



Wimmerera

STRATEGIC DIRECTIONS STATEMENT

AUGUST 2020



Integrated Water
Management Forums



Environment,
Land, Water
and Planning

Acknowledgement of Victoria's Aboriginal communities

The Victorian Government proudly acknowledges Victoria's Aboriginal communities and their rich culture and pays its respects to their Elders past and present. The government also recognises the intrinsic connection of Traditional Owners to Country and acknowledges their contribution to the management of land, water and resources.

We acknowledge Aboriginal people as Australia's first peoples and as the Traditional Owners and custodians of the land and water on which we rely. We recognise and value the ongoing contribution of Aboriginal people and communities to Victorian life and how this enriches us. We embrace the spirit of reconciliation, working towards the equality of outcomes and ensuring an equal voice.

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Cover photograph

Taylors Lake. Courtesy: Wimmera CMA

Barringgi Gadyin (Wimmera River) is the life blood of the Wotjobaluk Peoples, linking everything together.

Barengi Gadjin Land Council (BGLC) Country Plan

Integrated Water Management is a collaborative approach to water planning and management that brings together organisations with an interest in all aspects of the water cycle.

It has the potential to provide greater value to our communities by identifying and leveraging opportunities to optimise outcomes.

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Foreword

The Wimmera region has previously been recognised as one of the most water stressed regions in the Murray Darling Basin. In 2009 approximately 17,500km of open channel system was converted into the “Wimmera Mallee Pipeline project” it was Australia’s largest infrastructure project. At the time the region’s total water storages were less than 3%. Integrated Water Management principles have been well documented and continue to underpin the region’s decision making.

The Strategic Direction Statement describes how the region will work together to deliver the objectives and outcomes of Integrated Water Management.

Whilst the core principles of Integrated Water Management have been well documented in the Wimmera, new approaches and community expectations of water management continue to evolve.

As a forum, we look forward to achieving our vision where “Wimmera communities are maximising appropriate water use opportunities to contribute to improving life, property, community wellbeing and the economy.”

Our “Forum” is unique as it has been incorporated into the regions most recognised strategic planning process – the “Regional Partnership”. This alignment sends a clear message about the regional importance of all aspects of the water cycle and our commitment to collaboration and integration across all aspects of planning in the Wimmera. Our “Practitioners” group currently chaired by VICSES, integrates with the region’s floodplain management strategy. We believe this model of engagement delivers the maximum benefit to the region and the most efficient and effective means of delivery.

It is my pleasure to present the Strategic Direction Statement that identifies key priorities for investment, fosters a partnership culture and delivers meaningful outcomes.



David Brennan
Chair of the Wimmera IWM Forum

Acknowledgements

The Wimmera IWM Forum area includes Wotjobaluk Country. Barengi Gadjin Land Council is the Trustee for the Native Title rights and interests of the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia & Jupagalk Peoples (collectively Wotjobaluk) and this Strategic Directions Statement acknowledges the important role of Traditional Owners of this Country.

There is an opportunity for Traditional Owners to work with other stakeholders to identify and map cultural sites and values along waterway corridors in the region.

This will drive significant improvements to waterway management processes and create a knowledge base which can be managed by Traditional Owner groups.

Several Traditional Owner groups intersect with the boundary of the Wimmera IWM Forum area. Each project working group will liaise with relevant Traditional Owners to determine the appropriate approach and level of involvement in planning and delivery.

The Wimmera Strategic Directions Statement has been developed in collaboration with:





At a glance

The Wimmera IWM Strategic Directions Statement highlights the key challenges in the region and also identifies collaborative IWM opportunities that can improve resilience and liveability in cities and towns in the region.

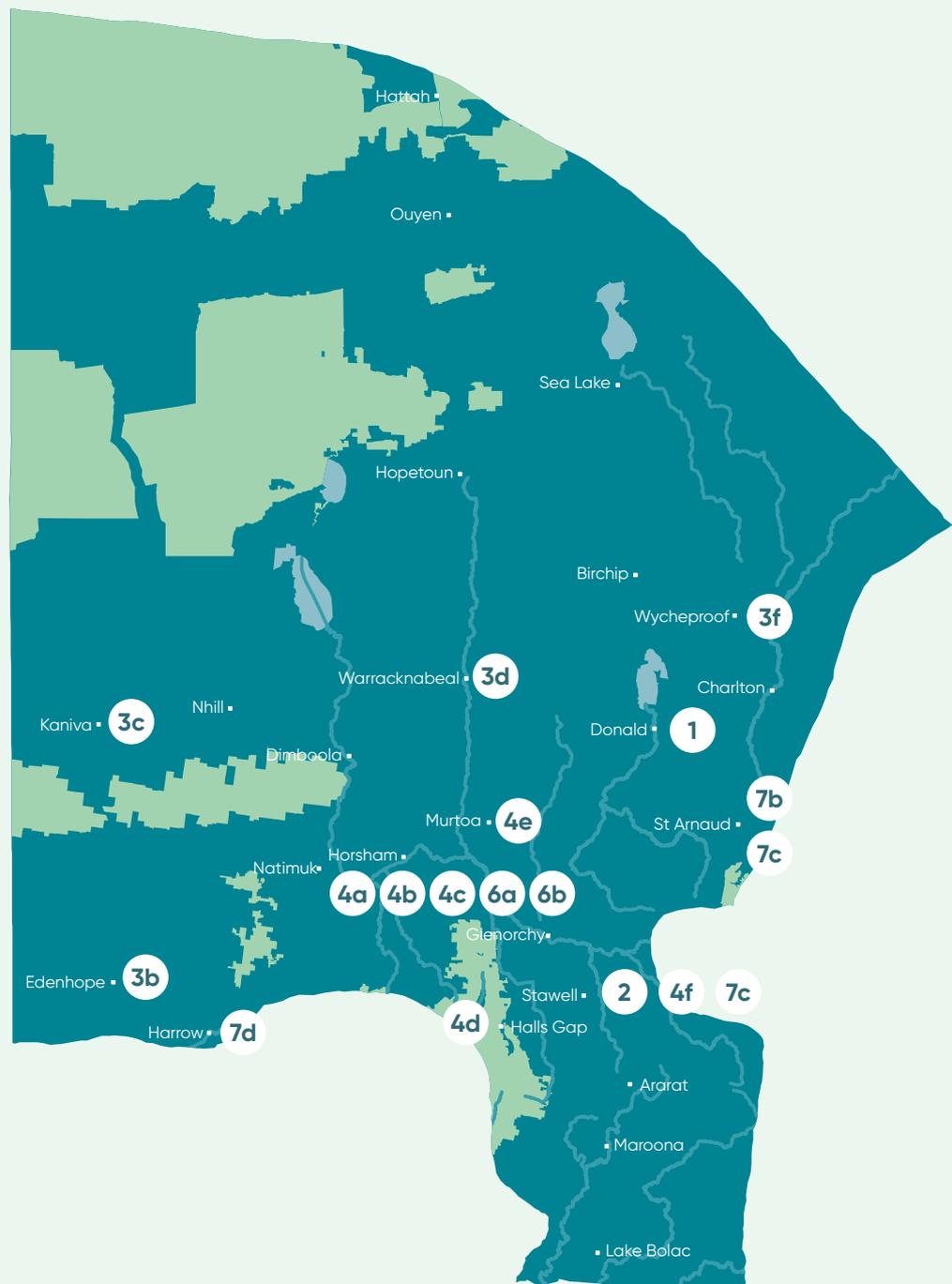
Our Vision

Wimmera communities are maximising appropriate water use opportunities to contribute to improving life, property, community wellbeing and the economy.

Strategic outcomes:

1. Safe secure and affordable supplies in an uncertain future
2. Effective and affordable wastewater systems
3. Avoided or minimized existing and future flood risks
4. Healthy and valued waterways, wetlands and waterbodies
5. Healthy and valued landscapes
6. Community values reflected in place-based planning
7. Jobs, economic benefits and innovation

Projects with multiple delivery locations include – 3a, 3e, 5a, 5b & 7a.



IWM opportunities

Partners of the forum are committing their best endeavours to ensure priority projects and strategies are progressed in line with the shared vision and strategic outcomes of the Wimmera IWM Forum.

IWM Opportunities Consolidation

1 Donald IWM Plan

Development of a plan considering urban growth and land use, including a broad community discussion to define a vision, objectives and assess options for future holistic water management in the town.

2 Mooney Dams Reactivation

A project to improve the quality of water within existing dams and enable irrigation of a nearby town sporting precinct whilst enhancing green space opportunities in the vicinity.

Fit for Purpose Water for Green Spaces

3a Wimmera Drought Resilience Masterplan

A comprehensive review of IWM opportunities for key towns in the shires of Yarriambiack, West Wimmera, Hindmarsh and Buloke. Opportunities from stormwater, wastewater treatment plants and raw supply will be considered in consultation with local communities to reduce the reliance on potable supply.

3b Enhancing water for Lake Wallace & Edenhope Recreation

Investigation to identify and enhance existing water sources for the Lake Wallace and Edenhope area to provide recreation opportunity.

3c Kaniva Cricket club precinct water security

The project will investigate options for reducing reliance on potable supply for the sporting facility through use of IWM opportunities.

3d Whitton Swamp

This project will investigate options for providing water to a former water storage and wetland to create additional community recreation opportunities.

3e Greening town streets

In concert with the drought resilience masterplan, this investigation will explore opportunities to improve the greening of regional town streets to enhance liveability.

3f Wycheproof Wetlands Development

This project involves redeveloping old redundant water storages into a wetland system for community recreation opportunities.

Maximise Reclaimed Water Opportunities

4a Horsham West Reclaimed Water

This project identified robust opportunities and strategies for reusing recycled water from the town wastewater treatment plant, to improve water security in Horsham longer term, and to allow more flexible and strategic planning.

4b Fit for purpose water for existing Public Open Spaces Irrigated by Stormwater

The project looks to capitalise on existing stormwater retention systems within the city to opportunistically irrigate from this source rather than potable supply.

4c Horsham Water Grid

An investigation to determine the infrastructure required to enable water of varying sources to be utilised within the township.

4d Water Sharing rules and Water Supply Backup for Lake Wartook

A project to analyse the consumption of water from the Lake Wartook system, to create rules for future water use that will improve water security.

4e Murtoa reclaimed Water from Grain Bunkers

Uptake of a previously undervalued water supply source to provide additional water to town green infrastructure.

4f Stawell Gold Mine – dewatering opportunities

This project will investigate the opportunity and viability of using dewatering water from the Stawell Gold mine within the parks and gardens of the Stawell township.

Potable Water Substitution Investigation – phase 1 delivery

5a Potable Water substitution for Green Spaces

A desktop assessment of current regional potable water demand for public green spaces. Water consumption and costs to connect to raw water were identified and projects prioritised.

5b Fit for purpose watering of green spaces

An extension of the potable water substitution project by considering alternative water source opportunities for green spaces such as stormwater and recycling options.

City to River – Incorporating IWM Outcomes

6a Horsham City to River – Incorporating IWM Outcomes

A project to enshrine the principles of IWM into the HRCC City to River design and implementation.

6b Burnt Creek – Waterway access to Green Lake

A concept idea to create a recreational transport link between natural assets to connect communities

IWM Future Opportunities

7a Potable water for West Wimmera towns

This project aims to investigate alternative opportunities for potable supply to several townships in the West Wimmera Shire, including Edenhope, Harrow, Goroke, Apsley and Kaniva.

7b St Arnaud amenity of water in storage

This project aims to transform a current water storage to a healthy and valued public space for passive recreation opportunities for the community.

7c Urban Creek transformation in Rural Towns

This project aims to transform and return creeks from current concrete lined channels to natural systems, creating passive recreation opportunities for their community.

7d Repair weir at Harrow for watering Johnny Mullagh Memorial Park

The proposed works to repair and enhance the weir crossing, including a necessary fish ladder/passage structure, would provide emergency egress for residents in case of a bushfire, provide increased water for irrigation of the Crown Reserve, whilst creating long term sustainable benefits for fish populations, waterway health, and recreational fishing values.



Chapter 1

The way forward

An unprecedented opportunity to progress water cycle planning and management in Victoria through collaboration.

Introduction

The Integrated Water Management (IWM) Framework for Victoria (September 2017) is designed to help regional stakeholders to work together, ensuring the water cycle contributes to the liveability of towns and cities in Victoria, with communities at the centre of decision making.

The Integrated Water Management (IWM) Framework for Victoria (September 2017) is designed to help regional stakeholders to work together, ensuring the water cycle contributes to the liveability of towns and cities in Victoria, with communities at the centre of decision making.

The central premise of an IWM approach is the overall acceptance that managing urban liveability and resilience is a shared responsibility and that water is a key enabler to achieving these shared aims.

To facilitate this, IWM Forums have been established across the state to identify, prioritise and oversee the implementation of critical collaborative opportunities. This Strategic Directions Statement has been produced by the Wimmera IWM Forum to capture and communicate those opportunities.

IWM seeks to build on existing partnerships and planning processes. In the Wimmera region, stakeholders such as local government, catchment management authorities and water corporations engage with their communities regularly to improve service delivery and urban planning. Community aspirations are embedded in the strategies and operational plans for organisations.

These aspirations reflect a desire for liveable and productive places and vibrant communities. The way in which we plan and use water is fundamental to ensuring these aspirations are realised.

Regional IWM is also strengthened by the formation of Catchment Partnership areas under the Government's Our Catchments, Our Communities Integrated Catchment Management Strategy for Victoria (2016-19). The Traditional Owners of land are active participants in water and waterway management across the region. For example, the Barengi Gadjin Country Plan 2014-2034 sets out goals for river and catchment management as well as community well-being which can be enabled through water management.

What is a Strategic Directions Statement?

This Strategic Directions Statement (SDS) articulates the regional context, the shared vision and the strategic water-related outcomes for the Wimmera Region IWM Forum region.

Integrated Water Management

Integrated Water Management is a collaborative approach to water planning that brings together organisations that influence all aspects of the water cycle. It has the potential to provide greater value to our communities by identifying and leveraging opportunities to optimise the outcomes of the water cycle.

This SDS includes a list of IWM opportunities, including projects and strategies, developed in collaboration by the Wimmera region IWM Forum partners.

Partners of the Forum have committed their organisations to apply their best endeavours to:

- Ensure priority projects and strategies are progressed in line with the shared vision and strategic outcomes of the Wimmera IWM Forum; and to
- Support DELWP to progress priority strategic enablers for IWM in Victoria.

It is envisaged that the SDS will be a living document which will be updated to reflect the current Wimmera Region IWM Forum priorities and opportunities.

Enduring collaboration

IWM is an evolving process that seeks to coordinate and balance many views and interests in the water sector around common goals and shared outcomes. IWM Forums collaborate and oversee ongoing IWM planning. The IWM Forum cycle is summarised on the next page.

How we're working together

The Wimmera IWM Forum identifies, coordinates and prioritises areas that would most benefit from collaborative and place-based water management planning and delivery.

To ensure IWM is successful and enduring across the region, Forum partners have committed to the promotion of a collaborative and shared values culture within their own organisations and beyond through their work with key water cycle delivery partners and local communities.

The Wimmera IWM Forum is governed by an open and transparent IWM planning process (Figures 1 and 2). This process assumes a holistic, whole-of-cycle approach to determining water cycle solutions, considering regulatory accountabilities and service delivery responsibilities.

Each organisation plays an important role in the decision-making and management of the water resources and assets for the entire catchment.

Collaboration across Forum partners ensures balanced consideration of the complex economic, environmental, cultural and community benefits and impacts associated with the range of proposed IWM projects and work programs.

The Wimmera IWM Forum partners will continue to work together and develop productive, enduring relationships to realise the shared vision for the region.

Further information on the IWM Forum's governance and planning framework is outlined in the Integrated Water Management Framework for Victoria, available at <https://www.water.vic.gov.au/liveable/resilient-and-liveable-cities-and-towns/iwm-framework>

Recognising Aboriginal values in water planning and management

The Wimmera IWM Forum is committed to working in partnership with Aboriginal Victorians across landscapes, communities and natural resources.

Several Traditional Owner groups intersect with the boundary of the Wimmera IWM Forum area. Each project working group will liaise with relevant Traditional Owners to determine the appropriate approach and level of involvement in planning and delivery.

Figure 1 IWM Planning Governance Structure

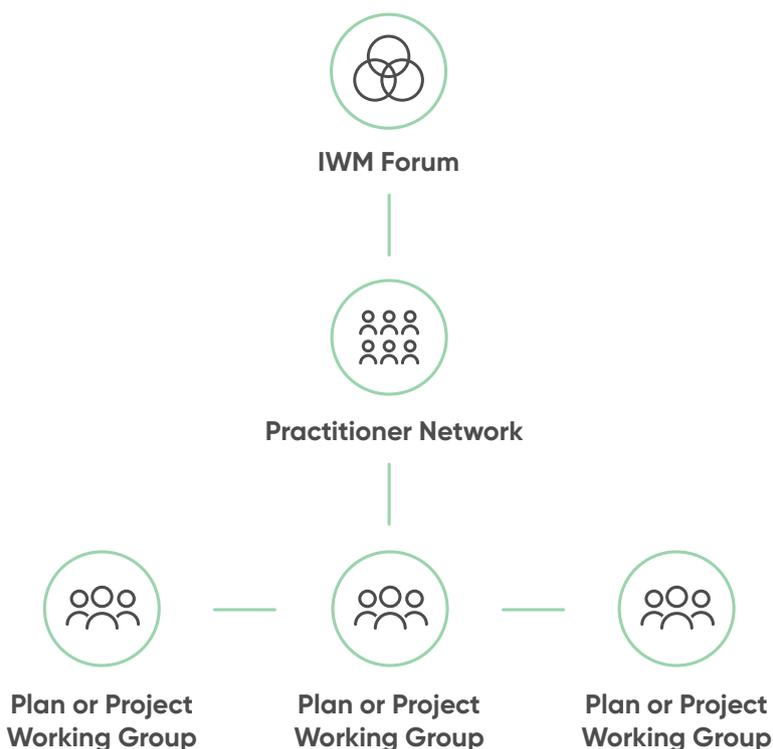
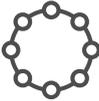


Figure 2 IWM Forum planning and delivery process

		Outcomes	Participants	
Phase I				
	Establish Organisational leaders come together in collaborative IWM Forums to discuss integrated water management opportunities and priorities for each region	Preliminary work on regional characterisation (offline, where necessary) Agree vision and objectives, goals & targets (where appropriate) Agree criteria for selection and prioritisation of opportunities Opportunities identified and prioritised IWM Plan Working Groups form to progress priority projects and build intra-organisational support (offline)	Local governments Catchment Management Authorities Water corporations Department of Environment, Land, Water and Planning Chair Others as relevant	←
↓				
Phase II				
	Develop Working groups will form to develop IWM Plans for prioritised projects	IWM Plan Working Groups develop objectives, place-based outcomes, and service levels for each project Technical and economic analysis, cost allocation, business case development into a 'prospectus' to attract investment IWM Plan Working Groups plan project delivery; report progress to IWM Forums	Relevant organisations who are a part of a sub group	← IWM Forums collaborate and oversee ongoing IWM planning
↓				
	Incorporate Organisations incorporate relevant elements of IWM Plans in their own planning system, e.g. Council and corporate plans	IWM Plan Working Groups to take commitments to their Board or Councillors for endorsement IWM Plan Working Groups to incorporate elements into their own organisational planning systems Report back to IWM Forum and prepare for next round of opportunity identification and prioritisation	Individual organisations who have committed to a project	←
↓				
	Deliver IWM Plans are implemented	IWM Plans implemented Additional community value added through collaborative planning Economic savings through shared costs Improved resilience and liveability of cities and towns	Individual organisations who have committed to a project	←



Chapter 2

IWM in the Region

Understanding why an integrated approach to water planning and management is critical for the Wimmera IWM Region now and for the future.



Vision and Outcome Areas for the Wimmera IWM Forum Region

Outcomes



**Safe, secure and affordable
supplies in an uncertain future**



**Effective and affordable
wastewater systems**



**Avoided or minimised existing
and future flood risks**



**Healthy and valued waterways,
wetlands and water bodies**

Objectives

A diverse range of water
supplies and resources
which are fit for purpose

Meets public health and
environmental standards

Communities and properties
that are resilient to local flood
risk

Improved water quality

Water quality meets regulatory
standards and community
expectations

Efficient and effective
wastewater systems with
servicing needs aligned
with future town and land
use planning

Appropriate levels of flood
protection and mitigation
including adaptation for climate
change

Improved stream flow patterns

Efficiently and effectively
manage water usage
and demand

Waste-to-resource
opportunities are maximised

Proactive planning to prepare
for and manage flood risk

Improved biodiversity and
amenity of riparian corridors
and edges

Secure and adaptable water
supply portfolios

Our Vision

Wimmera communities are maximising appropriate water use opportunities to contribute to improving life, property, community wellbeing and the economy.

IWM Outcome Areas

The region is seeking to achieve seven key outcomes through IWM. Each of these will have a significant role in shaping the liveability, prosperity and resilience of our cities and towns. These outcome areas provide indicators to assess the effectiveness of the various IWM opportunities, recognising that these outcomes are in themselves co-dependant.



Low-emission solutions

IWM opportunities that minimise the release of greenhouse gas (GHGs) emissions will be considered by the Forum as solutions are evaluated for implementation.



Healthy and valued landscapes

Active and passive recreation supported by water

Improved connectivity and access for active transport links

Urban landscapes retain moisture for cooler, greener cities and towns



Community values are reflected in place-based planning

Diverse landscapes that reflect local conditions and community values

Traditional owner values, needs and aspirations associated with water protected, enhanced and reintroduced

Water sensitive communities that are empowered and engaged



Jobs, economic benefits and innovation

Jobs and local economies, including industry, tourism and agriculture, supported by water

Strong governance and collaboration models that evolve to deliver innovative solutions

Local water related risks and issues are understood and managed by community

Recognise the competing values that exist for community use of public open space

Regional context

The Wimmera IWM Forum region covers an area of approximately 63,200 square kilometres, extending from Lake Bolac in the south to Ouyen in the north, reaching as far as St Arnaud and Donald to the east and Apsley in the west.

Horsham is the largest city in the region by a substantial margin, though other towns include Stawell, Ararat, Ouyen and Donald. The region includes more than 20 smaller towns, making the region and its water opportunities very diverse.

The Wimmera regions environment ranges from mountains and plains, to desert; from moist foothill forest to Box–Ironbark Forest, Buloke Woodland, grasslands, wetlands and Mallee Heath. The average annual rainfall varies from 1,000 mm in the Grampians to as little as 300 mm across the Northern Plains.

Population

The region has an estimated population of 61,800.

Climate Change

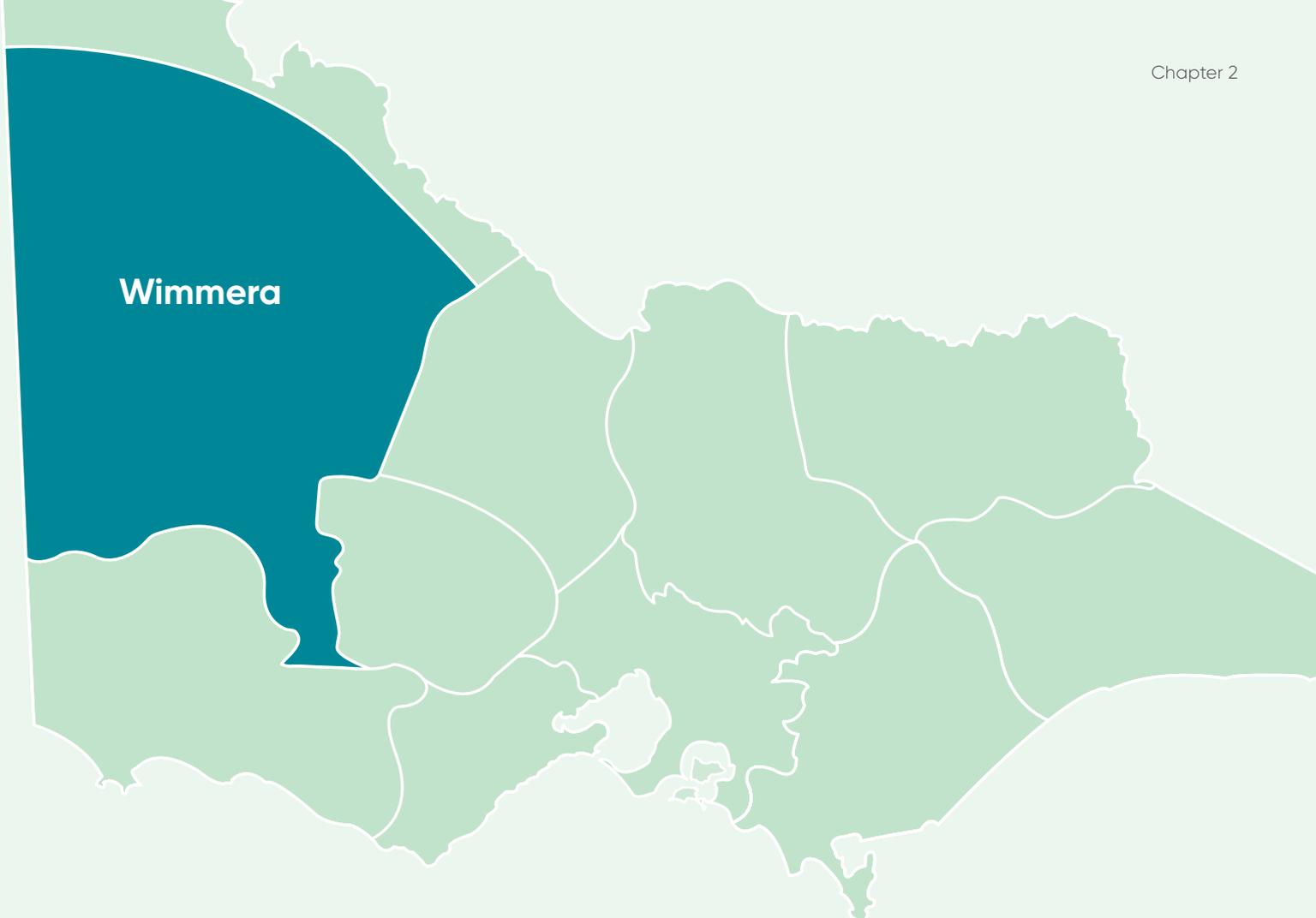
The Wimmera Region faces a warmer and drier future. By 2050, average annual maximum temperatures across the region are projected to rise by 1.6°C to 2.2°C (median value). This will be amplified in urban centres due to the prevalence of darker and harder surfaces, leading to environmental and human health impacts. Ensuring the provision of fit for purpose water for the region's urban greening will be a key priority in enhancing liveability and resilience for the community and environment.

The average annual rainfall is predicted to decrease by 5–12 per cent by 2050 (median value) – primarily impacting the 'cool' season. This presents a challenge for the region, as there will be an increased demand for urban water resulting with a hotter and drier climate.

*Climate information sourced from the Wimmera Southern Climate Projections report 2019.



Wild Action. Courtesy: Wimmera CMA

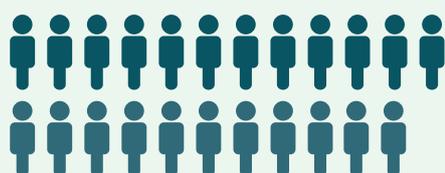


Wimmera

POPULATION CHANGE

61,800* NOW (2018)

58,000 BY 2036



THE REGION

- **20%** DRYLAND PASTURE
- **5%** NON-FARMLAND (RURAL LIVING, ROADS AND WATER BODIES)
- **32%** NATIVE VEGETATION
- **42%** BROAD ACRE CROPPING
- **<1%** HORTICULTURE
- **<1%** URBAN

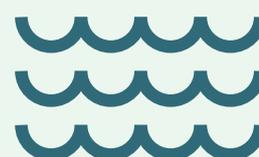


ANNUAL RAINFALL

↓ 5-12% DECREASE
BY 2050 UNDER MEDIUM AND HIGH CLIMATE CHANGE EMISSIONS SCENARIOS (MEDIAN VALUE)



WATERWAYS



TEMPERATURE

↑ 1.6-2.2°C INCREASE
BY 2050 UNDER MEDIUM AND HIGH CLIMATE CHANGE EMISSIONS SCENARIOS (MEDIAN VALUE)



WIMMERA BASIN
58%
IN A 'MODERATE' CONDITION

* Based on VIF2019 projections at SA2 level.

The case for IWM in the Region



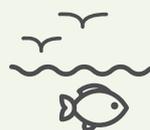
Safe, secure and affordable supplies in an uncertain future

The Wimmera region sources water from a number of catchments both locally within the region, and from outside the region via the Glenelg and Murray Rivers. The Wimmera-Mallee Pipeline is an important element of the Victorian water grid, which provides water from the Grampians to ensure security of supply for urban and rural customers in the Wimmera, Southern Mallee and South-West Loddon region. The primary source of water for the region is surface water and groundwater supplies along with local utilisation of recycled water and urban stormwater.

The Wimmera Mallee Pipeline; completed in 2010; has contributed significantly to the future security of water supply across the Wimmera-

Mallee region. The supply to existing urban, rural and industrial users has a high degree of water security and is resilient to future climate scenarios at current levels of demand. Future supplies would be compromised under increasing demands and more extreme climate scenarios. Supplies to other demands, such as recreation lakes are public open spaces are typically impacted more significantly. The provision of alternative water sources and demand management are key strategies to avoid shortfalls.

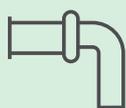
Partners in the region are currently working to plan and deliver new pipeline systems to improve supply, security, water quality and support economic development within and outside the region.



Healthy and valued waterways, wetlands and water bodies

The Regional Waterway Strategies for the Wimmera, North Central and Glenelg Hopkins show that the waterways, wetlands and waterbodies of the region are embraced by the urban and rural communities for their aesthetic, recreational, tourism and restorative appeal. These values can be challenged by poor water quality and are suffering from degradation due to surface water runoff from impervious surfaces, untreated stormwater and wastewater discharges. Some waterways are also suffering from flow stress due to water extractions for urban supply, agricultural and stock water.

There is a need to take a whole of catchment approach to waterway health, recognising both the urban and rural impacts on waterways and waterbodies and the varying needs and values connected to waterways. Many of the waterways and wetlands in the area contain a rich and diverse range of important cultural heritage sites and form a culturally important and significant part of country for Traditional Owner groups in the region.



Effective and affordable wastewater systems

There are reticulated sewage systems within fifteen towns across the Wimmera region. These systems collect and treat sewage at wastewater management facilities. Other small towns in the region continue to use onsite septic systems to treat their wastewater. Wastewater management has been progressively improved in recent years through the delivery of new sewer schemes to small towns such as Rupanyup and Great Western. GWMWater is currently planning a new scheme for Goroke. Small town wastewater management is an important issue across the region from an environmental, health, technical, governance and financial perspective.

The most effective strategy for wastewater management combined with town planning and the provision of other infrastructure needs is being investigated through partnerships between local councils and GWMWater.

Efficient and 'high-value' reuse of treated wastewater is an important potential resource for the region. There are nine towns with wastewater facilities producing Class C water for on-site and/or off-site reuse. Reclaimed water is primarily utilised for irrigation of agricultural land, vineyards, local sporting facilities and parks. Reclaimed water use in the region totals around 2.6 gegalitres (GL).



Avoided or minimised existing and future flood risks

Floodplains are a valued part of the ecosystem in the Wimmera region. The 'flooding' process provides essential nutrients to the region's agricultural land, but major flood events can also have significant impacts on agricultural economies.

In an urban context, flooding is more of a challenge as the majority of towns are built adjoining rivers, creeks or wetlands. Significant economic damage has been experienced from flooding on several occasions, with notable events affecting Horsham, Glenorchy, Warracknabeal and Charlton, as well as the towns of Dimboola, Jeparit and Halls Gap. Climate change is predicted to bring more intense rainfall events which may create further flooding challenges. It is essential to manage the economic, social, environmental and cultural values from floodplains in a balanced way whilst also having regard for their inherent risks. This will be particularly relevant in the context of increased extreme rainfall events and a strong desire for the community to increase the utilisation of waterways.

Projects to reduce flood risk to homes and businesses often provide an opportunity to support IWM. Retention basins in open space areas can also be utilised as water treatment areas or providing dual storage for flood retention and water harvesting. Integration of green infrastructure also contributes to reduced flows to drainage systems, helping to reduce flood risk in urban areas.



Healthy and valued landscapes

Healthy landscapes are valued in the Wimmera region, playing a key role in the liveability of urban and rural communities.

The support of well-connected public open space and recreational areas within the urban environment are important for health, well-being and serenity. The landscapes adjoining waterways are often important for active transportation and recreation. It is estimated that these areas stimulated more than \$31M in contributions to local economies during 2018-19¹. Councils in the region recognise this and are actively promoting healthy and valued landscapes that integrate land use and water planning.

Healthy rural landscapes are also a priority in the region, and there is often a close connection between urban and rural land and water management. Agriculture is a key industry for rural towns and also a large water user. Urban areas generate recycled water and stormwater which can be utilised to support nearby rural water needs in some areas, creating a mutually beneficial relationship between economies.



Jobs, economic benefits and innovation

Major industries in the region include Agriculture, mining and manufacturing. One of the economic strengths of the region is its diversity. The regional economy is projected to increase and education, tourism and hospitality display higher growth in recent times than traditional industries.

Several studies have captured the potential for the region to develop innovative food production systems to meet the demands of a growing population. These could include introducing hydroponics as well as the expansion of the diversity of primary production to include more viticulture and horticulture.

Water plays a key role in supporting industry and economic development in the region. The potential for reticulated water and sewerage services in some small towns has been highlighted as a potential catalyst for regional growth and development.

The significant tourism and recreation economy in the region is also strongly linked to the health and amenity provided by the region's waterways, lakes and towns. Raw and recycled water supplies also support agricultural economies in the region. As water supply challenges emerge, there is opportunity for innovation and collaboration with industry to ensure economic development and water planning are coordinated.



Community values reflected in place-based planning

The relationship between public health and wellbeing, and the environment is becoming increasingly recognised as an area of importance. The creation of greener neighbourhoods and providing residents with access to waterways and green space has the potential to support environmental and socio-economic outcomes.

Development of new areas and redevelopment of existing areas provides an opportunity to actively engage communities in planning and design, helping to increase dialogue to aid understanding and education around water. Key development areas such as the Horsham River to City project provide opportunities to enhance local waterways, deliver recreational

space and harness new water sources to achieve benefits for communities, including health and well-being. Given the diversity of urban areas in the region, there is a need for a similarly diverse approach to engage and recognise community needs.

¹Wimmera Southern Mallee Socio-Economic Value of Recreational Water 2019 - . Street Ryan 2019 -



Chapter 3

IWM opportunities

A portfolio of IWM projects and strategies for which IWM collaborative partners have committed themselves to applying their best endeavours to progress.

A History of Water Management

The Wimmera region has a strong & proud history of water management with the construction of a stock and domestic channel supply system covering some 2.9 million hectares (12% of the Victoria) which was once one of the largest water supply systems in the world through 17,500kms of earthen channels.

Whilst this system allowed the region to develop and prosper for over 100 years it was inefficient with up to 85% of water diverted from its headwaters lost through seepage and evaporation.

Construction of a replacement, piped system was undertaken throughout the Millennium Drought with the Northern Mallee Pipeline commencing in 1994 and the last leg of the Wimmera Mallee Pipeline being laid in April of 2010, 6 years ahead of its originally targeted timeframe. Many believe, without this fast paced delivery the region may not have made it through the drought with many headworks storages being

almost dry and the efficient system barely enabling the region to scrape through before welcoming rains in late 2010 and 2011.

The pipeline saves on average 103 billion litres of water a year compared to the previous channel consumption. It provides a continuous water supply to approximately 7,000 rural customers and 36 towns across the Wimmera and Mallee as well as water for the environments rivers, creeks and wetlands through water allocations brought about by savings.

https://www.water.vic.gov.au/__data/assets/pdf_file/0029/67529/DELWP-MillenniumDrought-web-SB.pdf.pdf

<https://www.gwmwater.org.au/our-water-supply/history-of-our-water-supply/constructing-the-wimmera-mallee-pipeline#a1890>



Brim Silo. Courtesy: Wimmera CMA

Success stories

Rupanyup – Creek Restoration

Wimmera people recognise the importance of water in many aspects of their lives and the Dunmunkle Creek Restoration Project in Rupanyup demonstrates the value of integrated water management in the region.

The implementation of the Wimmera Mallee Pipeline resulted in redundant water storages in the town. A flood study investigation in the Dunmunkle Creek had identified that these water storages were restricting floodwater flows. Flood modelling demonstrated the restrictions caused flooding in the town as the storages were constructed within the bed and banks of the Dunmunkle Creek, utilising gravity to provide water.

The Dunmunkle Creek alignment and profile has been restored after the decommissioning of the water storage reservoirs eliminating inundation of up to 20 houses in the Rupanyup township during a 1% flood. The area is now being developed to create a community public open space with walking trails and native plantings to provide a recreation space for the Rupanyup community to enjoy.

Horsham – Racecourse Wetlands

Lush green turf is just one of the benefits brought about by several projects to enhance the capture and treatment of stormwater to the west of the Horsham central business district in recent years.

The development of a series of water sensitive urban design features to capture and enhance the quality of stormwater before it passes into the Wimmera River has been modified over the years to maximise the volumes of water captured. Modifications have reduced the requirement for potable water supplied to irrigate several sporting fields including hockey, croquet and bowls as well as public parks in the centre of the town. The system also helps to reduce the likelihood of stormwater flooding through the capture of the Horsham central business district and nearby residential areas.

Weir Park Wetlands

This artificially constructed environment opened at the turn of the century (2000), creating a public open space for communities of the future to enjoy.

One of the first such projects in the Wimmera and indeed regional Victoria, the Weir Park Wetlands allow the collection and cleansing of urban stormwater from adjacent residential development and the Grains Innovation Park whilst creating additional floodplain storage to reduce the impact of future floods on nearby residents. Treatment includes litter traps, sediment ponds and lakes along with wetland plants and shrubs to cleanse water prior to entering the Wimmera River downstream of the Horsham weir providing much needed flow especially during dry times.

The area is an enormously beneficial recreation facility, with walking tracks and rest areas providing passive recreation alongside the Wimmera River corridor.



Horsham Racecourse Wetlands. Courtesy: Horsham Rural City Council

State-wide and region specific initiatives

This document outlines priority IWM opportunities for the Wimmera region. This includes strategies that will direct IWM in the region and specific projects that will deliver outcomes on-the-ground.

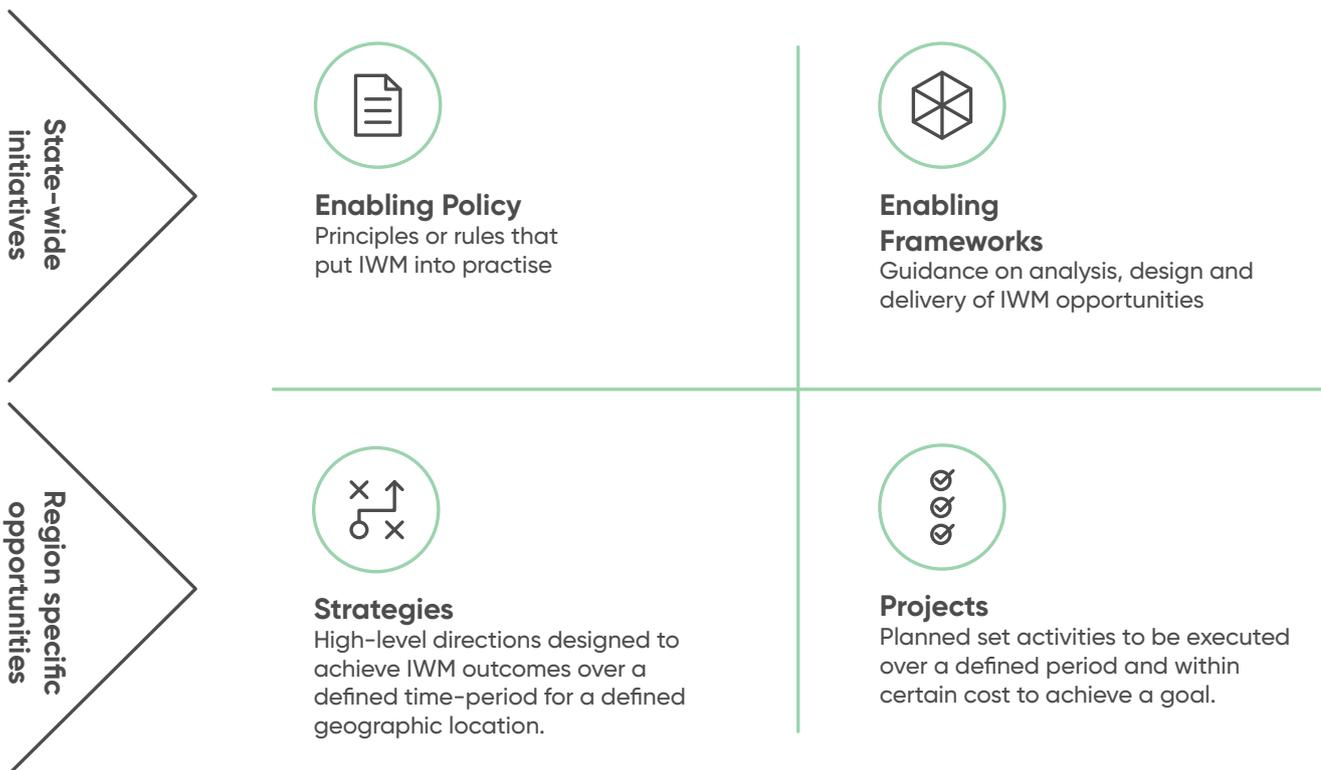
To ensure IWM opportunities are successful and delivered efficiently, work is also being done at a state-wide level.

Across Victoria, IWM Forums have identified a range of strategic policy and framework enablers to address barriers to integrated water management and planning and achieve water related benefits in priority areas.

A prioritised list of enabling policies and frameworks is being consolidated by DELWP.

A Resilient Cities and Towns (RCT) Reference Group was established to support the implementation of integrated water management and planning across the state. The Reference Group provides advice to DELWP on the development and implementation of key initiatives in relation to policy, processes or knowledge gaps.

IWM framework at a State-wide and regional level

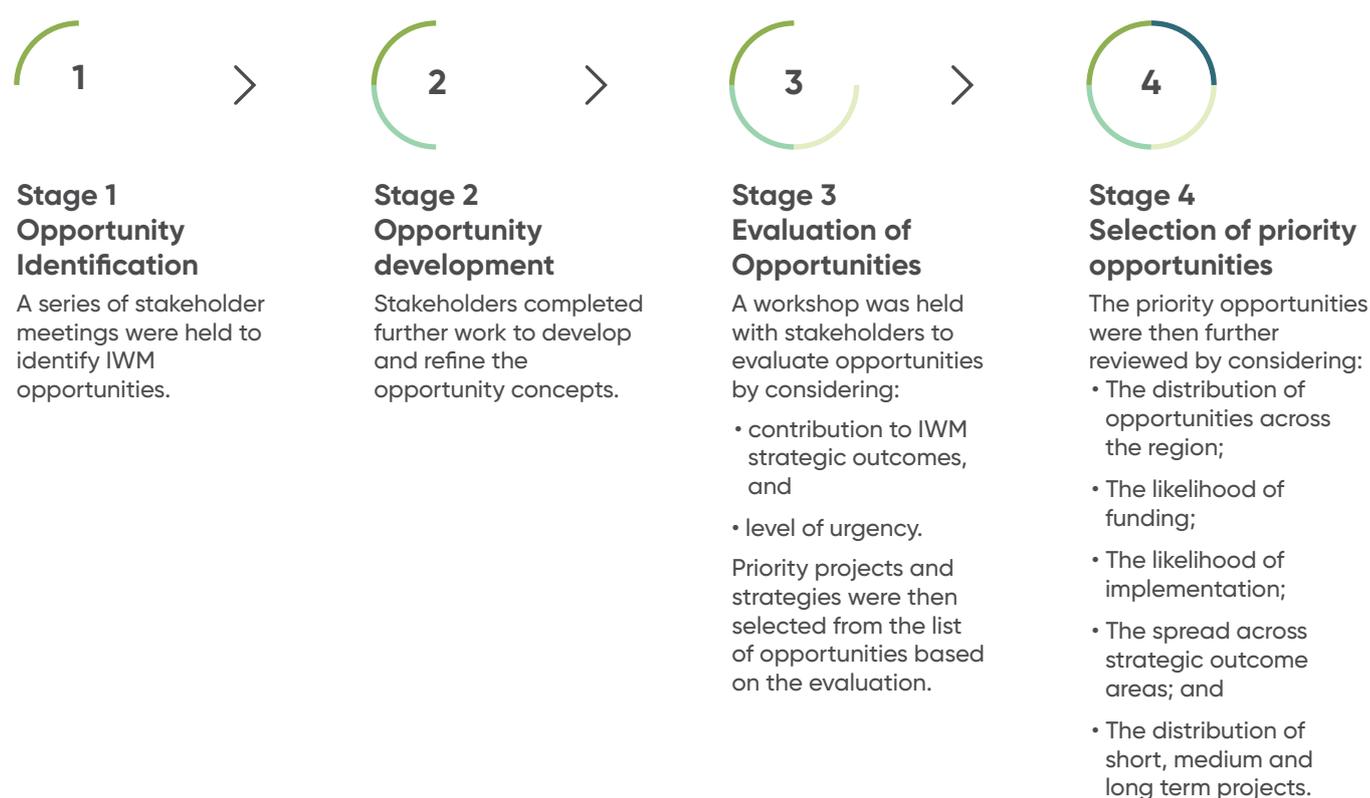


IWM opportunities: How were they selected?

IWM opportunities that link to and address IWM challenges for the region were identified and developed by the nominated practitioners of participating organisations. The process was an iterative, transparent and inclusive approach, as outlined in Figure 3.

This list of opportunities is dynamic and will be reviewed and updated as required to reflect the Forum's priorities.

Figure 3: The IWM opportunity prioritisation process



IWM project & strategy opportunities – overview

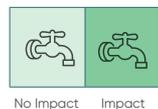
#	Consolidation Name	IWM opportunity	Strategic outcomes						Location	
1		Donald IWM Plan								Donald
2		Mooney Dams Reactivation								Stawell
3a	Fit for Purpose Water for Green Spaces (& Recreation)	Wimmera Drought Resilience Masterplan								Wimmera Councils
3b		Enhancing water for Lake Wallace & Edenhope recreation								Edenhope
3c		Kaniva Cricket club precinct water security								Kaniva
3d		Whitton Swamp								Warracknabeal
3e		Greening town streets								All shires
3f		Wycheproof Wetlands Development								Wycheproof
4a	Maximise Reclaimed Water opportunities	Horsham West Reclaimed Water								Horsham Rural city council
4b		Fit for purpose water for existing open spaces irrigated by stormwater								Horsham Rural city council
4c		Horsham Water Grid								Horsham
4d		Water Sharing rules and water supply backup for Wartook								Lake Wartook
4e		Murtoa Reclaimed Water from grain bunkers								Murtoa
4f		Stawell Gold Mine - dewatering opportunities								Stawell
5a	Potable Water Substitution Investigation - Phase 1 delivery	Potable water substitution for Green Spaces								Regional opportunities
5b		Fit for purpose watering of Green Spaces								Regional opportunities
5c	City to River - Incorporating IWM Outcomes	Horsham City to River - Incorporating IWM Outcomes								Horsham
5d		Burnt Creek - Waterway access to Green Lake								Burnt Creek & Green Lake
6a	IWM Future Opportunities	Potable water for West Wimmera towns								West Wimmera townships
6b		St Arnaud amenity of water in storage								St Arnaud
6c		Urban Creek Transformation in Rural towns								Stawell & St Arnaud
6d		Repair weir at Harrow for watering Johnny Mullagh Memorial Park								Harrow

A summarised list of priority IWM opportunities is shown in the table below, with more detail in the following section. Please note that this list is dynamic and will continue

to be updated to reflect the current Wimmera IWM Forum's priorities and opportunities. The projects are grouped in themes, but are not ranked. Partners of the Forum will

ensure priority projects and strategies are progressed in line with the shared vision and strategic outcomes of the IWM Forum.

Shade scale



Project opportunity status



Strategy opportunity status



Scale	Quick Win Y/N	Lead	Partners	Project Type	Project Status
Town/City	N	North Central CMA	Buloke Shire Council	Strategy	
Town/City	Y	Northern Grampians Shire Council		Project	
Inter-Forum	N	GWMWater	Buloke, Hindmarsh, West Wimmera & Yarriambiack Shire Councils	Strategy	
Town/City	N	West Wimmera Shire Council		Project	
Lot Scale	Y	West Wimmera Shire Council		Project	
Lot Scale	N	Yarriambiack Shire Council		Project	
Forum Area	N	All shires		Project	
Lot Scale	Y	Buloke Shire Council	GWMWater, Wimmera CMA	Project	
Town/City	Y	Horsham Rural City Council		Project	
Sub Catchment	Y	Horsham Rural City Council		Project	
Town/City	N	Horsham Rural City Council		Strategy	
Forum Area	Y	GWMWater	Wimmera CMA	Strategy	
Town/City	N	Yarriambiack Shire Council	Grain Receival Company	Project	
Town/City	N	Northern Grampians Shire Council	Stawell Gold Mine	Project	
Forum Area	N	GWMWater & all councils		Project	
Forum Area	N	GWMWater & all councils		Project	
Town/City	N	Horsham Rural City Council	GWMWater, Wimmera CMA	Project	
Sub Catchment	N	Horsham Rural City Council		Project	
Inter-Forum	N	West Wimmera Shire Council		Strategy	
Town/City	N	Northern Grampians Shire Council	GWMWater	Project	
Town/City	Y	Northern Grampians Shire Council	North Central CMA, GWMWater	Project	
Lot Scale	Y	West Wimmera Shire Council		Project	

Priority Portfolio of IWM Opportunities

Regional enablers

Three projects have been identified which will enable the delivery of IWM across the region. These are highly collaborative opportunities with broad reach that will benefit a large number of stakeholders and support and elevate integrated water management.

Project 5a - Potable Water Substitution for Green Spaces

A desktop assessment of current potable water demand of public, club and school green spaces in the region. The project looked at water consumptions for areas including;

- Sporting grounds – ovals, tennis courts, bowling greens, golf courses, other.
- Public green spaces – gardens, median strips, other.

A hydraulic assessment and water supply connection design and estimated costs to connect to rural (raw water) supply for priority sites was conducted

as part of a desktop assessment with some local intelligence fed in for more prominent sites.

It looked at their historic consumption and not at what they may use with a cheaper and more fit-for-purpose rural supply.

The project was then able to determine a strategic priority approach to implement potable water substitution for those public green space. This project list will be the focus of future IWM implementation efforts in the region.

Project 3a - Wimmera Drought Resilience Master Plan

In a similar approach to the Potable Water Substitution for Green Spaces project, the Wimmera Drought Master Plan will investigate and recommend options for alternative water supplies to existing infrastructure within four (4) regional municipalities (Hindmarsh, Yarriambiack, West Wimmera and Buloke), each with multiple small towns. The project will utilise and build upon work from the "Green Spaces" project but extend the use of stormwater and wastewater reuse opportunities, with the aims of providing drought resilience for these communities in a changing climate.

Project 4a - Horsham West Reclaimed Water

This project investigated opportunities for improved reuse of reclaimed wastewater in the Horsham urban area, which will allow targeted infrastructure planning by Horsham Rural City Council. The main objective of the study was to quantify available reusable water, and to prioritise options for reuse, allowing targeted and strategic identification of funding opportunities.

The focus of the report is the reuse of unallocated water from the Horsham wastewater treatment plant and where the water could be utilised in the township to benefit a range of sport and recreation facilities across the town.



Yarriambiack Creek. Courtesy: Wimmera CMA

IWM Opportunities Consolidation

PROJECT 1

Donald IWM Plan

Groundwater/surface water interactions in the Richardson River cause the water to become anaerobic. This degrades water quality, reducing the habitat and environmental values of the waterway. Securing adequate water to provide a freshwater lens is expected to reduce these threats. Sourcing an appropriate and secure allocation for the long term is problematic. The project will conduct a water balance study – which will enable the Donald community and partners to agree and deliver integrated water management actions and priorities in the future.

Next Steps

1. Conduct water balance study
2. Determine appropriate water uses with community
3. Implement supported projects

	
Status	<div style="width: 100%; height: 10px; background-color: #ccc;"></div>
Lead Agency	North Central CMA
Implementation Partners	Buloke Shire Council
Location	Donald
Cost	\$50,000
Timeframe	TBC
Scale	Township



Donald Weir Pool. Courtesy: Wimmera CMA

PROJECT 2

Mooney Dams Reactivation

Rehabilitation of an existing dam to store treated stormwater

- Wetland construction for treatment of stormwater
- Activation of local precinct to provide additional green space to Stawell residents
- Connection of piping system to existing sporting precinct infrastructure
- Use of educational information to promote the project and key outcomes



Status

Lead Agency Northern Grampians Shire Council

Implementation Partners

Location Stawell

Cost TBC

Timeframe >2 yrs

Scale Precinct

CONSOLIDATED PROJECT 3

Fit for Purpose Water for Green Spaces (and recreation)

This project will incorporate a range of projects across the Wimmera region aimed at providing fit for purpose water for recreation pursuits for Wimmera residents and travelling members of the public. It will consider and identify current water use and availability, as well as potential alternative water supplies to enable more secure and affordable for the future.

Projects include:

- Wimmera Drought Resilience Masterplan – (Buloke, Hindmarsh, West Wimmera and Yarriambiack Shires),
- Enhancing water for Lake Wallace & Edenhope recreation,
- Securing water for Kaniva cricket club recreational precinct,
- Securing water for Whitton swamp,
- Greening rural town streetscapes using stormwater and recycled water, and
- Wycheproof wetlands development for passive community recreation

Next Steps

1. Appoint project leaders from relevant organisations
2. Engage broader community in project concepts
3. Seek funding



Status

Lead Agency Wimmera IWM Forum

Implementation Partners Regional Councils

Location Wimmera region

Cost TBD

Timeframe < 2 years

Scale Regional



Horsham Fishing competition.
Courtesy: Paul Carracher,
The Weekly Advertiser

CONSOLIDATED PROJECT 4

Maximise Reclaimed Water Opportunities

A consolidated project to encourage and deliver fit for purpose water for facilities across the Wimmera.

Projects include;

- Development of a water supply backup using reclaimed water for existing open spaces currently irrigated with stormwater in Horsham
- A gridded water management network within Horsham to maximise the flexibility of multiple water sources for irrigation to ensure best use of water available especially during times of drought.
- Water sharing rules for Lake Wartook to ensure maximal value of the allocated resource.
- Utilisation of water from grain storage bunkers to reduce potable water reliance for public open spaces in Murtoa.
- Investigation of reuse of dewatering water from Stawell Gold Mine for public open spaces.

Next Steps

1. Setup project steering groups to work through development of projects
2. Prioritise works
3. Seek funding

	
Status	
Lead Agency	Wimmera IWM Forum
Implementation Partners	Regional Councils
Location	Wimmera region
Cost	TBD
Timeframe	< 2 years
Scale	Regional



Wimmera River Dimboola. Courtesy: Wimmera CMA

CONSOLIDATED PROJECT 6

Potable Water Substitution Investigation

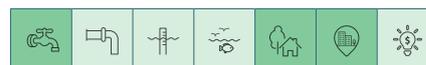
This project will utilise results from the previous project (regional enabler) – Potable Water Substitution for green Spaces that identified opportunities to replace the use of portable water with non-potable supplies from sources such as the Wimmera Mallee Pipeline. Additional work identifying opportunities within public green spaces has been identified for future consideration.

Facilities identified during the enabling project included;

- School ovals
- Public sporting ovals

Next Steps

1. Prioritise works
2. Engage implementation partners for support
3. Seek funding



Status

Lead Agency GWMWater

Implementation Partners Regional Councils

Location Wimmera region

Cost TBD

Timeframe < 2 years

Scale Regional



Yanga Track. Courtesy: Wimmera CMA

CONSOLIDATED PROJECT 7

City to River – Incorporating IWM Outcomes

City to River, a plan to manage the transformation of Horsham into a Regional City. This project provides a suite of transformative projects that aim to improve, revitalise and link Horsham's Central Activity District (CAD) and the Wimmera Riverfront Precinct; making Horsham a more attractive place to live, work, visit and invest.

Next Steps

1. Enshrine IWM principles within the development of the HRCC City to River design.
2. Fund the works that reflect the designs.



Status

Lead Agency Horsham Rural City Council

Implementation Partners GWMWater, Wimmera CMA

Location Horsham

Cost TBD

Timeframe < 2 years

Scale Regional

IWM Future Opportunities

A variety of projects have been identified by IWM partners that will contribute to improved water management, safe secure and affordable supply along with community amenity to the Wimmera region.

Projects include:

- Urban creek Transformation in rural towns (Stawell & St Arnaud)
 - A project to return natural creeks to their former glory by removing concrete lining of waterways.
- West Wimmera Towns – Potable Supply
 - Investigation of infrastructure solutions to supply potable water to the townships of Harrow, Goroke, Apsley & Kaniva.
- Alterations to enhance water storages for public amenity in St Arnaud.
- Improved water supply access to the Johnny Mullagh Memorial Park



Bemboka Treatment Plant. Courtesy: Wimmera CMA

Continued success through collaboration

IWM is an evolving process that seeks to coordinate and balance many views and interests in the water sector around common goals and agreed outcomes. IWM Forums collaborate and oversee ongoing IWM planning.

Phase 1 of the IWM Forum cycle has established an enabling environment for Victoria's water sector stakeholders to develop shared IWM objectives and overcome sectoral, institutional and geographic boundaries through collaboration. This phase was guided by the experience and knowledge of the Forum Members and resulted in the delivery of this Strategic Directions Statement (SDS).

Phase 2 of the IWM Forum cycle will assume a more strategic approach to successful IWM implementation and planning for the Forum Area. It is anticipated that the IWM Forum collaborative partners will continue use their best endeavours to advance priority IWM opportunities through regular meetings and future Forums. Forum Members will also continue to assess the feasibility of additional IWM opportunities identified in Phase 1.

Phase 2 will create an opportunity to evaluate and share learnings from Phase 1. It will also optimise resources and explore the development of innovative tools and approaches that plan for, and respond to, water supply and demand in the future.



Mitre Rock Mitre Lake. Courtesy: Wimmera CMA

Glossary of terms

Aboriginal Victorians

An Aboriginal Victorian is a person of Aboriginal descent who identifies as an Aboriginal and is accepted as such by the Victorian Aboriginal community in which he or she lives.

Algal blooms

A rapid increase in the population of algae that can occur in waterways, often caused by excess nutrients (particularly phosphorus and nitrogen).

Allocation

Water that is actually available to use or trade in any given year, including new allocations and carryover.

Assets

Assets are resources that provide benefit. This includes, for example, infrastructure such as treatment plants, pipes and pumps, water assets such as dams, bores and wetlands, and community assets such as sporting facilities, public gardens and street trees. Natural assets are assets of the natural environment, for example waterways and vegetation, also known as natural capital.

Aquifer

An underground layer of rock or sediment that holds water and allows water to flow through it.

Aquifer Storage and Recovery (ASR)

The recharge of an aquifer via a well for subsequent recovery from the same well.

Biodiversity

The numbers and variety of plants, animals and other living beings, including micro-organisms, across our land, rivers and oceans. It includes the diversity of their genetic information, the habitats and ecosystems in which they live and their connections with other life forms.

Catchment

An area where water falling as rain is collected by the landscape, eventually flowing to a body of water such as a creek, river, dam, lake or ocean; or into a groundwater system.

Catchment Management Authorities (CMAs)

The Catchment and Land Protection Act 1994 established 10 catchment and land protection regions, each with a catchment management authority responsible for the integrated planning and coordination of land, water and biodiversity management.

Climate Change

A long-term change of the earth's temperature and weather patterns, generally attributed directly or indirectly to human activities such as fossil fuel combustion and vegetation clearing and burning.

Climate Change Mitigation

Actions that prevent or reduce emissions of greenhouse gases that contribute to climate change.

Community

Includes individuals, public and private landholders, community groups and business owners.

Department of Environment, Land, Water and Planning (DELWP)

Supports Victoria's natural and built environment to ensure economic growth and liveable, sustainable and inclusive communities. The department assists the minister, develops and implements state policies and programs, and oversees the administration of organisations including catchment management authorities.

Ecosystem

A dynamic complex of plant, animal, fungal and microorganism communities and the associated non-living environment interacting as an ecological unit.

Entitlement (or water entitlement)

Authorisation to take water issued in accordance with the Water Act 1989. It includes bulk entitlements, environmental entitlements, water shares, and surface water and groundwater licences (also known as take and use licences).

Environmental Water

Water to support environmental values and ecological processes.

Fit for purpose (water quality)

Water of a quality that is appropriate for its intended use.

Flash Flooding

Sudden and unexpected flooding caused by sudden local heavy rainfall or rainfall in another area. Often defined as flooding which occurs within six (6) hours of the rainfall event.

Floodplain

Low-lying land adjacent to a river or stream with unique ecosystems dependent on inundation from flood events.

Flow

Movement of water – the rate of water discharged from a source, given in volume with respect to time.

Gigalitre

One billion (1,000,000,000) litres. One gigalitre is the equivalent of approximately 400 Olympic size swimming pools.

Green-Blue Infrastructure

Green infrastructure refers to key vegetation features such as street trees, parklands, grassed sports fields and vegetated walls. Blue infrastructure refers to key waterways, wetlands, recreational lakes, stormwater retarding basins, or other water body features. Green-blue infrastructure brings these assets together through integrated approaches to deliver community benefits.

Greenfield Land

Undeveloped land identified for residential or industrial/commercial development.

Groundwater

All subsurface water, generally occupying the pores and crevices of rock and soil.

Heritage River Area

Land in particular parts of rivers and river catchment areas in Victoria which have significant nature conservation, recreation, scenic or cultural heritage values. These areas are identified and protected under the Heritage Rivers Act 1992. There are 18 Heritage River Areas in Victoria.

Impervious Area

A surface or area within a catchment that significantly restricts the infiltration of water. Impervious surfaces can include concrete, road surfaces, roofs and saturated ground such as a lake or pond.

Infill

Development of unused or underutilised land in existing urban areas.

Infrastructure

Basic facilities and networks needed for the functioning of a local community or broader society.

Integrated Water Management (IWM)

A collaborative approach to planning that brings together all elements of the water cycle including sewage management, water supply, stormwater management and water treatment, considering environmental, economic and social benefits.

Integrated Water Management Forum

A meeting of urban water management organisations to identify, prioritise and commit to the investigation of integrated water management opportunities.

Integrated Water Management Opportunity

A servicing need that has the potential to leverage broader benefits when undertaken collaboratively, using an integrated water management approach.

Irrigation District

An area declared under the Water Act 1989 that is supplied with water by channels and pipelines used mainly for irrigation purposes.

Liveability

A measure of a city's residents' quality of life, used to benchmark cities around the world. It includes socioeconomic, environmental, transport and recreational measures.

Megalitre (ML)

One million (1,000,000) litres.

Open space

Includes land reserved for natural landscape, parklands, recreation and active sports, as well as waterways and bays.

Potable

Water of suitable quality for drinking.

Productivity

The economic value produced for an hour of work or a dollar of investment. Increasing productivity is a key source of economic growth and competitiveness.

Project

A planned set of interrelated tasks or activities to be executed over a defined period and within certain cost and other considerations, to achieve a goal.

Rainwater

Water that has fallen as rain or has been collected from rainfall.

Ramsar Convention

Defined by section 4 of the Commonwealth Water Act 2007 as the Convention on Wetlands of International Importance especially as Waterfowl Habitat done at Ramsar, Iran, on 2 February 1971.

Ramsar Wetlands

Wetlands of international importance, designated under the Ramsar Convention.

Recreational Water or Recreational Benefits

The objectives and benefits that recreational users and community members associate with the use of water, reservoirs and waterways for recreational activities. These objectives and benefits include wellbeing and enjoyment, derived from social interaction, physical activity and relaxation associated with activities including sporting events, fishing, water skiing and rowing, camping, walking and gathering with friends and family. It also includes flow-on economic benefits to local communities from visitors to regional areas to make the most of these opportunities.

Recycled Water

Water derived from sewerage systems or industry processes that is treated to a standard appropriate for its intended use.

Regional Victoria

Includes all municipalities outside metropolitan Melbourne (except part of Mitchell Shire within the urban growth boundary).

Reservoir

Natural or artificial dam or lake used for the storage and regulation of water.

Resilience

The capacity of individuals, communities, institutions, businesses, systems and infrastructure to survive, adapt and grow, no matter what chronic stresses or shocks they encounter.

Riparian

Refers to land or vegetation that adjoins a river, creek, estuary, lake or wetland.

Riverine Flooding

Inundation of normally dry land occurring when water overflows the natural or artificial banks of a creek or river. Also called main channel flooding.

Runoff

The portion of rainfall which actually ends up as streamflow, also known as rainfall excess.

Sewage

Wastewater produced from households and industry.

Sewerage

The pipes and plants that collect, remove, treat and dispose of liquid urban waste.

Stormwater

Runoff from urban areas. The net increase in runoff and decrease in groundwater recharge resulting from the introduction of impervious surfaces such as roofs and roads within urban development.

Stormwater Flooding

Inundation by local runoff. Stormwater flooding can be caused by local runoff exceeding the capacity of an urban stormwater drainage system or by the backwater effects of mainstream flooding causing the urban stormwater drainage system to overflow.

Strategy

A high-level direction designed to achieve an outcome, or a set of outcomes related to IWM, over a defined time period for a defined geographic location.

Traditional Owners

People who, through membership of a descent group or clan, are responsible for caring for Country. Aboriginal people with knowledge about traditions, observances, customs or beliefs associated with a particular area. A Traditional Owner is authorised to speak for Country and its heritage.

Urban Greening

Growing plants wherever possible in cities to contribute to urban vegetation coverage, and providing a connection to nature.

Urban Heat Island Effect

When the built environment absorbs, traps, and in some cases directly emits heat, causing urban areas to be significantly warmer than surrounding non-urban areas.

Urban Renewal

The process of planning and redeveloping underutilised medium and large-scale urban areas, precincts or sites for mixed land-use purposes.

Urban Water Cycle

The cycle of water through urban environments. Distinguished from the natural urban water cycle by the transfer of water through built infrastructure and the high runoff rates generated by impervious surfaces.

Use (water use)

The volume of water diverted from a stream or groundwater bore. It is not the same as 'use' by the end consumer of the water.

Wastewater

Water that has had its quality affected by human influence, deriving from industrial, domestic, agricultural or commercial activities.

Water Corporations

Victorian Government organisations charged with supplying water to urban and rural water users. They administer the diversion of water from waterways and the extraction of groundwater. Formerly known as water authorities.

Water Infrastructure

Facilities, services and installations needed for the functioning of a water system.

Water Sector

Organisations involved in water management, including water corporations, local government and catchment management authorities.

Water Sensitive Urban Design (WSUD)

Integrating the urban water cycle into urban design to minimise environmental damage and improve recreational and aesthetic outcomes.

Waterways

Rivers and streams, their associated estuaries and floodplains (including floodplain wetlands) and non-riverine wetlands.

Waterway Condition/Waterway Health

Waterway condition (or waterway health) is an umbrella term for the overall state of key features and processes that underpin functioning waterway ecosystems (such as species and communities, habitat, connectivity, water quality, riparian vegetation, physical form, and ecosystem processes such as nutrient cycling and carbon storage).

Wetlands

Areas, whether natural, modified or artificial, subject to permanent or temporary inundation, that hold static or very slow-moving water and develop, or have the potential to develop, biota adapted to inundation and the aquatic environment. Wetlands may be fresh or saline.

