

Annual Water Outlook 2021



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Executive Summary

Westernport Water (WPW) plays a vital role in ensuring that our region continues to be amongst the most liveable and productive regions of Victoria. This Annual Water Outlook (AWO) provides data and information to provide stakeholders and the community with forward looking projections on WPW's water security from the 1 December 2021 to 30 November 2022. It will provide an overview of any identified likely risks to the regions water supply and is informed by the 2017 WPW Urban Water Strategy (UWS).

The outlook for the upcoming year indicates water supplies will be sufficient to meet supply and demand requirements to the end of the outlook period, with no requirement to change restriction levels from the ongoing Permanent Water Saving Rules campaign.

WPW provides water and wastewater services wherever economically, environmentally and socially practicable to properties and communities throughout its district. WPW provides services to over 19,000 permanent customers (100,000 in peak holiday periods) in an area covering 300 square kilometres, encompassing Phillip Island and the district stretching from The Gurdies to Archies Creek (Figure 1).

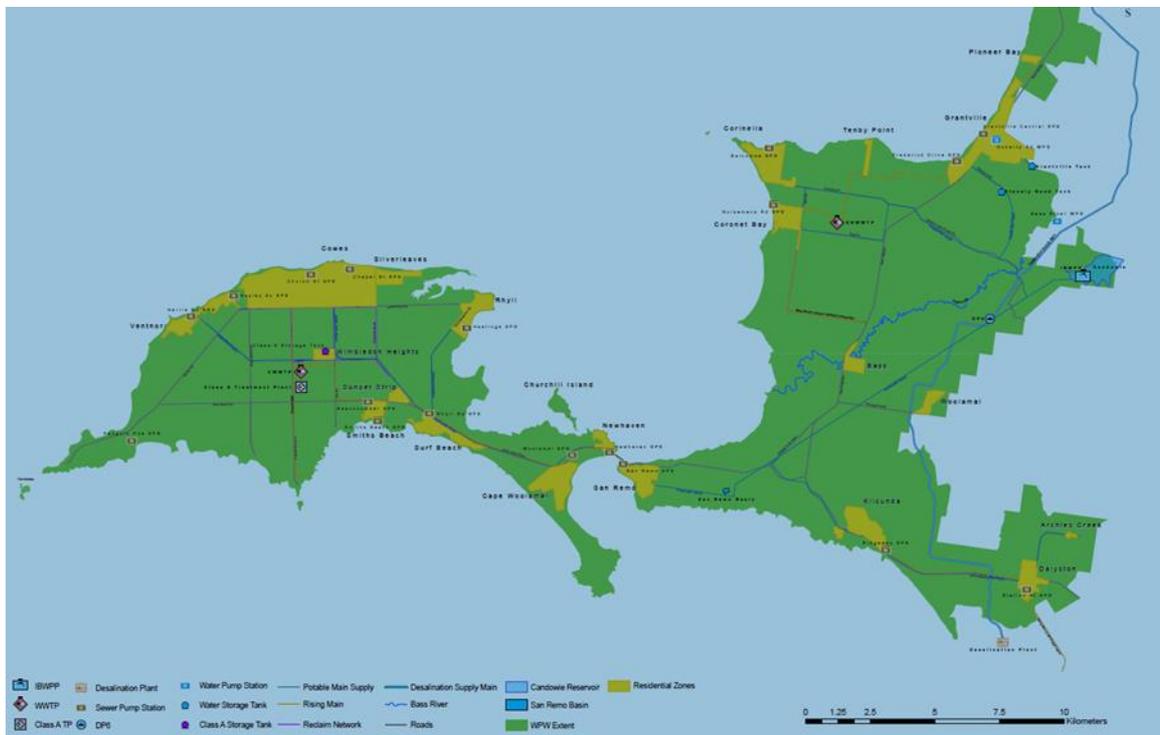


Figure 1 Westernport Water's supply district and primary sources of supply.

- In 2017, WPW revised its UWS, which governs the provision of water supplies to customers for the next 50 years and determines how demand will be met whilst enhancing the water supply, integrating water cycle management and meet customers expected level of service. The strategy looks at climate change and demand scenarios when managing water and considers feedback from customers and the community, as well as key stakeholders. The strategy is under review and will be submitted to DELWP by 31 March 2022. WPW undertook a number of tasks in 2020/21 in relation to the UWS and ongoing commitment to meet level of service. These are:
- Commenced the development of the next iteration of the UWS (due March 2022)
- Utilised the connection to the Melbourne Pool during peak periods.

Introduction

Westernport Water Supply Outlook

The AWO provides an overview of WPW water availability from 1 December 2021 to the 30 November 2022. The AWO has been developed taking account of the winter/spring inflows, the latest forecasts for rainfall from the Bureau of Meteorology and the UWS. This AWO will inform the State's AWO and provide information on the upcoming peak summer demand, the available water held in storage to adequately meet the predicted demand and inform customers and stakeholders of any changes to our water restriction regime, in accordance with WPW's Drought Preparedness Plan (DPP).

The outlook for the upcoming year indicates water supplies will be sufficient to meet supply and demand requirements to the end of the outlook period, with no requirement to change restriction levels from the ongoing Permanent Water Saving Rules campaign.

Table 1 Westernport Water supply system and expected restriction levels in the outlook period.

System	Towns supplied	Primary source of supply	Expected Water Restriction Status in Outlook period
Westernport Water Supply System	Grantville Corinella/Coronet Bay San Remo Phillip Island Kilcunda Dalyston/ Archies Creek	Candowie Reservoir (Tennent Creek) Bass River Melbourne Headworks supply	Maintain Permanent Water Saving Rules

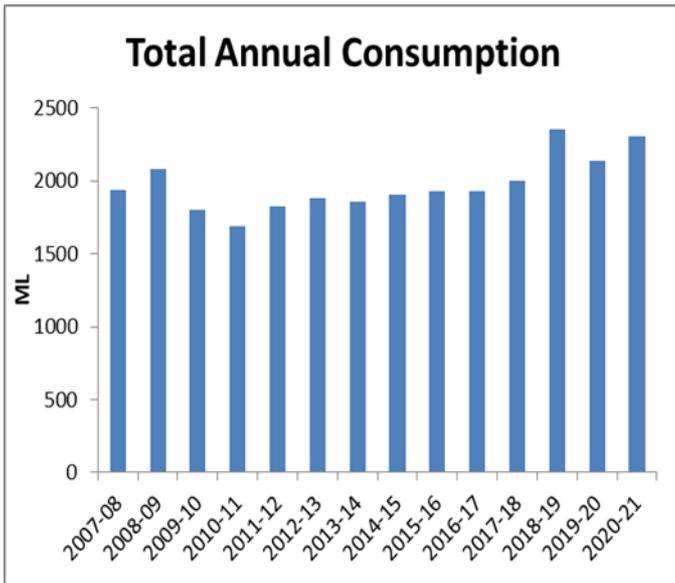
Key achievements –

Key achievements

- Continuation of the Integrated Water Management Forum in the Western Port Region to identify key priority projects to achieve integrated solutions for water management in the region.
- Participated in regional Integrated Water Management with Bass Coast Shire Council.
- Participated in the Central and Gippsland Region Sustainable Water Strategy working group.
- Continued pilot Trial Class B recycled water for agricultural use on surrounding farmland to the Cowes Wastewater Treatment Plant.
- Successfully trialled utilise the connection to the Melbourne Pool via the pipeline during reverse flow from Cardinia Reservoir.
- Grant was awarded to the Phillip Island Cemetery to expand irrigation utilising Class A water.
- Commenced the development of the next iteration of the UWS (due March 2022).

Future Initiatives

- Sustainable reuse and land management project to increase recycled water use through on-site irrigation;
- Continue to develop operating protocol for priority selection of water supply in light of successful commission of Melbourne Pool connection.



Westernport Water’s annual water use has been consistent over the last few years with an increase in consumption of 167ML in 2020-21 to 2,305ML.

The increase in consumption from last year is due to more people residing in the region on a more permanent basis and working from home, and business’ resuming operations following extended periods of closure due to COVID-19.

3% of annual water usage is made up of Class A Recycled Water, which was a 1% decrease from 2019-20. The decrease in Class A Recycled Water is due to the above average summer rainfall reducing irrigation demand.

Figure 2 Westernport Water’s yearly annual consumption comparison for the supply system.

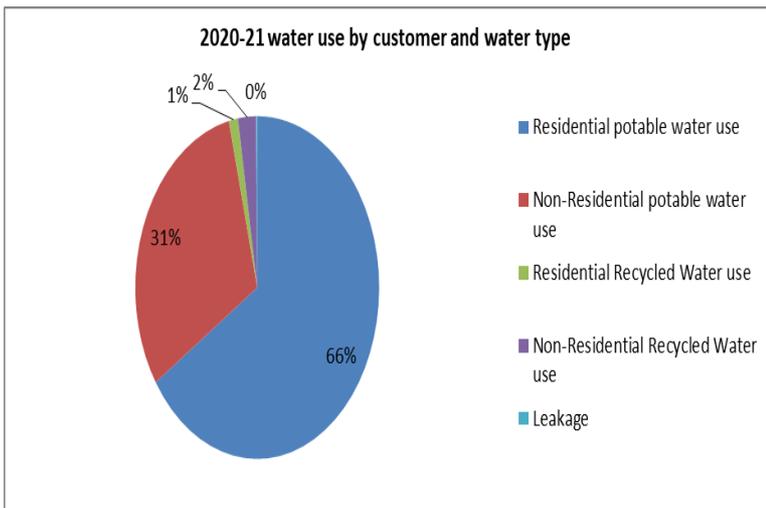


Figure 3 shows the distribution of water use in 2020-21 including potable water, recycled water and annual water losses through leakage in the system.

Water use is primarily potable water, and a greater percentage of that use is by residential customers (66%).

Class A recycled water makes up a small percentage of total (3%). Non-residential (i.e. commercial) customers are the major users of Class A recycled water (via irrigation), compared to residential customers, who are only using water for toilet flushing, gardening and wash down activities.

Figure 3 2020-21 break down of use customer/non-revenue/non-residential water and recycled water use.

Table 2 Bulk Entitlements for supply systems including environmental flow requirements.

System	Bulk Entitlement (ML/year)	Max rate of extraction (ML/day)	Daily flow to environment (ML/day)	Environmental flow (ML/year)	Amount taken (ML/year)
Tennent Creek	2,911	13.2	5.0 winter 0.1 summer 7.5 fresh	142	2106
Bass River	3,000	12	Nil		0
Greater Yarra System – Thompson River Pool	1,000		Nil		254

Current Water Resource Position

DEMAND INDICATORS

As part of the development of the UWS, WPW reviewed its water demand forecast to 2065. Water demand is typically difficult to forecast because it varies depending on climate variability, changing population and water use behaviour. The WPW region has an additional level of complexity associated with the large peaks in (non-permanent) population in summer and large number of tourists that visit the region. To reflect the uncertainty in forecast demand, WPW developed a baseline demand forecast with an upper and lower bound to reflect a probable range of demand growth. These forecasts are based on historic water consumption, population growth projections for the area and trends in water use. Due to the high degree of uncertainty, the long term climate change impact on demand has not been quantified in these demand projections.

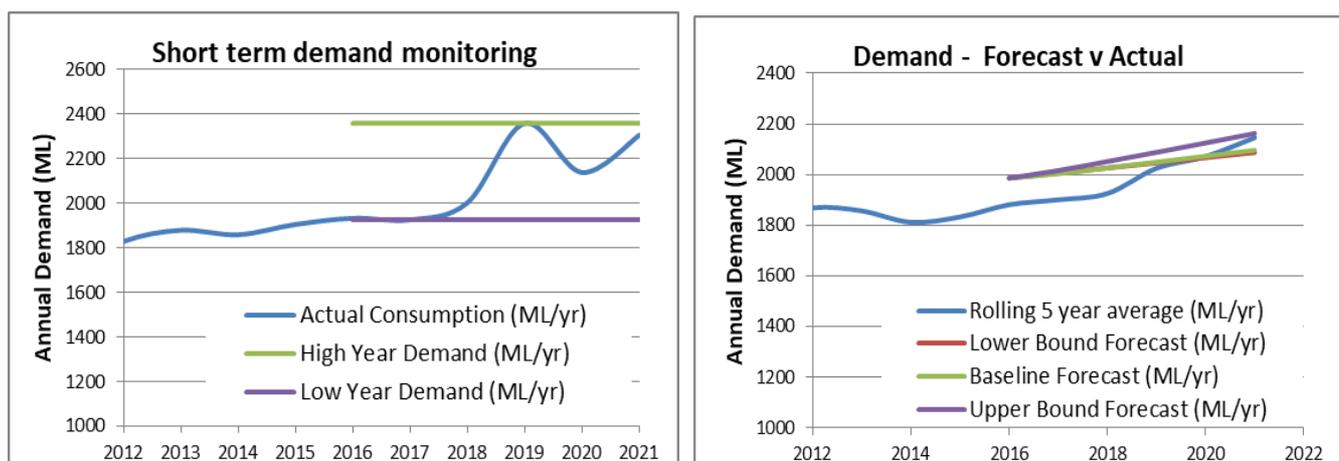


Figure 4 Updated demand indicators considered in the Annual Water Outlook determination November 2021.

Demand Indicators:

Short term: Water consumption was the 2nd highest recorded behind 2018-19. The increase in water usage from the 2018-19 was attributed to more people residing permanently in the area and working from home.

Long term: The rolling five year average demand indicates that demand is trending upwards and is likely to follow the demand forecast envelope. Demand should continue to be monitored.

Environmental flow releases: Flow released to Tennent Creek was 142ML.

Candowie Reservoir: reached 100% full in August 2021 and remains at 100%.

SUPPLY INDICATORS

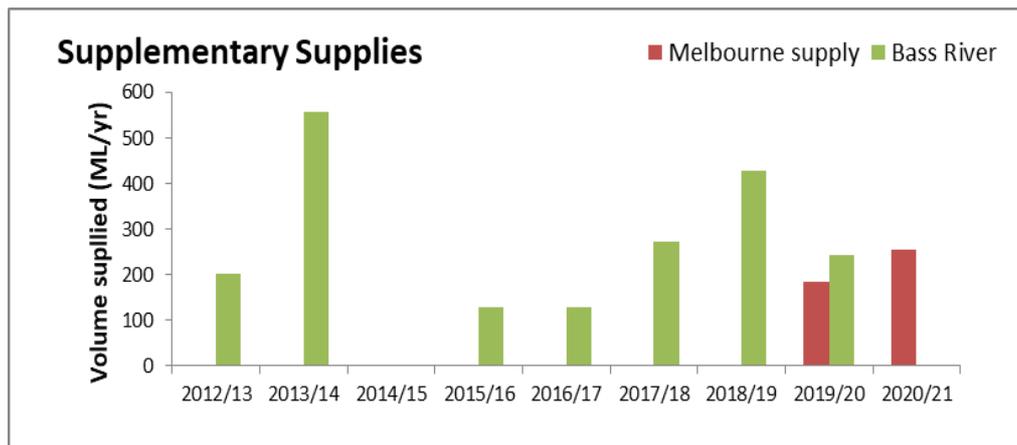


Figure 5 Use of supplementary supplies for the previous five years

Supply indicators:

Inflows into Candowie Reservoir were such that in August 2021 it reached 100% full and remains at 100%.

No water was extracted from Bass River during the reporting period as Candowie Reservoir did not reach the trigger levels to pump from Bass River.

254 ML was extracted from the Melbourne Supply System. Extraction was to augment supply to meet demand during peak periods and to supplement supply during water quality issues during Nov/Dec 2020.

No supplementary supplies have been used from 1 July 2021 to the date this report has been compiled (18 October 2020).

Alternative Water supplies:

Westernport Water produces Class A recycled water on Phillip Island. The Class A Recycled Water Treatment Plant remained offline over 2020-21 due to the combined impact from operational issues experienced at the treatment plant and a reduced demand from recycled water customers from higher than average rainfall. Westernport Water is preparing to operate the Class A Recycled Water Treatment Plant in preparation for late 2021.

Overall, across WPW's two effluent treatment facilities, WPW reused 126ML of treated effluent, equating to 7.4 per cent. This was below the forecast total reuse target of 25 per cent and due to above average rainfall throughout irrigation season reducing the demand and the Class A Recycled Water Treatment Plant being offline.

Seasonal Climate Outlook:

The Bureau of Meteorology (BOM) November to January rainfall outlook, issued 14 October 2021, is likely to be above median for the eastern two-thirds of Australia, as well as northern and south coast parts of WA (greater than 60% chance in most areas).

Temperatures for November to January are likely to be warmer than average for much of the country (greater than 60% chance).

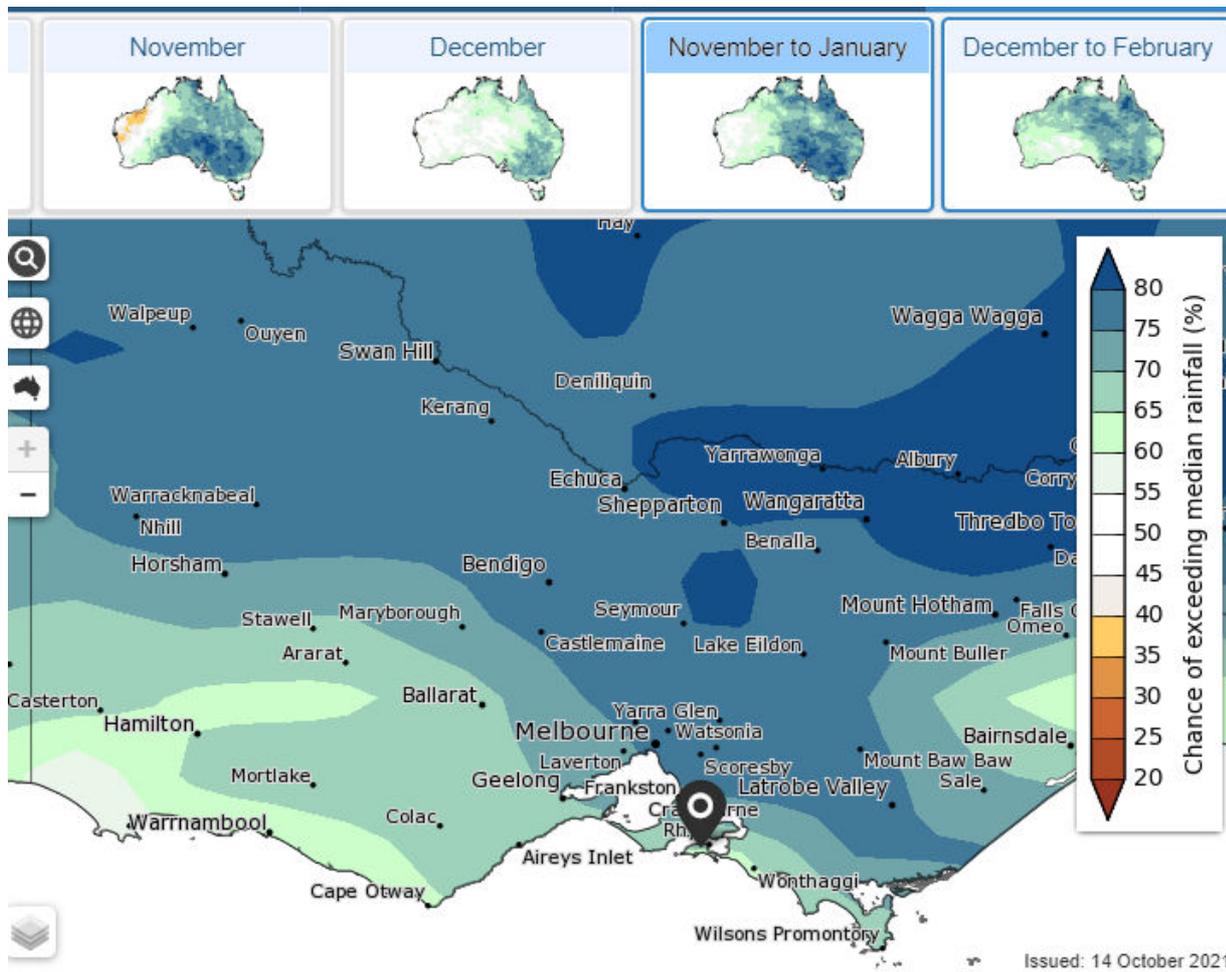


Figure 6 BOM Seasonal Rainfall outlook for November 2020 to January 2021.

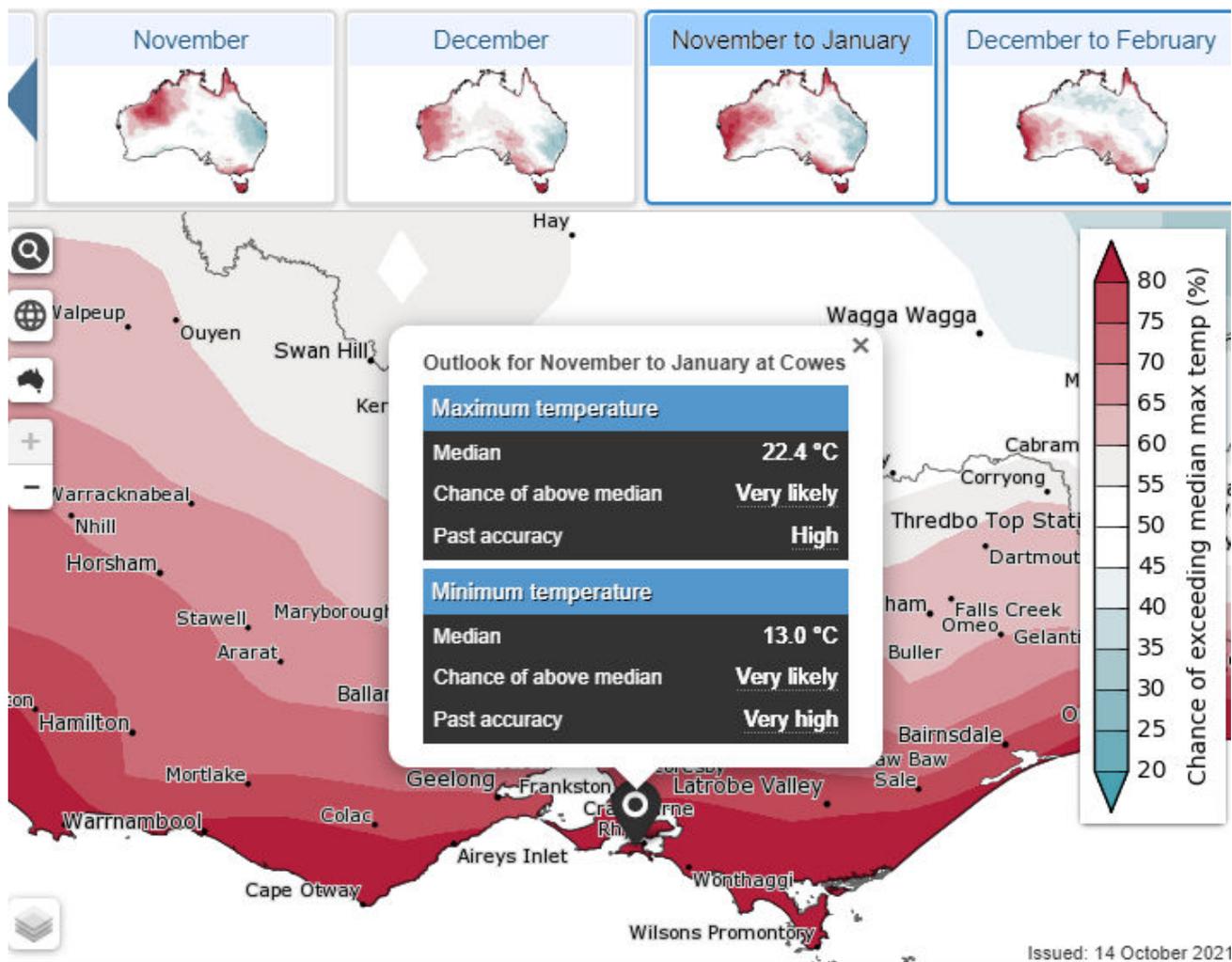


Figure 7 BOM Seasonal Temperature outlook for November 2020 to January 2021.

Seasonal Climate Trends:

Victoria's climate and streamflow is highly variable, but within this variability we have experienced a warming and drying trend over recent decades.

In comparison to historical conditions, we are already experiencing trends toward:

- Higher temperatures and more hot days;
- Reductions in rainfall in late autumn and winter;
- In some locations, increases in rainfall during the warmer months and during extreme, short-duration rainfall events; and,
- In many catchments, a shift in the streamflow response to rainfall, with less streamflow generated for the same amount of rain.

The rainfall decline in late autumn and winter is linked to changes in atmospheric circulation, and some of the change can be attributed to global warming. During the cooler time of the year we have been getting less rainfall from low pressure systems and frontal systems, and in the northern part of Victoria more rainfall during the warmer months from thunderstorms.

The cause of the reduction in streamflow response to rainfall is not yet fully known and is the subject of continuing research.

Over the longer term, we can expect:

- the rainfall reductions in winter to persist;
- possible increases in summer rainfall;
- increases in potential evapotranspiration due to higher temperature and lower relative humidity;
- reductions in streamflow because of less rainfall and higher potential evapotranspiration; and
- the streamflow response to rainfall to no longer remain the same, and generally decline.

Even if there is an increase in summer rainfall, it is unlikely to offset the streamflow impact from rainfall reductions in winter because most of the runoff in Victorian catchments occurs over winter and spring. In the warmer months, catchments are drier and more rainfall soaks into the ground, is used by vegetation or evaporates.

This indicates reduced runoff and inflow to Candowie Reservoir for this outlook period. However with the reservoir level currently 100% full, supply can meet demand. With the addition of Melbourne Water Supply system, Westernport Water continues water resilience planning and is in a positive position to maintain supply without any direct impact to customers or the environment throughout the outlook period. As per good governance, close monitoring of the triggers within the UWS and associated Drought Preparedness Plan (DPP) will continue throughout the outlook period even though data suggests we will not trigger any action.

Victoria's climate will continue to be variable with wet years and dry years, against a background drying trend. With a hotter future and projections of declining water availability, we can expect more frequent and severe droughts.

The Victorian Government is investing in further research to better understand how Victoria's climate is changing and the water resource implications, through the Victorian Water and Climate Initiative. More information on the observed changes and longer-term future climate and water projections can be found at: <https://www.water.vic.gov.au/climate-change/research/vicwaci>.

Forward Outlook for Water Resources Over the Coming Year

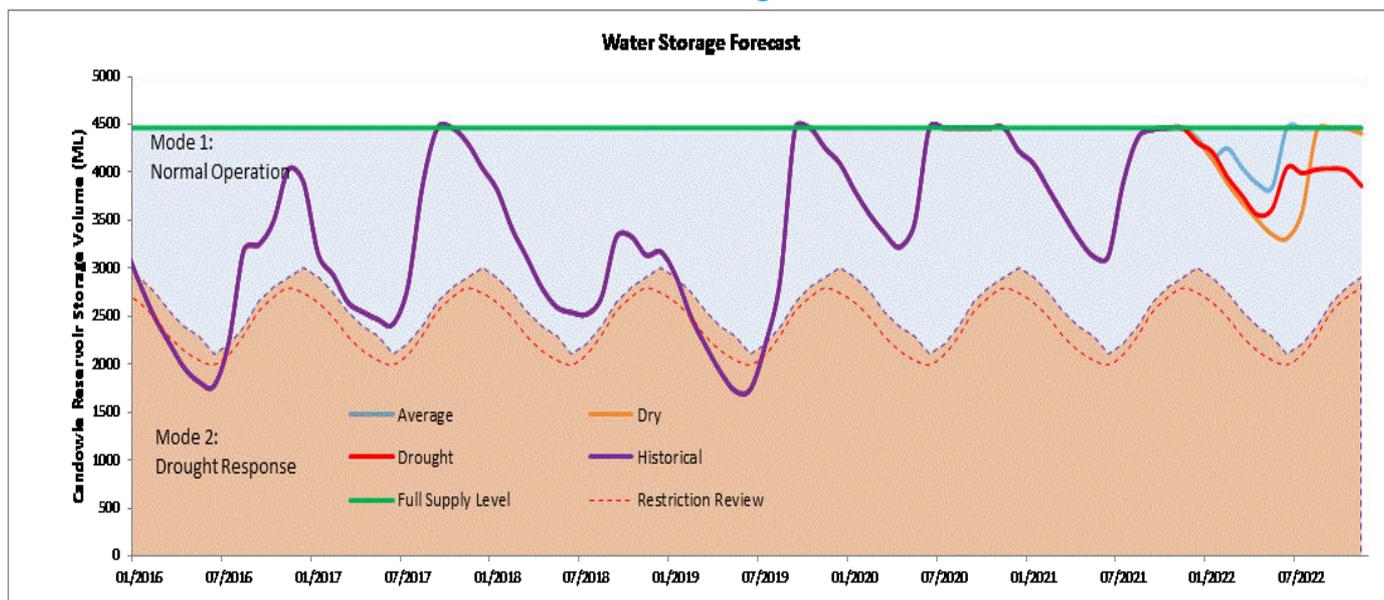


Figure 8 November 2022 Water Storage Forecast

Current Status: Permanent Water Savings Rules

Likely Status July 2022: Permanent Water Savings Rules

Likely Status Dec 2022: Permanent Water Savings Rules

Based on current Reservoir storage (100 per cent full at 1 November 2021) and BOM forecasts for the likely chance of above median rainfall over the three month outlook period, Candowie Reservoir storage levels are expected to remain within the normal operating zone (Mode 1) for the next year. Inflows to the Candowie system are expected to continue and the reservoir could continue to spill into 2022. By this time next year, the water level in Candowie Reservoir is expected to maintain at 100% or close to under the average and dry scenarios, and would only decrease under the drought scenario. Under an average scenario, Candowie Reservoir would fill to full supply level during winter 2022. Under a dry scenario, Candowie Reservoir would fill to full supply level during spring 2022.

This outlook indicates that the system will not enter the Drought Response Mode under any of the scenarios for the immediate foreseeable future. However, if climatic conditions change unexpectedly and storage level in Candowie looks to be trending towards Mode 2: Drought Response, WPW will activate the Drought Management Team, monitor the situation and consider utilising supplementary supplies, community education and voluntary water conservation.

Implementation of Mode 1 (Normal Operation), when the storage volume is above the Drought Response Trigger A, indicates that Westernport Water is not anticipating a drought event in the short term that will threaten the security of the region's water supply. In this mode Westernport Water will continue to monitor the following aspects of system security:

- Storage volume in Candowie Reservoir
- Inflows to Candowie Reservoir

- Climatic trends and seasonal outlooks published by the Bureau of Meteorology, and
- Water consumption and trends in water consumption behaviour.

Implementation of Mode 2 (Drought Response) indicates that Westernport Water considers it possible that a drought event may occur that could lead to a water shortage. The purpose of this mode is to allow Westernport Water adequate time to prepare for supply enhancement options and commence demand management actions in order to avoid further action.

Short-Term Action Plan

The demand and supply indicators discussed in the previous section shows that WPW has sufficient water to meet demand for the short to medium term. However, the balance presented is a forecast only, and the actual supply and demand balance will shift every year depending on climate, population growth and water consumption behaviours. WPW will continually monitor the supply and demand balance, and undertake actions to help manage this balance.

Urban Water Strategy Actions:

Ongoing monitoring of the implementation of the UWS approved in 2017, including the following detailed strategic actions. The actions listed in the UWS, future initiatives and any actions listed in this Outlook have been consolidated below.

Action	Source	Description	Timing
1	UWS, 2017	Westernport Water's aim is to provide the lowest practical cost of water to its customers while ensuring a reliable water supply.	Ongoing
2	UWS, 2017	Westernport Water has adopted a service level that water restrictions are not required in 95 years out of 100 to maintain a supply demand balance.	Ongoing
3	UWS, 2017	Westernport Water will actively pursue water conservation measures, including leakage detection, education and public awareness and implementing water efficiency programs.	Ongoing
4	UWS, 2017	Westernport Water will continue to seek new customers for its Class A recycled water supply, relieving pressure on the potable supply and reducing outfalls to the ocean.	Ongoing
5	UWS, 2017	As required to meet future demand increases, Westernport Water will seek to acquire an additional share from the Melbourne water supply system, currently the most cost-effective water source, or implement Stage 2 for Bass River Pump Station.	Ongoing
6	UWS, 2017	Westernport Water will report against the assumptions that underpin the UWS annually to monitor deviation from the demand and supply balance forecasts.	Ongoing

7	UWS, 2017	Westernport Water will update this UWS within five years of the submission of the strategy.	Ongoing
8	Annual Water Outlook 2021	Sustainable reuse and land management project to increase recycled water use through on-site irrigation.	Ongoing
9	Annual Water Outlook 2021	Commenced the development of the next iteration of the UWS (due March 2022).	2021-22
10	Annual Water Outlook 2021	Continue to develop operating protocol for priority selection of water supply in light of successful commission of Melbourne Pool connection.	2021-22