Victorian Annual Water Outlook

December 2020 to November 2021

VICTORIA State Government | Environment, Land, Water and Planning

Acknowledgement

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it. We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

We are committed to genuinely partner, and meaningfully engage, with Victoria's Traditional Owners and Aboriginal communities to support the protection of Country, the maintenance of spiritual and cultural practices and their broader aspirations in the 21st century and beyond.

Other Acknowledgements

DELWP kindly acknowledges the efforts of the urban and rural water corporations of Victoria.

DELWP is grateful for the input of the Victorian Environmental Water Holder and the provision of data by the Australian Bureau of Meteorology.

Cover photograph: Mallee Catchment Management Authority

Accessibility

If you would like to receive this publication in an alternative format, please contact DELWP Customer Contact Centre on 136 186, customer.service@delwp.vic.gov.au or via the National Relay Service on 133 677, www.relayservice.com.au. This document is also available on the internet at www.delwp.vic.gov.au

Ministerial foreword

Following three consecutive warm and dry years from 2017 to 2019, more favourable conditions have returned for much of the state in 2020. Spring rainfall and predictions of wetter conditions this summer put most water supplies in a good position heading into 2021.

Storage levels in Victoria are higher compared to last year and the wetter-than-average outlook means we don't expect water restrictions for any Victorian city or town. Melbourne water supplies are secure, with water provided from the Victorian Desalination Project lifting water storages by more than 14 percentage points.

In rural areas, seasonal determinations for 2020-21 are expected to reach 100 per cent for High Reliability Water Shares, and licence holders can expect limited or no restrictions. After four years of drought in parts of Gippsland, and significantly below average rainfall in 2018 and 2019 in the Millewa, we need sustained rainfall for local farms and communities to fully recover.

Over recent decades, Victoria has experienced warmer and drier seasons. While some seasons or years may see high rainfall, the longer-term trend of warmer and drier conditions is expected to continue. Because of this trend, the Victorian Government continues work to keep water supplies secure and resilient.

We need to plan for our community's short-term and long-term water needs. Water corporations regularly consult and engage with communities about the best ways to use our water resources. As part of this planning, water corporations each provide an annual water outlook to keep the community informed about the status of water supplies and expected demand and supply projections. This Victorian Annual Water Outlook presents a state-wide summary on what to expect in the next 12 months, including the impact of short-term climate trends on water sources.

While water supplies are secure for the year ahead in Melbourne and regional towns, our changing climate and population growth means we need to continue to invest in diverse sources of water, such as desalination, recycled water and stormwater harvesting.

Despite the challenges posed throughout 2020 by the ongoing (coronavirus) COVID-19 pandemic, rural water corporations and the Victorian Government continue to deliver infrastructure projects that upgrade water delivery systems, save water and build resilience in our communities. The $2 billion Connections Project has improved flow rates for over 7,600 irrigators and has completed works to deliver 429 gigalitres in water savings.

As always, demand management has a big part to play. Victorians should be proud of their water conservation efforts. Permanent Water Saving Rules are in place across the state, and we continue to promote water efficiency through *Target 155* in Melbourne and *Target Your Water Use* in regional Victoria. While more rainfall is expected in the coming months, continuing to be smart about our household, business and on-farm water use puts us in a better position for drier times. Smart water use helps secure our water supplies and allows more water to be used to support the economy and create greener and more liveable communities now and for the future. If we each save a little, we all save a lot.

Contents

Introduction

The aim of the Victorian Annual Water Outlook (the Outlook) is to keep Victorians informed about the state's water supplies for the coming year. It also outlines the contingency plans to manage any water shortages that may arise. The Outlook is a compilation of the annual water outlooks prepared by all 19 Victorian urban and rural water corporations for the 12-month period from December 2020 through to November 2021.

Due to the highly variable nature of Victoria's climate, 'average', 'dry' and 'worst on record' scenario climate modelling is used to identify potential water security risks and understand the vulnerabilities of each system. The individual water corporations' annual water outlooks present this information and report on the current condition of each water supply system, predict future water availability where possible, and outline strategies to meet customer demand. Each water corporation makes its annual water outlook available on its website.

The Outlook takes this information and provides a state-wide overview of the conditions that can be expected this year. It considers the seasonal conditions already experienced in 2020 and the short and long-range forecasts into 2021. The Outlook also summarises environmental water security across the state.

Note: Data provided within this report was correct as at 30 November 2020 or at the date specified.

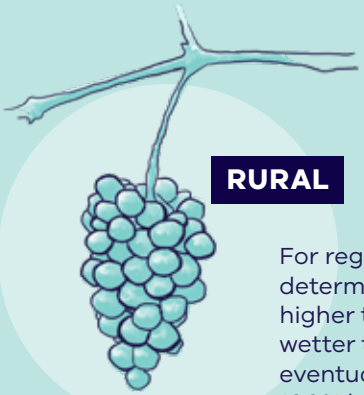
Craig Moodie

Snapshot for 2021

CLIMATE OUTLOOK

Above average rainfall and warmer temperatures are predicted for Victoria this summer.

After a relatively dry winter, spring rainfall across much of the state has resulted in a better water security outlook than this time last year.

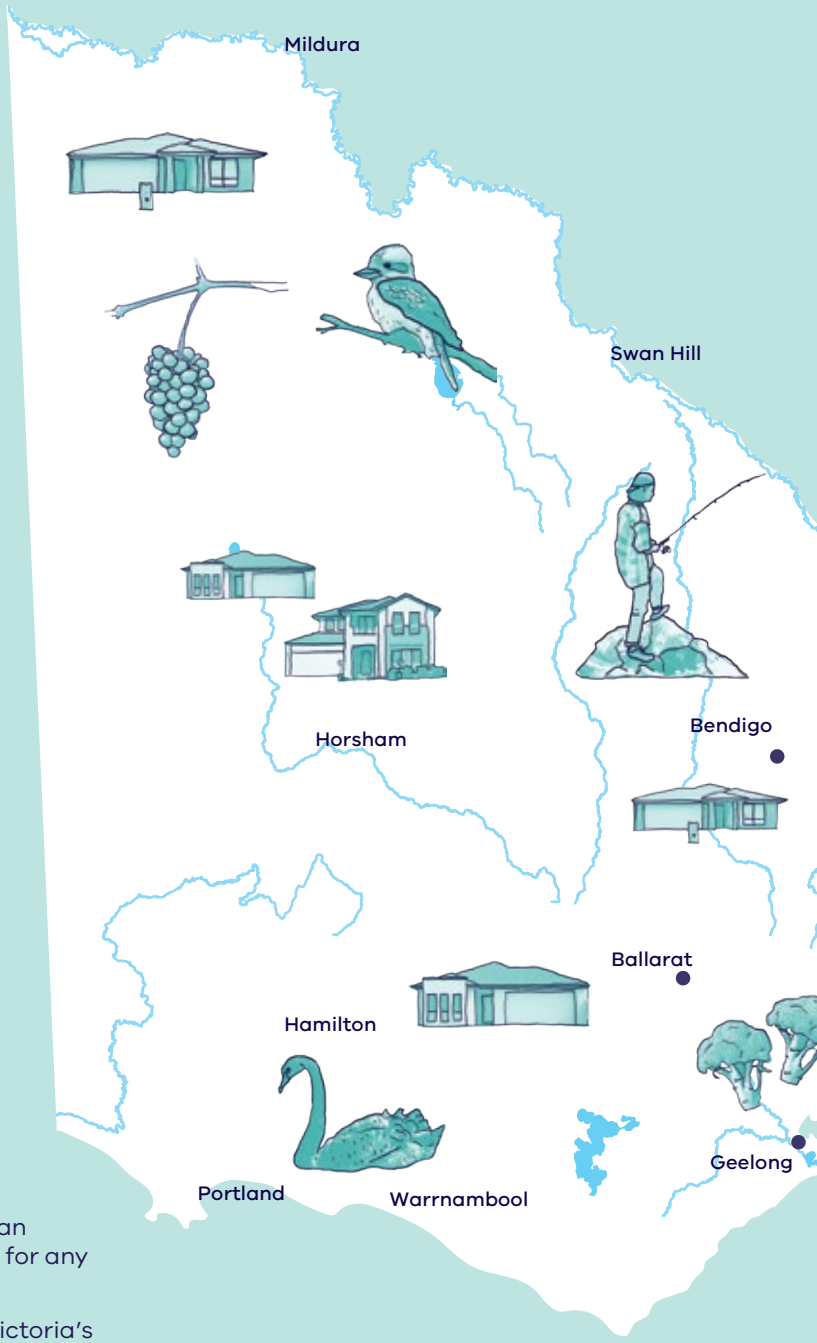


RURAL

For regulated systems, seasonal determinations are similar to or higher than last year. If predicted wetter than average conditions eventuate, all systems will reach 100% high-reliability water shares (HRWS) by the end of summer.

With the Bureau of Meteorology (BoM) predicting a wetter than average summer, licence holders in unregulated systems will have access to water in line with their licence conditions, with few waterways on diversion bans or restrictions this summer.

Most groundwater licence holders will not be affected by restrictions this year and wetter conditions this year have either halted declines or, in some cases, allowed groundwater levels to increase.



REGIONAL URBAN

With wetter conditions expected, urban water restrictions will not be required for any regional city or town.

Total storage levels across regional Victoria's major water storages are 14% higher than at the same time last year.

Some parts of Gippsland remain comparatively dry following recent years of drought, and a return to dry conditions could result in low-level water restrictions in East Gippsland.

MELBOURNE

Melbourne will not face water restrictions this summer and water storages 11% higher than this time last year.

Melbourne's storages would be more than 14 % lower without the water provided by the Victorian Desalination Project.

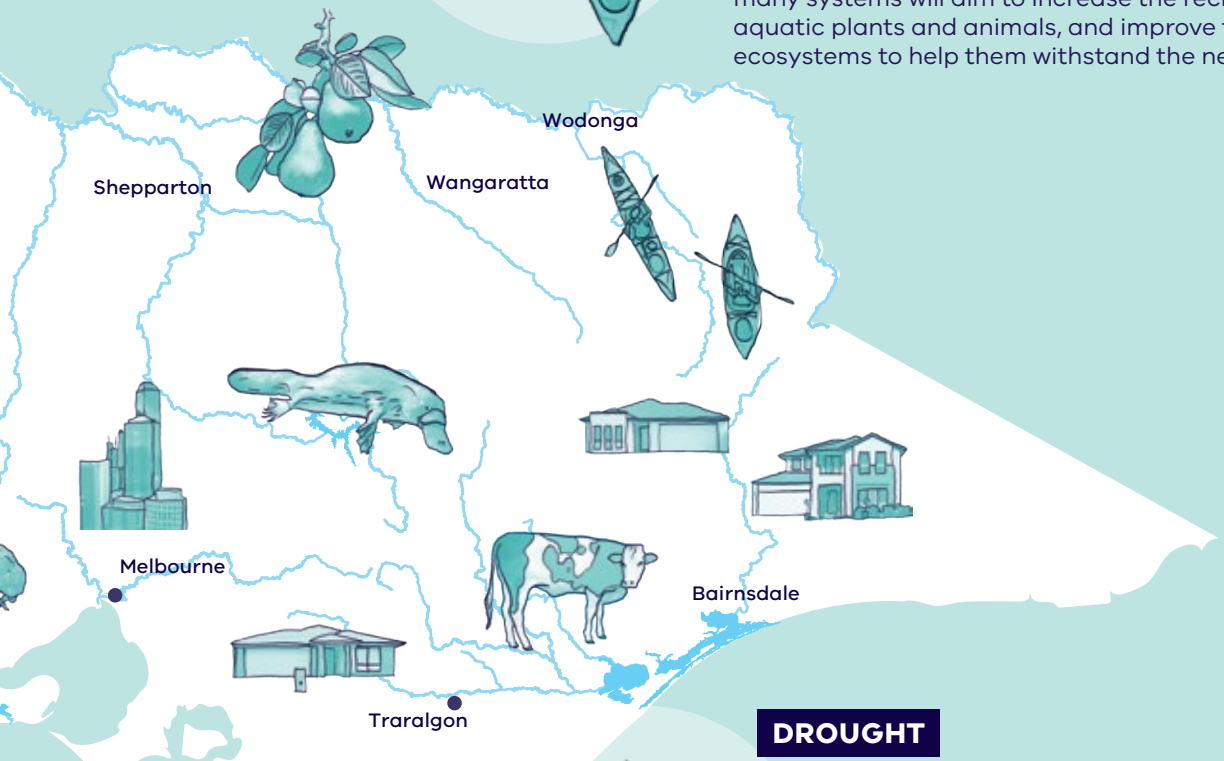
While water supplies are secure, we need to continue to closely manage supply and demand to adapt to a changing climate and significant future population growth.

Melbourne is working towards reaching a usage Target of 155 litres per person, per day.

ENVIRONMENT

Moderate to high reserves of water for the environment across catchments in west Gippsland, central and northern Victoria for the rest of 2020-21 and into 2021-22 are expected. Reserves of environmental water held in western Victoria are still very low.

If conditions are average to wet, environmental watering in many systems will aim to increase the recruitment of native aquatic plants and animals, and improve the condition of ecosystems to help them withstand the next dry period.



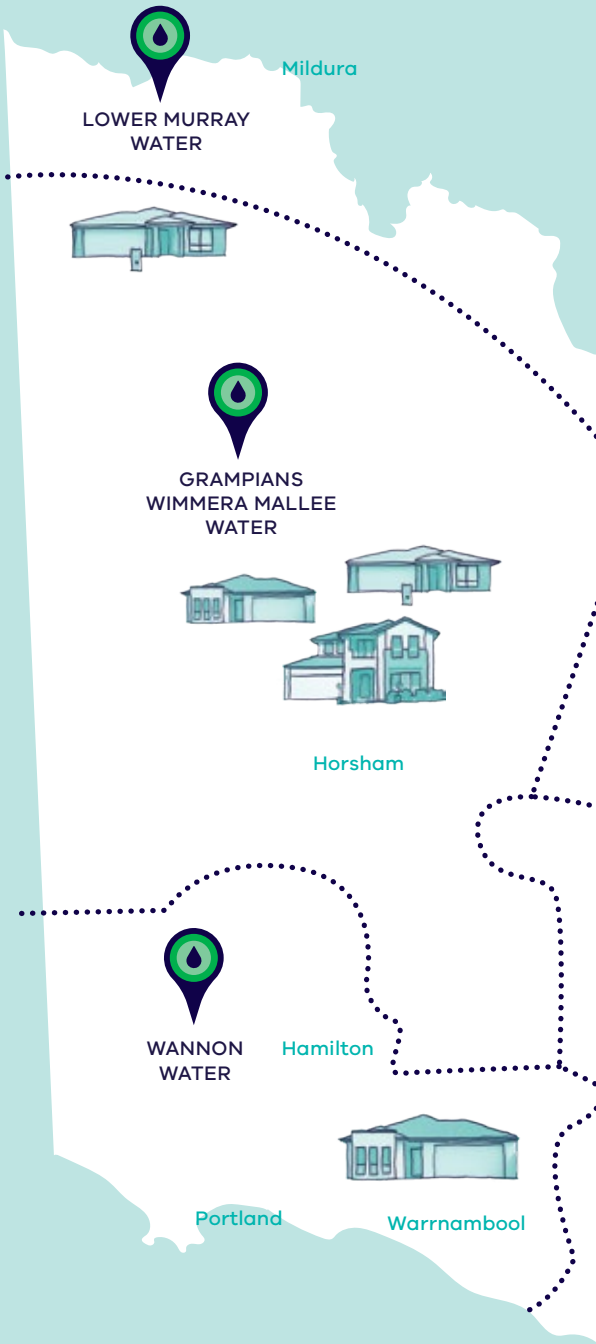
DROUGHT

Conditions have varied across the state throughout 2020 – and despite predictions of wet conditions over winter, rainfall has been mixed.

While many parts of the state have seen a return to more favourable conditions this year, after four years of drought in parts of Gippsland, and significantly below average rainfall in 2018 and 2019 in the Millewa, sustained rainfall is needed for local farms and communities to fully recover.

KEY MESSAGES

URBAN WATER



This summer, wetter than average conditions are predicted. Based on this, **water restrictions are not expected in any urban city or town.**

All water corporations

Water restrictions not expected this summer.

Even though we expect wetter than average conditions this summer, water corporations always plan for different climate scenarios to make sure we are prepared. Below are the plans in place in the unlikely event of dry and worst on record climate scenarios.

North East Water

Worst on record

Corryong: Stage 1 water restrictions possible between February and June 2021.
Benalla: Stage 1 water restrictions possible from May to June 2021.
Myrtleford: Stage 2 water restrictions possible in April 2021.

Water markets and demand management programs will be used to mitigate risk

East Gippsland Water

Dry climate scenario

Mitchell River system (including Bairnsdale, Paynesville, Lakes Entrance): Stage 2 water restrictions could be considered in late February to April 2021.

Worst on record

Mitchell River system (including Bairnsdale, Paynesville, Lakes Entrance): Stage 2 water restrictions could be considered in December 2020.

Water restrictions are not expected in Buchan this summer due to wetter conditions and the recommissioning of a water treatment device to manage water quality risks from bushfire.

Water restrictions not expected under average climate conditions

Water restrictions possible under dry or worst on record conditions

Water restrictions currently in place

CLIMATE SCENARIOS EXPLAINED

A climate scenario is a plausible and possible representation of the future climate.

Average: based on average climate experienced since 1975
Dry: based on the driest tenth per centile (ten per cent) of climate experienced since 1975
Worst on record: similar to the extremely dry conditions experienced during the peak of the Millennium Drought in 2006-07. Note that according to water corporation modelling, a worst on record scenario is not expected for any system over the outlook period.

Goulburn Valley Water

Worst on record

Longwood, Mansfield, Merrijig, Sawmill Settlement: any shortfall will be met through water carting.

In the previous outlook period, Stage 2 water restrictions were implemented in Euroa and Violet Town from 11 April 2019 to 7 May 2020. Increased rainfall and completion of two new raw water storages have since increased water security for the towns, and water restrictions are not expected over the next 12 months.

South Gippsland Water

Worst on record

Fish Creek, Toora, Welshpool, Port Welshpool, Port Franklin, Barry Beach: Stage 1 water restrictions may be considered in February 2021. Leongatha, Koonwarra: Stage 1 water restrictions may be considered in September 2021.

Actions to mitigate risk include reduction of leaks and wastage, and demand management programs.

Note: only three or six-month outlooks has been provided for some systems.

Barwon Water

Dry climate scenario

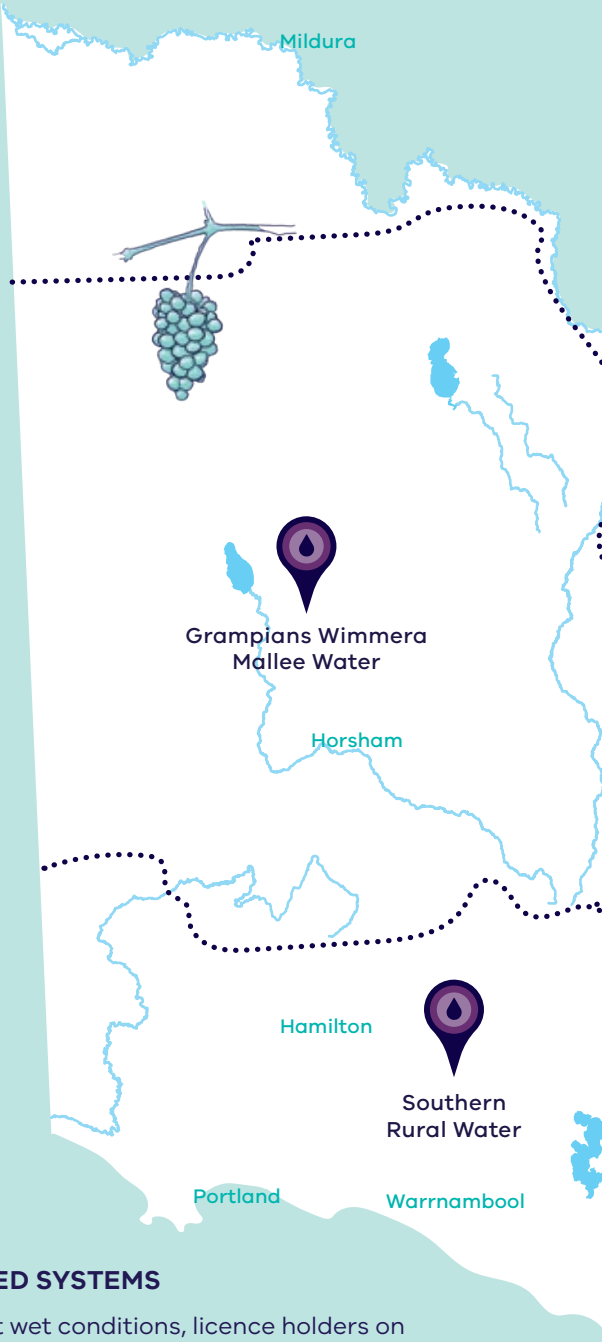
Apollo Bay: Stage 1 water restrictions could be considered in March 2021. Work is also underway to modify the Apollo Bay Basin to increase storage capacity.

Worst on record

Apollo Bay: Stage 1 to 2 water restrictions could be considered in January 2021.

KEY MESSAGES

RURAL WATER



GOULBURN-MURRAY WATER

REGULATED SYSTEMS

Murray:
81% HRWS / 0% LWRS

Campaspe:
100% HRWS / 0% LRWS

Goulburn and Loddon:
100% HRWS / 0% LRWS

Broken:
100% HRWS / 100% LRWS

Bullarook:
100% HRWS / 100% LRWS

If forecast wet conditions occur, it is probable seasonal determinations in the Murray system will increase and further reserves for 2021-22 seasonal determinations will be established in Murray and Goulburn systems. This would allow GMW to issue an opening seasonal allocation to Goulburn and Murray water shareholders on 1 July 2021.

UNREGULATED SYSTEMS

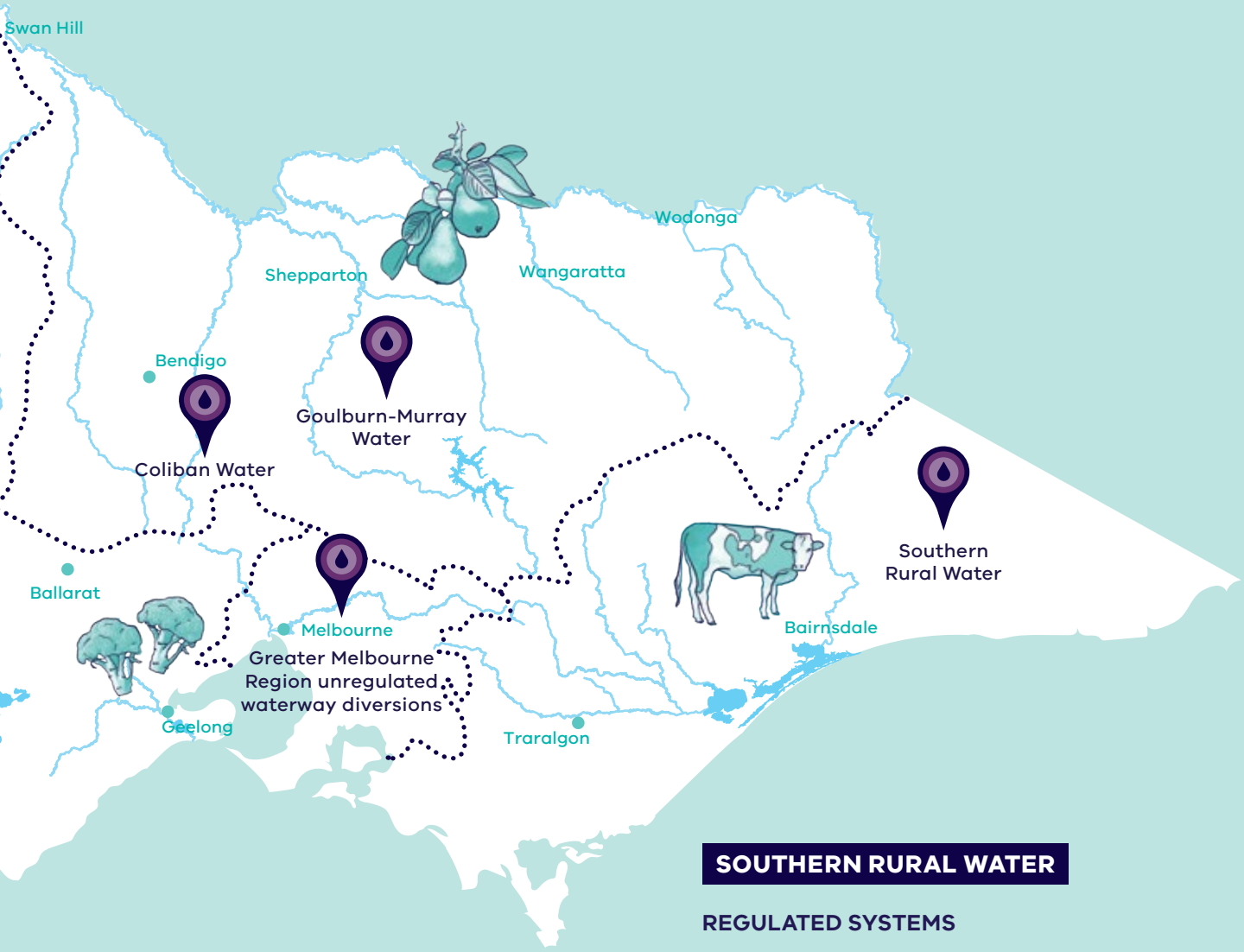
Under forecast wet conditions, licence holders on unregulated waterways should not expect larger rivers and streams to be placed on diversion bans or restrictions, while the smaller tributary streams may experience some restrictions.

GROUNDWATER

Under forecast wet conditions, groundwater levels are likely to remain stable or increase across the state in 2020-21. Predicted above-median rainfall associated with La Niña would increase recharge to the aquifers and reduce groundwater extraction.

COLIBAN WATER

Coliban rural water users will have access to their full licence volume.



GRAMPIANS WIMMERA MALLEE WATER

Rural pipeline customers remain secure for the next 12 months.

GREATER MELBOURNE REGION UNREGULATED WATERWAY DIVERSIONS

Wetter than average conditions in winter and spring meant that there were no diversion bans or restrictions in most systems. Melbourne Water's unregulated waterway customers should not expect extended periods of diversion bans and restrictions in the coming summer irrigation period.

SOUTHERN RURAL WATER

REGULATED SYSTEMS

Werribee/Bacchus Marsh system:
90% HRWS / 0% LRWS

Thomson-Macalister system:
100% HRWS / 0% LRWS

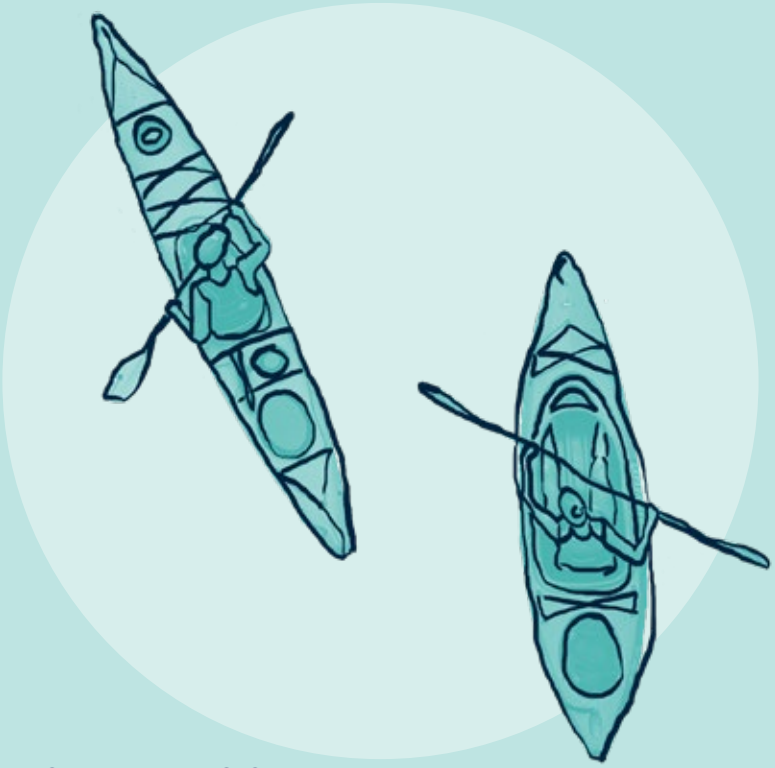
Customers have also had access to spill entitlement. If forecast wet conditions occur, Werribee /Bacchus Marsh customers will likely receive 100% allocations for High-Reliability Water Shares. And Werribee / Bacchus Marsh and Thomson Macalister customers may receive Low-Reliability Water Shares later in the year.

UNREGULATED SYSTEMS

Where bans or restrictions are typically applied over the summer period, they are likely to come into effect later this season, or not at all.

KEY MESSAGES

ENVIRONMENTAL WATER



NORTHERN REGION

MURRAY RIVER

Coordinated release in the Murray River is providing spring floodplain inundation at Barmah Forest. This water will be re-used at downstream sites in Victoria, New South Wales and South Australia.

GOULBURN RIVER

In the Goulburn River, environmental water may be used in spring to trigger spawning of golden perch, and in summer if it is needed to provide minimum recommended low flows for fish, plants and microorganisms.

HATTAH LAKES

In the absence of a natural flood, delivery of environmental water to Hattah Lakes will be a high priority during autumn/ winter 2021 to stimulate growth of aquatic vegetation in wetlands that are currently dry and provide refuge and feeding habitat for waterbirds.

KING RIVER

Taungurung Land and Waters Council may consider using their water entitlement in the King River system to support environmental objectives as part of their goal of healing Country.

WESTERN REGION

WIMMERA SYSTEM

Delivery to protect critical refuges for native fish and platypus over summer and autumn, and to ensure there are sufficient reserves to support priority watering in 2021-22.

GLENELG RIVER

Protect the environmental gains made through watering actions in recent years and to ensure sufficient reserves for critical watering actions in 2021-22.

***Freshes** are short-duration flow events that submerge the lower parts of the river channel. They are important for plants that grow low on the banks and provide opportunities for fish and other animals to move more easily along the river.

This map does not include all the possible environmental watering that may occur over the outlook period. For more information on other activities across Victoria, please visit **www.vewh.vic.gov.au**.

CENTRAL REGION

YARRA SYSTEM

The first watering of Annulus Billabong on the Yarra River floodplain near Heidelberg occurred during October 2020. The watering action was planned and delivered in conjunction with the Wurundjeri Woi-Wurrung Cultural Heritage Aboriginal Corporation. The environment will continue to respond to this watering event over coming months as the water levels draw down.

MOORABOOL RIVER

Extend duration of low flows to maintain habitat for fish, waterbugs and platypus through summer and autumn.

WERRIBEE SYSTEM

Maintain water quality and streamside vegetation, and provide opportunities for fish movement in summer and autumn. During September 2020, a spring high flow was delivered to Pyrites Creek and spring fresh was delivered to the lower Werribee River for the first time since 2017.

GIPPSLAND REGION

THOMSON RIVER

Freshes* will be provided in autumn to trigger migration and spawning of Australian grayling and in spring to encourage juvenile Australian grayling to move into the river from the sea.

LATROBE SYSTEM

Delivery to internationally important wetlands: Sale Common, Dowd Morass and Heart Morass.

SNOWY RIVER

Environmental flows have increased opportunities for canoeing and kayaking on the Snowy River.

Craig Moodie

Climatic conditions

Temperature and rainfall influence water use. We tend to use more water in summer when it is hotter and drier (for example for gardens and pools), than in winter when it is wetter and colder. Water corporations are continually monitoring storage conditions and use. They forecast demand using short-term seven-day forecasts and the BoM's seasonal climate outlooks, updated weekly.

Recent conditions

Varied rainfall and temperatures across the state in 2020.

Last summer started very dry and warm across Victoria and these conditions continued into 2020 in the north and far east of the state. In contrast, other parts of Victoria were largely wetter and cooler over summer; areas to the southeast and west of the state received more than double the average rainfall in February.

Autumn was wetter and cooler than average, especially in north and central Victoria, however dry conditions persisted in parts of East Gippsland. In winter this reversed, with East Gippsland receiving higher than average rainfall while the rest of the state was drier than average. In spring, October was wetter than average across most of the state, with part of eastern and some pockets of western Victorian very much wetter than average.

December to February outlook:

The BoM Seasonal Outlook prepared for summer 2020-21 indicates that warmer than average days and nights are very likely for December to February, with a 55 to 80 per cent chance of exceeding average maximum temperatures over the next three months (**Figure 1**). Victoria is likely to be wetter than average (between 60 to 80 per cent chance) this summer (**Figure 2**).

FIGURE 1. **Chance of exceeding median maximum temperature for December 2020 to February 2021**

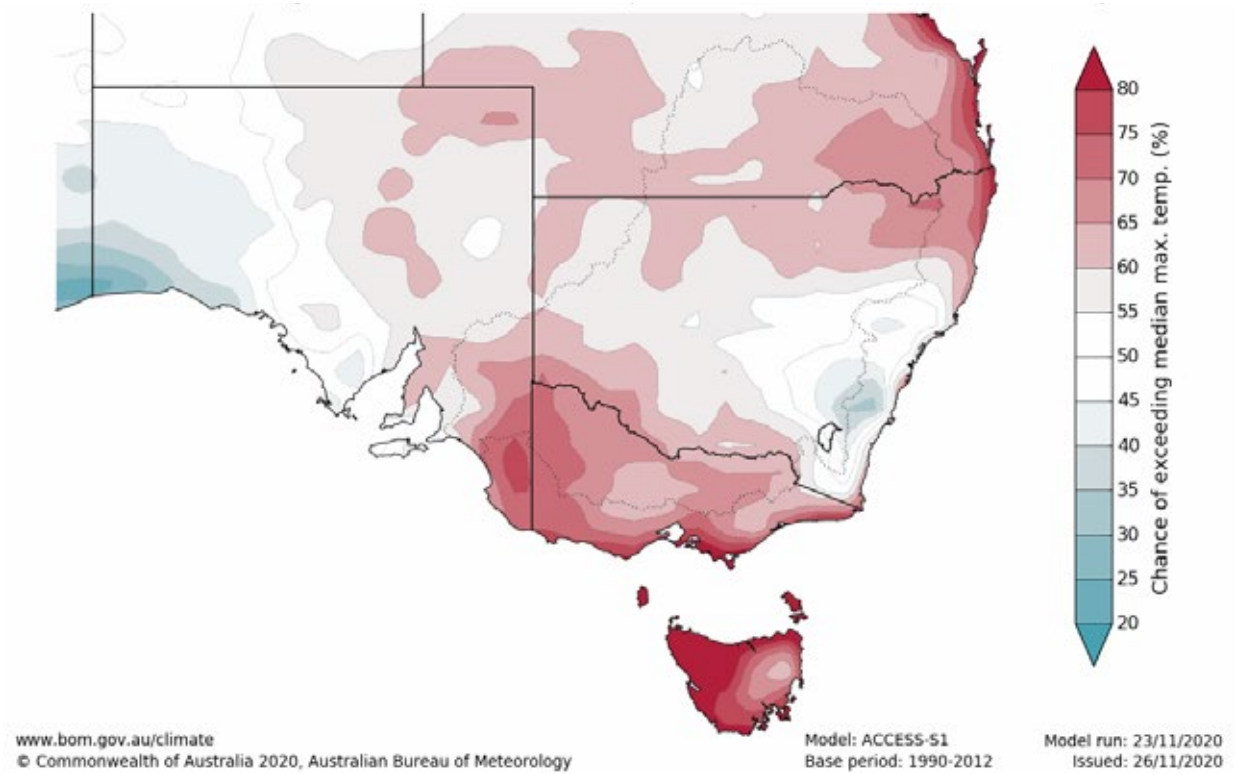
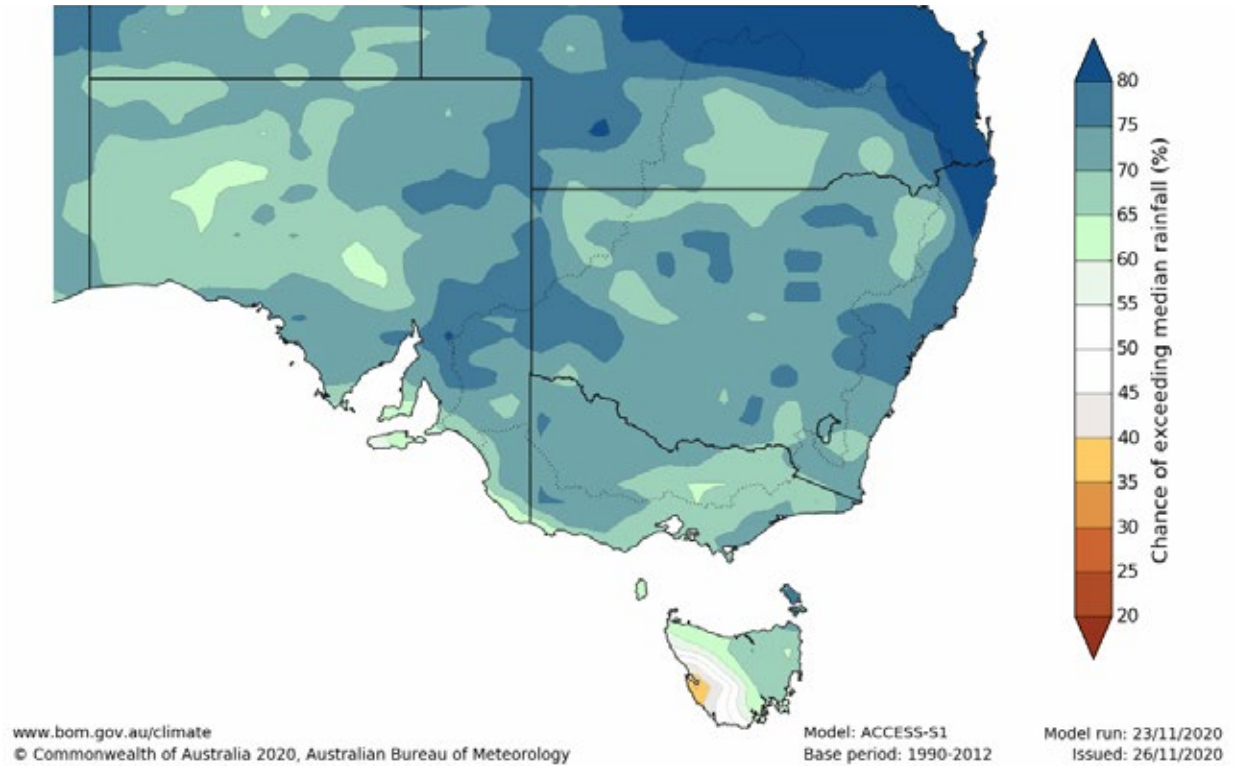


FIGURE 2. **Chance of exceeding median rainfall for December 2020 to February 2021**



Current climate and streamflow in the longer-term context

Victoria's climate has shown a warming and drying trend over recent decades, and this trend is expected to continue into the future. In comparison to historical conditions we are already experiencing:

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

Some of the rainfall decline in late autumn and winter can be attributed to global warming and changes in the weather systems that deliver rainfall to Victoria. 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 due to less rainfall and higher potential evapotranspiration; and
- the streamflow response to rainfall to no longer remain the same, and generally decline.

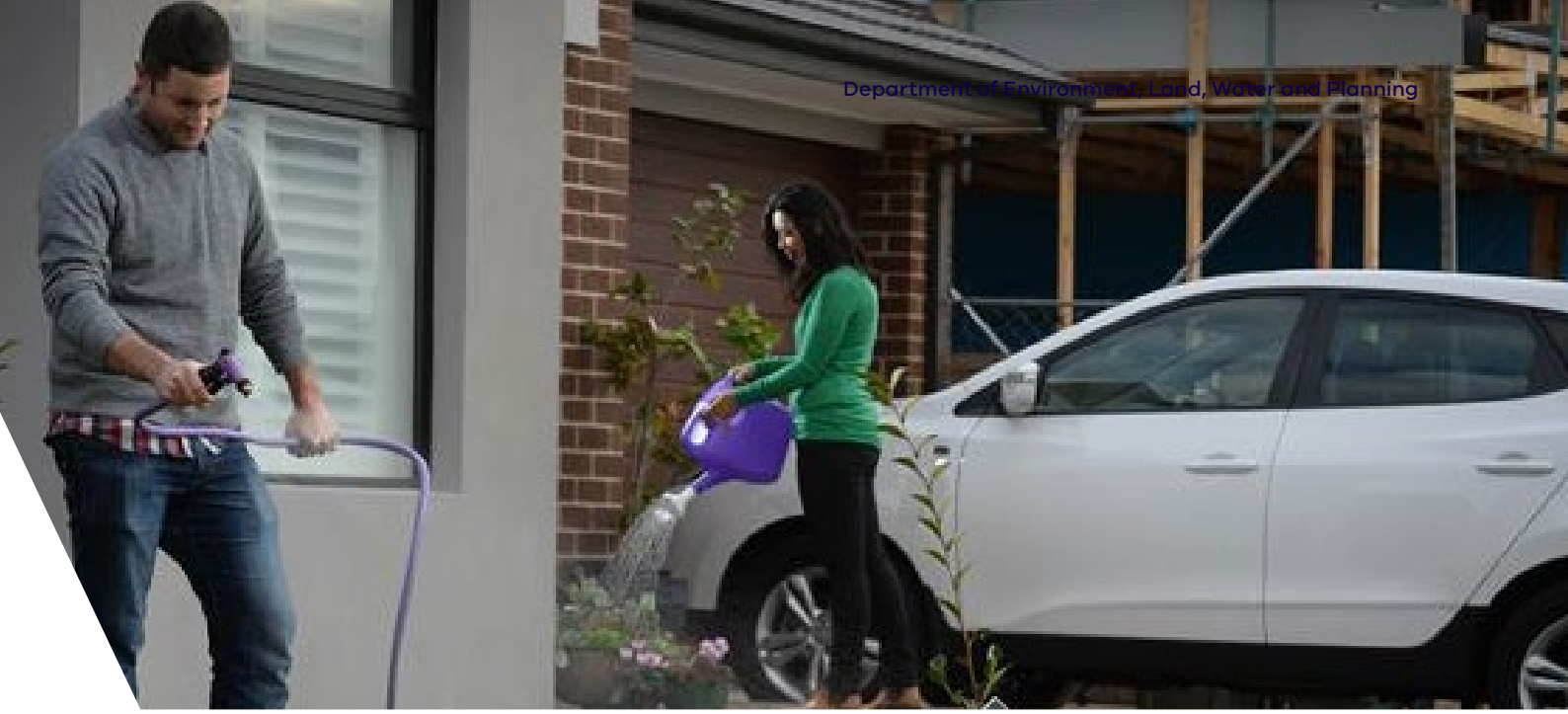
Even if there is an increase in summer rainfall, it is unlikely to offset the impact of less winter rainfall on streamflow, because most of the runoff in Victorian catchments occurs over winter and spring. In the warmer months, catchments are drier and more rainfall soaks into the ground, is used by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

Although there will still be a lot of variability in Victoria's climate and streamflow, the chances of experiencing warmer conditions and less streamflow is now higher than in past decades.

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**.

The Victorian Government is investing in further research to better understand how Victoria's climate is changing and the water resource implications, as part of implementing Water for Victoria.

Mallee Catchment Management Authority



Barwon Water

Water systems across the state are diverse and many factors influence why some areas of the state and their water systems are more vulnerable to drought than others. Factors include:

- Climatic conditions,
- Physical characteristics of water systems themselves, including reservoir capacity and availability of water for irrigation
- Whether there is a drought reserve
- Flexibility of local demand, including pressure by large industrial or commercial water customers
- Whether there is the option for additional or alternative supplies.

Some parts of the state may be reliant on smaller water systems with small storage that either have less than 12 months' supply or a supply direct from a river or stream. These parts of the state are more susceptible to drought and dry conditions.

DID YOU KNOW

Permanent Water Saving Rules are always in place throughout the state to ensure we use water wisely, even when water restrictions do not apply.

See **page 33** for the full list of rules.

Craig Moodie

Current state of Victoria's water storages

Rainfall in 2020 was higher than in 2019, resulting in increases across most major storages.

Figure 3 shows the state of Victorian storages as at 30 November 2020 in comparison to the previous two years.

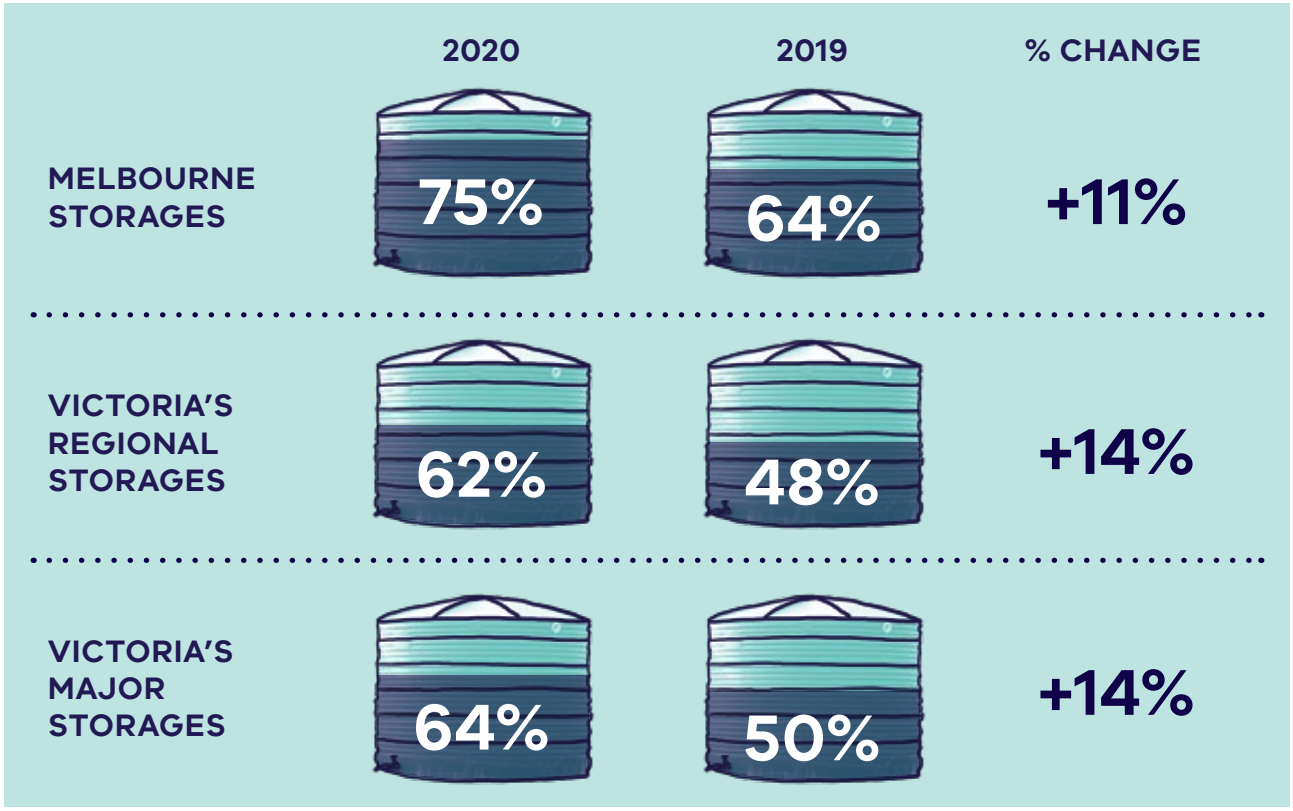
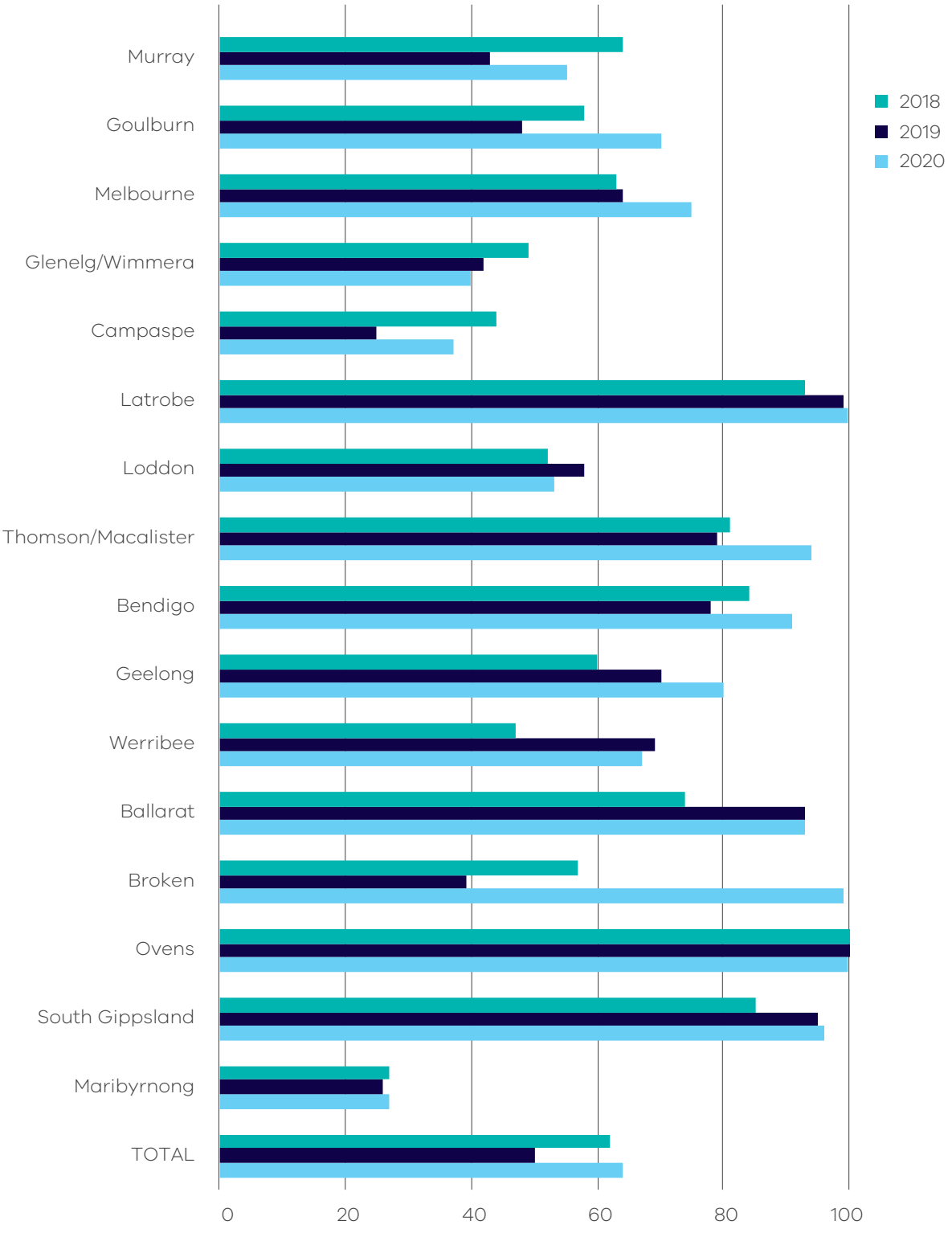


FIGURE 3. **Victorian storage levels as at 30 November 2018, 2019 and 2020**



Urban water supplies

Individual urban water corporations assess water supplies on a system by system basis, to determine the best ways to manage supply and demand to ensure secure supply for cities and towns. Implementation of water restrictions is only one of a range of possible responses that water corporations may use to help cope with potential water shortages. Specific to each system, other responses may include behaviour change campaigns, use of standby water sources, water carting and water trading.

Table 1 contains details for these towns, current water system levels, their outlook for the summer and autumn. and the short-term measures available to help affected communities and improve supply security.

WATER RESTRICTIONS THIS YEAR VERSUS LAST YEAR:

40 **2019-20:**
40 towns on Stage 1 or Stage 2 water restrictions

0 **2020-21:**
0 towns expected to be placed on water restrictions

TABLE 1. **Victorian towns and potential water restrictions in outlook period**

Water corporation	Water system	Towns supplied	Storage levels[1]	Water restriction level	Other mitigation measures
AVERAGE CLIMATE SCENARIO[2]					
No water restrictions are expected under an average climate scenario. Note that wetter than average to average conditions are predicted for the Outlook period.					
UNDER A DRY CLIMATE SCENARIO[4]					
Water Corporation	**Water System**	**Towns Supplied**	**Storage levels**	**Current condition, outlook and risks**	**Mitigation actions**
East Gippsland Water	Mitchell River	Bairnsdale, Wy Yung and Lucknow, Lindenow, Paynesville, Raymond Island, Metung, Tambo Bluff, Lakes Entrance, Lake Tyers, Lake Tyers Beach and Kalimna, Nowa Nowa, Nicholson, Johnsonville, Swan Reach, Bruthen, Sarsfield	96%	Stage 2 water restrictions possible from February 2021 to April 2021. While drought conditions have eased due to spring rainfall, more is needed to make up for the last four years of drought.	Planning underway for an additional raw water storage at Woodglen to provide a buffer during periods of low flow and reduce likelihood of future restrictions.
Barwon Water	Apollo Bay	Apollo Bay, Skenes Creek, Marengo	98.9%	Stage 1 water restrictions could be considered in March 2021.	Barwon Water will continue working with local tourism and hospitality businesses to improve peak summer water efficiency, awareness and leak management. Work is also underway to increase storage capacity of the Apollo Bay Basin.
UNDER A WORST ON RECORD SCENARIO					
Worst on record conditions are not expected to occur this year. However, if they were to occur, urban water corporations have identified restrictions may be required in up to 33 towns. The annual water outlooks for these systems will be updated accordingly and urban water corporations will implement their Drought Preparedness Plans to minimise the effect of any water restrictions.					

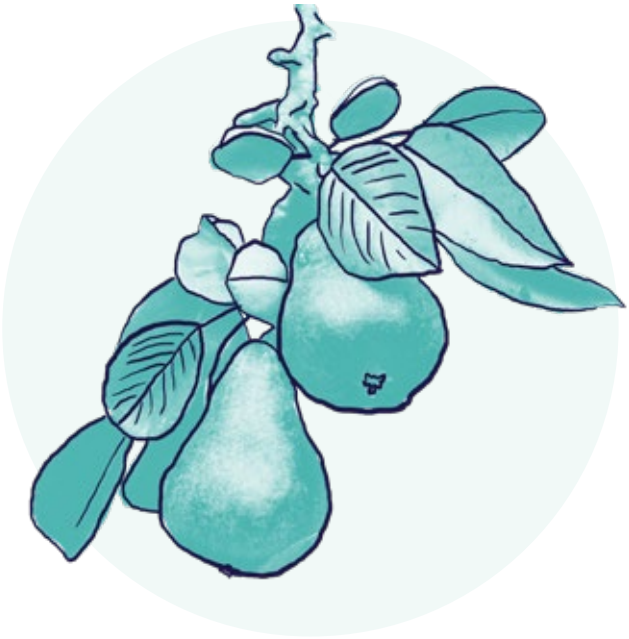
Under predicted wet and average conditions, no water restrictions are expected.

Under a dry climate scenario, Stage 1 or 2 water restrictions possible for 21 towns[5]

Under a worst on record climate scenario, water restrictions possible for 33 towns[6]

1 Storage levels as at 30 November 2020.
2 Based on average climate experienced since 1975
3 Based on the driest tenth per centile (ten per cent) of climate experienced since 1975.
4 A worst on record scenario would happen if conditions are similar to the extremely dry conditions that occurred during the peak of the Millennium Drought in 2006-07. This scenario is not expected in the Outlook period of 2020-21.

Rural water supplies



Northern Victoria:

The 2019-20 season started dry, and allocations in most systems took time to build. Conditions improved in summer and autumn, but it was too late for water shareholders to receive much benefit from the wetter conditions. It did, however, offset some watering requirements and allowed people actively using water to substitute rainfall for allocation. The 2019-20 season dry spell broke in April 2020 and Victoria experienced its third wettest April on record. The Rocky Valley weather station at Falls Creek received the highest monthly total of 417 mm during April 2020. Wetter conditions in April, May and June 2020 allowed Goulburn-Murray Water (GMW) to set aside enough water to operate the declared irrigation systems in 2020-21 and to remove diversion rosters and restrictions on many unregulated systems. At the end of the year, GMW only had 25 streams on diversion rosters or restrictions compared to 103 in February 2020.

Following a wet start and decisive autumn break, rainfall dried up and the 2020-21 water year[5] opened with the driest July since 2002. Northern Victoria experienced below average, and very much below average, rainfall and catchments started to dry up at a time when they would typically have received the some of the highest inflows of the year. Seasonal determinations of 8 per cent of high-reliability water shares (HRWS) were made available for Murray water users and 35 per cent of HRWS for the Goulburn and Loddon water users.

Despite the very dry start to the 2020-21 water year, conditions have improved, and October 2020 saw widespread average and above average rainfall in northern Victoria. This replenished streamflow and provided inflows into storages, particularly in the Goulburn and Broken catchments. The recovery in the Broken system was significant. In 2019-20 Broken system water users only had access to two per cent of their HRWS, and the river was being managed at very low levels. The storage went from 21.1 per cent on 1 April 2020 to the dam spilling on 8 October 2020, and the BoM issued a flood watch for the Broken catchment. On 15 October 2020 water users were given access to 100 per cent HRWS and 100 per cent low-reliability water shares (LRWS).

As at 16 November 2020, seasonal determinations increased, with the Murray system on 81 per cent HRWS and the Campaspe, Goulburn and Loddon systems all on 100 per cent HRWS. The Broken and Bullarook systems remained at 100 per cent HRWS and 100 per cent LRWS (see **Figure 4**). Unless the rest of the season is very wet a LRWS seasonal determination for the Goulburn, Loddon and Murray systems in 2020-21 is highly unlikely.

Early system reserves for 2021-22 have been established in the Goulburn and Murray systems. This means that even without any additional improvements this year, GMW will be able to operate these systems next year and supply customers' carryover. GMW still needs additional streamflow to ensure that the Loddon and Campaspe systems have enough water set aside in the operating reserve for 2021-22, but this is likely given the wet outlook. The Broken, Bullarook and Ovens systems are annual systems and water availability next year will depend on seasonal conditions and inflows closer to the start of 2021-22.

5 The water year is July - June

Craig Moodie

Water users that access water from unregulated rivers, streams and creeks only have access to licenced water when streamflows reach the minimum flow requirements specified in management plans. In northern Victoria, these are managed and monitored by GMW. At the end of spring 2020, there were 22 streams on bans or restrictions. The outlook for streamflow is for close to median conditions in December.

With a wet outlook for summer, it is likely that the larger streams in northern Victoria will not experience restrictions, while smaller tributary streams may experience some restrictions over the summer period. If the forecast rainfall is not received, then more restrictions are likely.

The majority of groundwater licence holders have access to 100 per cent of their entitlement, except for those in the Newlyn zone of the Loddon Highlands Water Supply Protection Area (WSPA) and all zones of the Lower Campaspe Valley WSPA, who have a 75 per cent allocation for 2020-21, and all zones in the Katunga WSPA who have a 70 per cent allocation for 2020-21. A final allocation announcement will be made for the Newlyn zone in mid-December 2020, but it is unlikely that allocations will increase.

Groundwater recovery and drawdown levels in northern Victoria are dependent on rainfall recharge and groundwater extraction. In 2019, groundwater levels declined in the Loddon and Campaspe catchments driven by above-average use and dry conditions. In 2020, most groundwater levels stabilised. If follow-up predicted wetter conditions eventuate, this would lead to further recharge to the aquifers and reduced groundwater extraction.

WATER SHARES EXPLAINED...

A water share is an ongoing entitlement to a share of water available in a water system. The volume of a water share is defined as the maximum amount of allocation that can be made against it each year.

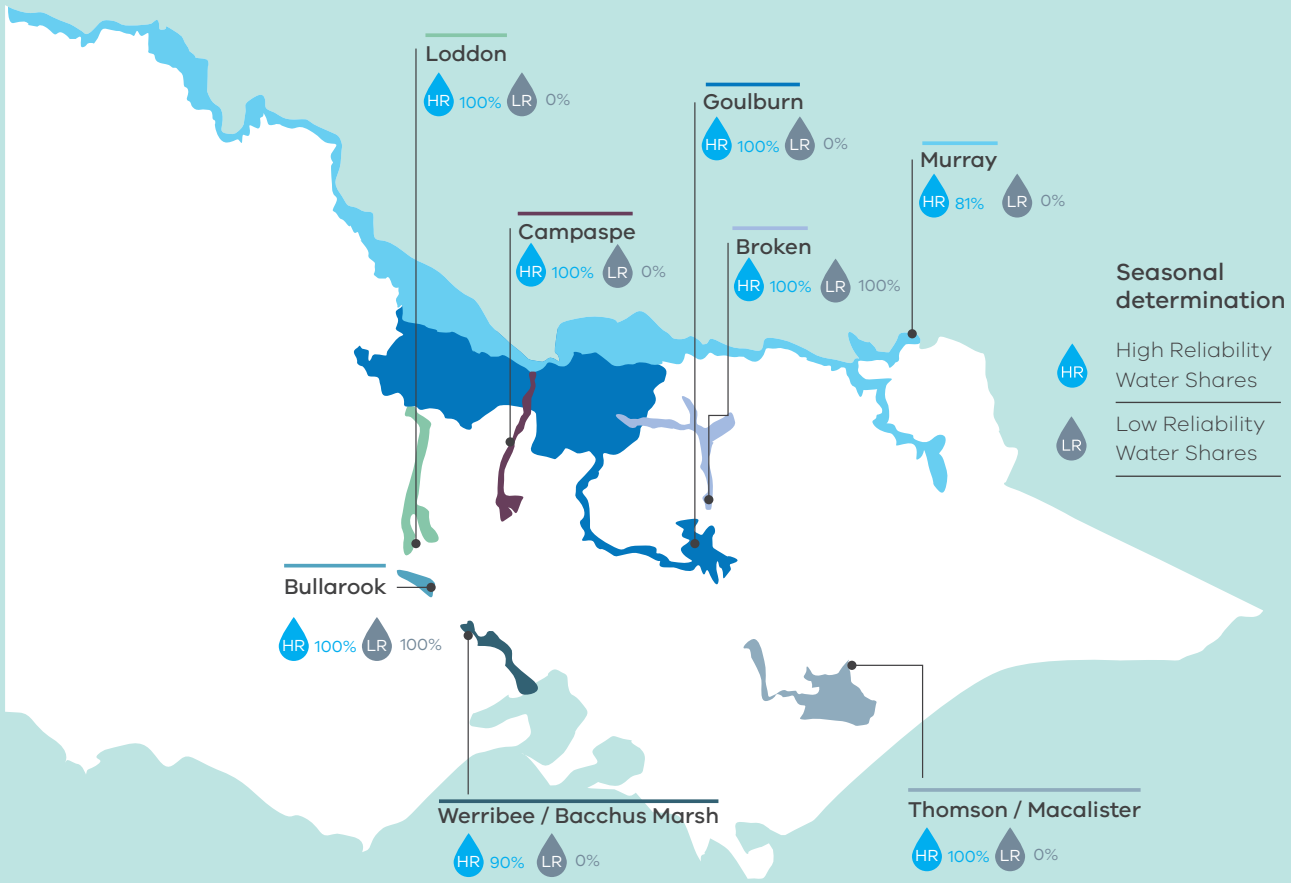
Water shares are classed by their reliability, which is defined by how often full season allocations are expected to be available. In Victoria there are two types, **high-reliability water shares (HRWS)** and **low-reliability water share (LRWS).**

Allocations are made to HRWS before LRWS. When HRWS have reached 100 per cent allocation and existing commitments are satisfied, only then will allocation for LRWS be considered.

FIGURE 4. Seasonal determinations in Victorian declared systems as at 16 November 2020

1 Water year – 1 July to 30 June

2 Water shares can be high or low-reliability. Seasonal determinations are made to high-reliability water shares before low-reliability shares.



LOWER MURRAY DELIVERY RISKS:

There is always a possibility of not being able to deliver enough water held in the River Murray System dams to users in the lower Murray (downstream of Barmah) at the time they want it. This can occur either when demand spikes and there is not enough time to release more water from dams, or when the physical channel capacity of the rivers limits the amount of water that can be delivered. The Murray-Darling Basin Authority (MDBA) operates the river on behalf of the River Murray states (Victoria, New South Wales and South Australia) and actively manages the system to avoid shortfalls. However, there can always be unforeseen circumstances that may arise. If required, the MDBA will announce a shortfall in the lower Murray, and states will ration demand between water users in the affected reach.

The risk of a shortfall due to a demand spike exists every year and is more likely during an extended heatwave, particularly when Lake Victoria levels are high. This is because it takes about three weeks for water released from Hume Dam to get to Mildura, so releases are made well before a heatwave is forecast or water users know they will need to increase their take. River operators have a good understanding about typical water use in the lower Murray, and draw on mid-river storages where they can, but it is not possible for anyone to know three weeks in advance what total demand will be. When there is spare capacity in Lake Victoria, additional volumes can be released to accommodate demand variability, knowing that surplus releases can be captured and used to support Murray allocations. However, when surplus releases cannot be captured in Lake Victoria, the surplus volume is a lost resource which can no longer support allocations.

The risk of a shortfall due to the physical capacity of rivers is monitored by MDBA throughout the year. The MDBA's Annual Operating Outlook for the River Murray System in 2020-21 (published in July 2020) sets out how the system will be operated, including to avoid a shortfall, under a range of different inflow conditions. It does not forecast any shortfalls, but highlights that under near-average inflow conditions, the river system would need to be run at capacity for most of summer and autumn, making it another challenging year for delivery management, particularly if unexpected conditions arise. System inflows have been tracking close to this trajectory this year. The MDBA is expected to publish a mid-year update to its Annual Operating Outlook in the coming months, as well as publish weekly information on the current delivery risk in its Weekly Report.

Coliban Water

Wimmera-Mallee:

The 2019-20 water year was dry, with inflows into the Wimmera-Glenelg headworks around 30 per cent of the historic average. At the end of 2019-20, allocations only reached 42 per cent for pipeline customers and there was still a 3 GL deficit for operating the system in 2020-21. This water was borrowed from bulk water entitlement holders and paid back before any new season allocations were issued. Despite continued wet outlooks, resource conditions in the Wimmera-Glenelg headworks system did not substantially improve until October 2020 when the catchments received between 100-200 per cent of the monthly average rainfall. This led to near average inflows into reservoirs and the largest weekly increase in storage volume since 2016. Storages are now holding 222,530 ML of water equivalent to being 39.7 per cent full, which is 2.3 per cent, or about 12.7 GL less, than the same time last year (as at 25 November 2020).

As at 4 November 2020, Grampians-Wimmera Mallee Water (as storage manager for the Wimmera-Mallee system) made allocations of 48 per cent against the Wimmera-Mallee Pipeline Product and 1 per cent against the Glenelg compensation flow. No allocation was made against the recreation entitlement, wetlands entitlement or Commonwealth environmental entitlement. However, some recreation lakes received water from other entitlements. Supplies for rural water customers from the Wimmera-Mallee Pipeline and Northern-Mallee Pipeline are secure this season.

Groundwater supplies remain relatively unaffected by recent conditions. There are sufficient volumes of water available to meet demands, with the exception of Neuarpurr Zone 1 which remains on restrictions.

Below average rainfall over the winter period has resulted in low flows in the Wimmera and Avoca rivers. Flows in these rivers have not reached the irrigation diversion triggers, which allow extraction of water for irrigation. Licensed diverters will be informed if conditions improve and triggers are met.

South-western Victoria:

There are two irrigation districts in south-western Victoria - Werribee and Bacchus Marsh – both of which are supplied from the Werribee and Lerderderg catchments via the Werribee system. In 2019-20, above average winter rainfall and streamflow filled Pykes Creek and Melton reservoirs. This allowed Southern Rural Water (SRW) to make seasonal determinations for Werribee and Bacchus Marsh in 2019-20 of 100 per cent HRWS and 100 per cent LRWS. This meant that water users carried over 11.2 GL of allocation equivalent to 70 per cent of the total entitlement. After good rain in the catchments since August 2020, SRW announced seasonal determinations of 90 per cent to HRWS. If the wet forecast conditions continue, seasonal determinations of 100 per cent HRWS are likely in December.

Despite the higher than average rainfall in the neighbouring Werribee catchment, the Maribyrnong catchment has had another poor winter and spring, with Rosslynne Reservoir receiving little inflows. It is currently 29 per cent full, which is 2 per cent less than the same time last year.

Rainfall across the western region has been above average for early spring and has seen major streams, and the Barwon, Leigh, Glenelg, Wannon and Hopkins rivers and Mount Emu Creek sustain reasonable flow levels for lengthy periods with minor flood levels being reached. On farm storages are now filled and spilling, and many aquifers will have been able to recharge. This allows for streams that have good baseflows from groundwater to remain high through early summer and could allow for unregulated licence holders to divert water without restrictions. Some diversion rosters and restrictions might still be necessary in summer this year, but if average or wetter conditions are experienced, they are likely not to be needed until later in summer than usual.

Groundwater levels in the western areas are generally showing a stable or increasing trend with most groundwater levels normal for this time of year. The exception is the shallow Deutgam aquifer in Werribee South, where licence holders have been restricted to 50 per cent of licence volume to protect the aquifer. At the same time last year, they were restricted to 25 per cent.

Gippsland:

The dry and drought conditions experienced in Gippsland for the last four years have started to improve, and in July 2020 while the rest of the state was very dry, Gippsland received above and very much above average rainfall. Further follow up rainfall has meant that rivers in central and East Gippsland are flowing at substantially higher volumes than the same time last year. This has allowed higher seasonal determinations for water shares and fewer licence holders on diversion rosters, bans and restrictions.

The Thomson and Macalister irrigation districts are situated in central Gippsland, and their primary source of water is Lake Glenmaggie, supplemented by water held in a 'drought reserve' in the Thomson reservoir. The opening seasonal determination for the 2020-21 water year for Thomson and Macalister water shareholders was 100 per cent HRWS. Inflows into the catchment in October 2020 allowed SRW to announce a spill determination. This means that all water used up to that point is classified as spill entitlement and allocation against HRWS are reset to 100 per cent. The next seasonal determination will be on 15 December 2020.

As at 30 November 2020, Blue Rock Reservoir (in the Latrobe system) is 100 per cent full. Under a medium to high streamflow scenario, Blue Rock Reservoir is likely to decline over summer and quickly refill in winter/ spring.

The outlook is indicating a very high chance of either achieving or exceeding median rainfall over the next three months. At this stage, it appears unlikely that any diversion restrictions will be required for unregulated streams in early summer, and only limited diversion restrictions might apply during the latter part of summer and early autumn.

The Mitchell River is the most significant of the systems in the east of the state. Despite promising spring rain, it has not received sufficient rainfall to make up for the deficit over the past three years. It is likely that diversion restrictions for licence holders will be less severe and start later in the season than over the previous three years.

South and central Gippsland rivers have been flowing well so far this irrigation season and, given the wet outlook, diversion restrictions for licence holders on unregulated streams might not be required.

Groundwater systems throughout Gippsland do not have any restrictions on extractions by licence holders and are well placed to meet unrestricted demand.

Keith Ward

South-Central Victoria:

Rainfall has been above average in areas of the central region so far this water year and as a result, unregulated streams are flowing well. Further rainfall would mean the need for diversion restrictions will be less than in previous years.

The Yarra Valley region experienced wetter than average conditions in winter and average conditions in spring, which meant diversion bans or restrictions could be lifted along the majority of systems. Unregulated waterway customers should not expect extended periods of diversion bans and restrictions in the coming summer irrigation period.

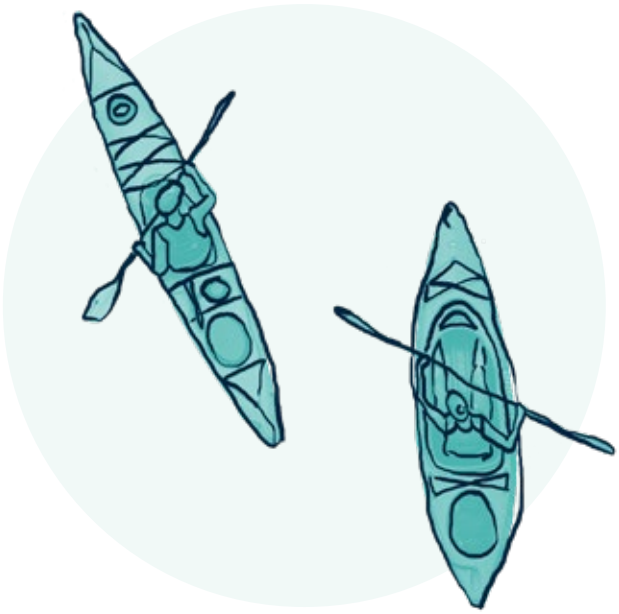
Annual rainfall across the Dandenong Creek catchment has greatly improved conditions from last year. Further rainfall across the catchment will provide a positive outlook and make diversion restrictions unlikely in this catchment.

The Werribee and Maribyrnong Catchments have had above average rainfall for the first six months of 2020. Considering current water flows within the Maribyrnong system, diversion restrictions for all-year licences might not be implemented in the Maribyrnong Catchment as early as they have been in previous years. The Turitable and Willimigongong Creeks are usually subject to a total diversion ban in the summer months. With predicted rainfall this might not occur as early as it has previously.

Rainfall across the Tarago/Bunyip catchment was generally 100 to 200 mm more than the mean between October 2019 and September 2020. If this trend continues, the river system should be well placed coming into the irrigation season.

Craig Moodie

Environmental water supplies



'Water for the environment' is water managed to protect and maintain rivers, wetlands and lakes, and the native species that rely on them. It is critical in keeping waterways – and the life within and around them – healthy. Environmental flows also support activities like recreation, tourism, timber production and beekeeping, and help maintain cultural connections and values as well as social wellbeing.

The Victorian Environmental Water Holder (VEWH) holds water entitlements and receives water allocations that can be used for environmental purposes. The VEWH and its partner waterway managers consider a range of possible climate and water availability scenarios to determine environmental watering actions under different conditions. The VEWH's annual seasonal watering plan identifies the scope of the environmental watering activities that could occur in waterways across Victoria under different climate scenarios. The plan can be accessed at **www.vewh.vic.gov.au**.

In northern Victoria, the VEWH works with the Commonwealth Environmental Water Office, the MDBA, and with the New South Wales and South Australian governments to prioritise how and where water is used, and to ensure use of water is coordinated to optimise the condition of connected waterways in the southern Murray-Darling Basin.

Climatic conditions and water availability in many parts of Victoria have been close to the long-term average during the first half of 2020-21. This follows several years of drier than average conditions. Environmental watering actions delivered so far this year have aimed to increase habitat and food in rivers and wetlands to help populations of native plants and animals recover. Western Victoria has not received as much rain as other parts of the state, and environmental water is being used in the Wimmera and Glenelg system to protect and, where possible, maintain populations of native plants and animals as they cope with continuing dry conditions. Low rainfall in the western region has limited environmental allocations so far in 2020-21, and environmental water carried over from 2019-20 will help meet some of the critical environmental flows this year.

Climate outlooks indicate that the remainder of 2020-21 will be wetter than average in eastern Australia. Average to wet conditions would help replenish storages and might create opportunities to deliver environmental flows to improve environmental outcomes in many systems. These opportunities are less likely in western Victoria.

Wet conditions are likely to cause high flows or floods in some rivers and might fill some floodplain wetlands. These natural events support important ecological processes and are critical to the health and persistence of many native plants and animals that live in Victoria's waterways. Environmental water may be used to supplement natural high flow events (e.g. to extend the duration of a wetland inundation to help nesting waterbirds successfully raise their chicks) or may be saved for later use if not needed at the time. Subject to entitlement conditions, unused environmental water can be carried over to support environmental flows in subsequent years. The ability to carry water over between years is critical to help maintain waterway health in drier periods.

The VEWH may consider buying or selling water for the environment where it is important for meeting an environmental objective. The VEWH's annual *Water Allocation Trading Strategy* describes the trading activity that the VEWH may undertake during 2020-21: **www.vewh.vic.gov.au/watering-program/trading**.

Craig Moodie

Securing our water supplies

To manage the impact of population growth and climate change, we need to stay focused on both water supply and demand.

The Victorian Water Grid

Victoria's water grid works much like our road network, connecting sources such as dams, reservoirs, irrigation districts and the Desalination Plant via infrastructure including pipes and pumps, and natural elements like rivers. The water grid includes:

- the capture, production and storage infrastructure (such as dams, reservoirs, weirs, groundwater extraction locations and the Victorian Desalination Project)
- the delivery infrastructure (such as channels, pipes, pumps and the waterways used to deliver water)
- the arrangements by which water can be purchased and sold through the water markets and allocated through the water entitlement framework.

The Water Grid Partnership was established in late 2018 to oversee the grid and realise opportunities to maximise community benefit, water affordability and water security across the state. The partnership consists of water corporations, catchment management authorities and the VEWH, and integrates perspectives from the broader water industry. Throughout 2019, the Partnership focused on improving our understanding of the grid and the resources it supplies, via the first south-central water grid stress test as well as assessing options to augment the grid.

The second biennial statement is in development. This next iteration will take the form of digital interactive dashboards that consolidate our understanding of the water grid and associated challenges and opportunities. You will be able to access this information on the DELWP website.

Desalination Plant

The Victorian Desalination Plant underpins water security for Melbourne and surrounding regions through the water grid and is managed to ensure storages do not reach dangerously low levels. Better use of our water grid means Melbourne's storages must also be ready to provide for new regional allocations to other towns. The water grid connects the Desalination Plant to many regional towns, including; Geelong, Sunbury, Melton, Cowes, Wonthaggi, Korumburra, Poowong, Loch and Nyora.

To date, the Victorian Desalination Project has delivered over 263 GL of water to the Melbourne system. Melbourne's storages would be more than 14 per cent lower without the water provided by the Victorian Desalination Project.

DID YOU KNOW?

You can save up to $40 a year on water and energy bills by using one bucket less of water per day.

Water efficiency measures in urban areas

The urban water corporations are working collaboratively with DELWP on a program of initiatives for residential and non-residential customers, including the:

Target 155 water efficiency program helping metropolitan Melbourne and Western Water householders to target 155 litres of water per person per day

Target Your Water Use regional water efficiency program focusing on efficient water use for each region

Schools Water Efficiency Program enabling schools to track their water usage using data loggers to help identify leaks, faulty appliances and inefficient water practices

Community Rebate and Housing Retrofit programs helping vulnerable and hardship customers and not-for-profit housing organisations to reduce water use and bills.

Smart Water Advice providing water utilities, customers and councils with a range of educational, interactive water saving resources - **www.smartwatermark.org/Victoria**

Public spaces (Urban water security planning)

Each urban water corporation produced an Urban Water Strategy in 2017. They identify the best mix of measures to provide water services in towns and cities now and into the future. These strategies include Drought Preparedness Plans that set out how the water corporation will respond to water shortages if they arise. The strategies are updated every five years. Urban water corporations are currently preparing to review their strategies for the next update in early 2022.

As part of those strategies, water corporations continue to engage with councils and other public open space managers to identify and assess which important liveability assets, such as sporting facilities, public gardens and street trees, would be impacted under water restrictions and the extent to which they should be exempt from these restrictions. Urban water corporations also consult with customers regarding important community assets that might require water to be made available during water shortages.

Rural water supplies

Rural water infrastructure is vital to support agriculture and its future growth. Successive governments have invested in modernising irrigation districts with a focus on reducing the amount of water required to operate the irrigation systems and increase the value of agricultural production. Also, governments have partnered with communities to build modern stock and domestic supply systems in drier parts of the state that traditionally rely on rainfall or groundwater.

The Victorian Government, the Commonwealth Government, water corporations and local communities have invested in four important projects that have been completed this year. The most significant of these is the Connections Project, the largest irrigation modernisation project in Australian history, which has now completed works to achieve 429 GL of water savings to be shared between the environment, irrigators and the Melbourne water retailers. This world-leading delivery system will support the sustainable future of productive agriculture in the Goulburn-Murray Irrigation District (GMID) for generations to come.

The South West Loddon Rural Water Supply project was completed in June 2020 and will provide a more secure stock and domestic water supply to Wedderburn and the surrounding region from summer 2020-21. Also completed in 2020, the Werribee and Bacchus Marsh irrigation districts modernisation projects have increased the efficiency of irrigated agriculture across the region.

The next phase of the Macalister Irrigation District modernisation project (Phase 1B) is due to be completed in June 2021 and in 2020, state and Commonwealth funding to modernise the final phase of the district (Phase 2) was secured. Also due for completion mid-2021 is the Mitiamo and District Reticulated Water Supply Project which will establish a domestic and stock water supply system covering approximately 75,000 hectares in the Mitiamo region in north central Victoria.

The completion of these projects will improve the resilience of the rural water grid network in Victoria, expand opportunities for irrigated agriculture, and deliver environmental benefits through water recovery.

This year the Victorian Government has been successful in securing funding from the Commonwealth for three additional rural water investment infrastructure projects, including the Macalister Irrigation District Modernisation Phase 2 Project mentioned above, the East Grampians Water Supply Project, and the Western Irrigation Network project. In addition to the Commonwealth, Grampians Wimmera Mallee Water and landholders are also contributing to the East Grampians Water Supply Project due for completion in 2022. The Western Irrigation Network project will establish an irrigation scheme in the Parwan/Baillang region supplied by recycled water from nearby treatment plants and is due for completion in 2025.

Climate change will increase the need for existing infrastructure to be more efficient. New infrastructure that enables access to water via the expansion of the water grid is also being considered. The Victorian Government has invested in developing business cases for five feasibility projects listed in Victoria's Northern Water Infrastructure Prospectus,[6] that are expected to have neutral or positive socio-economic impacts and will generate water savings for the environment to meet Victoria's Basin Plan targets. A key project included in the prospectus, the GMW Water Efficiency Project proposal, has been submitted to the Commonwealth for funding consideration following a positive socio-economic assessment which included public consultation. This project aims to further modernise the irrigation supply system in targeted GMID locations.

The feasibility of expanding irrigated agriculture in central Gippsland is being explored through a SRW-led study and will inform the Central and Gippsland Region Sustainable Water Strategy.

6 **https://www.water.vic.gov.au/__data/assets/pdf_file/0028/395830/Victorias-Northern-Water-Infrastructure-Prospectus_Continuing-to-deliver-the-Basin-Plan.pdf**

Craig Moodie

What are Permanent Water Saving Rules?

They are a set of common-sense rules to help Victorians use water wisely. They are always in place and only replaced if water restrictions are enforced. Breaking these rules could result in penalties.

HAND-HELD HOSE

Water from a hand-held hose must not be used for any purpose unless the hose is:

- Fitted with a trigger nozzle; and
- Leak-free.

RESIDENTIAL OR COMMERCIAL GARDENS AND LAWNS

Can be watered with:

- A hand-held hose, bucket or watering can at any time; and
- A watering system between the hours of 6PM – 10AM on any day.

PUBLIC GARDENS AND LAWNS AND PLAYING SURFACES

Can be watered with:

- A hand-held hose, bucket or watering can at any time;
- A watering system fitted with a rain or soil moisture sensor between the hours of 6PM – 10AM on any day; and
- In accordance with an approved Water Use Plan.

FOUNTAINS AND WATER FEATURES

Water can only be used for fountains or water features that recirculate water.

CLEANING OF HARD SURFACES

(includes driveways, paths, concrete, tiles, timber decking)

High-pressure water cleaning devices, a hand-held hose or bucket only can be used for:

- Cleaning as a result of an accident, fire, health hazard, safety hazard or other emergency;
- Staining to the surface has developed (limited to once a season).

EXEMPTIONS

Each Victorian urban water corporation can grant exemptions in special circumstance.

Permanent water saving rules do not apply to recycled, reclaimed, rain or grey water use.

Further information

More information about sustainable water management and how we manage in dry conditions can be found at:

- Department of Environment, Land, Water and Planning – **www.water.vic.gov.au**

More information about your local conditions and how water corporations manage in dry conditions can be found at:

- Barwon Water – **www.barwonwater.vic.gov.au**
- Central Highlands Water – **www.chw.net.au**
- City West Water – **www.citywestwater.com.au**
- Coliban Water – **www.coliban.com.au**
- East Gippsland Water – **www.egwater.vic.gov.au**
- Gippsland Water – **www.gippswater.com.au**
- Goulburn-Murray Water – **www.g-mwater.com.au**
- Goulburn Valley Water – **www.gvwater.vic.gov.au**
- Grampian Wimmera Mallee Water – **www.gwmwater.org.au**
- Lower Murray Water – **www.lmw.vic.gov.au**
- Melbourne Water – **www.melbournewater.com.au**
- North East Water – **www.newater.com.au**
- South East Water – **www.southeastwater.com.au**
- South Gippsland Water – **www.sgwater.com.au**
- Southern Rural Water – **www.srw.com.au**
- Wannon Water – **www.wannonwater.com.au**
- Western Water – **www.westernwater.com.au**
- Westernport Water – **www.westernportwater.com.au**
- Yarra Valley Water – **www.yvw.com.au**

More information about environmental water can be found at:

- Victorian Environmental Water Holder – **www.vewh.vic.gov.au**

More information about forecast rainfall and temperatures can be found at:

- Australian Bureau of Meteorology – **www.bom.gov.au/climate/ahead**

More information about using water efficiently can be found at:

- Smart Water Advice - **www.smartwatermark.org/Victoria/www.smartwatermark.org/Victoria/**

More information on water restrictions can be found at:

- **https://www.water.vic.gov.au/liveable/water-restrictions**

Melbourne Water

delwp.vic.gov.au