

Lower Murray Water

Rural Masterplan 2050 - Phase One

Masterplan foundations and options

October 2025



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Message from the Managing Director

Lower Murray Water (LMW) is one of three water corporations in Victoria managing both urban and rural water services. We've been delivering secure, reliable, and efficient water to our customers and communities – and supporting them through heat, drought, floods and storms.

We need to ensure that our business adapts to the challenges and opportunities presented to us in a changing climate while continuing to improve the services we provide to water users.

With over 1100km of Murray River frontage – from Koondrook to the Victoria-South Australia Border – our region is home to diverse agricultural and environmental landscapes with significant economic, social, cultural and environmental values. In this semi-arid landscape, water is essential to everything we value: our farms, our communities, our towns and our environment.

This Masterplan Foundations and Options paper provides a strategic overview of:

- LMW's irrigation district water supply networks
- Current land use and key commodities; and
- Emerging trends.

It sets the groundwork for the **Rural Masterplan 2050** – a 25-year plan to guide future investment, infrastructure planning, and service delivery in our pumped irrigation districts.

At the heart of this is recognising the true value of water which underpins healthy communities, productive landscapes, and long-term regional prosperity. Understanding and appreciating this value enables the investment needed to secure reliable, sustainable water services and to make informed decisions about pricing where necessary.

The Rural Masterplan 2050 will continue to evolve with input from our customers and communities.

Your feedback will help shape:

- How we manage our rural infrastructure
- How we respond to changing land use and water demand
- How we keep services affordable and reliable.

Your insights will help us build a stronger, more sustainable future for agriculture and water in our region.



Paul Northey
Managing Director

Have your say

We invite our customers and other stakeholders to share their thoughts on the **Rural Masterplan 2050 (RM2050) foundations and options** set out in this document.

As you read through, please consider the following questions:

- **Have we accurately described the key trends and drivers affecting LMW's rural customers?** Why or why not?
- **How have these trends and drivers affected you – positively or negatively?** Have they influenced any changes in your practices, or do you plan to make changes in the future?
- **Do you agree with the strategic issues identified in Section 5?** Are these the right priorities for RM2050? Why or why not?
- **Which option do you think LMW should adopt for each strategic issue?** Why?
- **Is there anything else that should be considered in RM2050?**

You can share your feedback through our online submission page: <https://www.lmw.vic.gov.au/water-supply-and-services/projects-and-works/rural-masterplan-2050/>

We value your input and look forward to hearing from you.

1 Introduction

1.1 Background

The Lower Murray region, located in Victoria's northern Mallee, is a significant contributor to both the state and national economies. Renowned for its export quality horticultural products, it is one of Australia's most productive and profitable irrigated agricultural areas, with a rich history of development spanning over 100 years.

Agriculture remains the key economic driver in the region. Commercial-scale irrigation was introduced into the region in 1887 by the Chaffey brothers and remains critical to the success of the region's agriculture, which continues to diversify and evolve.

Today, irrigated agriculture is undertaken in the pumped irrigation districts of:

- Mildura
- Merbein
- Red Cliffs
- Robinvale.

It also occurs outside these irrigation districts via private diversion along the Murray River.

1.2 LMW's role in supporting agriculture

Lower Murray Urban & Rural Water Corporation (LMW), a Statutory Corporation, provides essential irrigation and drainage services within the above listed pumped irrigation districts and manages water resources throughout the region. LMW supports over 2655 irrigation customers, and 2253 stock and domestic customers.

These services underpin hundreds of millions of dollars in annual irrigated agricultural production. They also add value to the regional economy by creating jobs and supporting industries, such as local food and beverage processing and transport.

1.3 Benefits of Pumped Irrigation Districts

The pumped irrigation districts offer a range of benefits to growers, including:

- Proximity to urban centres and services
- Efficient water delivery directly from the Murray River to growers' properties
- Low capital investment.

The irrigation districts also contribute to the local amenity and regional economy.

While these districts have operated successfully for over a century, recent regional and global trends are driving change, including:

- Urban expansion
- Climate change and variability
- Changes to water markets and water availability
- Market volatility (domestic and export), and
- Political factors, such as Commonwealth Government water entitlement purchases (buybacks).

These changes affect where and how rural customers irrigate, what crops they grow, how much water they need and when they need it, and how much water is available – impacting demand for LMW's irrigation and drainage services.

1.4 Planning for the future: Rural Masterplan 2050 (RM2050)

To respond to these evolving challenges, LMW – working with rural customers and regional partners – must make strategic decisions about long-term investments in irrigation and drainage services that:

- continue to meet the needs of its customers; and
- support productive irrigation districts.

The Rural Masterplan 2050 (RM2050) will guide LMW's strategic direction over the next 25 years, helping build a sustainable and more resilient system. The Masterplan will guide LMW's long-term investment in the irrigation districts, and support irrigators' confidence to plan and invest in their enterprises.

1.5 Focus Areas of RM2050

RM2050 will focus on LMW's four pumped irrigation districts – Mildura, Merbein, Red Cliffs and Robinvale. It will cover both irrigation and drainage networks within these districts and may also:

- lead to outcomes for rural domestic and stock customers in these districts; and
- consider areas adjacent to the pumped irrigation districts, including private diversion areas, with interdependencies or impacts on the districts.

2 About this document: Foundations for RM2050

This document lays the groundwork for RM2050 and introduces the strategic options that LMW is considering. It is designed to inform and invite feedback from customers and stakeholders on the future of irrigation and drainage services in the region.

2.1 What's inside

This document includes:

- **Objectives and principles** – what LMW aims to achieve for its rural customers and the LMW business through provision of irrigation and drainage services, along with the principles that will guide decision-making during the development and implementation of RM2050.
- **Why a Rural Masterplan is needed** – explains the importance of the pumped irrigation districts, outlines key trends affecting LMW and its rural customers, and highlights the need for a new approach to irrigation and drainage services.
- **Key strategic issues and options** – identifies the major challenges facing the region and presents possible responses to each issue.
- **Next steps** – outlining the process for completing the Masterplan and how stakeholders can stay involved.

2.2 Lower Murray Water Regional Snapshot

Located in Victoria's northern Mallee, the LMW region is a part of the Sunraysia Region and is renowned for its intensive horticulture and exports. The LMW region also includes the Millewa, located west of Mildura, which is predominately dryland cropping and livestock enterprises. A map of the LMW region can be found in Appendix 1, and a snapshot of the region is shown below (Figure 1).

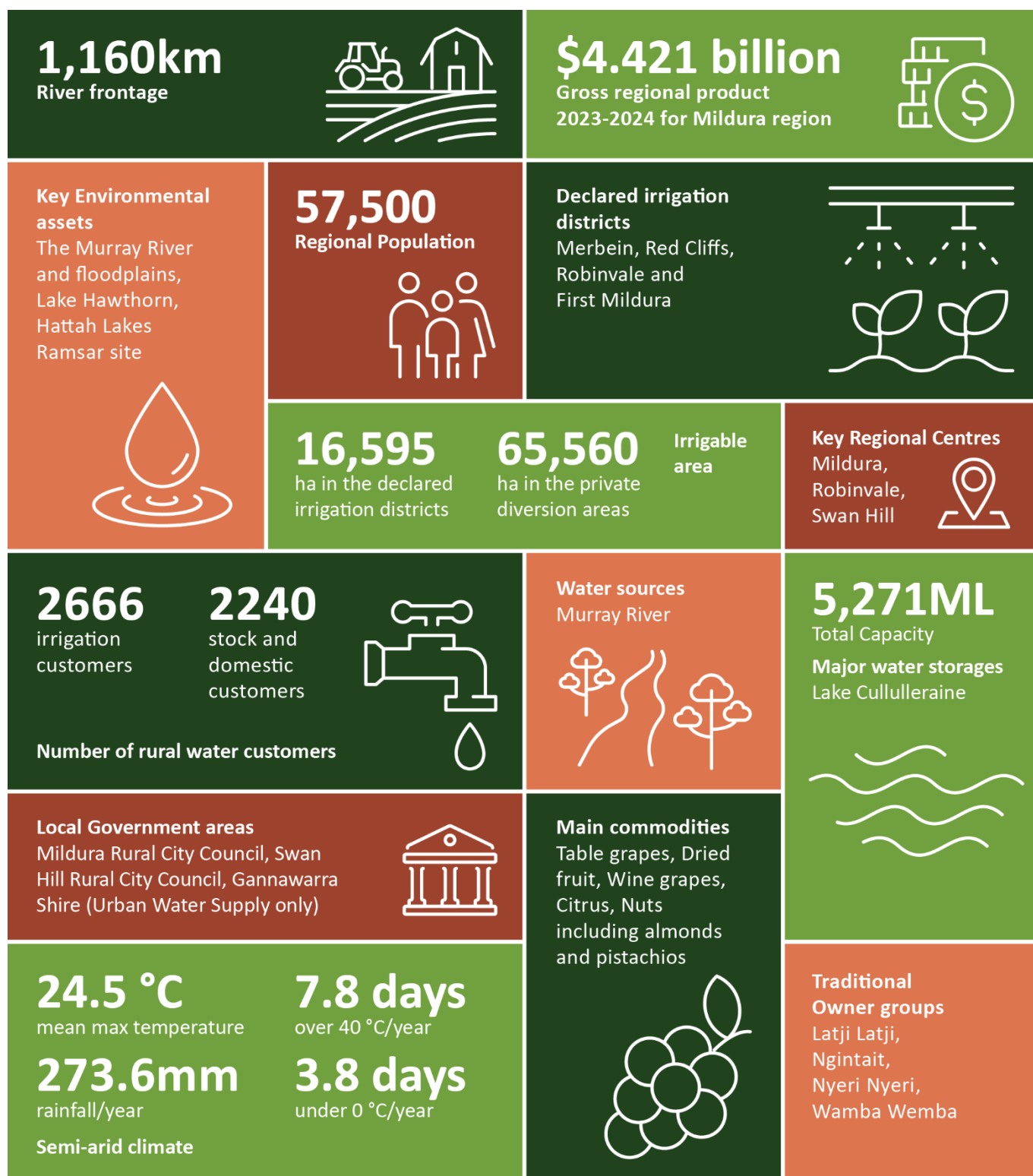


Figure 1 Snapshot of the Lower Murray region

3 Principles and objectives for the Rural Masterplan

The key guiding principle in developing and delivering the Rural Masterplan is the recognition that the viability of irrigators and LMW are mutually dependent.

LMW provides valued irrigation and drainage services to support viable horticulture in four pumped irrigation districts, funded through user fees and charges. To continue to provide rural services, LMW needs viable irrigation customers; and to be viable, customers need reliable and affordable irrigation and drainage services from LMW.

RM2050 will seek to set directions for the irrigation districts that preserve the viability of LMW's rural services by supporting its customers with financially sustainable, reliable and fit-for-purpose rural irrigation and drainage services.

The RM2050 objectives for rural customers and the LMW business are to:

- **Provide rural customers with valued irrigation and drainage services at a sustainable price**, supporting their viability and enhancing the attractiveness of the irrigation region for future growers.
- **Be responsive to the changing needs of irrigation and drainage customers**, including managing urban expansion, effectively managing our assets, and adapting to climate change, commodity markets, and new farming technologies and practices.
- **Effectively plan for the future of the region**, including meeting Traditional Owner and environmental water needs, and to fulfil LMW's obligations to support climate resilience

Developing and delivering the RM2050 will be guided by the following principles:

- **Recognise** that irrigators' viability and LMW's viability are mutually dependent.
- **Plan** future investment and service delivery to support mutual viability and business sustainability for customers and LMW
- **Engage** with customers to:
 - understand their needs
 - build shared understanding of the challenges and opportunities facing the irrigation districts and service delivery
 - inform decision making that balances customer needs, desired levels of service and willingness to pay
 - provide clarity and certainty on the future of the declared irrigation districts
 - build awareness of the regulatory and compliance obligations on both LMW and customers, including emissions targets, licence conditions, water theft prevention and managing water shortfall risks.
- **Collaborate** with local government to ensure a strategic approach to future urban and commercial development where it affects the irrigation districts and provide clarity of timing and approach to the community
- **Proactive** engagement with Traditional Owners to identify opportunities to support their aspirations and ensure our actions uphold and respect their values
- **Leverage** current and new regional partnerships to enhance social, environmental, cultural, and economic outcomes across the region.

4 Why a Rural Masterplan is needed

4.1 Value of pumped irrigation districts

Pumped irrigation districts offer a range of benefits to growers, including the convenience of living and farming close to an urban centre, providing easy access to:

- processing and packaging facilities
- transportation for their produce
- agricultural service providers and skilled labour, and
- general services such shops, schools and healthcare.

With LMW owning and managing irrigation and drainage infrastructure in the pumped irrigation districts, customers only need to invest in their own on-farm systems, resulting in:

- lower capital costs
- reduced infrastructure operation and maintenance risks; and
- simpler navigation and compliance with the water management framework and regulations.

4.2 Irrigation district changes

LMW's irrigation districts are changing and evolving due to local, regional and global trends. These include:

- increasing urban expansion and commercial development within irrigation districts
- climate change impacts
- shifting domestic and export commodity markets, changing consumer preferences, and development of more productive and high-value crops, and
- declining and more variable water availability.

These trends influence:

- utilisation of irrigable land
- irrigation locations
- what crops are being grown; and
- water demand patterns.

4.3 Current challenges and opportunities

Over the past 20 years, the irrigation districts have seen an increase in vacant¹ agricultural land, which has led to a decline in demand for LMW's rural water services. At the same time, there has been a shift in crop types, with table grapes becoming the dominant commodity. This change has increased profitability for irrigators but also increased water usage due to the higher water needs of table grapes.

Meanwhile, LMW's irrigation and drainage infrastructure is ageing, with a significant portion expected to require replacement within the next 25 years. This situation presents a strategic opportunity for LMW to modernise its infrastructure and rethink its investment strategy.

Although these trends bring challenges for LMW and its rural customers, they also create opportunities for innovation and improved rural water services. By taking a proactive approach, LMW can better support both current and future irrigators through investment in more resilient, efficient, and future-ready services.

Key challenges:

- **declining demand** for rural irrigation services due to increased vacant irrigable land and urban expansion
- **higher water requirements** from the shift to table grape production and adapting to climate change impacts, including changing rainfall patterns and increased evapotranspiration
- **ageing infrastructure**, with major replacements needed in the next 25 years.

¹ Vacant refers to irrigable land within the districts which is not actively planted or irrigated but which retains a water delivery share.

Key opportunities:

- **modernising infrastructure** to meet future needs
- **repositioning investment strategies** to align with changing agricultural needs
- **supporting irrigators** with more efficient and resilient services
- **driving innovation** in water service delivery and infrastructure planning.

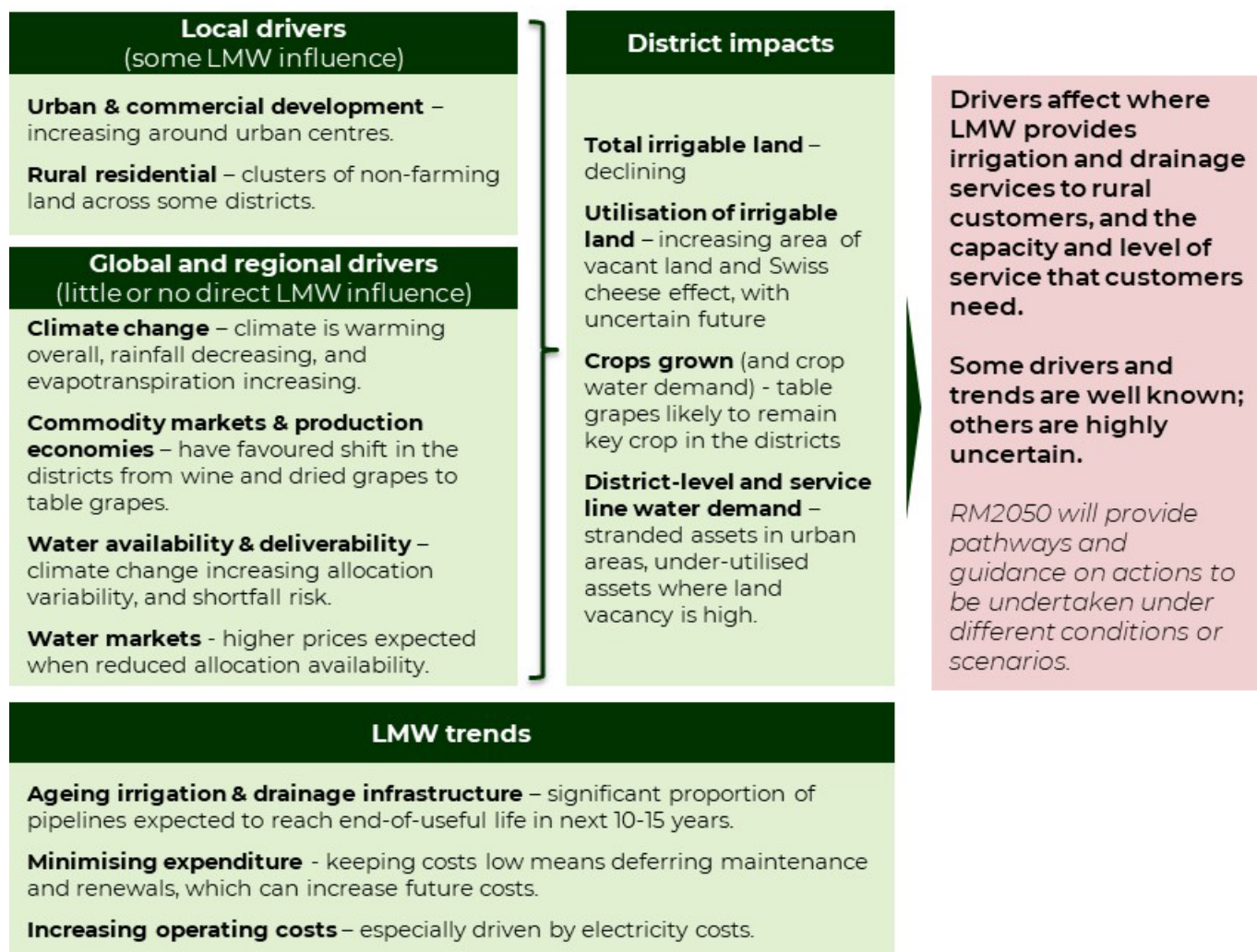


Figure 2 Local, global and regional drivers, LMW trends, and implications for the districts.

4.4 Local drivers of change

The local drivers for change within the rural district area where LMW operates are:

- increasing urban and commercial development, and
- increasing rural residential developments.

4.4.1 Increasing urban and commercial development

Urban expansion within and adjacent to the irrigation districts, including the expansion of the footprint of existing townships, is reducing the land available for irrigation, and has left some irrigation and drainage assets stranded. These changes are most significant in the Mildura district, where urbanisation and the

retirement of irrigable land have resulted in a 14% reduction in irrigable land from 1997 to 2024.² This loss of irrigable land has occurred primarily on the urban fringes of Mildura, Irymple and Nichols Point. Urbanisation can also lead to tension at the urban fringes, where complaints can arise from urban residents about farming practices so close to their homes.

Urban expansion is expected to continue, particularly around Mildura through the Mildura South Urban Design area and the Mildura East Growth Area (MEGA), which will see an initial 168 ha of total land area transition from current horticultural uses to housing, industrial and greenspace uses as part of Phase 1 of the development. This will include rezoning current farming land and result in a further reduction in irrigable land in the Mildura district and further stranded irrigation and drainage assets.

4.4.2 Increasing rural residential and industrial developments

Clusters of rural residential properties within the districts, particularly Merbein and Mildura, are also resulting in loss of irrigable land to residential and industrial uses. The fragmented development creates a patchwork of urban and agricultural land, reducing demand for irrigation services in some parts of the districts. As a result, irrigation and drainage assets are becoming under-utilised. This creates inefficient service delivery to under-utilised pipelines, higher costs to service fewer customers, and price pressure on customers who remain.

4.5 Global and regional drivers of change

Global and regional drivers of change impact a larger area than that in which LMW operates and have significant complexity in both the causes and outcomes of change. LMW is unable to directly influence these drivers but will still be affected by the changes.

4.5.1 Climate change

The LMW service region sits within the arid zone of Australia and is susceptible to drought, heat waves, frost and other climate-related challenges. The region's climate is characterised by low humidity and high temperatures, especially in the hotter months when the average maximum temperature exceeds 30 degrees, and a number of days exceed 40 degrees. The region has low average annual rainfall, and high mean annual evaporation of 2,190 mm. These conditions are ideal for grape varieties and other permanent horticultural crops grown in the region.

Climate change is expected to lead to a warmer and drier climate for the region, with climate models projecting that by 2050³ there will be a potential increase of 1.7–2.2°C in annual average maximum temperature, a 5-12% decline in annual average rainfall, and an increase in evapotranspiration of 25-32%.

These changes are expected to affect the region's horticultural industry in a variety of ways, which include:

- heat stress that depresses some plant growth in summer,
- reduced cold stress in winter, possibly causing earlier bud-burst and later leaf drop for deciduous crops and annuals, leading to a longer growing and irrigation season for some crops, while creating challenges for others that require chill hours for crop production, such as almonds,
- increased growth and water demand in cooler months for non-deciduous crops e.g., citrus,
- more extreme rainfall events, increasing waterlogging risks and crop losses in summer, and
- higher crop water demand as irrigators adapt to higher temperatures and evapotranspiration rates, declining annual rainfall, and longer growing seasons.

² Mallee CMA (2025), *2024 Mallee Horticultural Crop Report*. Accessible at: <https://malleecma.com.au/wp-content/uploads/2025/07/2024-Mallee-Horticulture-Crop-Report-Final-130625.pdf>

³ Models include: Mallee CMA (2024) *Implications of Climate Change on the water requirements of horticulture in the Victorian Mallee – Phase III* & Clarke et al (2019) *Victorian Climate projections 2019 – Mallee Region Projected Change Summary Dataset*.

4.5.2 Commodity markets and production economies

Grapes are the dominant crop types grown within the pumped districts over the last two decades. Until the mid-2000s, grapes – including table grapes, wine grapes and dried fruit – collectively occupied more than 80% of irrigable land inside the districts, before decreasing to just over 60% of irrigable land since 2012.⁴ Over this time, there has also been a shift from wine grape and dried grape production towards table grapes, which now occupy almost 45% of irrigable across all LMW districts.

Other crops in the pumped irrigation districts include seasonal crops, citrus, olives, almonds, other horticultural crops such as avocados and pistachios. The change in area planted to these crops within the four pumped districts since 1997 is shown below (Figure 3).

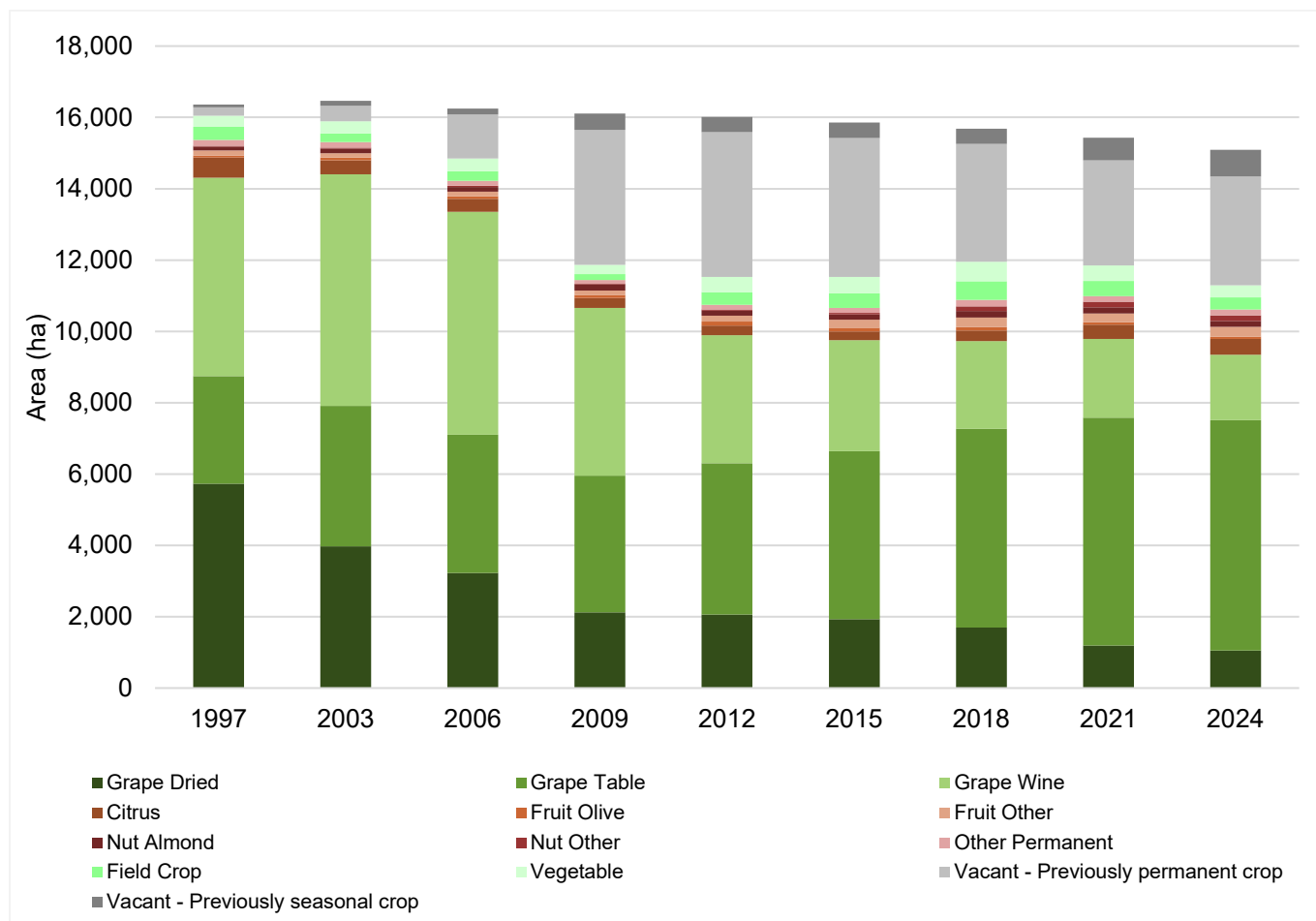


Figure 3 Change in crop area 1997 – 2024 within the pumped irrigation districts⁵.

Almond plantings remain the dominant crop type in the broader LMW region but are largely grown outside the pumped irrigation districts by private diverters on larger properties. Large-scale plantings of almonds and their profitability have helped sustain the region's agricultural economy. Citrus also remains an important crop in the LMW region. Diversity of profitable crops across the region has also contributed to the region's agricultural success.

A range of factors will affect which crops are grown where in the LMW region and in the pumped irrigation districts in future.

⁴ Data sourced from Mallee CMA (2025), 2024 Mallee Horticultural Crop Report. Accessible at: <https://malleecma.com.au/wp-content/uploads/2025/07/2024-Mallee-Horticulture-Crop-Report-Final-130625.pdf>

⁵ Mallee CMA (2025), 2024 Mallee Horticultural Crop Report. Accessible at: <https://malleecma.com.au/wp-content/uploads/2025/07/2024-Mallee-Horticulture-Crop-Report-Final-130625.pdf>

These include whether:

- it is financially viable to produce the commodity in small-scale operations, which are typical in the districts
- the commodity needs production methods that require larger scale operation, such as those found outside of the districts, and
- a small-scale operation can effectively manage the growing operation, distribution and marketing requirements of the commodity, or have suitable proximity to these through the local supply chain.

Trends in global and domestic markets and the production requirements and economies suggest that table grapes are likely to remain the dominant crop inside the pumped irrigation districts into the future. Factors affecting the production of a range of commodities grown in the region and implications for commodities in the irrigation districts are summarised below (Table 1).

Table 1 Trends affecting key commodities in the LMW region⁶ and implications for the pumped irrigation districts

Category	Influences on future production in LMW region	Implications for the pumped irrigation districts
Table grapes	Improved varietal mix has delivered higher eating quality earlier, leading to higher demand in domestic and export markets, higher prices and longer seasonal supply windows. Table grape growers have demonstrated capacity to adapt and invest in better varieties. Domestic demand is expected to remain strong, supported by higher quality early season fruit and with that increased fresh fruit category share. Export market is expected to remain strong with market access across 10+ countries and the advantage of early-season supply.	Table grapes have high suitability for the small blocks typically located in the districts. Table grapes have intensive labour requirements, and need proximity to packing, processing, transport and supply chain, all of which can be readily accessed from the pumped irrigation districts. Table grapes have a strong commercial outlook and are expected to remain an important crop inside the districts.
Dried grapes	Dried grapes face increased growth of competing market products, such as nuts and processed snacks, which suppresses demand for dried grapes. Processors have a gatekeeper role, determining prices, and this is expected to continue, affecting financial returns to growers. There is demand in export markets for a high-quality product, which provide increments of increased demand for Australian product.	Dried grapes have high suitability for the small blocks typically located in the districts. Dried grapes need proximity to packing and transport, all of which can be readily accessed from the pumped irrigation districts. Dried grapes can be processed on site or through an external processor. Production is likely to stabilise or increase in the districts.
Wine grapes	Oversupply of wine grapes due to pressure from winemakers to overplant, and decline in market demand for wine due to health concerns, competing products and trade tariffs. Declining profitability. The domestic market expected to remain flat. The export market is dependent on uncertain trade tariffs.	Wine grapes have high suitability for the small blocks typically located in the districts. Wine grapes have faced declining market and profitability, overall reduction in consumer demand for wine, and closures of local processing facilities. Wine grape production is expected to continue to decline in the districts and region.
Olives	Global and local market support for health benefits of olive oil has potential to add trickle-down with a positive effect on Australian consumers' demand. Fluctuations in production due to biennial cropping patterns can be managed through balancing imports. Opportunities to increase Australian produced olive oil as share in domestic market.	Olives have low suitability for the small blocks typically located in the districts. Other than specialised niche growers, olives are suited to larger blocks to exploit economies of scale and apply mechanised harvesting techniques. They don't require the same proximity to labour that grape varieties need.

⁶ Defined as the horticultural production operations located in the LMW catchment that access water via the pumped irrigation districts of First Mildura, Merbein, Red Cliffs and Robinvale, or as private diverters licensed to pump river-quality water directly from the Murray River in the zone between Nyah and the South Australian border.

Category	Influences on future production in LMW region	Implications for the pumped irrigation districts
Almonds	Almond production is set to expand as existing trees mature and further plantings are made. Domestic demand is expected to increase due to population growth, diverse uses of almonds and health attributes. Export market demand is expected to remain strong, driven by market access and the advantage of the southern hemisphere growing season.	Almonds have low suitability for the small blocks typically located in the districts. Almonds are suited to larger blocks to exploit economies of scale and apply mechanised harvesting techniques. They don't require the same proximity to labour that grape varieties need.
Mandarins	Plantings in northern Australia maturing to deliver higher volumes and extending seasonal supply window. Domestic demand is responding well to longer season and increased varietal mix and is expected to remain strong. Export market demand is expected to remain strong, with recognised quality and wide exposure. LMW growers can leverage domestic and export markets with supply that follows northern growers.	Mandarins have medium suitability for the small blocks typically located in the districts. Other than specialised niche growers, mandarins are better suited to larger blocks to exploit economies of scale. They don't require the same proximity to labour that grape varieties need. It is difficult to adjust varieties/plantings on small blocks, and to compete on economics of scale with larger growers.
Oranges (navel)	Navel oranges are a long-term fresh citrus fruit staple and the requirements for their growth, handling and distribution are well understood. Optimum varieties are planted on scale and production volume growth is expected to continue. Domestic demand is expected to remain steady as a staple winter fruit. Export market demand is expected to remain strong, with recognized quality and wide exposure.	Oranges have medium suitability for the small blocks typically located in the districts. Other than specialised niche growers, oranges are better suited to larger blocks to exploit economies of scale. They don't require the same proximity to labour that grape varieties need. It is difficult to adjust varieties/plantings on small blocks, and to compete on economics of scale with larger growers.

4.5.3 Water availability and water market dynamics

4.5.3.1 Water availability

Water for LMW's region is sourced from the Murray River. LMW's customers are located within the Zone 7 Vic Murray (below Barmah) but can also access water via trade or transfer from other zones (including in South Australia and NSW), subject to trading rules and constraints. The region's groundwater is highly saline and not suitable for use in agriculture.

Significant water reforms were introduced into Australia in response to the Millennium Drought including the *Water Act 2007* and the development of the *Murray-Darling Basin Plan 2012*. The Basin Plan aims to sustainably manage the Murray-Darling Basin's water resources by balancing water use for communities, industry, and the environment. It sets Sustainable Diversion Limits (SDLs) to cap water extraction while managing ecological health. Initially, the plan sought to recover 2,750 GL of water for environmental purposes, but amendments in 2018 reduced the recovery target to 2,075 GL through measures like the SDL Adjustment Mechanism and the Northern Basin Review. An additional 450 GL is to be recovered via efficiency projects to enhance environmental outcomes downstream.⁷

As of 30 June 2025, 292.7 GL remains to be recovered across the southern connected Murray-Darling Basin against the 450 GL target to enhance environmental outcomes.⁸ A proportion of this volume will be recovered from the broader lower Murray region, and may include recovering entitlement from LMW

⁷ <https://www.dcceew.gov.au/water/policy/implementing-the-plan/450-framework>

⁸ <https://www.dcceew.gov.au/water/policy/water-recovery/progress>

customers, both in-district customers and private diverters. This may reduce the water available to customers to buy through the water market, if needed.

While allocations were restricted in the Millenium Drought, policy settings have since changed, including implementation of the *Water Act*, the Murray-Darling Basin Plan, the unbundling of water entitlements in Victoria and the introduction of carryover in Victoria, all of which contribute to drought risk mitigation. Since the Millenium Drought, high security and high reliability entitlements in the broader lower Murray region typically received full or high allocations, even in dry years.

Delivery shortfalls can affect short-term water availability for LMW's customers. Delivery shortfalls can occur in times of high demand or reduced river flow and mean that water cannot be delivered when and where it is needed. To help manage shortfalls, the Victorian Government introduced the **Place of Take Approvals Framework**.⁹

This framework clarifies and protects existing water users' rights to take water during a shortfall and provides flexibility for water users to manage their own delivery risks.

When a shortfall cannot be avoided, water use is temporarily rationed to ensure users with a delivery share or extraction share have access to some water if they require it. River diverters are restricted in proportion to their extraction share, and district irrigators are restricted in proportion to their delivery share in the same way they are during irrigation channel congestion events.

The Victorian Government notes that the need to ration water use is rare. It has only happened twice since 2000:

- in March 2002, a 10 GL shortfall affected water users for two weeks; and
- in late-2018, environmental water holders were restricted because the channel capacity was being used to meet summer demand.¹⁰

However, climate change and changes in land use are expected to increase the risk of shortfall in future years. This is especially a challenge for permanent horticulture, which requires water at specific times. Shortfalls could damage crops and affect the irrigators' productivity for that season.

4.5.3.2 *Water market dynamics*

Water entitlement prices in the lower Murray zones generally increased from 2010 to 2023 (Figure 4) due to a decade of low interest rates and low inflation which created upward price pressure on various assets, including water entitlements.

At the same time, there has been an expansion of high-value permanent horticulture in the broader lower Murray region, resulting in increased inflexible water demand in the region. However, prices have softened since their peak in 2022-23, influenced by rising interest rates, inflation and broader economic challenges.

⁹ <https://www.waterregister.vic.gov.au/water-entitlements/about-entitlements/place-of-take-approvals>

¹⁰ <https://www.waterregister.vic.gov.au/water-availability-and-use/murray-delivery-risks>

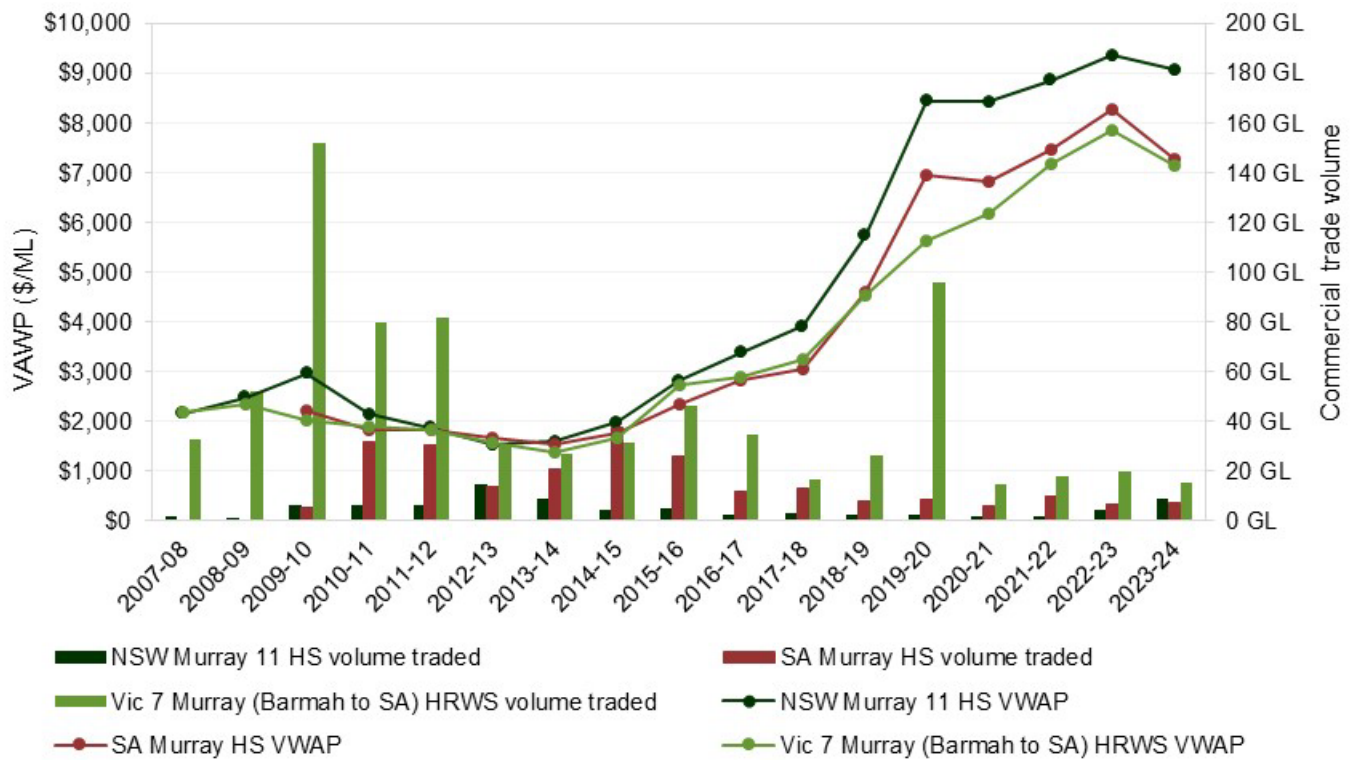


Figure 4 Historical annual Volume Weighted Average Price (VWAP) and commercial trade volume for HS/HRWS entitlements in the broader lower Murray region (2007-08 to 2023-24)¹¹

Higher entitlement prices are positive for those who own entitlement and can provide an incentive to sell entitlements. This may free up capital for the farmer to invest in their business, or it may lead to retiring of irrigable land, contributing to a reduction in the use of the irrigation and drainage network. This may lead to price increases for remaining customers, as there are fewer customers to share costs to operate and maintain the network.

Increasing entitlement prices can make it harder for new players to enter irrigated agriculture or for existing producers to increase water holdings to provide more secure access to water for irrigation. Those who cannot purchase entitlement, due to cost or other reasons, to meet their irrigation needs, are reliant on purchasing water allocations on the temporary market and are subject to variations in allocation prices and access.

Water allocation prices in the region are influenced by a variety of factors including:

- seasonal changes
- water availability, and
- commodity prices, production economies, and irrigators' ability to pay for allocation.

Typically, allocation prices increase in dry years (low water availability) and decrease in wet years (high water availability). Prices have reached as high as \$700 per ML in dry years like 2019-20 and as low as \$37 per ML in 2022-23, a record wet year.

The increase in high-value permanent horticulture in the broader lower Murray region since 2015 has also affected allocation prices over the last decade. These crops have inflexible water needs that must be met regardless of weather conditions (at risk of permanent damage or crop death).

¹¹ Ricardo (2025), *Water Markets Database*. Based on the NSW, Victorian and South Australian water registers.

Allocation prices will continue to fluctuate in response to seasonal variations and changes in water availability. However, with continued permanent horticultural growth and the impacts of climate change becoming realised, long-term average allocation prices will likely increase.



Figure 5 Historical annual aggregated allocation Volume Weighted Average Price (VWAP) for broader lower Murray region and commercial trade volume for HS/HRWS entitlements (2007-08 to 2023-24). This considers trade within and into each trading zone¹²

Allocation prices affect irrigators in different ways. Growers who own sufficient water entitlement to meet their needs are largely unaffected by allocation prices. However, higher prices do provide options to sell allocations to support profitability. Producers who are reliant on allocation trade to meet their irrigation needs are more affected by higher allocation prices. Higher allocation prices increase the cost of production and, depending on commodity prices or other factors, may reduce profitability. Different irrigators will respond differently, with some adapting and continuing to operate, while others may reduce their scale of production or even retire irrigable land.

4.6 Changes for the irrigation districts and customers

4.6.1 Reduction in actively irrigated land within the districts

Urban and industrial development is reducing the amount of land available for agriculture within LMW's pumped irrigation districts. As a result, some irrigation and drainage assets are now under-utilised or stranded due to falling demand. Although these assets have, or will soon have, little or no use, LMW is still responsible for managing the risks associated with stranded assets, or alternatively, may pursue opportunities to rationalise these assets.

At the same time, vacant irrigable land— land that was once irrigated but is currently unused – has been high since the Millennium Drought. In 1997, only 2% of irrigable land was vacant. That number peaked at 28% during the Millennium Drought and sat at 25% in 2024.¹³ This can be due to a number of drivers including water availability and pricing, commodity markets, or climate change. The vacant land may be undergoing redevelopment, or it may be abandoned. If irrigators are unable to adapt to future water

¹² Ricardo (2025), *Water Markets Database*. Based on the NSW, Victorian and South Australian water registers.

¹³ Mallee CMA (2025), *2024 Mallee Horticultural Crop Report*. Accessible at: <https://malleecma.com.au/wp-content/uploads/2025/07/2024-Mallee-Horticulture-Crop-Report-Final-130625.pdf>

availability, commodity market volatility and climate change or extreme weather events, vacant land in the districts will increase in the future.

The future of vacant irrigable land is uncertain - it may return to production or remain vacant. In the meantime, the irrigation and drainage assets that service vacant land are under-utilised, and future demand for these assets is unclear.

Reduction in actively irrigated land in the districts leads to fewer rural customers. This means that if it is not possible to rationalise and reduce infrastructure in the long run, then LMW's fixed costs to manage the irrigation and drainage network will be shared across fewer irrigators, which will inevitably result in price increases for remaining customers.

4.6.2 Changing crops and water demand

Over the last decade, table grape enterprises in the districts have increased due to strong domestic and export markets, and this trend is expected to continue. Table grapes have higher water requirements than other crops grown in the districts. As a result – if the trend towards table grapes continues – overall water demand per hectare is likely to increase and total water demand across the districts will rise, especially during peak periods, putting more pressure on delivery systems and infrastructure.

Yet at the same time, future water demand is hard to predict due to the changing climate, which is already impacting on the region's agricultural practices:

- Increasing crop water needs, and
- Extending the growing season into winter and spring.

Meanwhile, total water availability is declining due to reduced rainfall affecting seasonal allocations against entitlements, and Australian Government policy such as 'buybacks' reducing the total entitlement on issue (EOI) available via the water market.

This potential combination of higher demand and reduced supply is expected to put upward pressure on water prices and make high-value horticulture and financial viability an even greater focus for growers.

4.7 LMW trends

4.7.1 Ageing irrigation and drainage infrastructure

The irrigation network across the Mildura, Merbein and Red Cliffs irrigation districts has almost 900 km of pipelines and channels. Pumps are used to lift water from the Murray River to the four irrigation districts.

Robinvale's irrigation network was upgraded in 2010 to a high-pressure system. However, a large proportion of the irrigation assets in other districts were installed in the 1960s, consisting of asbestos cement (AC) and reinforced concrete pipes (RCP). Further lengths were installed between 1980-2010, including some AC and then shifting to lengths in PVC and other plastics.

Approximately 44% (265 km) of LMW's active irrigation pipelines across Mildura, Merbein and Red Cliffs districts will likely need to be replaced in the next 25 years,¹⁴ based on asset age.

Drainage networks in the districts are also ageing. The drainage networks span 627 km and include both major and spur pipelines. Based on asset age, 103 km of drainage pipeline is already past its assumed asset life. Over the next 25 years, a further 475 km of drainage infrastructure will become outdated, making a total of 92% of active pipeline that will likely need to be replaced.

There are 10 main pump stations plus additional booster pump stations servicing the districts of Merbein, Mildura and Red Cliffs. The main pump stations are monitored for early indication of failure risk and are repaired accordingly.

¹⁴ Spatial Vision, Treloar B., Jones C. and Browne J (2023), *LMW GIS Layers: FMIT – gisdb10_GISADMIN_IrrPipeline_FMIT & SRWA – gisdb10_GISADMIN_IrrPipeline*. LMW. Shapefile.

While the assets reaching the end of their useful life may not require immediate renewal or replacement, the ageing irrigation network increases the risk of asset failures and outages. Ageing infrastructure poses significant risks, including service outages, localised flooding, cost spikes from reactive maintenance, and challenges in delivering reliable water to high-value crops during critical periods.

4.7.2 Minimising expenditure

LMW has been working hard to minimise expenditure and keep costs down, which has helped to keep prices low for customers in the near term. This has meant deferring maintenance and renewals, which can increase future costs either to respond to asset failures or undertake proactive maintenance and renewals to avoid asset failure. Where regulated utilities, such as LMW, receive government grants or private customer contributions towards specific projects, this keeps prices lower in the short term as the capital costs do not need to be recovered from customers.

LMW has accessed this mix of funding sources for its capital expenditure program to keep its customer prices more affordable. Except for government-funded modernisation projects, investment in asset renewals over the last 20 years has been low. But given a number of pipeline assets in the districts are ageing and are expected to reach the end of their useful life over the next 25 years, further deferring asset renewals is not sustainable.

If not proactively renewed, there is a risk that ageing assets will continue to increase in failure frequency, possibly with increased reactive maintenance costs and more service outages. Service outages could be devastating for growers if the outage disrupts water supply during critical periods. Without investment in the short term LMW will see a significant spike in capital expenditure to replace assets, or face an increasing risk of asset failure, with serious implications for the service levels provided to customers. Eventually significant renewal will be unavoidable, possibly across large parts of the network at the same time.

While government grants or private funding contributions may play an important role in the funding mix to undertake this work, LMW will not be able to continue to minimise expenditure to the current levels into the future.

4.7.3 Increasing operating costs

LMW has high fixed costs to deliver its irrigation and drainage services. Operating costs are increasing, including electricity prices which increased by approximately 25% in 2024-25 compared with the previous year. While this will eventually mean higher prices for customers, in the current regulatory pricing period, which runs from 1 July 2023 until 30 June 2028, LMW is unable to charge a price in excess of the Essential Services Commission (ESC) allowance for operating expenditure. Where LMW incurs operating expenditure in excess of the ESC allowance, it is unable to recover its operating costs and has a direct negative financial impact on the business.

In addition, there are inefficiencies for LMW to deliver services in under-utilised parts of the irrigation and drainage network, meaning that there are higher costs to service fewer customers. Without an appropriate response to the issue of under-utilisation, these inefficiencies will continue or increase, putting pressure on prices for customers who remain.

4.8 A new Masterplan to help plan for a changing future

Local, regional and global drivers and trends shape where and when irrigators need water – impacting the services LMW provides and the level of demand. While some drivers are clear, others are uncertain, creating both challenges and opportunities.

To stay resilient, LMW and its rural customers need to prepare and invest wisely, while positioning themselves to respond effectively and make the most of the challenges and opportunities ahead. Without effective planning and strategic investment, these challenges and missed opportunities could undermine the viability of LMW's rural water services and its customers, and lead to a decline in the pumped irrigation districts.

The future is always uncertain. However, identifying possible future scenarios, that consider the trends and drivers and how they may shape the future, can help LMW and its customers prepare for uncertainty,

identify opportunities to avoid undesirable outcomes, and work toward a more positive and preferred direction. It can also help LMW and its customers to prepare and plan with more confidence.

Three possible future scenarios are outlined below (Figure 6). They capture a spectrum ranging from:

- **Scenario A:** thriving irrigation districts with high demand for irrigation and drainage services
- **Scenario B:** gradual decline or no change in horticulture (current trajectory)
- **Scenario C:** rapid exit from the irrigation districts and low demand for irrigation and drainage services

RM2050 aims to strengthen Scenario B (current trajectory), while preparing LMW and its customers for the possibilities of scenarios A or C.

SCENARIO A: THRIVING IRRIGATION DISTRICTS	
Drivers: • Continuation of strong markets for commodities suited to the pumped districts. • Change in volume of water in consumptive pool is within bounds of irrigators' adaptability. • Climate change impacts are within bounds of irrigators' adaptability. • Managed urban and commercial development • Disruptions may occur, but customers are able to transition or adapt	Possible outcomes for irrigated land and service demand: • Maximum utilisation of irrigable land • Contiguous irrigation properties throughout district • High demand for irrigation and drainage services • Customer base and revenue enables LMW investment in assets and services
SCENARIO B: GRADUAL DECLINE OR NO CHANGE IN HORTICULTURE (CURRENT TRAJECTORY)	
Drivers: • Moderate or variable markets for commodities suited to the pumped districts. • Buybacks uncertainty increases uncertainty of future water availability • Climate change impacts stretch irrigators' adaptability and willingness of new growers to establish in the districts	Possible outcomes for irrigated land and service demand: • Gradual decline in utilisation of irrigable land, or land vacancy remains at around 25% • Disjointed irrigation properties throughout district • Stable or decline in demand for water, and uncertainty about where water is needed • Uncertain customer base and revenue a challenge for strategic LMW investment in assets and services
SCENARIO C: RAPID EXIT FROM HORTICULTURE	
Drivers: • Major, prolonged drought. • Poor markets for commodities suited to the pumped districts. • Reduction in consumptive pool • Entitlement and allocation prices exceed irrigators' willingness to pay • Climate change impacts exceed irrigators' adaptability. • Current customers are unable to adapt or transition in response to disruptions, and the districts are unattractive to new growers	Possible outcomes for irrigated land and service demand: • High vacancy of irrigable land • Customers dispersed across network • Customers can't pay fees for delivery shares • Significant undertutilisation of service lines • Rapid decline in demand for services • Insufficient customer base and revenue to enable LMW investment in assets and services

Figure 6 Possible future scenarios for the irrigation districts and customers

5 Strategic issues and options

Five interdependent issues arise from the drivers and trends outlined above (Section 4). These relate to the biggest long-term opportunities and challenges facing LMW's rural business and its customers. Strategic decisions about how to address these issues will support a sustainable and viable future for LMW and customers in the irrigation districts.

These issues and the strategic questions are shown below (Table 2).

Table 2 LMW's strategic choices for the Rural Masterplan

Strategic issue		Strategic question
1	Supporting or influencing customers	To what extent will LMW support customers to adapt to future scenarios, and how?
2	Managing stranded assets in urbanised and urbanising areas	How should LMW manage stranded assets and associated risk in urbanised areas?
3	Balancing supply capacity and demand to meet customer needs	How should LMW better balance supply and demand to get the right volumes of water to customers where and when they need it, and rationalise assets where there is no longer demand?
4	Renewing irrigation and drainage assets	Where, when, how should LMW renew or upgrade ageing irrigation and drainage infrastructure where irrigation is expected to continue?
5	Balancing the level of investment required with the costs recovered from customers.	How should LMW support ongoing sustainability of the business by aligning efficient costs of service provision with affordable prices and funding options?

A range of options are being considered in response to each strategic issue. The options are high-level, and the adopted options will guide LMW's investment in irrigation and drainage services and infrastructure over the next 25 years. LMW, in ongoing consultation with customers, will make further detailed decisions as it plans and delivers investment. LMW will also need to complete further studies and investigations to inform some of these further decisions.

Many of the options being considered will be enhanced through coordination and collaboration with other agencies. LMW will continue to work with regional partners where appropriate to ensure that there is regional alignment and to enhance outcomes for our customers and the region.

Below is a summary of the key strategic issues and the options under consideration.

Issue 1: Supporting customers to adapt to future scenarios

To what extent will LMW support customers to adapt to future scenarios, and how?

The viability of irrigation customers and LMW is interdependent. Having high levels of irrigation district utilisation helps spread fixed costs and maintain viability. Consideration is being given to the following options:

Do least —————→ Do most		
A. Engagement and information provision to inform customers' decisions and support new customer connections.	B. Option A plus active engagement with current and potential customers to encourage utilisation of irrigable land and the irrigation and drainage network.	C. Option B plus actively incentivise utilisation of irrigable land and highlight opportunities that may support customer decisions and on-farm practices.

Issue 2: Managing stranded assets in urbanised and urbanising areas

How should LMW manage stranded assets and associated risk in urbanised areas?

Increasing urbanisation is leading to irrigation and drainage assets becoming stranded. LMW remains responsible for these stranded assets and any risks they carry – but they no longer generate a financial return.

To address this, LMW is considering the following range of options to manage these assets more effectively.

<i>Do least</i> —————→ <i>Do most</i>		
D. Leave existing stranded as they are and no active prevention of further assets becoming stranded.	E. Leave existing stranded assets as they are but prevent further stranded assets by decommissioning (or make safe) before urban development commences.	F. Risk-based prioritised decommissioning (or make safe) of existing stranded assets and prevent further stranded assets by decommissioning before development starts.

Issue 3: Balancing supply capacity and demand to meet customer needs

How should LMW better balance supply and demand to get the right volumes of water to customers where and when they need it, and rationalise assets where there is no longer demand?

Supply capacity and demand are misaligned across the districts. Increasing vacant irrigable land within the districts means some assets are under-utilised and are not being used efficiently. Operating costs are borne by fewer customers and paying for renewals will be difficult. In other parts of the network, high demand for irrigation means that growers can't always get water when they need it.

This issue has two key parts:

- i. Understanding and managing irrigation and drainage assets that are under-utilised, and
- ii. Understanding and managing those parts of the networks where peak demand for water is greater than the network capacity.

To address both challenges, LMW is considering the following range of options:

	<i>Do least</i> —————→ <i>Do most</i>		
i. Understanding and managing asset under-utilisation	G. Do not seek to rationalise assets. Leave under-utilised assets as they are.	H. Strategically rationalise under-utilised assets over time and with advanced notice when demand falls below a defined threshold. Engage proactively with customers in under-utilised areas to inform any rationalisation decision. Incentivise or support any remaining customers on affected line/s to exit irrigation or relocate.	I. Option H plus adjust district boundaries to maintain or increase utilisation of the network.
ii. Understanding and managing where and when peak demand exceeds delivery capacity	J. Information provision to customers to enable customers to manage their own water demand within existing network constraints.	K. Hierarchy of interventions, starting with non-infrastructure means to encourage or incentivise customers to manage own delivery capacity risk and smooth peak demand, before minor infrastructure changes to adjust capacity locally.	L. Increase supply capacity when renewing assets, and/or large-scale reconfiguration, including connecting and integrating districts.

Issue 4: Renewing irrigation and drainage assets

Where, when, and how should LMW renew or upgrade ageing irrigation and drainage infrastructure where irrigation demand is expected to continue?

Many irrigation and drainage assets are expected to reach end of life in the next 25 years. If not renewed in time, the risk of failure increases – potentially leading to costly outages and reduced services for customers. Planned upgrades are more cost-effective and reliable than emergency repairs, which can be expensive and disruptive.

However, predicting future service needs is challenging. Climate change, shifting grower expectations, and uncertainty around future demand make it difficult for LMW to plan infrastructure and for growers to plan their businesses.

To respond to these challenges, LMW is exploring the following range of options.

<i>Do least</i> —————→ <i>Do most</i>		
M. Run assets to fail and renew selectively and reactively to existing level of service, or opportunistic renewals when external funding is available.	N. Improve asset condition knowledge to more confidently predict asset-life and undertake risk-based renewal of assets to existing capacity and level of service. Consider local opportunities to improve operational, water and energy efficiency in configuration and design.	O. Strategic approach to renewals at a system scale. Align capacity and level of service to customers' changing needs. Incorporate opportunities to improve operational, water and energy efficiency in configuration and design.

Issue 5: Balancing the level of investment required with the costs recovered from customers

How should LMW support ongoing sustainability of the business by aligning efficient costs of service provision with affordable prices and funding options?

Long-term Investment is essential, and operational costs are rising in some areas. These costs need to be recovered from customers, but irrigation and drainage services also need to remain affordable for customers to stay viable. If not, some customers may reduce operations or leave the districts.

This raises questions about:

- tariff structures and pricing levels
- timing of investment, and
- potential alternative funding sources.

LMW is currently considering the following range of options to address these challenges.

<i>Do least</i> —————→ <i>Do most</i>		
P. No immediate major changes to tariff structures. Some effort to seek additional funding sources. Maintain and enforce termination fees.	Q. Optimise pricing without major tariff structure changes. Reset prices based on cost-reflective pricing principles. Strategically staging investment and seeking government and/or new customer funding contributions for major capex, if required. Maintain and enforce termination fees and apply them to adjust network as relevant.	R. Major pricing reform. Option Q, but seek to move to a single price for same level of service across all districts as part of future price submission. This option may be affected by interconnection between districts, transitional price impacts and/or other business/administrative benefits.

6 Next steps

LMW is setting the direction for the future of its irrigation and drainage services through the development of RM2050. As part of this process, we're exploring a range of strategic options outlined in Section 5 of this paper.

Once finalised, the Masterplan will guide future planning, investment, and decision-making – starting with early actions to investigate and refine how these pathways will be implemented.

Help Shape the Future of Irrigation in Our Region

We're committed to working closely with our rural customers and stakeholders as we plan for the future of irrigation and drainage services.

Right now, we're seeking your feedback on the foundations and options presented in this paper.

We invite you to consider and respond to the following questions:

- **Have we accurately described the key trends and drivers affecting LMW's rural customers?** Why or why not?
- **How have these trends and drivers affected you – positively or negatively?** Have they influenced any changes in your practices, or do you plan to make changes in the future?
- **Do you agree with the strategic issues identified in Section 5?** Are these the right priorities for RM2050? Why or why not?
- **Which option do you think LMW should adopt for each strategic issue?** Why?
- **Is there anything else that should be considered in RM2050?**

Your input will help shape a stronger, more sustainable future for rural water services.

You can share your feedback through our online submission page: <https://www.lmw.vic.gov.au/water-supply-and-services/projects-and-works/rural-masterplan-2050/>

We value your input and look forward to hearing from you.

Appendix 1 – Map of the Lower Murray Water Service Area (2023)





LOWER MURRAY WATER

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