



2017

Annual
Water
Outlook

- EXECUTIVE SUMMARY -

This Annual Water Outlook for 2017/18 has been prepared by Lower Murray Water to meet the needs of its customers and the Department of Environment, Land, Water and Planning (DELWP). It provides an eight to twelve month outlook for supply security in its water supply systems, which are almost entirely supplied from the Murray Regulated system.

System	Towns supplied	Primary source of supply	Likely water restriction status during the outlook period	Timeframe	Comments
Murray Regulated system	<ul style="list-style-type: none"> •Mildura System, including Merbein •Kerang System •Red Cliffs System •Piangil System •Robinvale System •Koondrook System •Murrabit System •Swan Hill System, including Nyah/Nyah West, Lake Boga and Woorinen 	River Murray (97%) Loddon River, GMW Channels (3%)	Urban Water Restrictions very unlikely in the 2017/2018 water season under "Wet, Average and Dry" Scenarios	1 Nov 2017 to 1 Jul 2018 ¹ .	<p>The LMW region has experienced drier than average climatic conditions since August 2017, with the August to October rainfall between 60% and 100% of the long term average.</p> <p>As an allocation based system however, LMW will have sufficient allocation available to meet the expected demand over the next 8 months, irrespective of further changes in water consumption.</p> <p>Based on the current resource situation and the expected demands throughout the remainder of 2017/18, LMW systems are expected to be secure over the next 12 months.</p>

¹ Supply from Regulated Murray system is allocations based, with an initial allocation made in early July.

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1. Introduction

During 2016/07, Lower Murray Water had the following key achievements and highlights:

Serving Our Customers

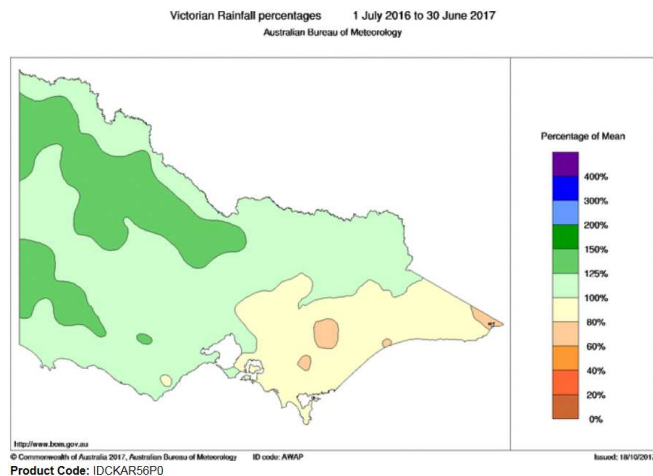
- *Continued to deliver high quality urban and rural water services*
- *Launched our Water Refill Station Grant Program for schools*
- *Delivering irrigation services:*
 - *completion of the \$120m Sunraysia Modernisation Project*
 - *decrease of rural tariffs in real terms over the past two years*
 - *relining of the Mildura Irrigation District Triple Syphon*
- *Continued our work with multiple agencies to deliver the Sunraysia Rejuvenation Project*
- *Continued our focus on improvement of key stakeholder relationships*
- *Launched our Engagement Strategy*
- *Broadened our communication channels through utilising social media platforms*
- *Commenced development of our Reconciliation Plan*
- *Developed new water saving awareness tools for residential customers*
- *Updated our Drought Preparedness Plan*
- *Commenced preparation of our Indigenous Engagement Plan*

Committing to the Environment and Region

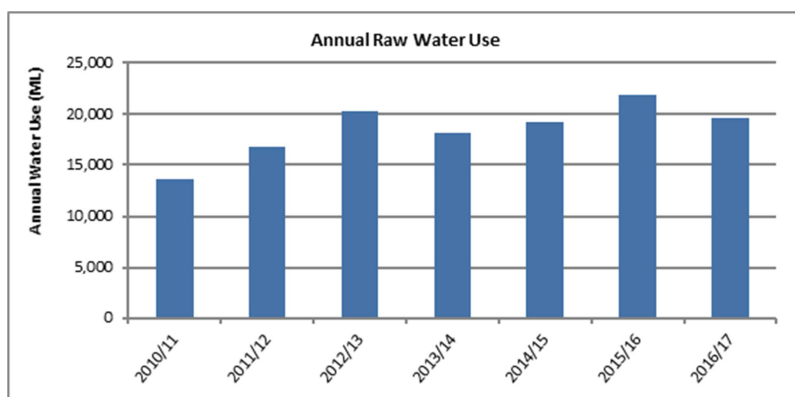
- *Recorded a 6.4% decrease in net greenhouse gas emissions*
- *Pledged zero net emissions by 2050*
- *Continued our support of our community through:*
 - *sponsorships and partnerships*
 - *enhanced and extended school education projects*
 - *water related education events and programs*
- *Increased our community collaboration*
- *Commenced planning for progressive rollout of onsite solar power generation*
- *Continued our program of waste reduction and recycling including the commencement of provision of biosolids for beneficial land application*
- *Continue to manage threatened species (Hooded Scaly-foot Lizard and Murray Hardyhead) at our sites*
- *Continued to encourage reclaimed water projects*

Recent climate conditions

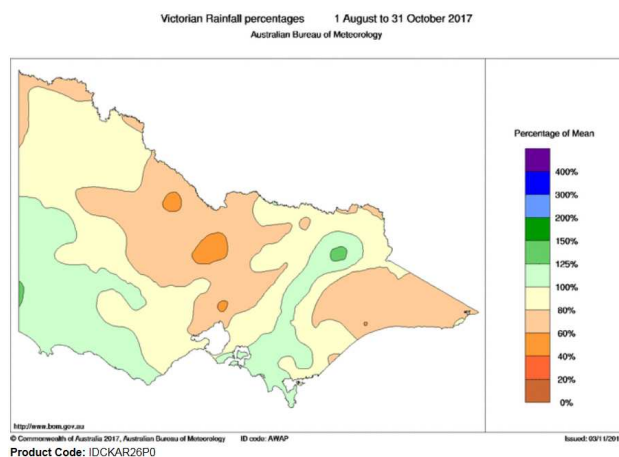
For the 12 month period July 2016 to June 2017, the Lower Murray Water region experienced wetter than average climatic conditions, with the annual rainfall between 100% and 125% of the long term average, as shown in the figure below.



This higher rainfall contributed to a 10% reduction in raw water consumption compared to the previous year, as shown in the figure below.



Since August 2017, the Lower Murray Water region has experienced drier than average climatic conditions, with the August to October rainfall between 60% and 100% of the long term average, as shown in the figure below.



2. Current water resource position

Supply Systems

A description of each of Lower Murray Water's supply systems is provided below, including the supply source, infrastructure and number of connections.

Mildura

Water is pumped from the River Murray at Mildura through two conventional water treatment plants. The treated water is supplied to around 21,000 connections in the City of Mildura and surrounding rural-residential areas including the townships of Irymple, Merbein and Cardross. The Seventh Street treatment plant is designed for a capacity of 85 ML/d and the Mildura West plant has a capacity of 20 ML/d.

The average daily consumption for the summer months is normally below 50 ML/d with occasional consumption in excess of this. Treated water pumping stations at Seventh Street and Mildura West distribute water to two water towers with a combined storage capacity of 3.03 ML. Additional booster pump stations and ground level storages with a combined storage capacity of 37.6 ML allow the system to maintain pressures to the outlying areas on days of higher demand.

Merbein is supplied with treated water from the Mildura treatment plant via a 450 mm diameter transfer pipeline some 7.14 km long. The pipeline transfers water directly to the Merbein reticulation that includes a ground level storage of 7.5 ML capacity. During times of high demand, booster pumps of 150 L/s (13 ML/d) capacity, pump from the storage directly into the reticulation system to maintain optimum pressures.

Red Cliffs

The town of Red Cliffs (14 km south of Mildura) is an independent system, and services around 1,700 connections. A pumping station extracts water from the River Murray through a dissolved air flotation treatment plant to a 6 ML ground level storage. The treated water is delivered to a water tower near the town centre. Two rising mains of 300 mm and 375 mm diameter. The plant design capacity is 9.5 ML/d and the average daily consumption during the summer months is usually below 6.0 ML/d.

Robinvale

The town of Robinvale pumps water from the River Murray via a 300 mm pipeline to a conventional water treatment plant, which services around 1,000 connections. The maximum plant design capacity is 6 ML/d, with an average peak daily consumption during the summer months of approximately 4.0 ML/d, from a 3.6 ML ground storage and 0.3 ML water tower.

Kerang

Kerang is situated at the southern end of the Lower Murray Water region. Water is pumped either from the Loddon River, the River Murray (at Koondrook) or the Goulburn Murray Water 14/2 Channel and treated in a conventional treatment plant, which services around 2,100 connections. The maximum plant design capacity is 16.6 ML/d and average peak daily consumption has reached 7.2 ML/d during some summer periods.

Piangil

At Piangil, water is pumped from the River Murray to a “Package” conventional water treatment plant which services around 100 connections. The plant has a capacity of 0.7 ML/d. Treated water is then pumped to the existing 1.14 ML ground storage, situated on a high ridge east of the town. From this storage, the system is re-pressurised by pressure booster pumps for distribution into the town’s reticulation network.

Koondrook

Water is pumped from the Murray River to a conventional water treatment plant with a capacity of 3 ML/d. An above ground water storage of 2 ML and standpipe of 0.9 ML services around 500 connections .

Murrabit

The Murrabit system can pump water both from a Goulburn-Murray Water channel and the Murray River to a conventional water treatment plant of 0.2 ML/d. Treated water pumps supply a 50 kL high level storage which services over 50 connections.

Swan Hill

The Rural City of Swan Hill is situated in the centre of the southern region of LMW. Raw water is pumped from the River Murray at Swan Hill to a conventional filtration and disinfection system with a capacity of 35.6 ML/d. The Swan Hill system also supplies Woorinen South, Nyah & Nyah West and Lake Boga, which together service around 7,000 connections. The average daily consumption is normally below 23 ML/d for this system. Treated water pumps deliver treated water to a 2.27 ML ground level storage and 0.68 ML water tower near the city centre. Two extra ground level storages, each of 4.0 ML capacity, and a 0.15 ML water tower are situated west of the city.

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

The townships of Nyah and Nyah West are supplied via a 27 km long, 300 mm diameter pipeline from the Swan Hill Water Treatment Plant. A 6 ML ground level storage, chlorination facility and re-lift pumps are situated at Nyah. Properties adjacent to this pipeline are able to access water for domestic or commercial supply.

Lake Boga is supplied via a 250 mm diameter pipeline from the Swan Hill Plant. A 0.9 ML ground level storage, chlorination facilities and 0.1 ML water tower together with associated re-lift pumps have been installed to maintain pressures on days of high demand.

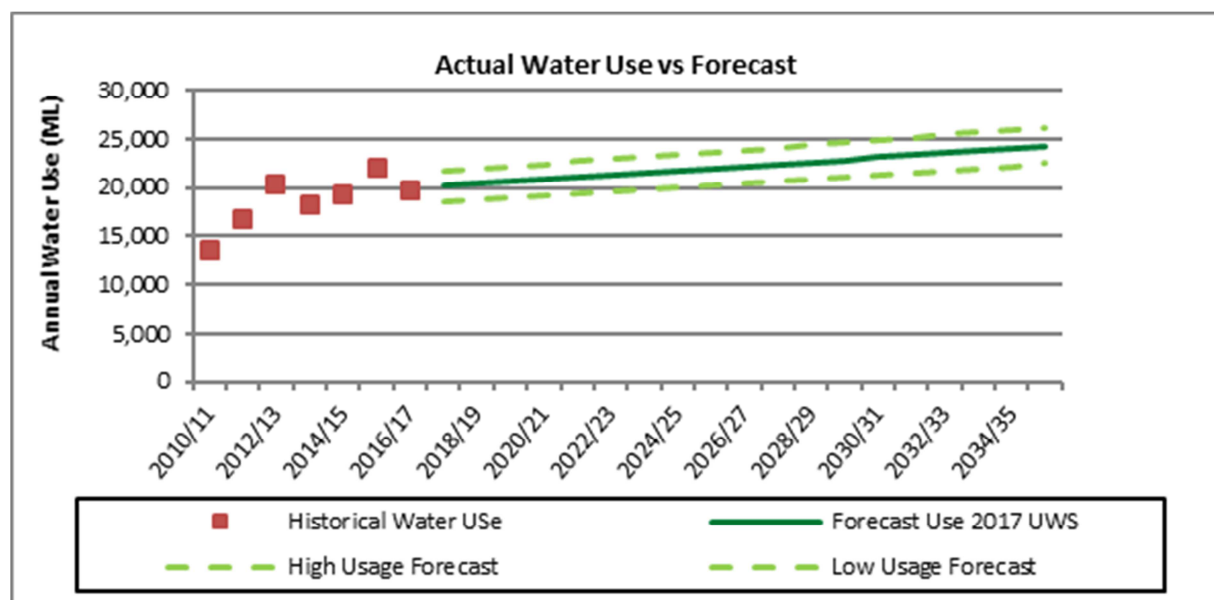
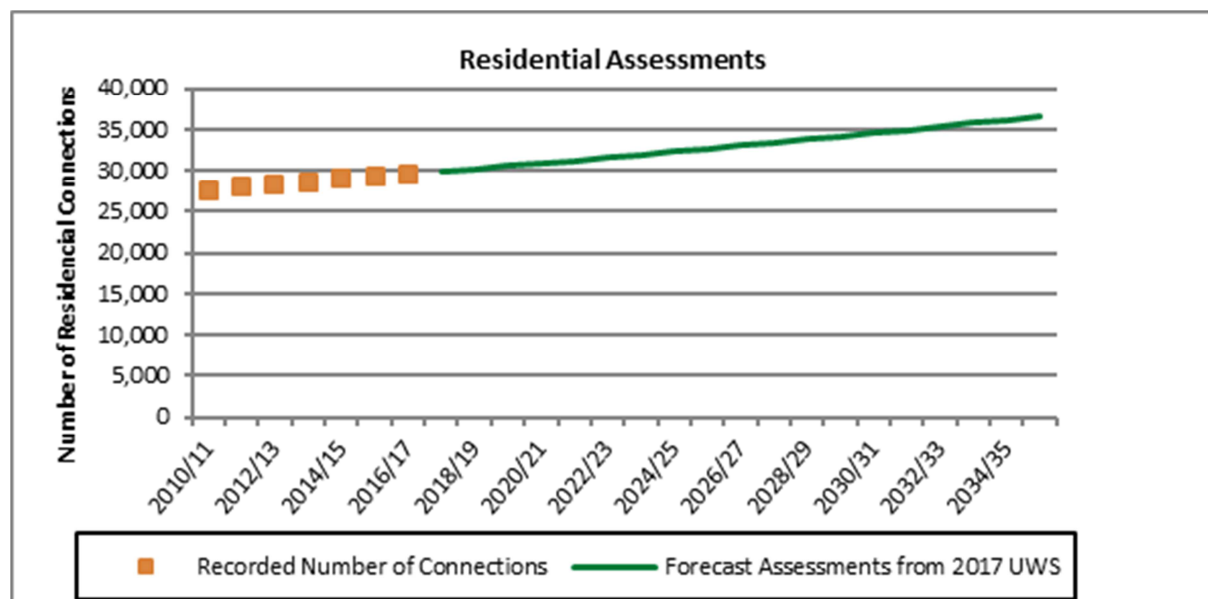
Sources of Supply

Lower Murray Water (LMW) sources 97% of its water from the Murray River with the remainder from Goulburn Murray Water irrigation channel systems. A bulk water entitlement of 30,971 ML is currently specified under the Bulk Entitlement (River Murray - Lower Murray Urban and Rural Water - Urban) Conversion Order 1999 as at June 2011. LMW supplements the bulk entitlement with purchases of additional water share and allocation volumes and currently holds 1,460 ML of high reliability water shares. The total entitlement held by LMW in July 2017 was 32,098 ML.

Based on the current total entitlement volume, the Murray system can supply 28,630 ML per year assuming a continuation of recent climatic conditions and 28,060 ML per year assuming a medium climate change scenario in 2040, based on the adopted annual reliability of 96%.

Demand

The current (unrestricted) demand is estimated to be 19,600 ML per year, based on the average annual demand over the three-year period 2013/14 to 2015/16. The number of residential customers within the region is forecast to increase from its current level of 29,300 to 38,300 by 2040 and to 51,000 by 2065. As a result, average annual demand is forecast to increase to 25,400 ML by 2040 and 33,100 ML by 2065.

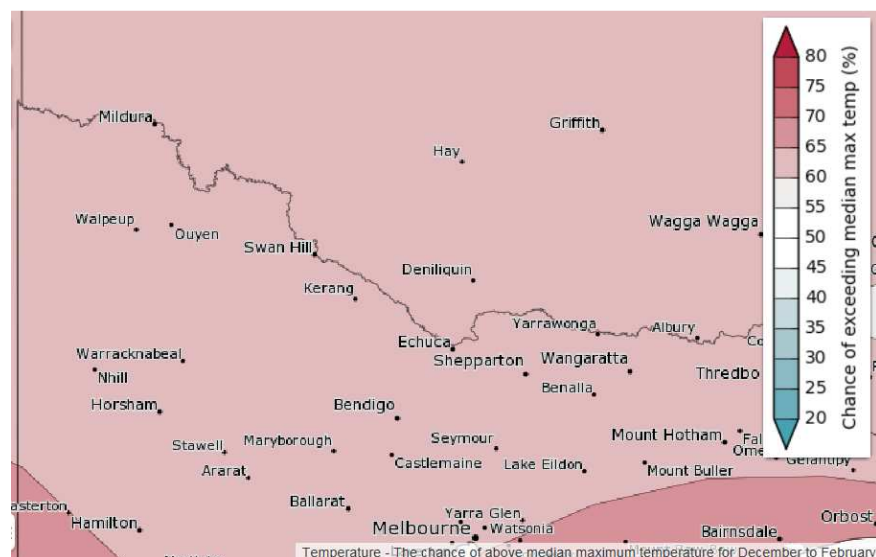
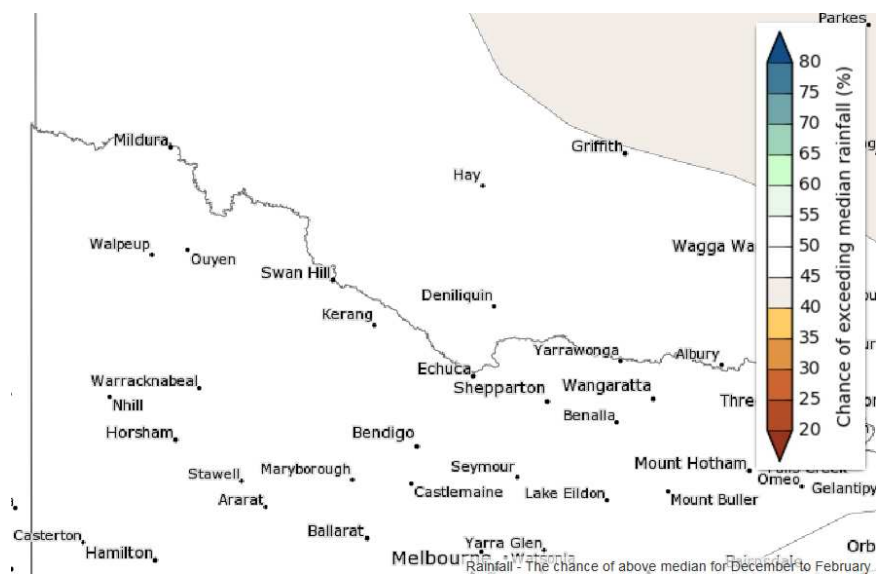


3. Climate outlook

The rainfall outlook for summer (December to February) shows there is no strong shift towards a wetter or drier summer across the Lower Murray Water region. As shown in the figure below, the chance of exceeding median rainfall for December to February in the Lower Murray Water region (and much of the state) is around 45 to 50%.

The temperature outlook shows that summer daytime and overnight temperatures are likely to be warmer than average for most of the eastern two-thirds of Australia, including the Lower Murray Water region. The figure below shows that the chance of exceeding the median maximum temperature for December to February in the Lower Murray Water region is around 60 to 65%.

It is noted that for the Lower Murray Water region, the climate outlook mainly provides an indication of potential water demand, with the supply relatively secure due to the 100% allocation in the Murray system.



4. Forward outlook for water resources over the coming year

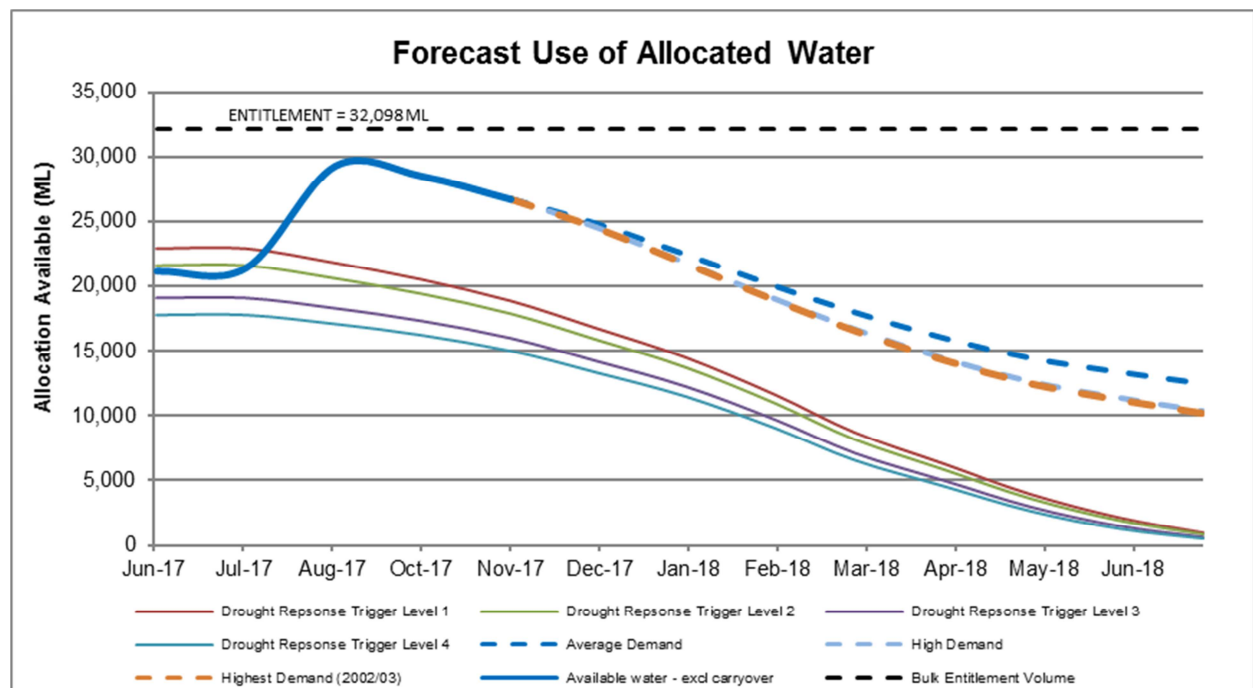
Lower Murray Water sources about 97% of all raw water from the River Murray, with about 3% (on average) being supplied from the Loddon River and GMW Channel system. As of 1 July 2017, Lower Murray Water held 32,098 ML of high reliability water shares in the Regulated Murray system. The large storage capacity in the Murray system relative to Lower Murray Water's small demands makes the system relatively secure, and the system is considered to have a low water security risk profile.

Murray system high reliability determinations commenced at 66% on 3 July 2017 and increased to 100% on 2 October 2017.

The Resource Manager Northern Victoria announced on 10 November 2017 that based on low inflows during October, the risk of spill during 2017/18 was well below the 10% threshold needed for a low spill risk declaration to be made, with a risk of spill of 3% for Victoria's share of Lake Hume.

The Lower Murray Water region has experienced drier than average climatic conditions since August 2017, with the August to October rainfall between 60% and 100% of the long term average. As an allocation based system however, LMW will have sufficient allocation available to meet the expected demand over the next 8 months, irrespective of further changes in water consumption.

Based on the current resource situation and the expected demands throughout the remainder of 2017/18, LMW systems are expected to be secure over the next 12 months, with no likelihood of restrictions being introduced within the next 8 months and a low likelihood within the next 12 months.



5. Short-term action plan

Managing the impacts of reduced water allocations resulting from climate change is the main issue facing Lower Murray Water, now and into the future. A range of initiatives has been implemented in recent years, such as carryover arrangements for unused allocations, which will assist to mitigate the impacts in the short term.

Lower Murray Water's preferred action for securing the region's water supply will focus on the purchasing of additional allocation and water shares from the water market. This action provides flexibility in terms of the timing of decisions to purchase water, and a more cost-effective approach compared to large capital investments in new infrastructure. The timing and volume of water purchases is illustrated in the figure below, noting that the impacts of climate change may bring forward the purchase of water shares or increase the volume required.

Lower Murray Water will continue to use management tools such as carryover to make more efficient use of the available water supply.

