

Water Outlook

2024 - 2025



LOWER MURRAY
WATER

Acknowledgement of Country



(Artist, Bella Sloane)

Lower Murray Water (LMW) acknowledges the Traditional Owners of the land on which we work and reside. We recognise their continuing connection to land, waterways and community. We pay our respects to Elders past, present and future.

The Traditional Owners groups within LMW's service region lie within the traditional lands of First Nations Peoples, from upstream at Koondrook moving downstream along the Murray River through to the western edge of our region at the South Australian border. They are the Barapa Barapa Peoples, Wemba Wemba Peoples, Wadi Wadi Peoples, Tatti Tatti Peoples, Latji Latji Peoples, Nyeri Nyeri Peoples, Ngintait Peoples and the Wegaia Peoples.

The First Nation People's connection to land and water is the living cultural knowledge that is passed down from generation to generation. The stories that connected the ancestors to their culture still live through the First Nations Peoples of today.

- Acknowledgement of Country written by Stephanie Sloane

Stephanie works at LMW as a Diversity and Inclusion Officer. She is a proud Ngiyampa woman and has a strong connection to her culture, history and the land. Stephanie has brought not only her experience and passion for people to this role but also a commitment to inspire and mentor others wishing to pursue a career at LMW.

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Water Outlook 2024-25

At a glance. (as of 15 October 2024)

Seasonal determinations

Murray system – 94% HRWS 0% LRWS

Goulburn System – 100% HRWS 0% LRWS

Dam storage

Dartmouth Dam

– Oct24 capacity: 96%

– 2023-24 capacity: 99%

Hume Dam

– Oct 24 capacity: 62%

– 2023-24 capacity: 96%

Urban Demand is expected to increase steadily, and Rural demand will remain relatively constant.

Figure 1 – Forecast Volumetric Urban Demand

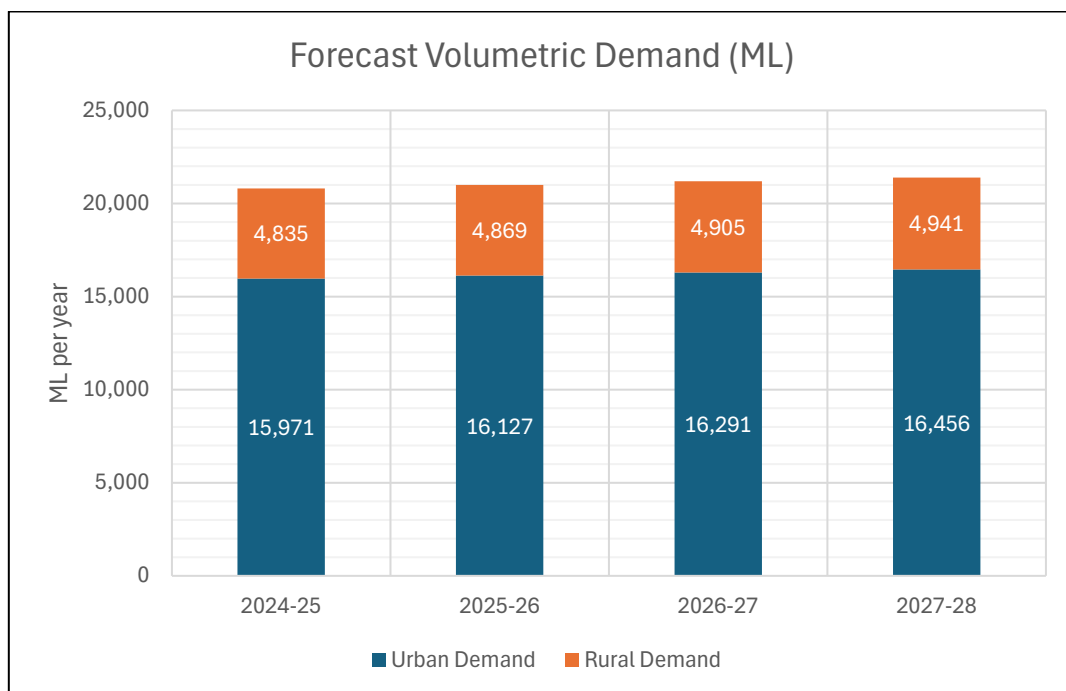


Table 1 – Supply Strategy

Strategy	LMW actions to balance Supply and Demand
Increase Supply Availability	<ul style="list-style-type: none">– Purchase additional water shares or allocation to secure supply levels
Reduce demand for water	<ul style="list-style-type: none">– Deliver the Community Housing Retrofit Program– Enforce Permanent Water Saving Rules– Explore the feasibility of provision of recycled water in public spaces
Heightened awareness and compliance	<ul style="list-style-type: none">– Deliver School Education Programs– Community interaction - Public information and water-wise events.– Water use compliance and enforcement, along with awareness and advertising to remind water saving rules and limit the usage
Water Efficiency	<ul style="list-style-type: none">– Sunraysia Water Efficiency Project (SWEP) funded by State and Commonwealth governments is in progress to reduce water losses in the Mildura, Merbein and Red Cliffs irrigation districts.

Summary

LMW's service area extends from Kerang to the South Australian Border, spanning the municipalities of Mildura, Swan Hill and Gannawarra. The Annual Water Outlook for 2023-24 provides an eight to twelve-month outlook on security of water supply to LMW's urban and rural customers, which is almost entirely delivered from the Murray River Regulated System.

Table 2 below summarises the details of the urban & rural water supply systems and the level of security of supply for 2023-24.

Table 2 – Water supply systems and levels of security

System	Urban / Rural	Towns Supplied	Supply Sources	Level of Restrictions	Likelihood of Restrictions*
Mildura	Urban	Mildura and Merbein	River Murray (97%) Loddon River, Goulburn Murray Water (GMW) Channels (3%)	PWSR has been in place since June 2020	Very Rare <1%
Red Cliffs		Red Cliffs			
Robinvale		Robinvale			
Piangil		Piangil			
Swan Hill		Swan Hill, Nyah, Nyah West, Lake Boga and Woorinen South			
Kerang		Kerang			
Koondrook		Koondrook			
Murrabit		Murrabit			
Millewa	Rural	Millewa	River Murray (100%)	None	Very Rare <1%
Merbein		Merbein, Yelta			
Mildura		Mildura			
Red Cliffs		Red Cliffs			
Robinvale		Robinvale			

* Likelihood of water restrictions range: very rare <1%; rare 1-4%; unlikely 5-19%; possible 20-49%; likely 50-79%; almost certain 80-100%.

As shown in **Table 2**, LMW has a very rare likelihood of enforcing water restrictions on our customer base. Higher than average rainfall in 2023-24 has supported the water resources in the Murray-Darling catchment and the Murray River system completing its yearly 100% determination of High-Reliability Water Shares (HRWS). The Murray system experienced good inflows due to the above average rainfall throughout the 2023-24 summer. The Murray Darling Basin Authority Outlook indicates that there is a low risk of a delivery shortfall for this water year. In addition, the urban water shares purchased in compliance with the Urban Water Strategy 2022 will ensure the security of supply of water to urban customers in 2023-24. Given the current strong resource position and forecasts, the probability of restrictions in our water supply systems is Very Rare **Table 2**.

In our systems, we expect to have 100% allocation for 2024-25. LMW will continue to apply PWSR in urban water supply systems. LMW is aware that there are still risks such as higher demand due to the warmer climatic conditions (the Bureau of Meteorology are forecasting a drier climatic outlook until February 2024), raw water quality issues, emergency situations, asset failure, which could result in the need for escalation.

In 2023-24 the total volume of potable water supplied to our water districts was 15,418 ML and the total number of customer connections was 35,496, which is 0.6% increase in consumption and 75% increase in number of connections compared to the previous year.

In 2023-24, the total volume of water supplied to irrigation districts was 120,303 ML which is 16.3% reduction compared to last year.

To ensure continuity of service delivery, LMW has several initiatives which include 'Operational Summer Readiness Program' to ensure that all critical assets can deliver their function during peak summer demand periods. Our emergency management plan includes contingency and response plans for Blue Green Algae, and Drought, LMW also undergoes proactive capital renewal programs to rehabilitate or replace critical water and irrigation mains along with the rehabilitation of network sewer assets.

LMW will also continue with programs to reduce usage including Compliance and Enforcement activities with rural customers, Community Housing Retrofit Program and place information on our website which will help customers to conserve water and encourage the efficient use of water.

Our Service Region

Lower Murray Water is one of the few hybrid water utilities in Victoria and is the most remote water corporation from Melbourne, combining an urban water business with an irrigation water business, plus other support functions delivered for private diverters and the Mallee Catchment Management Authority. We have around 200 staff to provide services to approximately 76,000 urban customers, 6,040 irrigation, stock, and domestic water customers, and 985 private diverters.

LMW's Services

LMW provides several services across the north-west of Victoria, but our core business is centered on providing:

- Potable drinking water in the urban and regional centers.
- Wastewater collection and treatment services to the urban and regional centers.
- Irrigation water supply and irrigation drainage services.
- Management of private diversion licenses.
- Domestic and stock water supply to rural areas; and
- Reclaimed water re-use.

Figure 2 below shows the service area of LMW, which includes regional centers and towns within three local government areas. They are Mildura Rural City Council, Swan Hill Rural City Council, and Gannawarra Shire Council.

Figure 2 - LMW's service region



Table 3 below shows the connection numbers and volume of potable water supplied to each town water supply system supplied by LMW in 2023-2024.

Table 3 - Total number of customer connections across LMW districts – Urban

Town Supplied by LMW	Number of Urban customer Connections	Volume of potable water supplied (ML)
Kerang	2,194	819
Koondrook	549	188
Lake Boga	510	250
Mildura	22,417	12,548
Murrabit	57	23
Mystic Park	15	8
Nyah	352	213
Nyah West	296	144
Piangil	122	122
Red Cliffs	1,824	1,248
Robinvale	1,023	557
Swan Hill	5,962	2,706
Woorinen South	175	102
Total	35,496	18,928

Table 4 shows the volume of water delivered to our rural customers in each water supply district supplied by LMW in 2023-24

Table 4 - Volumes of water delivered to Rural Customers in 2023-24

District	Volume Delivered (ML)
Mildura	34,257
Merbein	17,371
Red Cliffs	33,194
Robinvale	17,266
Total for Irrigation Districts	102,088
Lake Cullulleraine and Millewa	18,215
Private Diverters	422,303
Total Water Delivered	542,606

374 megaliters of water use was recorded by the Victorian Environmental Water Holder entitlements associated with LMW. LMW manages a variety of short-and long-term risks to its urban and rural water supplies.

Table 5 summarises LMW’s water supply risk ranking and the comparison of risks with the previous year.

Table 5 - Risks (perceived) to the urban and rural supply over the next 12 months

Risk	Rank (23-24)	Rank (24-25)
Water Availability	1	5
Water Quality - Blue Green Algae (BGA) & Plumatella	2	4
Emergencies like floods, bushfires, resulting damages, service interruptions and higher demands	3	5
Urban growth and Supply demand	4	5
Infrastructure resilience	5	5

Note that Rank 1 and 5 correspond to highest and lowest risk, respectively. These risks represent a ‘point in time’ and highlight some immediate areas for attention within LMW’s operational planning and development of longer-term strategies.

Water availability is the key risk to rural water supply, which is highly dependent on climate. LMW and the customers are taking actions to adapt to climate change and reduce water use such as implementing efficient irrigation systems and reducing losses in water transfer systems. Given the storage levels at Dartmouth and Hume dams and current flows in the Murray Darling catchment, this risk is reduced in the short term.

With the predicted hot climatic conditions during next summer, Blue Green Algae (BGA) outbreaks in the Murray River system could be initiated. This is still one of the key issues to ensuring water supply to our communities. Significant operational interventions are required to produce compliant drinking water during BGA bloom events. During BGA bloom periods, the rural stock and domestic customers are advised not to use the water as a precautionary measure to minimise the risk. Short-term emergency restrictions may be required to manage demand.

Infrastructure resilience remains one of the focus areas for both urban and rural water supply. LMW is undertaking several actions such as improvements in asset maintenance, asset renewals and augmentations to improve infrastructure resilience and cater to the future demands and urban growth. Our Water Plan 5 has been approved by the Essential Services Commission (ESC) in 2024 and we are working towards delivering the projects to improve our infrastructure and streamline our service delivery.

Water Supply Systems (Urban)

Urban Water Supply Systems

Mildura

Water is pumped from the River Murray at Mildura through two conventional water treatment plants (WTP). The treated water is supplied to around 22,400 connections in the City of Mildura and surrounding rural-residential areas including the townships of Merbein, Cabarita, Birdwoodton, Irymple, Nichols Point, Koorlong and Cardross. The Seventh Street treatment plant has a capacity of 74 ML/d and the Mildura West plant has a capacity of 18 ML/d.

The current average daily consumption is approximately 44.5 ML/d, with a current estimated peak day consumption of 76.1 ML/d. Treated water pumping stations at Seventh Street and Mildura West distribute water to two water towers with a combined storage capacity of 3.0 ML. Additional booster pump stations at Ginquam and Benetook and ground-level storages with a combined storage capacity of 37.2 ML allow the system to maintain pressures in the outlying areas on high-demand days.

Merbein is supplied with treated water from Mildura (both Mildura Water Treatment Plant Seventh Street and Mildura Water Treatment Plant West) via a 450 mm diameter transfer pipeline 7.14 km long. The pipeline transfers water directly to the Merbein reticulation, including ground-level storage of 7.5 ML capacity. During high demand, booster pumps of 150 L/s (13 ML/d) capacity can be operated to maintain optimum pressures and flows in the reticulation network.

Red Cliffs

The town of Red Cliffs (14 km south of Mildura) is an independent system and services around 1,800 connections. A raw water pumping station extracts water from the river Murray and supplies it to a dissolved air flotation and filtration treatment plant. The treated water is stored in a 6 ML ground-level storage tank (GLS). From the GLS the treated water is delivered to a water tower near the town center via two rising mains of 300 mm and 375 mm in diameter and supplied to the town. The plant capacity is 11 ML/d, and the average day demand is approximately 3.6 ML/d with a current estimated peak day consumption of 9.2 ML/d.

Robinvale

At Robinvale, raw water is pumped from the River Murray via a 300 mm pipeline to a conventional water treatment plant, which services around 1,000 connections. Treated water is pumped to a 0.9ML standpipe from a 3.6 ML ground storage tank. The reticulation network is supplied by the 0.3 ML standpipe and a set of booster pumps. The maximum plant design capacity is 6 ML/d, with an average peak daily consumption during the summer months of approximately 5.0ML/d.

Kerang

Kerang is situated at the southern end of the LMW region. Raw water is pumped either from the Murray River (at Koondrook) or the Goulburn Murray Water 14/2 Channel and treated in a conventional water treatment plant, which services around 2,200 connections. LMW can extract water from the Loddon River in the event of an emergency with a temporary pipework arrangement, however it is not preferred due to poor water quality.

The treated water is pumped via dual rising mains of 400mm diameter to Nolan Street which supplies the reticulation network with a 0.68 ML water tower and a 2.5 ML ground storage tank. During high demand, water can be supplied from the ground storage tank via a booster pump station to maintain optimum pressures and flows in the reticulation network. The maximum plant design capacity is 11 ML/d, and the average peak daily consumption reached 7.2 ML/d during summer periods.

Piangil

At Piangil, raw water is pumped from the river Murray to a “Package” conventional water treatment plant which services around 120 connections. The plant has a capacity of 1.0 ML/d. Treated water is then pumped to a 1.14 ML ground storage tank, situated on a high ridge east of the town. The system is re-pressurised by pressure booster pumps for distribution into the town’s reticulation network from this storage tank.

In 2021-22, a new water main was constructed (225 mm PE, 1.2 km long) as the old AC (Asbestos Cement) main was approaching the end of asset life and had multiple leaks/failures. This enabled LMW to provide an increased volume of water supply with increased pressure (from 180 – 240 kPa).

Koondrook

Raw water is pumped from the Murray River to a conventional water treatment plant with a capacity of 3 ML/d, which services around 550 connections. Treated water is pumped to a 0.9 ML standpipe from a 2 ML ground storage tank. The Koondrook reticulation network is supplied by this standpipe.

Murrabit

The Murrabit system can pump raw water from the Raw Water Storage, which is fed from the Goulburn- Murray Water channel or directly from the Murray River to a “Package” conventional water treatment plant with 0.4 ML/d capacity, which services around 50 connections. Treated water is pumped into 1 x 50 KL elevated storage tank from 4 x 50 KL ground storage tanks. The Murrabit reticulation network is supplied from the elevated storage tank.

Swan Hill

Raw water is pumped from the River Murray at Swan Hill to a conventional water treatment plant with a capacity of 32 ML/d. The Swan Hill system also supplies Woorinen South, Nyah & Nyah West, and Lake Boga, which together service around 7,300 customers. The average daily consumption is 9.8 ML/d for this system. Treated water pumps deliver treated water to a 2.3 ML ground-level storage and a 0.68ML water tower near the city center. Two ground-level storages, each of 4.0 ML capacity, and a 0.15 ML water tower are situated west of the city. A new 5 ML storage facility has also been recently constructed at this storage site and has been operational since March 2022.

Woorinen South is supplied from the Swan Hill system via a 10 km long pipeline with 300 mm and 250 mm diameter sections with a 2.0 ML ground level storage tank and associated re-lift pumps and chlorination facilities.

The townships of Nyah and Nyah West are supplied via a 27 km long, 250mm diameter pipeline from the Swan Hill Water Treatment Plant. A 6.5 ML ground-level storage tank,

chlorination facility, and re-lift pumps are situated at Nyah. Properties adjacent to this pipeline can access water for domestic or commercial supply.

Lake Boga is supplied via a 250 mm diameter pipeline from the Swan Hill Water Treatment Plant. A 0.9 ML ground level storage, chlorination facilities, relift pumps, and a 0.08 ML water tower that supplies the Lake Boga community.

Table 6 summarises the availability of water as per the seasonal determinations.

Table 6 - Availability of water for LMW in 2024-25 at October 2024

Source of water	Entitlement/ Share (ML)	Seasonal Determination on 1 July 2024	Seasonal Allocation issued	Seasonal determination on 15 October 2024	Available balance as of 15 October 2024
Goulburn HRWS	550	69%	379.5	100%	550
Goulburn LRWS	216	0%	-	0%	0
Murray HRWS	2,613	63%	1,646.1	94%	2,456
BE (Urban)	30,971	63%	19,511.7	94%	29,113
Carryover	-	-	1,233	-	1,233
Total (ML)	34,350	-	22,770	-	33,352

1. Carryover as of the start of the season (1 July 2024)
2. Net trade Vol = trade in - trade out. Negative volume indicates trade out.
3. The volume of water write-off was from the spillable water account, which does not impact the water available.
4. The volume includes permanent water shares purchased by LMW since 30th September 2023.

LMW services 2666 irrigation and 2240 stock and domestic customers in the four pumped irrigation districts of Mildura, Merbein, Red Cliffs and Robinvale, and a further 297 customers in the Millewa waterworks district and 12 Yelta waterworks district customers. Raw water is drawn from the Murray River via several offtake pump stations and distributed to the customers via combination of channels and piped transfer networks except for Robinvale Irrigation District, which is supplied through a pressurised piped system.

Sources of supply

LMW draws 97% of raw water from the Murray River with the remaining from Goulburn Murray Water's Irrigation Channel systems. A bulk water entitlement of 30,971ML is currently specified under the Bulk Entitlement (River Murray - Lower Murray Urban and Rural Water - Urban) Conversion Order 1999 as of June 2011.

LMW supplements the bulk entitlement with purchases of additional water share and holds 2,222.6ML of High-Reliability Water Shares (2612.9ML Murray and 550ML Goulburn), and 216ML of Low-Reliability Goulburn Water Shares as of 15th October 2024.

In 24-25, the opening allocation for High-Reliability Water Shares (HRWS) was 63% in the Murray system and 69% in the Goulburn system. The total available water volume was 21,537ML, with a carryover volume of 1,233ML (as of July 1, 202).

Current Demand and Forecast

Figure 3 below shows LMW's historical volumetric water usage from 2020-21 to 2023-24.

Figure 3 - LMW's historical volumetric water usage from 2020-21 to 2023-24

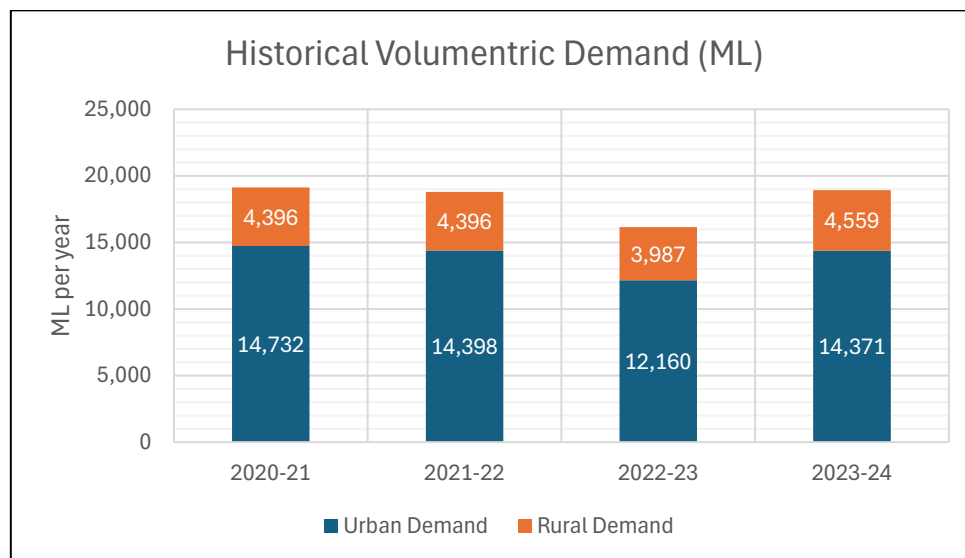
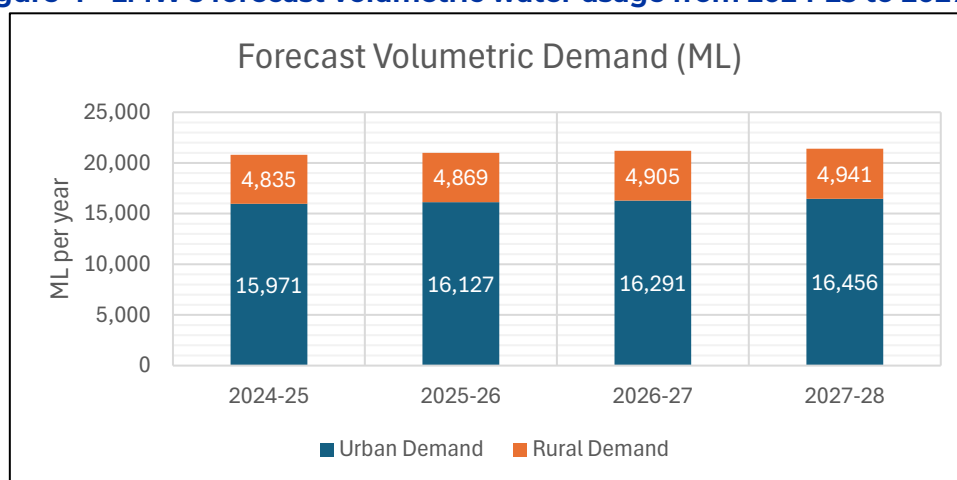


Figure 4 below shows forecast volumetric water usage from 2024-25 to 2027-28. The forecast is based on average climatic conditions in the last 3 years with an average annual demand of 528kL per residential connection expected. This assumption is consistent with the LMW 2022 Urban Water Strategy (UWS). Urban demand is expected to increase steadily, and Rural demand will remain relatively constant.

Figure 4 - LMW's forecast volumetric water usage from 2024-25 to 2027-28



Usage during 2022-23 and 2023-24 shows a reduction of water consumption which is attributed to seasonal conditions including higher rainfall, flooding and lower than average temperatures.

During 19-20, Stage 1 water restrictions were in effect from November 2019 to June 2020. Over this time, temperatures exceeded 35°C for almost half of the restriction period with Rainfall in these months well below the mean. The forward climatic outlook by BoM (Bureau of Meteorology) predicts warmer climatic conditions this season with rainfall below the mean rainfall levels. Therefore, the demand for water use may go up and the community should comply to the PWSR to manage the demands. It is difficult to accurately predict water savings achieved through restrictions during a single season and across a large population base such as Mildura. Further, demand due to the growth in population and activities in the region will result in higher demand in the future. The level of water usage depends on several factors such as temperature, rainfall, and customer behaviour. Water restrictions offer public guidelines on water use but do not necessarily have a direct impact, particularly when the restriction is at a low level such as Stage 1.

Rural Water Supply Systems

Current Demand and Forecast (Rural)

Table 7 & 8 show the volume of water supplied to irrigation districts. As can be seen from the historical water usage data, rural demand is relatively constant. Variances between seasons are relative to the climate conditions, where dryer years have resulted in increased demand and wet years resulted in lower than average.

No new irrigation district off-take points were agreed to or used in the last 3 years. However, spare capacity created due to the Sunraysia Modernisation Project and through the augmentation of networks through Sunraysia Modernisation Project 2, volumes will increase for rural customers in Red Cliffs and Merbein irrigation districts over the coming seasons. Demand has increased slower than forecasted due to back-to-back wet seasons and slower uptake of development than expected by customers

On the other hand, there would be an increase in demand due to a drier climatic outlook with less rainfall below mean levels for the rest of the 2024-25 season than last season. The estimated delivery to irrigation district customers is 115,000-130,000 ML which is approximately 0%-13% more than what delivered in 2023-24.

Table 7 - Volume of water supplied to irrigation district customers

Year	Volume of water supplied to irrigation district customers (ML)	Volume of water supplied to VEHW(ML)
2024-2025 (Est)	115,000 - 130,000	-
2023-2024	115,301	374
2022-23	100,706	-
2021-22	116,564	118
2020-21	117,809	922
2019-20	117,511	1,608
2018-19	129,348	1,561

Table 8 - Volume of water supplied to private diversion customers

Year	Volume of water supplied to irrigation district customers (ML)
2024-2025 (Est)	450,000
2023-2024	440,518
2022-23	350,926
2021-22	285,199
2020-21	366,868
2019-20	356,658
2018-19	356,902

Climate Conditions and Outlook

Recent conditions

Mean maximum temperatures for September in Victoria was above average (top 30% of all Septembers since 1910) to very much above average (top 10% of all Septembers since 1910) across most of the state, except the south-west and an area of the far south. The mean maximum temperature for September in Victoria was 17.54 °C, which was 1.35 °C above the 1961–1990 average. The minimum temperature decile for LMW's area of operations was in the "average" range in the 12 months leading up to September 2024 – see Figure 3. The Maximum temperature decile for LMW's area of operations was in the "above average" range in the 12 months leading up to September 2024 – see Figure 4.

Across the Murray-Darling Basin, minimum temperature deciles varied from below average to average (**Figure 5**), while maximum temperature deciles varied from very much above average to the highest on record (**Figure 6**).

The September average rainfall total was below average (lowest 30% of all Septembers since 1900) to very much below average (lowest 10% of all Septembers since 1900) across the state's north. Most of the south was generally within 10 mm of average, except some regions in the far south with above average September rainfall total (highest 30% of all Septembers since 1900).

Victoria's average rainfall total for September 2024 was 43.28 mm, which was 32.9% below the 1961–1990 average.

Figures 5 & 6 - Murray-Darling Basin minimum temperature deciles for September 2023 to September 2024, and maximum temperature deciles for September 2023 to September 2024. Source: Bureau of Meteorology

Figure 5 – Minimum Temperature Deciles for September 2023 to September 2024

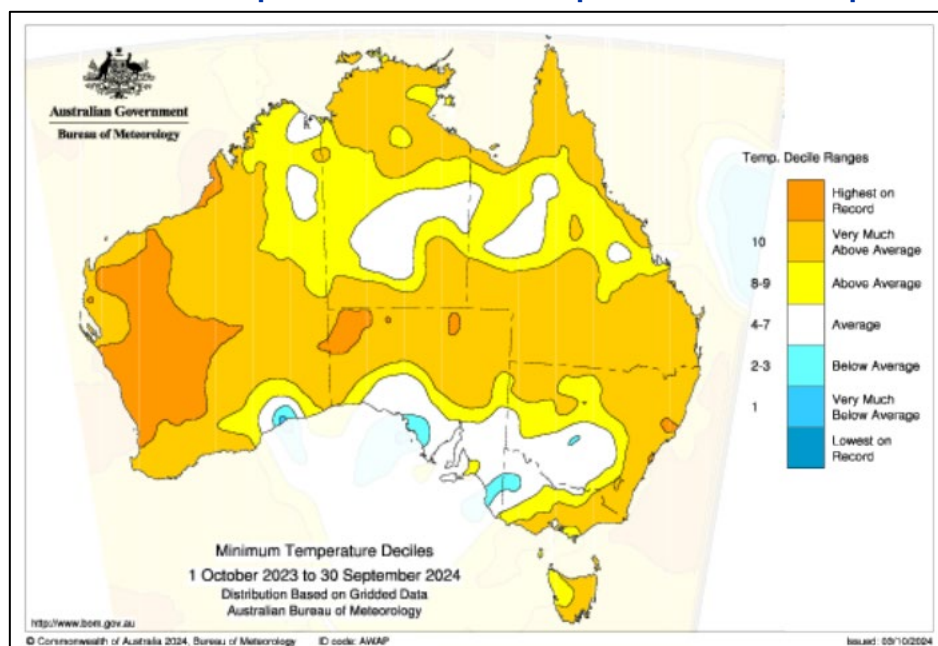
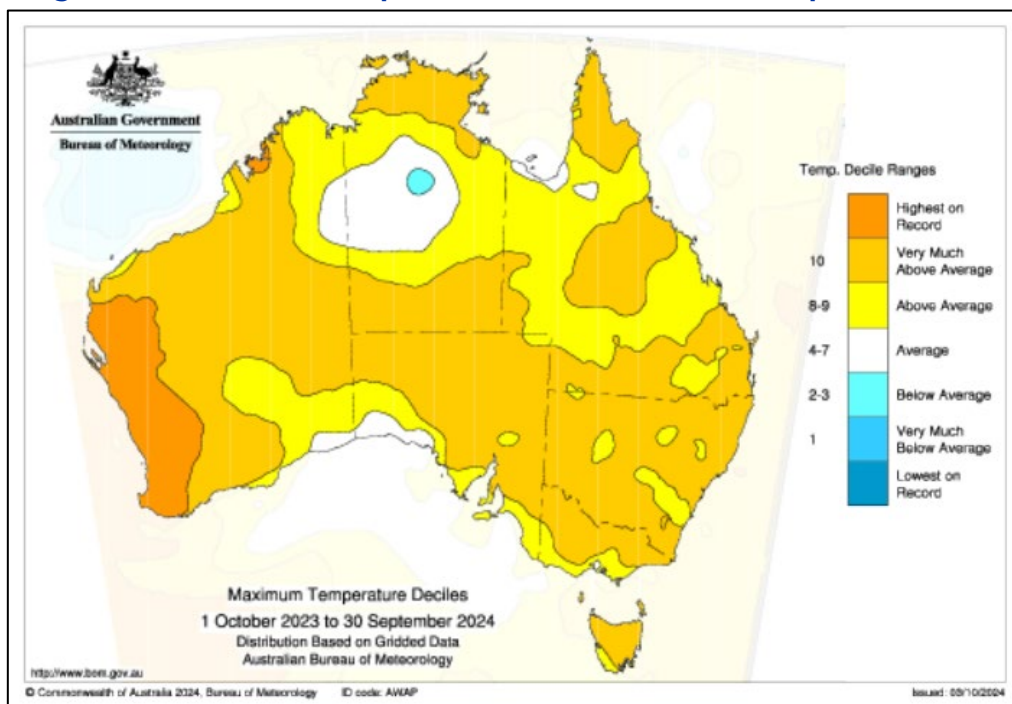


Figure 6 – Maximum Temperature Deciles for 2023 to September 2024



Figures 7 & 8 - Murray-Darling Basin rainfall for September 2024 (left) and September 2024 rainfall deciles. Source: Bureau of Meteorology

Figure 7 - Murray Darling Basin September 2024 Rainfall

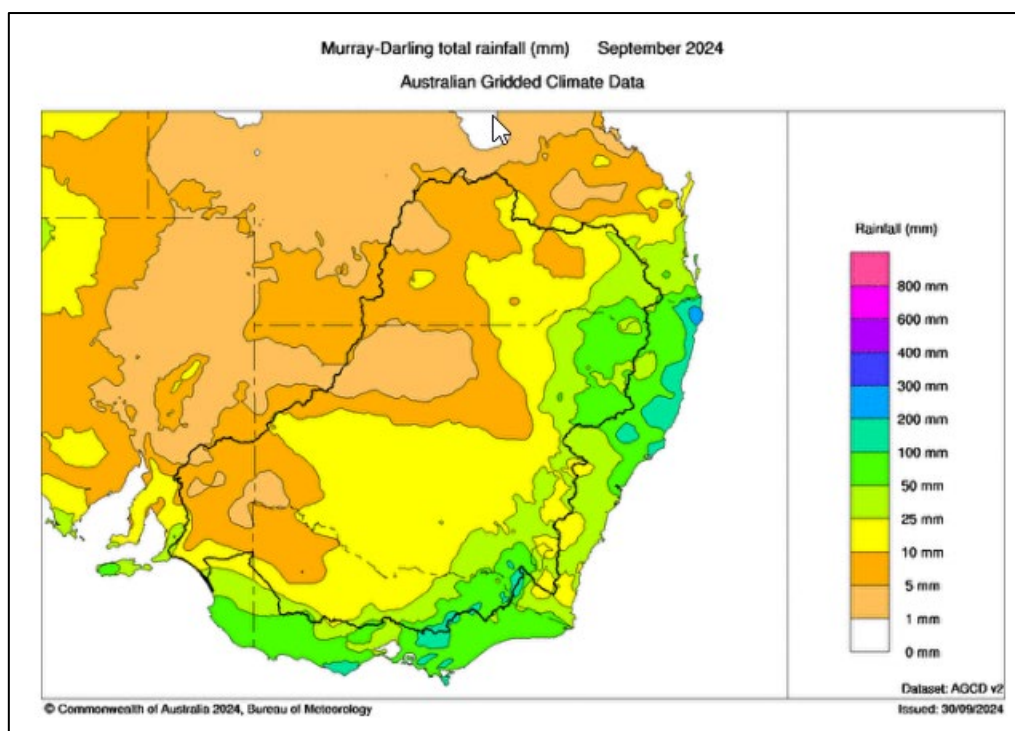
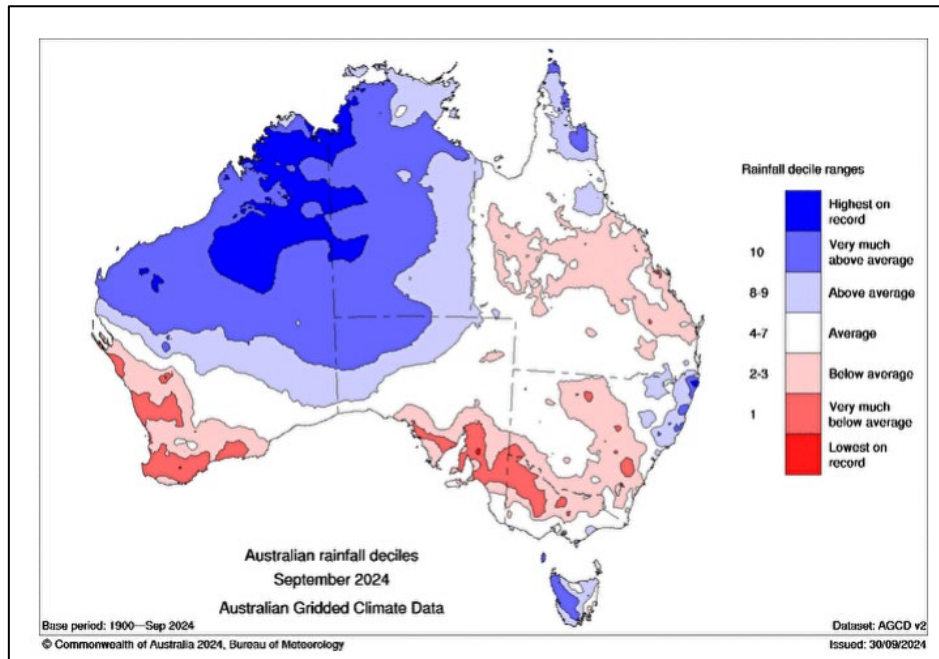


Figure 8 - Murray Darling Basin September 2024 Rainfall Deciles



Murray inflows are significantly below the long-term average, and below last year's inflows with April to October rainfall in the upper catchments being mostly very much below average, resulting in low to very low streamflows. In fact, the MDBA reports that inflows since April this year have had an Annual Exceedance Probability of 95%, meaning that in 95% of years we would expect to see higher inflows over this period than we have observed this year. Typically, October is a month of high inflows, but like recent months this has not been the case and sufficiently heavy rainfall is needed on the dry catchment to turn things around. The climate outlook for November to January is for neutral rainfall conditions across most of the Southern Basin.

Figure 9 - Murray system monthly inflows (excluding Snowy, Darling, IVT and environment inflows).

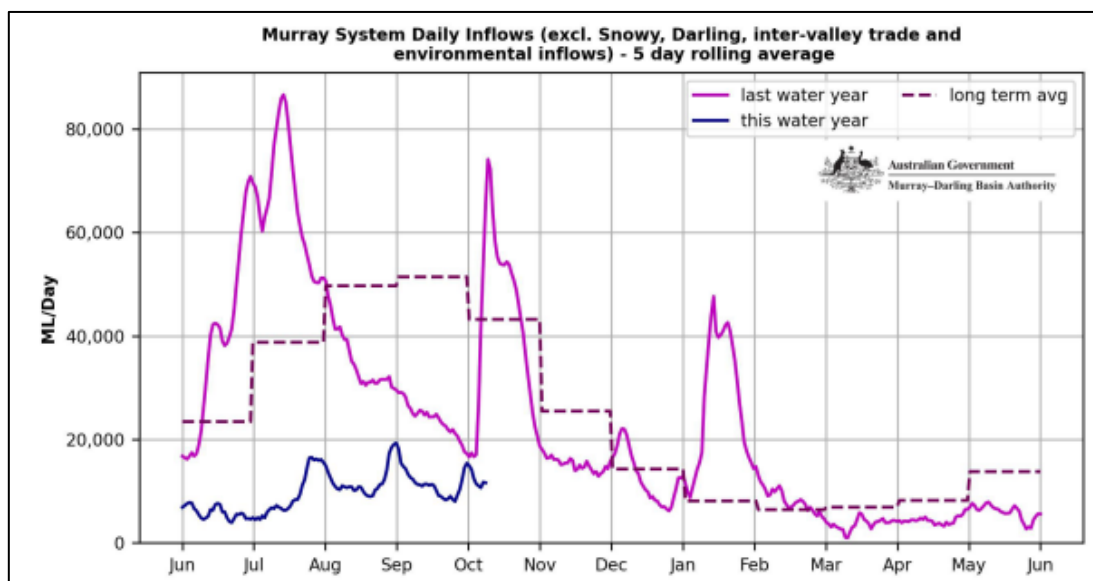


Table 9 compares the equivalent seasonal determination in the Murray system for 15 October between 23-24 and 24-25. This secures a positive outlook for this water year regarding water resource position.

Date of Announcement	High / Low Reliability Water Share	
	2024-25	2023-24
15 October 2024	94%, 0%	100% / 100%

Climate Outlook

The BOM's outlook for November is basically neutral for most of the Southern Basin. Confidence in the outlook is wavering based on recent performance.

Figure 10 – November 2024 Rainfall Outlook

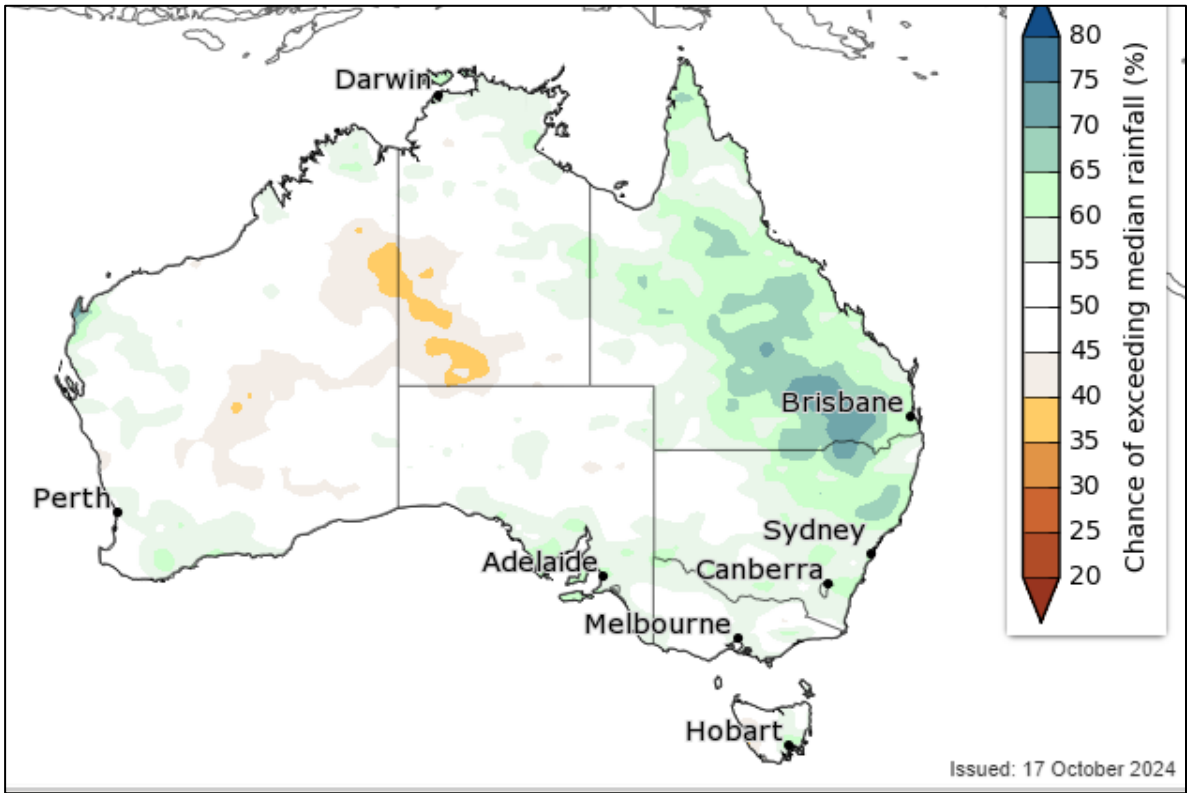


Figure 11 & 12 - Chance of exceeding the median rainfall (December to February) and chance of exceeding the median maximum temperature (December to February).

Figure 11 – Chance of exceeding median rainfall December - February

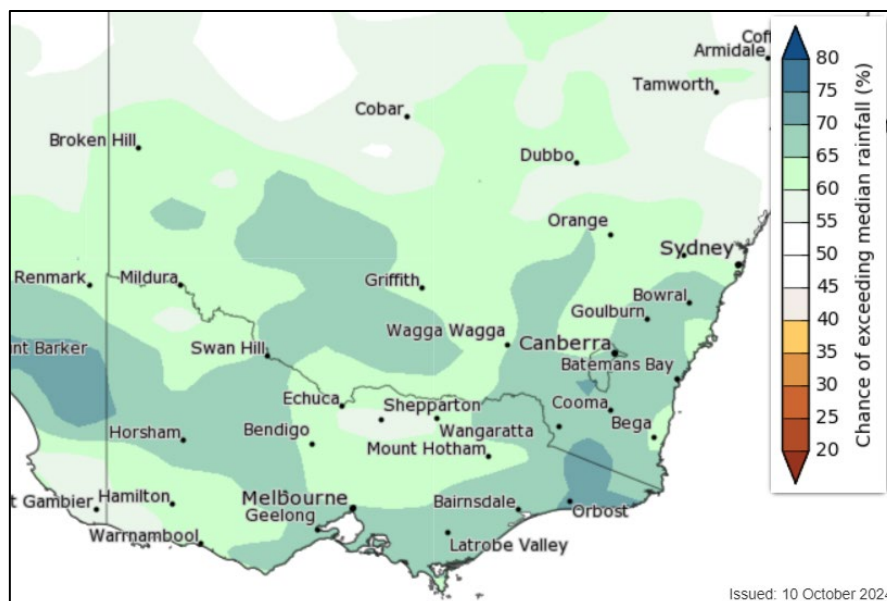
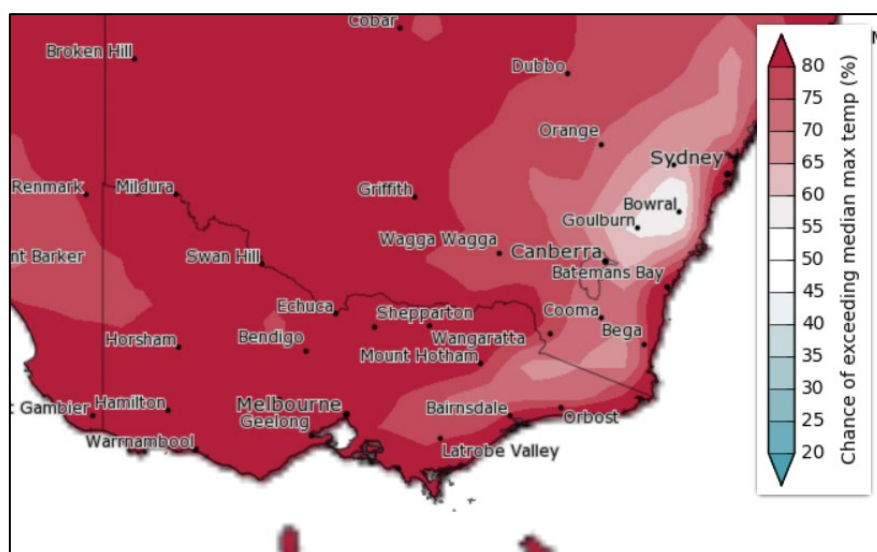


Figure 12 – Chance of exceeding median maximum temperature December - February



The BOM has released a climate driver update. The El Nino-Southern Oscillation (ENSO) remains neutral. The chance of a La Nina event developing in the coming months has decreased compared to recent outlooks. If a La Nina should develop it is forecast to be relatively weak and short-lived.

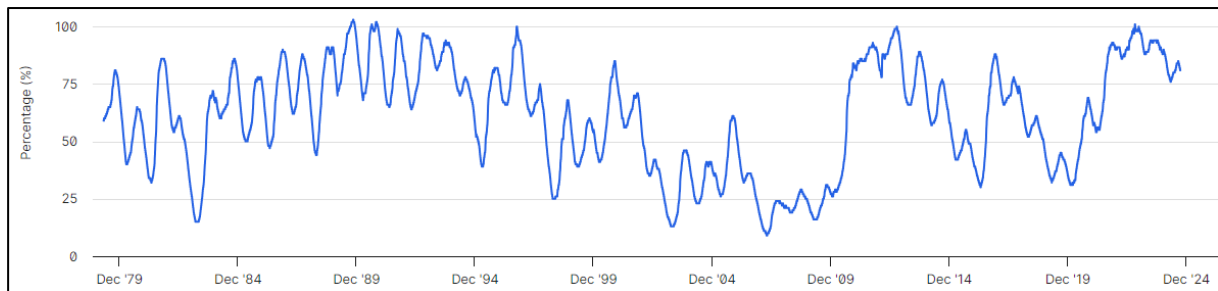
The Indian Ocean Dipole (IOD) is currently neutral and is likely to remain neutral for the rest of the year.

Water storages and Streamflow

Total Southern Basin water storage

The BOM graph below shows the combined volume in southern Murray-Darling Basin storages as a percentage of capacity. Southern Basin storages include Lakes Dartmouth, Hume, Eildon, Burrinjuck, Blowering, Menindee(s), Victoria, Wyangala, and other smaller storages. Currently Southern Basin storages are at 81% capacity, compared to 93% capacity at the same time last year.

Figure 13 -Southern Basin combined storage



Source: Bureau of Meteorology, MDB Water Information Portal.

- Currently Southern Basin storages remain at a relatively healthy 81% capacity, compared to relatively high 93% capacity at the same time last year.
- Water allocations on the Vic Murray system are 94% HRWS, 100% HRWS on the Goulburn, 44% GS on the NSW Murray, 34% GS on the Murrumbidgee, and 100% HS in South Australia.
- With dry inflows the outlook is for the Vic Murray system to reach 100% HRWS by 16 December 2024, while the NSW Murray system would reach 63% GS by 1 February 2025, and the Murrumbidgee would remain on 34% GS on 1 February 2025.
- Large volumes of water were carried over in the Southern Basin into this irrigation season. In total 2,940GL were carried over on the Vic Murray, Goulburn, NSW Murray and Murrumbidgee of which 2,172GL is private water.
- There is currently a total of 619GL bounded in northern Victorian spillable water accounts of which 454GL is private water.
- Murray inflows since April this year have had an Annual Exceedance Probability of 95%, meaning that in 95% of years we would have seen higher inflows.
- Typically, October is a month of high inflow for Southern Basin storages. However, like recent months this has not been the case and sufficiently heavy rainfall is needed on the dry catchments to turn things around.
- Over-all, rootzone soil moisture in the key upper catchments is lower for this time of year.
- October to December inflows is forecast to be lower than median for key storages.
- The inflows into the large dams that supply the Murray River are shown below in **Figure 14** showing observed and forecast flows into Lake Dartmouth, **Figure 15** showing observed and forecast flows into Hume Dam and **Figure 16** showing observed and forecast flows into Lake Eildon.
- **Figure 17** shows the streamflow forecast for eastern Australia including the Murray Darling Basin for October to December 2024.

Figure 14 -Total Inflow to Lake Dartmouth Sept – Oct 2024

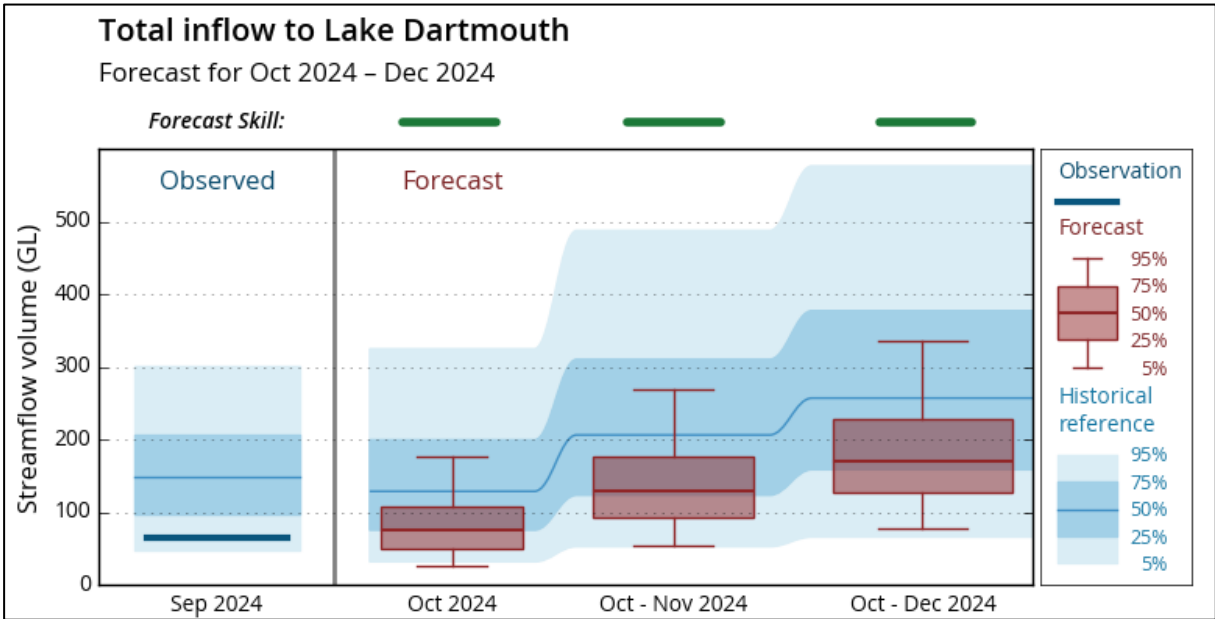


Figure 15 -Unregulated inflow in Hume Dam Oct - Dec 2024

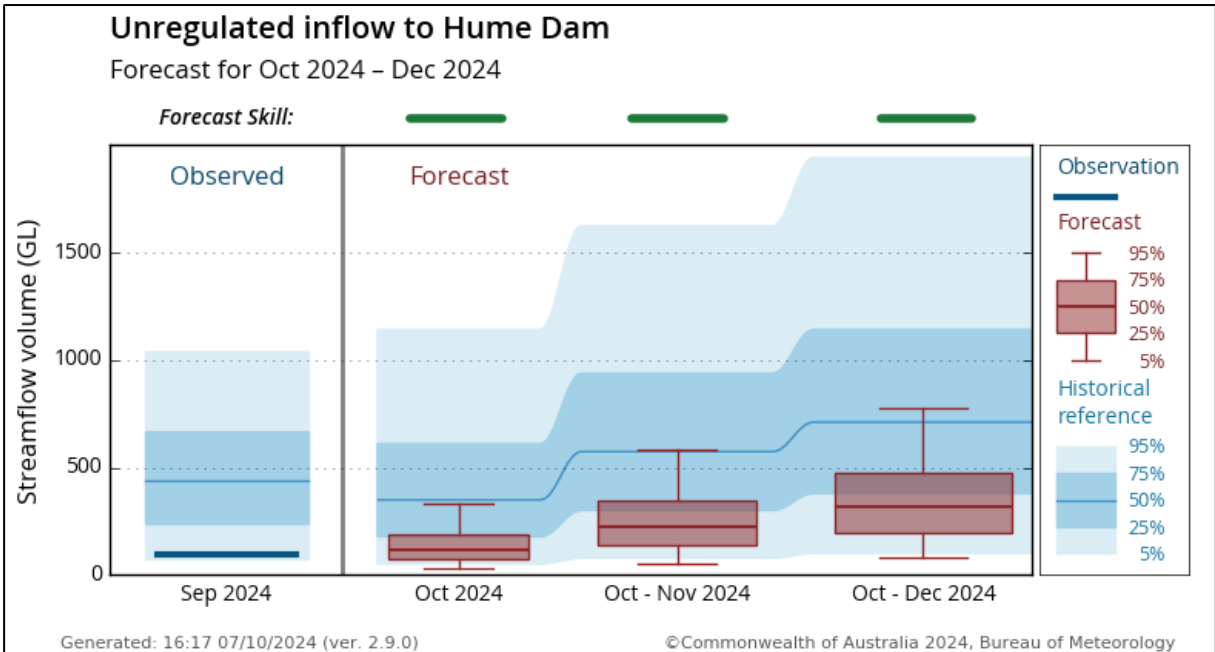


Figure 16 -Total Inflow to Lake Eildon Oct 2024 – Dec 2024

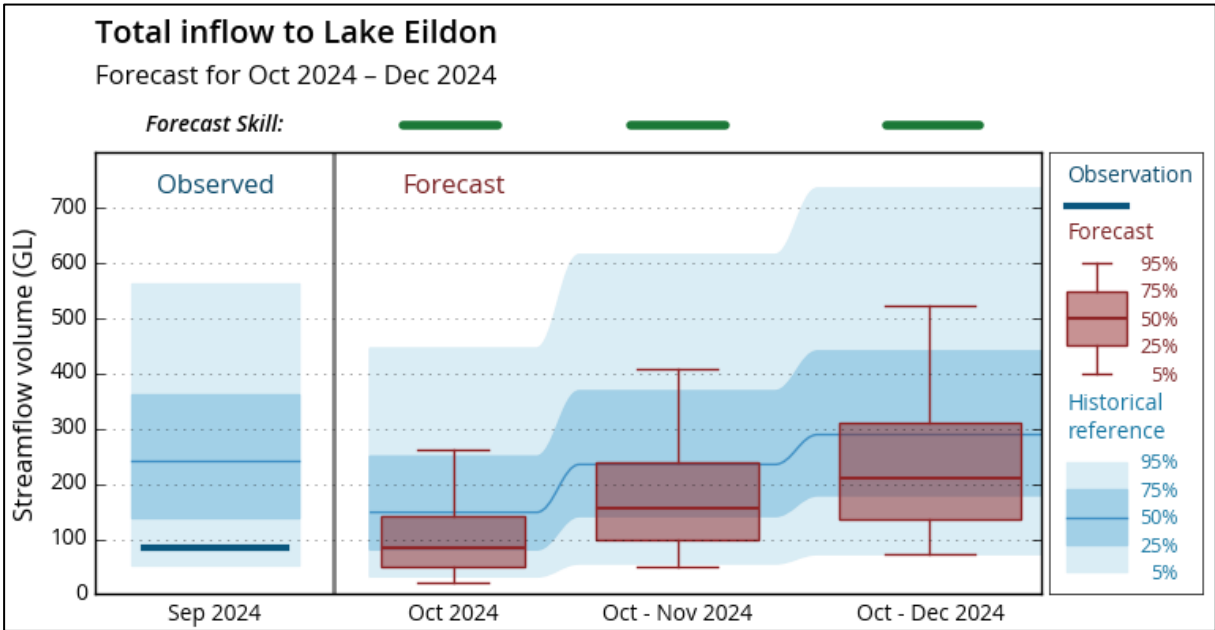
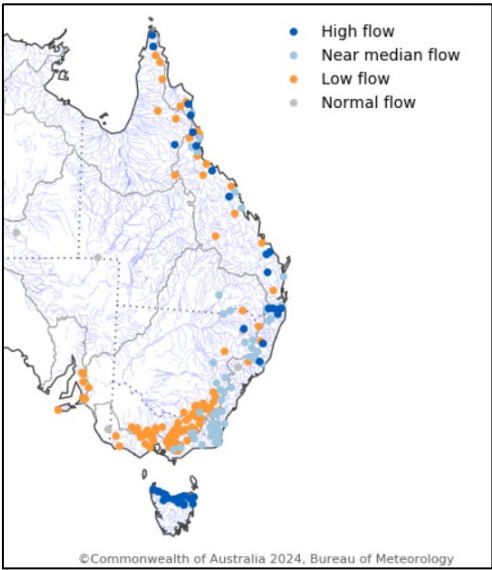


Figure 17 – Streamflow forecast from Oct to Dec 2024



The current planning process for the River Murray Operations 2024-25

- Prevailed cold conditions and low demands in the Spring continued to keep the storage levels in the basin at static levels.
- Dartmouth and Hume Dams are operating with capacities of 62% and 96%.
- Despite the dry start to 2024–25 water year, River Murray storages are high, with 68% active storage shared between Dartmouth Dam, Hume Reservoir, Menindee Lakes and Lake Victoria.
- State opening water allocations, including carry-over, are relatively high with high water availability and use anticipated for the year ahead.
- Significant volumes of water for the environment are planned for delivery from Environmental Water Holders this year.
- As per the MDBA Annual Operating Outlook (AOO), If demands in the mid and lower Murray system are higher than the volume able to be delivered, then a 'shortfall' could arise. Shortfalls are more likely during peak demand periods (November to April). The AOO shows that a system shortfall occurring during the peak demand period is unlikely due to the delivery strategies available during 2024–25. Delivery shortfalls are not expected to occur under any scenarios presented in this AOO. The average flow rates anticipated in the mid and lower River Murray are anticipated to remain within the green alert or yellow alert levels which includes meeting anticipated demands with additional buffer.

LMW will be monitoring the climatic conditions and the water resource levels of the Murray system. If extreme climatic changes are observed, we will implement our drought and emergency response plans. We will take steps to create awareness about the changes and actions amongst our customers and community through regular communications via our website and social media pages (Facebook, LinkedIn).

Long-term impact of climate change in Victoria

Victoria's climate has shown a warming and drying trend over recent decades, and this trend is expected to continue with climate change and drivers like El Nino and Indian Ocean Dipole which occur from time to time. In comparison to historical conditions, we are already experiencing:

- Higher temperatures and more numbers of hot days
- Higher fire danger days
- Reductions in rainfall during the cooler months
- In some locations, increases in rainfall during the warmer months and during extreme, short-duration rainfall events
- In many catchments, a shift in the streamflow response to rainfall is being observed, where fewer stream flows are generated for the same amount of rainfall.
- Over the longer term, we can expect:
 - The rainfall reductions in winter persist
 - Increases in summer rainfall

- Increases in potential evapotranspiration due to the higher temperature and lower relative humidity
- Reductions in streamflow because of less rainfall and higher potential evapotranspiration; and
- The streamflow response to rainfall no longer remains the same and declines.

Because of the projected decline in cool season rainfall, higher warmer periods, and potential evapotranspiration future runoff in Victoria will be lowered. The intensity of shorter duration rainfall occurrences in some places increased. But that will not offset the water availability impact of overall declines in rainfall. (Source: Victoria's water in a changing climate). This outlook points to the need for strategic planning to manage the long-term impacts of climate change and reduced streamflow on water availability.

Forward Outlook 2024-25

Allocation for HWRS on the Murray system was increased to 98% on 1 November 2024 from 63% (as of 1 July 2024). The HWRS on the Goulburn system is 100% on 1 November 2024 from 69% (starting 1 July 2023). The BoM forecasts drier than average conditions for the next three months however the Murray system is expected to reach 100% allocation throughout November 2024.

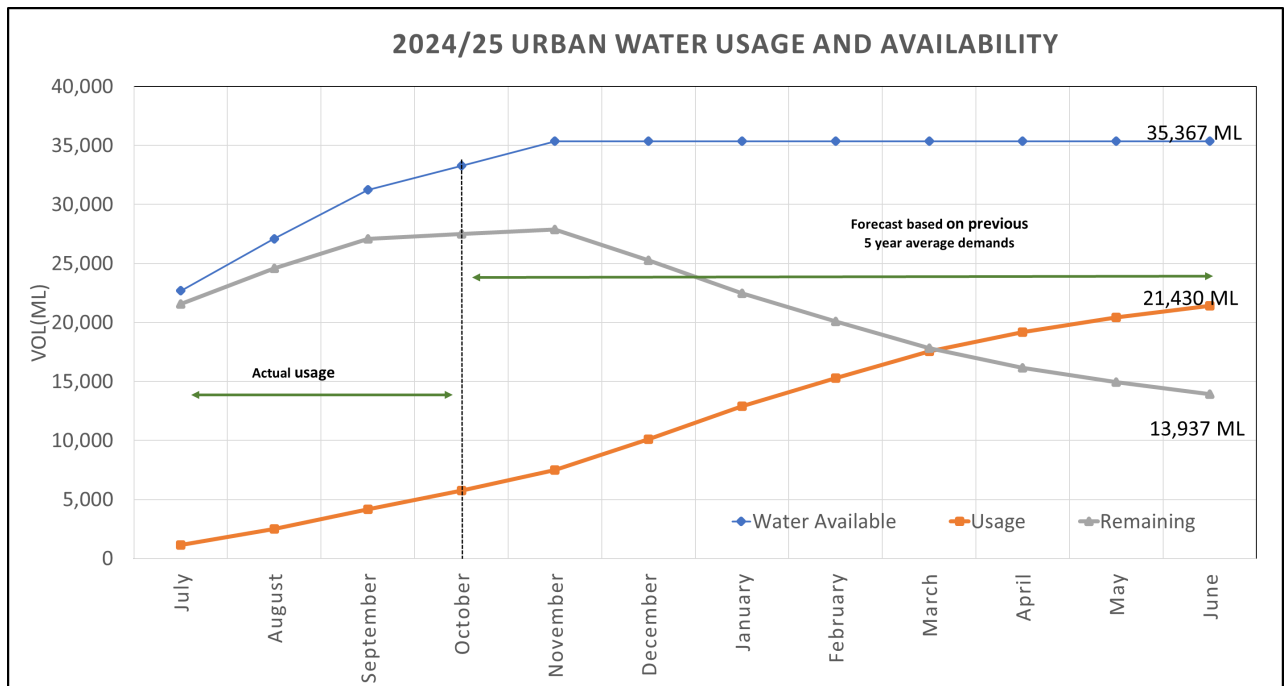
Factors to consider in this forward outlook:

- Typical annual potable water usage is generally between 19,000 and 21,000 ML
- The volume of water supplied to urban customers to the end of October 2024 was approximately 5,986 ML (Source: LMW operational raw water extraction data)
- No deductions occurred from the spillable water accounts in the current year up to 15th October. Under current scenario's, it is expected that there that some water will be spilled throughout 2024-25. This may impact the ability of 100% allocation to be securely stored for use or trade.
- A positive seasonal outlook for 2024-25 suggests LMW will have enough allocation to meet its Urban customers' demand with a surplus volume at the end of the season.
- Similarly, rural customers are likely to have enough allocation to meet their irrigation and stock and domestic demand.
- Despite the rare likelihood of restrictions, extreme weather events or emergencies such as bushfires in our catchments, major loss of power supply or water contamination might require implementation of restrictions to manage water demands.

Figure 18 summarises the urban water availability based on the supply-demand balance. The volume of available water is plotted in a cumulative monthly pattern considering seasonal allocation and trade (No trade volume assumed from November 2024 to June 2025).

The demand is plotted as a cumulative monthly volume (raw water) based on the actual usage till October 2024 and forecast for November 2023 - June 2024 based on usage pattern observed in the last five years. The data indicates there is no likely shortfall for the 2024-25 season.

Figure 18 - Forecast Water Supply Demand (ML) for 2024-25 season



* Note, Usage for July to September 2024 was higher than forecast due to dry conditions resulting in the total volume forecasted for 2024-25 to be higher than the volumes forecasted within the 2024-25 corporate plan.

Key Achievements

Service Delivery

During the 23/24 year, our region experienced some residual issues from the 22/23 floods. These were mainly to do with water quality in the Southern Region of our area of operations resulting in a boiled water alert at Kerang which was the result in an operational issue at the WTP. The issue was diagnosed and addressed quickly.

Customer Engagement and Compliance

Our customer services survey of our customer base continues to show we have a good relationship with our customers, and we continue to seek to improve this year on year.

Several advisory notices and formal warnings were issued to rural customers in relation to S.33E (Unauthorised Take of Water) and S.289 (Wrongful Take of Water) of the Water Act 1989. We acknowledge the positive behavior change made by most of our rural customers with an approximately 95% reduction in water theft. This is due to an increased focus and more efficient implementation of our compliance and enforcement processes and the consistent reinforcement of the Minister's Zero Tolerance of Water Theft messaging.

Operational

During the 2023/24-year LMW experienced issues with high levels of manganese in the Murray River raw water supply. These levels were higher in the southern area of operations and were addressed by augmenting the water treatment process with the dosing of Sodium Hexametaphosphate (Calgon) at all LMW Water Treatment Plants.

Infrastructure

LMW ensured our assets and infrastructure meets current and future needs by optimising our infrastructure through improved life cycle management and delivering our Water Plan capital expenditure (Capex).

- UV treatment unit installations at were completed Swan Hill and Mildura Water Treatment Plants
- At Kerang WTP, we completed a replacement of the filter media within the three WTP filters.
- Filter media replacement works were commenced in FY25 at both Mildura West and Mildura WTPs
- Renewal of the inlet and outwork pipework and isolation valves was undertaken at the Mildura 10th St Water Tower in the winter of 2024
- Works have commenced on the upgrade of the Red Cliffside Urban Water Pump Station and rising main to the city center.
- Works have commenced on the recoating of the 18ML Treated Water Storage tank at Mildura West WTP which is scheduled for delivery in the winter of 2025.

The \$37M Sunraysia Water Efficiency Project (SWEP) commenced in early 2023 with support from the Australian Government. These works will increase the efficiency of water delivery for LMW customers, remove redundant assets, minimise channel leakage and seepage, and more accurately measure water usage. The project will save up to 2.5 GL in water savings that can be shared between the environment, Traditional Owners and improving urban water security in the Sunraysia region.

High Level Actions

Actions

Various aspects of 2022 UWS projected to 2071 are implemented. Some of the completed and on-going actions discussed below.

System	Action	Status	Timing for Completion	Remarks
	Purchase of water share to ensure the urban water demand and water security is maintained. LMW will assess the water resource position periodically and purchase adequate additional shares. 694ML of additional water shares were purchased during the 2023/24 period. This will be an additional entitlement to supplement dry years.	In progress	2027/28	Purchasing is occurring in line with forecasts submitted in LMW's ESC Approved Pricing Submission 5.
	Permanent Water Savings Rules (PWSR) campaigns.	Implemented	Ongoing	Ongoing campaigns until such time as restrictions are necessary
	Deliver Schools and Community Education Programs.	Implemented	Ongoing	Delivered annually through LMW's ongoing

				engagement programs.
	Deliver Community Housing Retrofit and rebate programs.	Implemented	Ongoing	Delivered annually through LMW's ongoing customer support programs.
	LMW manages carryover of water to maximise system reliability. Due to the risk of carryover being written off with spillable accounts LMW traded out 8,850 ML in FY 2023/24. A similar approach will be taken this season depending on the climate outlook and resource position.	In progress	Ongoing	LMW develops and publishes its trading plan annually. Trading occurs throughout the year based on seasonal conditions and allocations.
	LMW will continue to explore opportunities for alternative water supplies and alternative sources to supplement potable water.	In progress	2027/28	LMW is exploring feasibility of alternative water supplies for use in green spaces through funding opportunities provided by the Intelligent Water Network (IWN).
	BGA blooms also impact rural customers particularly the stock and domestic customers. Given the potential for the presence of algal toxins in the water during the BGA bloom periods, the stock and domestic customers are advised not to use the water as a precautionary measure to minimise the risk. With the drier climatic outlook, the likelihood of extreme events like bushfires and droughts is possible. We will follow our emergency and response plans as required.	Implemented	Ongoing	LMW continues to monitor and inform customers and community on water quality matters and is the lead agency coordinating the Sunraysia Regional Algae Committee (RAC).



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