies, we also 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 are driving 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.

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).
Melburnians’ water use

Residential customers are Melbourne’s biggest water users, using around two and a half times more water than industry.

Melbourne’s water usage in 2018-19 increased by 1.3% compared to the previous year (Figure 5). Residential water use comprised 65% of Melbourne’s total water use in 2018-19 (Figure 6).

The residential per-person consumption for 2018-19 was 162 litres per person per day (Figure 7). This is slightly higher than the previous year and requires further focus through delivering on actions from our Urban Water Strategies and working with the community to make every drop count and reach Target 155.

Since 2011-12 (Figure 8), the Victorian Environmental Water Holder has released water available from environmental entitlements to the Thomson, Yarra and Tarago Rivers to improve environmental outcomes and the health of water ecosystems.
A drier, warmer season ahead

Bureau of Meteorology outlooks show below average rainfall, warmer temperatures and low storage inflows are more likely for the Melbourne region over the coming months.

Temperature and rainfall influence water use, particularly during summer periods when it’s used for watering gardens, parks, and sportsgrounds. At the same time, rainfall and temperature also influence inflows to Melbourne’s storage reservoirs.

The latest Bureau of Meteorology climate outlook issued on 21 November 2019 indicated that below average rainfall and warmer-than-average day time temperatures are likely for the Melbourne region for the season ahead (December 2019 to February 2020).

The latest seasonal streamflow forecast issued in mid-November 2019 for Melbourne’s four major storage reservoirs indicated low inflows are likely for the three-month period (November 2019 to January 2020).

We continually monitor storage conditions and the Bureau of Meteorology’s seasonal climate outlooks.
What this means for Melbourne

Permanent Water Use Rules, increased efforts to achieve T155 and water from the Victorian Desalination Project are all necessary to keep our water supply secure.

As of 27 November 2019, the total system storage level is 63.9%, 0.9% higher than the same time last year. As a result of the Victorian Government’s desalinated water orders, since 2017 storage levels are 8.4% higher than they otherwise would have been.

While storage levels are likely to remain in the high (secure) zone (above 60%) at 29 November 2020, modelling suggests that in some scenarios they could be in the medium (take action) zone if dry conditions occur during 2020 (Figure 11). The modelling has taken into account the potential water requirements of regional urban water corporations to be met through the water grid and environmental needs. We have several actions (as detailed in Figure 1) in the medium (take action) zone and based on this, water restrictions are unlikely for Melbourne over the next 12 months. However Permanent Water Use Rules will continue to apply to ensure sensible water use. Permanent Water Use Rules are a set of common-sense rules to make sure we use water more efficiently and encourage all Victorians to value this precious resource for the long term.

Use of the Victorian Desalination Project, supported by increasing community awareness of efficient water use practices and targeting water consumption of 155 litres per person per day, reduces the risk of entering the medium (take action) zone and contributes to maintaining a safe and secure drinking water supply for Melbourne.

Figure 11: Melbourne total system storage outlook (projected from 27 November 2019)
What this means for Melbourne

We’ve identified a number of actions in our Urban Water Strategies and the Melbourne Water System Strategy, as well as the actions we’ve taken collaboratively in 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:

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make Every Drop Count campaign</td>
<td>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. This is in line with our commitment to supporting efficient use of water across the community as stated in Water for a Future-Thriving Melbourne, where we forecast demands of 150 litres per person per day for residential drinking water use across Melbourne by 2022. We will continue to aim for this water use target while being aware of the environment we’re operating in which includes low inflows to dams, a growing population and hotter, drier weather.</td>
</tr>
<tr>
<td>Community Rebates Program</td>
<td>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).</td>
</tr>
<tr>
<td>Integrated Water Management (IWM)</td>
<td>Continuing Catchment scale IWM strategies for each of the IWM Forums that support Forum members (eg metropolitan water corporations, Councils, and Traditional Owners) to achieve IWM strategic objectives including the development of place based IWM plans. Outcomes include the use of stormwater and recycled water.</td>
</tr>
<tr>
<td>Desalinated water order advice</td>
<td>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. Since 2017, desalinated water has increased our water supplies by 8.4%.</td>
</tr>
<tr>
<td>Digital Metering Joint Program</td>
<td>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.</td>
</tr>
<tr>
<td>Network efficiency</td>
<td>Undertaking active leak detection, reticulation mains renewals, district metering and trialing intelligent network technologies to minimise non-revenue water.</td>
</tr>
<tr>
<td>Key achievements</td>
<td>Schools Water Efficiency Program (SWEP): over 1000 schools have now participated in the program which helps them identify leaks, faulty appliances and inefficient practices. Approximately 3.5 gigalitres has been saved since inception of the program in 2012.</td>
</tr>
<tr>
<td></td>
<td>Greenhouse gas emissions reduction: The retailers and Melbourne Water are working to reduce greenhouse gas emissions associated with delivery of our services. The retailers are three of 13 water corporations that have formed Zero Emissions Water, using collective purchasing power to negotiate a 78GWh renewable energy Power Purchase Agreement that will reduce water sector emissions and energy costs. Melbourne Water has pledged to halve net greenhouse gas emissions by 2025 and achieve net zero emissions by 2030. Using big data and a sophisticated algorithm, Melbourne Water has better synchronised water pumps at the Winneke water treatment plant, reducing greenhouse electricity gas emissions and reducing energy costs by 20%. This process will be rolled out to other pump stations in the future.</td>
</tr>
<tr>
<td></td>
<td>Choose Tap: The Retailers through Choose Tap have continued installing public drinking fountains and serving free tap water at events across the country, as well as working with community groups, schools and sports clubs to support local communities and promote the quality of Melbourne’s tap water. Choose Tap is now focusing efforts on tackling the environmental issues associated with single use plastics, helping Melbournians reduce their bottled water consumption.</td>
</tr>
<tr>
<td></td>
<td>Recycled Water: Retailers and Melbourne Water are investigating the feasibility of a recycled water ring main being incorporated into the suburban rail loop.</td>
</tr>
</tbody>
</table>
Melbourne’s Water Outlook 2020

City West Water programs and projects

<table>
<thead>
<tr>
<th>Program / Plan</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Altona and West Werribee Recycled Water Schemes</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Western Area Recycled Water Expansion</strong></td>
<td>We’re working with local partners to identify and implement opportunities to expand our current recycled water supply area within Wyndham. To date this work has identified opportunity to provide additional recycled water to our customers and therefore reduce demand on drinking water. Stage 1 of this project is scheduled for completion in 2021.</td>
</tr>
<tr>
<td><strong>Greening the West</strong></td>
<td>We are launching Greening the West Strategy Refresh driving Greening the West to 2025 and will continue delivering regional green infrastructure projects in partnership with state government, local government, industry bodies and community groups, linking sustainable water supplies to enabling healthy, liveable communities.</td>
</tr>
<tr>
<td><strong>Stormwater Harvesting Partnership Fund</strong></td>
<td>We are continuing to implement the Stormwater Harvesting Partnership Fund through completion of a number of projects in 2020, including Balmoral Park, Arndell Park, Edinburgh Gardens, Woodlands Park and Laverton Baseball Centre.</td>
</tr>
<tr>
<td><strong>Arden Macaulay Alternative Water Plan</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>
| **Key achievements** | **Digital Metering**: We have successfully installed approximately 900 digital meters in the Richmond area and have achieved water efficiencies through identification of leaks on residential and non-residential properties.  
**Greening the West**: Partnered with key stakeholders to complete the ambitious plan to plant 1 million trees across Melbourne’s Western suburbs, delivering wide-ranging improvements to the liveability of Melbourne’s west. This program received a Premier’s Sustainability Award in 2019.  
**Stormwater Harvesting Partnership Fund**: Awarded funding to six stormwater harvesting projects. Melbourne Olympic Park Tennis Centre Stormwater Harvesting Scheme completed and now supplying stormwater for urban greening. |

Melbourne Water Outlook 2020
## South East Water programs and projects

<table>
<thead>
<tr>
<th>Water efficiency campaigns</th>
<th>We continue to raise awareness with current and future customers about the long-term benefits of water efficiency through social media campaigns, a new page on our online portal and information in our customers’ bills.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local council partnerships</td>
<td>We’ll be strengthening our relationships with local councils in our catchment area so we can help contribute to healthier communities. For example, in 2019–20 we’ll be conducting trials with Frankston City Council and the City of Casey to improve water efficiency and affordability in their communities. We’ll also collaborate with local councils to co-create greener, more liveable spaces for their communities to enjoy.</td>
</tr>
<tr>
<td>Digital metering</td>
<td>By the end of 2020 we’ll have installed up to 15,000 digital meters in homes throughout Melbourne’s south east. The meters take readings every 30 minutes and send us a usage report once every day, so we can let customers know if we notice anything unusual – like continuous water use – that could mean they have a water leak.</td>
</tr>
<tr>
<td>Customer First program</td>
<td>We’re committed to supporting and assisting our most vulnerable customers. Our ‘Customer First’ program is business-wide and proactively identifies and supports vulnerable customers. The program provides access to services to better enable these customers to manage their usage and improve their water efficiency.</td>
</tr>
<tr>
<td>Supporting liveable communities</td>
<td>We’ll continue to create and support liveable, sustainable and climate resilient communities through the integration of water sensitive design principles into our planning and delivery of water services. This will be achieved through projects including Fishermans Bend and Aquarevo, where we will maximise use of water resources including rainwater and recycled water. We’ll also be delivering on customer expectations to increase supply and use of recycled water, with a focus on new estates.</td>
</tr>
<tr>
<td>Key achievements</td>
<td>We appointed the John Holland SUEZ Beca (JHSB) joint venture to deliver and then manage a major upgrade of our Boneo Water Recycling Plant. They’ll be implementing innovative treatment technologies designed to reduce energy consumption in the water recycling process and protect the local environment.</td>
</tr>
<tr>
<td></td>
<td>Lang Lang Water Recycling Plant: Our eight water recycling plants each produce Class A or Class C recycled water. In 2018–19, we supplied 6.9 billion litres of recycled water, saving the same amount of drinking water. In 2018–19, construction continued on the upgrade to our Lang Lang Water Recycling Plant to produce Class A recycled water, as well as Class C.</td>
</tr>
<tr>
<td></td>
<td>Aquarevo: We’ve welcomed the first homeowners at Aquarevo, our partnership developed with Villawood Properties in Lyndhurst. All homes are equipped with smart tanks that capture, store and use rain and stormwater, so residents only use drinking water where it’s really needed – and as a result, they’ll use around 70% less water than an average home.</td>
</tr>
</tbody>
</table>
### Recycled Water

We're working to provide recycled water to more than 100,000 homes in Melbourne's fast-growing northern suburbs of Beveridge, Craigieburn, Epping, Kalkallo and Wallan, as well as Chirnside Park and Lilydale. We're also working with farmers and Yarra Ranges Council to develop a plan to use recycled water to irrigate peri-urban agriculture at Coldstream.

### Integrated Water Management

Collaboration with our Integrated Water Management forum partners in the Yarra, Maribyrnong and Dandenong Creek catchments will deliver initiatives including:
- The Merri Creek Upper Integrated Water Management Sub-Catchment Plan
- Progressing plans to supply recycled water to about 5500 properties in Doncaster
- Creation of a community farm in Whittlesea
- Naturalisation of Taralla Creek

### Water Recycling at National Employment Cluster

We're involved in water recycling planning at Monash (with South East Water) and LaTrobe National Employment Clusters. We're also working with the Department of Environment, Land, Water and Planning, Melbourne Water and local councils to review opportunities for water recycling in areas undergoing redevelopment.

### Digital metering

We're working with about 800 customers in Vermont South to trial digital meters. Early results have been very positive, with data helping customers identify and address leaks on their property. The findings have saved customers $7,858 a year and the equivalent of 18,000 bath tubs of water.

### Non-revenue water reduction

We continue to invest in ways to reduce water loss through leaks. We have proactive leak detection processes and are installing 29 network flow and pressure monitoring devices throughout the network to identify hidden leaks and reduce non-revenue water losses.

### Key achievements

- **Climate Resilience:** In 2018-19 we completed our Climate Resilience Plan which sets out key actions that build our capacity, reduce our vulnerabilities and support long-term planning for an uncertain future. Our waste to energy plant, “ReWaste”, has transformed more than 45,000 tonnes of food waste into 10,000 Megawatt hours of clean energy since its launch two years ago.
- **Water Conservation Awareness:** We created pop-up hubs at major shopping centres to share water saving tips and spread the word about our programs to support vulnerable customers. We had specialist customer service teams at Broadmeadows, Northland and Greensborough shopping centres, and feedback was overwhelmingly positive.