



Rural Strategic Pathways

September 2026



**RURAL
MASTERPLAN
2050**
STRENGTHENING
RURAL
NETWORKS



**LOWER MURRAY
WATER**





Acknowledgement of Country

Lower Murray Water 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 Owner groups within Lower Murray Water's service region lie within the traditional lands of First Nations Peoples, from upstream at Koondrook moving downstream along the Murray River (Mil) 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 Wergaia Peoples. The First Nation Peoples' 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 Ngilyampa 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.*

RM2050 proceeds on Country and within living cultural landscapes. Respectful partnership with Traditional Owners is foundational to how irrigation and drainage services are planned, governed and adapted over time.

The Victorian Lower Murray at a glance

The Victorian Lower Murray region is one of Australia's most established and productive irrigated regions, supporting nationally significant horticultural production, major regional communities and export supply chains. More than a century of sustained irrigation development and private investment underpins a concentrated, high-value production system that depends on reliable well-timed irrigation water services.

This irrigated production base forms a critical foundation of the region's economic activity and export performance.

Rural water services (irrigation water supply and drainage) in the region are delivered through four prescribed irrigation districts: Mildura, Merbein, Red Cliffs and Robinvale. Each district operates as a distinct service area with its own infrastructure, customer base and operating characteristics. Together, they form a concentrated irrigation footprint within a shared geographic and climatic setting characterised by low rainfall, high evapotranspiration and strong reliance on managed surface-water supplies from the Murray River.

Agricultural production in the Victorian Lower Murray is dominated by permanent, high-value horticulture, characterised by:

- high-value permanent plantings with substantial capital investment
- strong sensitivity to the reliability, timing and quality of water services
- limited capacity for short-term adjustment once production systems are established

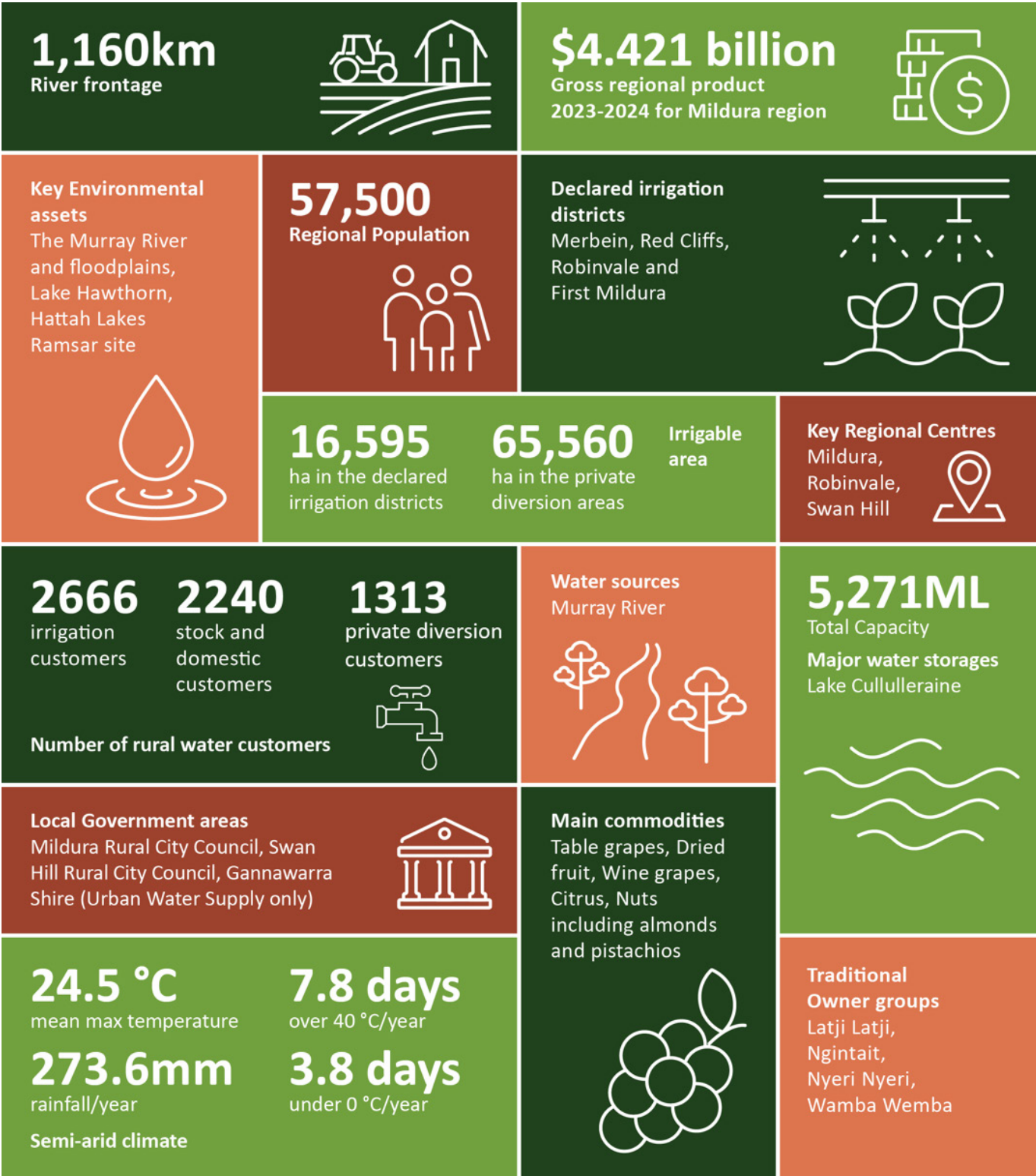
These characteristics shape both infrastructure design and service expectations, placing a premium on continuity and reliability. Once established, production systems and supporting assets reduce short-term flexibility, increasing the importance of careful planning and disciplined sequencing of decisions.

The irrigation and rural drainage networks that support this production base are mature and long-lived. Much of the infrastructure continues to operate under conditions that differ from those for which it was originally designed, while drainage remains critical to managing water tables and salinity across irrigated landscapes. As a result, decisions affecting rural water services in the Victorian Lower Murray tend to have lasting consequences that accumulate across successive planning and regulatory cycles.

This is a region with strong underlying capability, established investment and long horizons. In this context, the value of long-term, coordinated strategic planning lies not in responding to short-term variation, but in setting clear direction and enabling decisions to be staged and adapted across successive planning horizons.

These characteristics establish the need for a clear, long-term framework to guide how decisions about rural water services are made, sequenced and adapted over time.

Regional snapshot



RM2050: Setting long-term direction for rural water services

RM2050 sets the long-term direction for how rural water services are planned, governed and managed across the Lower Murray Water region. It provides a strategic frame that looks beyond individual decisions to consider how choices shape service reliability, affordability and flexibility across successive planning horizons.

The Strategy clarifies the strategic intent, principles and decision logic that inform how decisions are considered within established planning and regulatory processes. RM2050 is supported by this Executive Summary and a suite of technical and supporting documents that provide further detail and evidence, helping ensure long-term considerations are addressed consistently, rather than emerging incrementally through individual decisions.

RM2050 applies this decision logic through an adaptive pathways approach. Adaptive pathways enable decisions to be progressed in stages—advancing action where evidence and risk are well understood, while retaining the capacity to adjust or change course as conditions, knowledge and priorities evolve. This approach supports disciplined sequencing and proportionate responses in the face of uncertainty.

By setting direction to 2050, RM2050 provides a stable reference point that supports clarity and transparency in how choices are considered. It enables coordination across successive planning horizons and preserves flexibility for future decisions as circumstances change.

The Victorian Lower Murray supports some of Australia's most established and economically significant irrigated horticulture, underpinned by long-lived assets, permanent plantings and sustained private investment. Decisions about how rural water services are planned and governed over the coming decades will directly shape production continuity, regional livelihoods and long-term public value.

At the same time, climate change, land-use change, evolving Basin settings and rising costs are increasing uncertainty and narrowing the margin for error. RM2050 responds to this challenge by setting clear long-term direction and a disciplined framework for how decisions will be made, staged and adjusted over time.

RM2050 Direction

Reliable, sustainable and fit-for-purpose irrigation and draining service that support customers, regional prosperity and long-term adaptation.

Objectives



Valued services at a sustainable price

Support customer viability through reliable and sustainable irrigation and draining services



Responsive services for changing needs

Respond to changing customer needs, land use, asset condition, climate, markets and technology



Effective planning for the region

Plan for future regional needs, climate resilience, Traditional Owner outcomes and environmental water

Regional challenges to meet RM2050 objectives



Changing land use

Urban growth and vacant land are reducing service demand in some areas



Network utilisation

Some assets are under-used, while peak demand places pressure elsewhere



Ageing infrastructure

Irrigation and drainage assets are approaching end of life



Rising costs

Operating costs, asset renewal needs and pricing impacts require careful staging



Climate and water

Changing climate, water availability and delivery risks affect future services

Strategic Priorities

Priority 1

Support informed customer decisions and stronger district utilisation



Customer capability

Priority 2

Manage stranded and under-utilised assets



Risk-based assets

Priority 3

Balance supply capacity and service demand



Service balance

Priority 4

Renew irrigation and drainage assets where services continue



Asset renewal

Priority 5

Stage investment, pricing and funding decisions



Investment staging

Guided by mutual viability, customer engagement, coordinated planning, Tradition Owner partnership, regional collaboration.

Climate Change and Climate Variability

The Victorian Lower Murray has always experienced a highly variable climate. Climate change is now altering the baseline conditions within which irrigation and drainage services operate, increasing uncertainty and reducing the usefulness of historical averages as a guide for future decision-making.

The Victorian Lower Murray is a semi-arid irrigation environment, characterised by low rainfall, high evapotranspiration and strong reliance on managed water supplies.

For regions dominated by permanent horticulture and long-lived infrastructure, reliability, timing and affordability of water services matter as much as volume. Long-term decisions that do not account for increasing climate variability risk undermining grower confidence, regional employment and the economic value already embedded in the system.

Observed trends indicate rising temperatures, more frequent and prolonged heat events, higher evaporation and shifting seasonal

patterns. Looking ahead, climate projections consistently indicate hotter conditions, longer and more intense heat periods, and greater variability in rainfall. These changes do not point to a single predictable future. Instead, they describe a wider range of plausible conditions that rural water services must be able to operate within.

For irrigated horticulture, this means longer irrigation seasons, higher peak water demand during heat events, and changing timing of water use across the year. For drainage systems, changing rainfall intensity and variability have implications for runoff, waterlogging and salinity management. Importantly, the precise scale, timing and interaction of these factors cannot be forecast with confidence.

RM2050 treats climate change as a source of ongoing uncertainty rather than a problem that can be solved through a single projection or fixed response. This reinforces the need for long-term planning that is flexible, staged and capable of adapting as conditions evolve.



Average annual temperature increased 1.2°C since 1910



Since 1950s, heatwaves* have become more intense, frequent and longer, and the heatwave season starts earlier.



The number of very hot days** per decade has more than doubled since 1986–2005, with some areas experiencing up to 5 times as many very hot days.



Bushfire frequency, area burned and severity have increased.



Average annual rainfall has decreased but extreme rainfall events are generally becoming more intense.

Extreme rainfall events have almost doubled since 1958–1985.

Cool season rainfall has decreased by more than 10% compared to 1961–90.



More extended dry periods and changing flood patterns.

* A heatwave is defined as at least 3 consecutive days above the 95th percentile of daily average temperatures

** Very hot days are defined as days with daily maximum temperature exceeding the 99.9th percentile.

Source: VCSR24, p. 5

Information from www.climatechange.vic.gov.au



Planning under changing conditions

Irrigation and drainage services in the Lower Murray Water region are being planned in response to changing service needs and conditions. Climate variability, shifting development patterns, market dynamics and Basin-wide system settings all influence how services may need to operate between now and 2050, requiring planning that remains practical, affordable and responsive to customer and service requirements.

Decisions taken today can shape future options for decades. This is particularly the case where decisions involve major irrigation and drainage infrastructure, service levels, investment timing, or pricing and cost-recovery settings that become difficult and costly to reverse once in place.

RM2050 therefore provides a stable long-term framework for planning under these changing conditions. Rather than seeking to predict a single future, the Strategy enables decisions

to be staged between now and 2050. Early action focuses on low-regret measures such as improving monitoring and maintenance planning where irrigation demand changes, while larger commitments are considered only where service pressures, affordability and evidence show that further investment is needed.

By setting clear direction and decision logic through to 2050, RM2050 supports consistent, proportionate and transparent decision-making across successive Water Plans. This approach preserves future options, avoids committing too early to costly decisions that are difficult to change, and supports resilient, affordable services as conditions, evidence, service needs, and priorities change.

Strategic Themes

In response to the changing conditions described above, RM2050 is structured around five strategic themes that organise long-term decision making and support prudent investment choices. The themes provide a stable framework for considering how challenges and opportunities should be addressed as evidence, risks and customer needs change.

They are intended to:

- Support integrated decisions about services, assets, affordability and resilience
- Guide where future action and investment may be needed, based on evidence, risk and affordability

- Keep future Water Plan decisions open, so projects, prices and delivery timing can be considered through the right planning, customer engagement and approval processes.
- The themes translate RM2050 into a practical, integrated delivery framework. They support the assessment of future actions in an integrated manner, testing service, asset, affordability and resilience implications against evidence and risk before actions are implemented across the life of the RM2050. The Strategy helps ensure major projects, pricing impacts and delivery timeframes are assessed before investment proceeds, reducing the risk of unnecessary price impacts for customers.

The five themes are outlined below.

Table 1. RM2050 themes

RM2050 Theme	What this theme addresses
Theme 1 – Strengthening customer capability and productive land use	Customer viability and the long-term operation of Lower Murray Water’s rural water network are closely linked. Customer decisions about land use, crop types, investment and water use influence service needs. LMW supports customer planning through service reliability, affordability and the provision of clear information. This theme recognises that non infrastructure responses — such as information, engagement and capability building — can often manage risk more effectively than capital investment alone. RM2050 prioritises supporting informed decision making by customers and partners before escalating to asset-based responses, helping to avoid premature or unnecessary investment.
Theme 2 – Ensuring a safe, dependable and environmentally responsible rural water network	Core service obligations — particularly those relating to safety, environmental protection and regulatory compliance — must be met regardless of changes in demand or land use. This theme separates these non-discretionary responsibilities from growth or expansion planning. It focuses on maintaining safe and dependable services, managing stranded or under-utilised assets, and meeting environmental and regulatory requirements over time.

RM2050 Theme	What this theme addresses
Theme 3 – Planning pricing and investing responsibly for long term sustainability	Investment decisions and pricing outcomes are closely linked and must be considered together. This theme integrates service outcomes, investment timing and affordability, recognising that costs are ultimately recovered from customers. RM2050 provides a framework for staging decisions so that affordability is tested before further commitments are made. The Strategy does not set prices or funding outcomes. Instead, it supports disciplined sequencing of decisions through future Water Plans and regulatory frameworks.
Theme 4 – Building a flexible and resilient network for a changing climate and economy	Where irrigation and drainage services are expected to continue, climate change and economic uncertainty require flexibility rather than fixed solutions. This theme provides discipline for considering infrastructure responses only where there is clear evidence of ongoing service need. Operational and non-asset measures are prioritised, with infrastructure upgrades considered only after other options are shown to be insufficient.
Theme 5 – Enabling long term system resilience and adaptation	Changing conditions arising from climate change, Basin settings, land use change, energy markets and policy evolution require an adaptable planning approach. This theme establishes the overarching adaptive pathways logic that governs all other themes. It reinforces monitoring, triggers and decision gates as the mechanism for managing change, ensuring decisions can be staged, adjusted or deferred as conditions evolve.

How the themes work together

Each theme has a distinct role, but none operates in isolation. Taken together, the five themes ensure that RM2050 supports decisions that are:

- proportionate to evidence and risk
- staged to preserve future options
- mindful of affordability and public value, and
- resilient to changing conditions over time

This thematic structure allows RM2050 to guide decisions consistently across future planning cycles, while preserving future decision rights.

Anchoring decisions in evidence - and risk-based analysis

Decisions about rural water services carry consequences that extend well beyond individual planning cycles. Given the scale of exposure for customers, communities and the region, RM2050 establishes a clear expectation that decisions are grounded in evidence, risk assessment and proportionality.

In practice, this involves drawing on information about service demand, asset condition, land use, climate signals and customer behaviour,

while being explicit about uncertainty and limits in precision. It also requires deliberate consideration of trade-offs and how risks and costs may be distributed across customers and over time.

RM2050 provides the analytical discipline needed to ensure that decisions progressed through future Water Plans are transparent, defensible under scrutiny and aligned with long-term public value.





Understanding trade-offs

Decisions about rural water services involve balancing competing priorities over long timeframes. Many of these priorities cannot be optimised simultaneously. Choices that improve outcomes in one area may increase costs, risks or constraints in another.

RM2050 recognises that these trade-offs are unavoidable. Rather than seeking to eliminate them, the Strategy provides a framework for identifying, testing and managing trade-offs transparently over time. This supports decisions that are proportionate to evidence, aligned with long-term public value, and responsive to changing conditions.

The key trade-offs shaping decisions under RM2050 include:

Reliability and affordability - Maintaining high levels of service reliability can require ongoing investment in infrastructure, which places upwards pressure on prices

Investment timing and future risk - Investing early can reduce long-term system risk and avoid reactive costs, while deferring decisions preserves flexibility but may increase exposure to asset failure or service disruption.

Maintaining the network and improving efficiency - Maintaining existing infrastructure supports continuity for customers; while rationalising under-utilised parts of the network may improve long-term efficiency and reduce costs across the system.

Certainty for customers and flexibility for future decisions - Clear signals about future service provision support investment confidence, while maintaining flexibility ensures decisions can adapt as conditions, evidence and policy settings evolve.

Local outcomes and system-wide performance - Decisions affecting individual areas may have broader implications for costs, service levels and equity across the network. Balancing local impacts with system-wide outcomes is necessary to support long-term sustainability.

RM2050 supports these trade-offs being considered explicitly and consistently through evidence- and risk-based analysis and adaptive pathways. Decisions are progressed through established planning and regulatory processes, including future Water Plans, business case development and staged investment decisions, ensuring outcomes are proportionate, affordable and positioned to meet future conditions.

Applying adaptive pathways

RM2050 applies an adaptive pathways approach to manage uncertainty and avoid committing to major investment decisions prematurely and reduce the risk of price shocks to customers.

This approach enables decisions to be staged between now and 2050, with early action focused on no-regret, non-asset and operational responses. Larger or more consequential commitments are considered only where evidence shows pressures persist and the need for action is clear.

Decisions can be progressed, paused or adjusted as conditions, knowledge and priorities evolve. This ensures responses remain timely and proportionate, while keeping future options open where circumstances may change.

By embedding adaptive pathways into its decision framework, RM2050 supports long-term planning that responds to uncertainty without rushing decisions, committing funding too early, or narrowing future choices before they are fully understood.

Strengthening long-term resilience and public value

Strengthening long-term resilience and public value requires a framework that guides evidence- and risk-based decision-making across successive Water Plans. Decisions about rural water services are progressed through individual planning cycles, but the effects of those choices accumulate over time, shaping affordability, flexibility and future options well beyond a single planning period.

RM2050 provides a decision-making and adaptive pathways framework to guide how planning is progressed through successive Water Plans. The framework supports decisions being made in stages—advancing action where evidence strengthens and pressures persist, while retaining the flexibility to pause, adjust or change course as conditions evolve.

This supports coordinated staging of investment, helping to avoid price shocks for customers while promoting prudent, evidence-based investment that remains proportionate to need and affordability over time.

Viewed over multiple planning cycles to 2050, rural water decisions are considered in the context of asset renewal, permanent horticulture, population and land-use change, and intergenerational cost impacts. This enables planning that balances current needs with future consequences, rather than deferring risk or cost to later periods.

By embedding this framework, RM2050 strengthens long-term resilience and public value. It ensures risks are managed deliberately rather than emerging incrementally through individual decisions and builds confidence that unavoidable trade-offs are identified and handled transparently as conditions change.

Safeguarding long-term economic value

The Victorian Lower Murray underpins one of Victoria's and Australia's most economically significant irrigated horticultural regions, supporting nationally important supply chains, regional employment and export markets. Permanent, high-value horticulture is a defining feature of the region, particularly table grapes, wine grapes, citrus, almonds and nuts.

The region's economic strength delivers:

- approximately \$1.8–2 billion in annual horticultural output
- supply of the majority of Australia's exported table grapes, along with a significant share of exported almonds and summer fruit
- strong participation in domestic and international markets
- substantial private investment in permanent plantings and on-farm infrastructure
- employment across farming, packing, processing, logistics and associated supply chains

This economic output is underpinned by permanent plantings and significant private investment in on-farm and supporting infrastructure. These production systems are built around long-term investment decisions and place a strong premium on service reliability, quality and timing. As a result, even short-duration disruptions can have

disproportionate economic impacts due to crop sensitivity, export quality requirements and narrow market windows.

In combination, decisions affecting rural water services have implications that extend well beyond individual planning cycles. They influence investment confidence, production continuity, employment outcomes and the ongoing competitiveness of the regional economy. Safeguarding this economic value therefore requires long-term stewardship and planning that recognises the cumulative effects of decisions taken over time.

RM2050 provides the long-term strategic context for this stewardship. By guiding evidence- and risk-based decision-making across successive Water Plans, the Strategy supports disciplined consideration of economic consequences, helps manage trade-offs between service outcomes, affordability and flexibility, and reinforces the role of rural water services as enabling infrastructure for a nationally significant agricultural and export region.

RM2050 does not seek to influence commodity markets or guarantee production outcomes. Instead, it focuses on ensuring that rural water services continue to enable productivity, adaptability and long-term economic opportunity as conditions, markets and service needs evolve.



Sustaining communities and regional livelihoods

Rural water services play an important role in supporting employment, population stability and community wellbeing across the Victorian Lower Murray. Reliable irrigation and drainage services underpin productive land use, support regional supply chains and contribute to the viability of rural towns and service centres.

The irrigation districts support a wide range of regional livelihoods, including farming, packing, processing, transport and related services. These activities contribute to local employment, sustain regional skills and help maintain the social and economic fabric of communities across the region.

As climate conditions, land use and production systems change, the way rural water services are planned and adapted can influence how communities evolve over time. Changes to services, pricing or infrastructure — if not well sequenced — can have flow-on effects for employment confidence, business viability and community stability.

RM2050 supports communities by providing a long-term decision framework that helps ensure changes to rural water services are considered deliberately, communicated clearly and staged over time. This approach helps avoid unnecessary disruption, supports smoother transitions for customers and communities, and strengthens confidence in how decisions affecting regional livelihoods are made.

RM2050 recognises that broader regional development, population growth and social outcomes sit beyond the scope of the Strategy. However, by guiding disciplined and coordinated planning of rural water services, the Strategy supports conditions that enable resilient communities and regional livelihoods to be sustained as circumstances change.

Managing interdependencies

Rural water services in the Victorian Lower Murray operate within a highly interconnected system that includes irrigation, drainage, land use planning, domestic and stock supply, energy, urban development and environmental water management. Decisions taken in one part of this system can have consequences elsewhere if interdependencies are not recognised and considered.

Irrigation and drainage services share infrastructure and operational linkages with other water services and land uses across the region. As patterns of development, demand and service provision change, these interdependencies can influence service reliability, operating costs and risk exposure across multiple customer groups.

RM2050 makes these connections explicit at a system level. By identifying where rural water services interact with other systems,

the Strategy supports more coordinated and informed decision-making and helps reduce the risk of unintended consequences arising from decisions taken in isolation.

RM2050 does not seek to resolve or pre-empt decisions that sit within other planning, regulatory or service delivery frameworks. Instead, it provides a basis for recognising interdependencies early and ensuring that future decisions are progressed through the appropriate planning, regulatory and governance processes.

By supporting coordinated consideration of system interactions over time, RM2050 helps strengthen the resilience, efficiency and stewardship of rural water services within the broader regional system.





Sequencing decisions to 2050

RM2050 emphasises the importance of sequencing decisions over time rather than committing to fixed solutions upfront. This recognises that pressures on rural water services will not emerge evenly or predictably and that decisions made too early can limit future options or impose unnecessary costs.

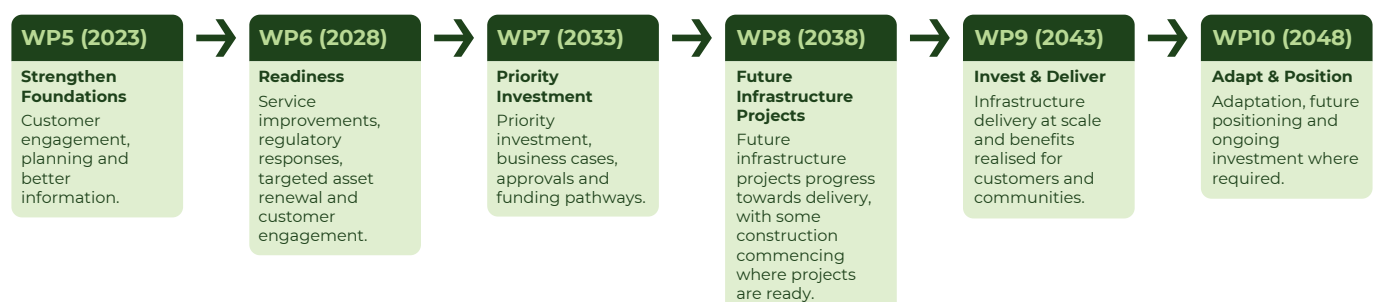
Staging decisions allows risks to be addressed early where possible, investment to be aligned with evidence and affordability, and future options to remain available as conditions change. It enables incremental responses to emerging pressures while retaining the capacity to adjust direction if circumstances evolve.

With a clear reference point to 2050, RM2050 helps successive Water Plans build on one another rather than responding in isolation. This supports coordinated planning across cycles, reduces the risk of price shocks, and supports prudent, evidence-based investment that is proportionate to need and affordability over time.

Staging decisions through a clear decision and adaptive pathways framework also supports transparency and confidence. It makes clear what is being monitored, when decisions may need to be revisited, and how choices will be considered over time, without pre-empting future approvals or commitments.

RM2050 Pathway Logic

Strengthen Foundations → Operational, service and policy improvements and readiness → Priority investment → Major opportunities/Future Infrastructure Projects → Delivery → Adaptation



Future decisions will be guided by evidence, customer input and changing conditions. This approach allows RM2050 to remain flexible while providing a clear long-term direction.



From strategy to implementation

RM2050 sets the long-term direction, decision framework and adaptive pathways that guide future planning for rural irrigation and draining services.

The Strategy provides a structured framework for identifying and assessing future opportunities that can strengthen service outcomes, support regional prosperity and deliver long-term customer value.

Future opportunities progress through the appropriate planning, customer engagement, business case, and regulatory processes, including future Water Plans where relevant, before investment decisions are made.

This approach helps ensure future investment and service decisions reflect customer priorities, affordability, service need and long-term public value.

RM2050 provides a clear pathway between long-term strategy and future investment decisions, helping ensure options are assessed consistently, transparently and at the appropriate time.



Enabling coordinated and resilient decision-making

Engagement will continue throughout the life of RM2050 and across future water planning and delivery cycles.

Future options and investments will be informed by customer priorities and perspectives, new evidence, changing operating conditions, service needs and affordability considerations.

Where options are progressed for further assessment, customers and stakeholders can contribute to how those options are tested, refined and prioritised.

RM2050 provides a clear, long-term strategic foundation for managing change and uncertainty affecting rural water services. It brings together evidence-based analysis, a decision and adaptive pathways framework, and disciplined governance to support coordinated decision-making across successive planning cycles. and maintain flexibility.

Regular reviews and updates will keep the Strategy aligned with changing operating conditions, policy settings, service needs, customer priorities and the latest available evidence.

RM2050 equips Lower Murray Water (LMW), customers and stakeholders with a shared framework for making informed, balanced and resilient choices. Progress against the Strategy will be monitored through a Monitoring, Evaluation, Reporting and Improvement (MERI) Framework that supports continuous improvement, performance monitoring and evidence-based decision-making.

Together, these processes will ensure that the RM2050 Strategy remains focused on supporting productive agriculture, strong communities and sustainable rural water services through to 2050.





LOWER MURRAY WATER

Mildura (Head Office)

741-759 Fourteenth Street
Mildura Victoria 3500
PO Box 1438
Mildura Victoria 3502

Swan Hill (Area Office)

73 Beveridge Street
Swan Hill Victoria 3585
PO Box 1447
Swan Hill Victoria 3585

Kerang (Area Office)

56 Wellington Street
Kerang Victoria 3579
PO Box 547
Kerang Victoria 3579

www.lmw.vic.gov.au