



# Central Highlands

STRATEGIC DIRECTIONS  
STATEMENT

SEPTEMBER 2018



Integrated Water  
Management Forums



Environment,  
Land, Water  
and Planning



**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 Central Highlands region prides itself as a leader in Integrated Water Management (IWM) with an active group of stakeholders who understand the importance of collaboration. The collective benefits of IWM in terms of economic prosperity, environmental improvements and enhanced liveability are key strategic goals for the region.

Accordingly, these benefits are well-recognised in the plans and strategies of the organisations represented in the Central Highlands IWM Forum and are known priorities for the communities that they represent. The Forum has benefited greatly from representation from Wadawurrung and Dja Dja Wurrung Clans Aboriginal Corporation to highlight traditional owner goals and opportunities connected to water management, as well as setting strong foundations for ongoing collaboration in identifying and delivering IWM projects across the region.

Our future focus lies in addressing the two major challenges of population growth and climate change while seizing opportunities to enhance the liveability of our cities and towns through the management of water. The largest city in our region, Ballarat, has a long history of successfully delivering IWM projects for the community and a mature

water planning framework that is underpinned by the award-winning Ballarat IWM Plan. With momentum building from a range of IWM activities and rapid growth frontiers in Ballarat West, the city is set to further advance its reputation as an exemplar regional centre for IWM in Victoria.

The connectivity between urban and rural environments also brings opportunities to harness urban water resources such as recycled water and stormwater to support a range of outcomes. As the most flow-stressed waterway in Victoria, the Moorabool River is a priority for our region, and our forum is poised to explore opportunities for innovative and collaborative water management initiatives to achieve better outcomes for key catchments by taking a big-picture view.

The region is also home to the significant urban centres of Maryborough, Daylesford, Ballan, and a large number of small towns

which offer a multitude of resilience and liveability opportunities. These opportunities range from closed-loop alternative water supplies to support local economies in centres such as Beaufort, to joint investments to enhance local catchments and water bodies such as Burrumbeet Creek and Lake Burrumbeet which provide important ecological, tourism, recreational and cultural values for the region.

As a forum, we look forward to achieving our vision of "working together to leverage opportunities across the water cycle to deliver a healthy, resilient and prosperous future for the region and its communities".



**Jeff Haydon**

Chair of the Central Highlands Region IWM Forum

# Acknowledgements

The Central Highlands Region IWM Forum area includes Dja Dja Wurrung and Wadawurrung country, whose ancestors and their descendants are the Traditional Owners of this country.

The Forum wishes to acknowledge that these two groups have greatly contributed to the development of this Strategic Directions Statement from an early stage, despite challenges with resourcing. The Forum members, and in particular the Department of Environment, Land, Water and

Planning will work with both groups to assist them to participate more fully in the future.

The meetings of the Forum, working group and individual meetings with project sponsors have developed initiatives from ideas into mature project themes.

Collaboration and cross-pollination has been a key outcome of the Forum, with ideas being shared and improved by input from project partners.

The Central Highlands Strategic Directions Statement has been developed in collaboration with:



\* In-principle support for this SDS pending formal endorsement at a forthcoming Council meeting.



Water bugs survey, Moorobull Yaluk Kuwin River Day with Wadawurrung Community. Courtesy: Wadawurrung

# At a glance

The Central Highlands 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.

## Vision

Working together to leverage opportunities across the water cycle to deliver a healthy, resilient and prosperous future for the region and its communities.

## Strategic outcomes:

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





# IWM opportunities

Partners of the Forum have committed their best endeavours to ensure priority projects and strategies are progressed in line with the shared vision and strategic outcomes of the Central Highlands Region IWM Forum. Thirteen priority opportunities have been identified in the region and these have been grouped into four themes – regional enablers, prioritising action in major urban centres, delivering benefits in key regional locations and building momentum in Ballarat.

## Regional enablers

### 1 Mapping of Cultural Values of Waterways

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.

### 2 Enhancing flows to the Moorabool River and the Leigh River

The Moorabool is the most flow-stressed waterway in the state and it is a regional priority for action. This project will complete initial studies to ascertain the volume and flow characteristics of urban flows entering the Yarrowee–Leigh River and understand potential to harness those resources to enable additional flows to be released to the Moorabool River. These studies provide key information to inform the Central Region Sustainable Water Strategy and should be considered with other options to enhance flows.

### 3 Central Highlands Small Towns Green-Blue Infrastructure Plan

The Central Highlands region has many small towns that function as community hubs, tourism centres and regional attractions. This plan recognises the significance of these towns and provides a process to review and prioritise IWM investments to drive green-blue outcomes for key community assets.

## Prioritising action in major urban centres

### 4 Maryborough Integrated Water Management Plan

A comprehensive review of IWM opportunities for Maryborough and Carisbrook, will identify priority actions and projects and develop concept designs for key options that can contribute to the community's vision for "a resilient Maryborough with a thriving community, a prosperous economy, and a healthy environment".

### 5 Daylesford Integrated Water Management Plan

An IWM Plan will be developed for Daylesford, Hepburn Springs and surrounding townships to articulate a community vision and identify IWM opportunities to deliver the vision. The IWM plan will outline priority projects for implementation by Hepburn Shire Council, Central Highlands Water and North Central Catchment Management Authority.

### 6 Ballan Integrated Water Management Plan

An IWM Plan will be developed for Ballan to articulate a community vision and identify IWM opportunities to deliver the vision. The IWM Plan will outline priority projects for implementation by Moorabool Shire Council, Central Highlands Water and Melbourne Water.

## Delivering benefits in key regional locations

### 7 Revitalising Lake Burrumbeet and Burrumbeet Creek

There is an opportunity to revitalise sections of Burrumbeet Creek and improve Lake Burrumbeet through collaborative planning and investment, bringing great benefit to communities in Ballarat and Traditional Owners as well as visitors, protecting and enhancing natural and cultural values and improving these priority assets.

### 8 Beaufort Closed Loop Recycled Water Scheme

This project will enable a closed loop recycled water scheme to manage all of the Beaufort community's wastewater within the urban environment through irrigation for the local golf course, school, recreation reserve, numerous sporting facilities.

### 9 Integrated Management of the Tullaroop catchment

Through collaboration, shared objectives will be formed and management actions outlined to respond to catchment stressors and enhance the health of Tullaroop Creek. The Tullaroop Creek catchment is a closed system of a manageable scale where multiple tangible benefits can be delivered in the short term to support longer term objectives.

## Building on momentum in Ballarat

### 10 Breathing Life into the Yarrowee River: Works Prioritisation Masterplan

A Master Plan will engage community members, key stakeholders and Traditional Owners to develop a prioritised plan of future investments to reinvigorate and breathe life into the urban reaches of the Yarrowee River corridor. This will ensure that future projects can be implemented in the context of a holistic community vision that delivers maximum benefit.

### 11 Expanding Ballarat's Alternative Water Network

The existing non-potable network in Ballarat has potential for expansion to support irrigation of sporting grounds and parks. The priority connections in the short term are sporting grounds at Wendouree West Reserve and Ballarat Secondary College (Mt Rowan Campus).

### 12 Ballarat West Stormwater Harvesting Hubs

Ballarat West is growing fast. An opportunity exists to create stormwater harvesting hubs with multiple schemes utilising treated urban stormwater to irrigate open spaces in new development areas. Proactive funding, planning and design can lead to widespread on-ground implementation where infrastructure is installed in a cost effective manner to derive greatest community benefit.

### 13 Victoria Park (Ballarat) Green Space Transformation Management

Feasibility assessments have been completed to harness an alternative water source to provide irrigation to Victoria Park, the key green space in Ballarat. The scheme would transform this key community asset into a year round green space and attract events as well as enhancing existing lakes and public amenity.



## 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 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 Central Highlands IWM Forum to capture and communicate those opportunities.

IWM seeks to build on existing partnerships and planning processes. In the Central Highlands 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.

Alongside local plans and strategies, communities in the Central Highlands region have also been strongly engaged in the shaping of IWM through the development of the *Ballarat and Region's Water Future: A whole-of-water-cycle management*

*framework (2014)*. The Framework set out a vision to create "a greener, more liveable and prosperous water future" for the region. Community engagement was expanded in the largest urban area in the region, through the development of the Ballarat City IWM Plan (2017) which prioritised IWM opportunities for the city.

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 Dja Dja Wurrung 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 Central Highlands Region IWM Forum region.

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

## Integrated Water Management

IWM 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 water cycle.

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 Central Highlands Region 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 Central Highlands 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 agreed 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 Central Highlands Region 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 Central Highlands Region IWM Forum is governed by an open and transparent IWM planning process. 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 Central Highlands Region IWM Forum partners will continue to work together to build inter-organisational trust 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 Central Highlands Region IWM Forum is committed to working in partnership with Aboriginal Victorians across landscapes, communities and natural resources.

The Forum recognises that Traditional Owners throughout the region are unique to Country and their involvement in IWM planning will be specific to each planning area.

Organisations involved in IWM have obligations to involve Traditional Owners and consider Aboriginal values in their organisational activities, particularly where there is a Recognition and Settlement Agreement in place. The Forum will continue to work with Traditional Owner groups to determine the appropriate approach and level of involvement in IWM planning process and projects.







## Continued success through collaboration

Phase One 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 Two 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 One.

Phase Two will create an opportunity to evaluate and share learnings from Phase One. 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.

## Forum process: Summary of planned phases

	Outcomes	Participants
<b>Phase I</b>		
 <p><b>Establish</b></p> <p>Organisational leaders come together in collaborative IWM Forums and Working Groups to discuss integrated water management challenges, opportunities and priorities for each region</p>	<p>Preliminary work on regional characterisation and collaborative governance</p> <p>Agree vision, objectives and goals</p> <p>Agree criteria for selection and prioritisation of IWM opportunities</p> <p>IWM opportunities identified and prioritised</p> <p>Collaboratively develop and endorse Strategic Directions Statement for each region</p>	<p>Local governments</p> <p>Catchment Management Authorities</p> <p>Water corporations</p> <p>Traditional Owners</p> <p>Department of Environment, Land, Water and Planning</p> <p>Chair</p> <p>Others as relevant</p>
↓		
<b>Phase II</b>		
 <p><b>Planning</b></p> <p>Cultivate a collaborative culture to progress IWM opportunities</p>	<p>Co-design and agree on Terms of Reference, governance structure, stakeholder engagement and/or community participatory planning guidance for IWM project/strategy</p>	<p>Collaborative partners</p> <p>Community representatives</p> <p>Others as relevant</p>
 <p><b>Progress</b></p> <p>Forum Members use best endeavours to progress IWM opportunities to next stage</p>	<p>IWM Project Groups initiate work as per identified project/strategy status, including: feasibility assessment; technical and economic analysis; cost allocation; business case development</p> <p>Strategic enablers for IWM progressed by DELWP with support from Forum Members</p> <p>IWM Project Groups report progress to IWM Forums</p>	<p>Collaborative partners</p> <p>Individual organisations who have committed to a project/strategy</p> <p>Community representatives</p> <p>Relevant stakeholders</p>
 <p><b>Incorporate</b></p> <p>Collaborative Partner organisations incorporate relevant elements of IWM in their own plans, guidelines or frameworks</p>	<p>IWM Project Groups to take IWM commitments (projects and strategies) to their Board or Councils for investment endorsement</p> <p>IWM Project Groups incorporate elements into their own organisational planning systems, e.g. Council and corporate plans, Construction Guidelines, etc.</p> <p>Report back to IWM Forum</p>	<p>Individual organisations who have committed to deliver a project/strategy</p>
 <p><b>Realise</b></p> <p>IWM benefits are realised following implementation of project/strategy</p>	<p>Application of practical IWM tools and innovative approaches</p> <p>Additional community value added through participatory planning</p> <p>Monitoring and evaluation of key measures and outcomes</p> <p>Economic savings through shared resources, costs, etc.</p> <p>Improved resilience and liveability of cities and towns</p>	<p>Collaborative partners</p> <p>Individual organisations who have committed to a project/strategy</p> <p>Community representatives</p> <p>Others as relevant</p>
↓		
<b>Phase III</b>		
 <p><b>Prepare</b></p> <p>IWM Forums prepare to refresh the Strategic Directions Statement</p>	<p>Collaborative partners prepare for next round of IWM Forums</p> <p>IWM Forums collaboratively review key learnings and outcomes from Phase I &amp; II, including catchment-scale IWM Strategy and progress on strategic enablers</p> <p>Next round of IWM opportunity identification and prioritisation</p>	<p>Collaborative partners</p>



**Next 12-18 months**

The feasibility of IWM opportunities will be continually reviewed and assessed in Phase II to confirm the need for specific IWM projects/strategies





## Chapter 2

# IWM in the Region

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



Aerial view of Lake Wendouree, Ballarat. Courtesy City of Ballarat

# Vision and outcome areas for the Central Highlands 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



## Working together to leverage opportunities across the water cycle to deliver a healthy, resilient and prosperous future for the region and its communities.

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 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

# Regional context

The Central Highlands IWM Forum region covers an area of approximately 9,275 square kilometres, extending from Rokewood in the south to Redbank in the north, reaching as far as Ballan and Daylesford to the east and Navarre in the west. Ballarat is the largest city in the region by a substantial margin, though other large towns include Maryborough, Daylesford and Ballan. The region includes more than 60 smaller towns, making the region and its water opportunities very diverse.

The Central Highlands region is positioned on high ground, and occupies the top of the catchment of nine major river systems. This gives the region unique challenges and opportunities in terms of water management. Average annual rainfall varies significantly across the region, from near 800mm east of Ballarat to only 400mm in the north of the region.

## Population

The region has an estimated population of 160,000, which is forecast to grow to 225,000 by 2040. This growth will be felt across a majority of the major urban centres of the region, with the highest growth predicted in Ballarat.<sup>i</sup> Ballarat's population is expected to more than double in the next 50 years, with the majority of growth expected in large growth areas in the west of Ballarat and further growth areas being investigated.

## Climate Change

The Central Highlands Region faces a warmer and drier future. By 2070, average annual temperatures across the region are projected to rise by 1.4°C to 2.5°C (median value). This will be amplified in urban centres due to

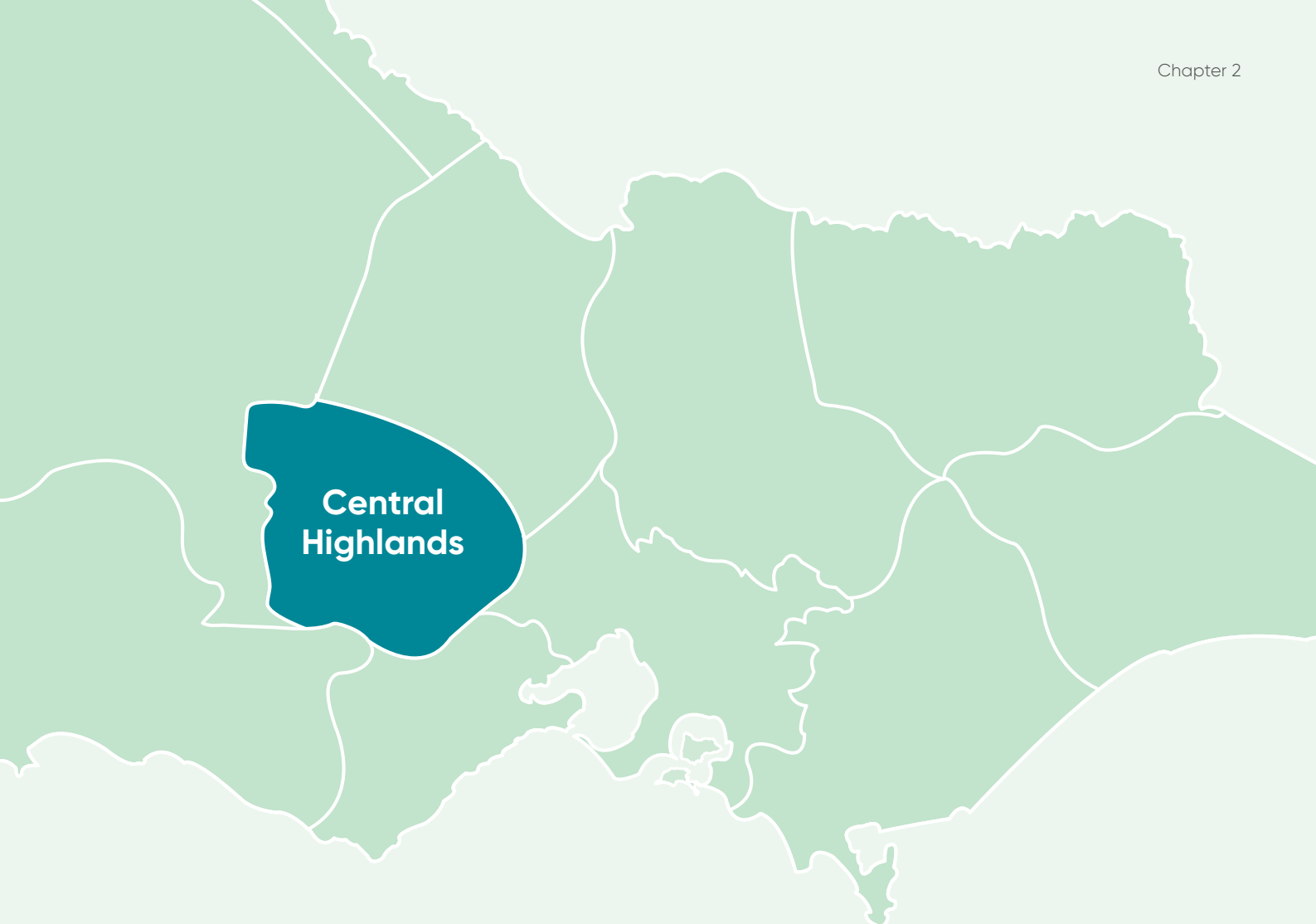
the prevalence of darker and harder surfaces, leading to environmental and human health impacts. Ensuring the provision of fit for purpose water for the region's urban greening will be a key priority in enhancing liveability and resilience for the community and environment.

The average annual rainfall is predicted to decrease by 6-7 per cent by 2070 (median value) – primarily impacting the 'cool' season – while there is also an expectation of a year-round increase in temperatures.

This presents a challenge for the region, as there will be an increased demand for urban water resulting from population growth together with a hotter drier climate. The average annual rainfall is predicted to decrease by five per cent by 2070 (median value) – primarily impacting the 'cool' season – while there is also an expectation of a year-round increase in temperatures. This presents a challenge for the region, as there will be an increased demand for urban water resulting from population growth together with a hotter drier climate.<sup>ii</sup>



Irrigator spraying onto crops. Courtesy: Central Highlands Water



**Central Highlands**

**POPULATION GROWTH**

**160,000** NOW (2018)

**225,000** BY 2040 <sup>1</sup>

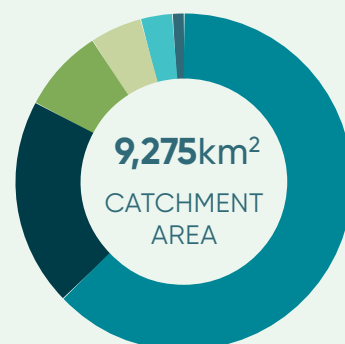


**40%**  
INCREASE



**THE REGION**

- DRYLAND PASTURE **63%**
- NON-FARMLAND **20%** (RURAL LIVING, ROADS AND WATER BODIES)
- BROAD ACRE CROPPING **8%**
- NATIVE VEGETATION **5%**
- HORTICULTURE **3%**
- URBAN **1%**



**CHANGE IN RAINFALL**



**6-7%**  
DECREASE

BY 2070 <sup>2</sup>



**TEMPERATURE**



**1.4-2.5°C**  
INCREASE

BY 2070 <sup>3</sup>

**WATERWAYS**

**50%**  
CORANGAMITE

**46%**  
NORTH CENTRAL



IN 'MODERATE'  
STREAM CONDITION <sup>4</sup>

<sup>1</sup> Victoria in Future

<sup>2</sup> Guidelines for Assessing the Impact of Climate Change on Water Supplies in Victoria (2016)

<sup>3</sup> Guidelines for Assessing the Impact of Climate Change on Water Supplies in Victoria (2016)

<sup>4</sup> Corangamite CMA Waterway Strategy and North Central CMA Waterway Strategy





# The case for IWM in the Region



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

The Central Highlands region sources water from a number of catchments both locally within the region, and from outside the region via the Goldfields Superpipe. The Goldfields Superpipe is an important element of the Victorian water grid, which provides water from northern Victoria to ensure security of supply for urban customers in Ballarat. The primary source of water for the region is surface water and groundwater supplies along with local utilisation of recycled water and urban stormwater.

Potable water services are currently provided to cities and towns in the region via 15 water supply systems. The Region faces several challenges over the next 50 years from climate change impacts on supply and a steadily increasing population. Urban water supply is relatively secure, though some scenarios could result in shortfalls in some towns if future actions are not implemented. The provision of alternative water sources and demand management are key strategies to avoid shortfalls.<sup>iii</sup>



Passive irrigation of street trees with stormwater. Courtesy: e2Design Lab

During the drought, Ballarat sought to harness stormwater as a new water source for the City, and created a network of wetlands to treat stormwater for reuse and to supplement Lake Wendouree. Recycled water and groundwater supplies were also harnessed to make Ballarat an example of integrated water management in action. Central Highlands Water has also committed to developing an IWM Plan for Maryborough, Daylesford and Ballan.

Partners in the region are currently working to consider the viability of a new reticulated potable water supply to support economic development at Moonambel and a potential upgrade to improve water quality at Amphitheatre.



## Effective and affordable wastewater systems

There are reticulated sewage systems to nearly 59,000 properties across the region. These systems collect and treat sewage at 13 wastewater management facilities.<sup>iv</sup> In addition to these facilities there are many small towns in the region which typically use onsite septic systems to treat their wastewater. 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 Central Highlands Water in towns including Talbot, Wallace and Bungaree. A major upgrade program to the Blackwood septic management scheme is also being delivered by multiple partner organisations.

There are currently 18 water reclamation schemes in the Central Highlands region. These deliver Class A, B and C water to sites operated both by Central Highlands Water and third-party customers.<sup>v</sup> Recycled water is primarily utilised for irrigation of agricultural land and local sporting facilities and parks. Recycled water use in the region totals around 1.6 gigalitres (GL), while additional treated wastewater is reused for operational purposes. The remainder of treated wastewater (approximately 7 GL), primarily originating in the Ballarat area, is returned to waterways. Future 'excess' treated wastewater is an important potential resource for the region.



### Avoided or minimised existing and future flood risks

Floodplains are a valued part of the ecosystem in the Central Highlands 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. The major urban centre of Ballarat as well as many smaller centres are located on waterways and floodplains. Significant economic damage has been experienced from flooding on several occasions, with notable events effecting Ballarat CBD, Miners Rest and Delacombe, as well as the towns of Carisbrook, Clunes and Creswick. 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, urban growth and increased imperviousness in catchments.

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 waterways, wetlands and water bodies

Positioned high in a number of catchments, the region incorporates areas managed by four catchment management authorities – North Central, Glenelg Hopkins, Corangamite and Wimmera. Each has identified priority waterways their respective Regional Waterway Strategies<sup>vi</sup>, including the Yarrowee–Leigh, Moorabool, Avoca and Loddon River as well as a number of important smaller waterways such as Tullaroop Creek and Burrumbeet Creek. Some waterways are also important for urban supplies and have significant public health benefits. The Leigh and Moorabool Rivers are also key contributors to RAMSAR listed wetlands in the Barwon region. There are a series of important waterbodies and wetlands in the region that provide ecological, amenity and recreational benefits, including Lake Burrumbeet, Lake Wendouree, Lake Victoria and Daylesford Lake. In many cases, waterbodies and waterways provide a centrepiece to the towns in the region, influencing the identity, character and economic success of local communities. The well-documented drying of Lake Wendouree in Ballarat had serious economic effects for local businesses and communities.

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 are 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. Empowering Traditional Owners to restore and enhance waterways and riparian land will support passing on of healthy water to neighbouring groups and the restoration of significant sites. Dja Dja Wurrung Clans Aboriginal Corporation already have an active Care for Country team, and this is a focus for Wadawurrung to develop in the medium-term.



## Healthy and valued landscapes

Healthy landscapes are valued in the Central Highlands region, playing a key role in the success of urban and rural communities.

The support of well-connected public open space and recreational areas within the urban environment are important for liveability, health and well-being. The landscapes adjoining waterways are often important for active transportation and recreation. Corangamite CMA and City of Ballarat have actively invested in improving parts of the Yarrowee River corridor through the Breathing Life into the Yarrowee project, and the Living Moorabool Project brings focus to improving the health of the Moorabool River.

Many of the Councils in the region are actively promoting healthy and valued landscapes that integrate land use and water planning. The award-winning Greening Ballarat: A Green-Blue City Action Plan aims to green Ballarat while harnessing stormwater as a key resource. The City of Ballarat has a target for 40% tree canopy cover for the city which outlines its ambition. Other councils in the region have similar plans and recognise greening as a key strategy to underpin economic activity and well-being outcomes.

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 support 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.



## 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, social and 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 Ballarat West 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.



## Jobs, economic benefits and innovation

Major industries in the region include manufacturing (including food processing), mining and agriculture. One of the economic strengths of the region is its diversity. The regional economy is projected to grow, 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 increased utilisation of hydroponics and aquaculture as well as expansion of the diversity of primary production to include more viticulture and horticulture. A sustainable water supply will be an asset to the region in developing and expanding these industries.

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.



# Success stories

The Central Highlands region has many examples of successfully delivering integrated water management plans and projects through collaboration between state and local government, regional agencies, communities, planning bodies, education institutions and the private sector. The two case studies below highlight a proven ability to work collaboratively, respond to challenges, identify opportunities, plan for success and deliver outcomes across the region.

## Evolution of waterway care in the Central Highlands Region

Stakeholder collaboration, strategy development and implementation of on-ground works has evolved considerably for waterways across the Central Highlands region. A coordinated effort and a strong focus on integration, community participation, values and aspirations has enabled priorities to be set, regional work programs to be outlined and investment to be guided by clear strategies for our rivers and wetlands.

The Regional Waterway Strategies utilise community involvement to define outcomes and actions for our waterways. They align with the directions and policies of the Victorian Waterway Management Strategy and the objectives and actions from Regional Catchment Strategies. They also build on and replace the foundation work that was created with the development of River Health Strategies in the mid-2000s.

Increasingly, the management of waterways considers the range of economic, social, environmental and cultural values a waterway can provide. Waterways are often a focal point for collaboration where Catchment Management Authorities, Traditional Owners, Councils, Water



Yarrowee River. Courtesy: Central Highlands Water

Authorities and community groups work together to achieve multiple outcomes. A range of collaborative initiatives have also shaped on-ground action to deliver key waterway projects and improvements, including:

- Living Moorabool Project
- Breathing Life into the Yarrowee Project
- Harnessing Ballarat's Stormwater
- Victorian Volcanic Plains and Land Stewardship Project
- Connected Landscapes Project
- Implementing seasonal watering proposals
- Delivering detailed work programs within catchment zones
- Using partnership delivery models with public and private land managers, water corporations, local government and the community (e.g. Landcare networks, Friends groups and Waterwatch) under the framework of integrated catchment management.

## Ballarat Urban Water Supply Journey

At the height of millennium drought, Ballarat was a city in water crisis with dry lakes, brown recreational areas, dusty sporting grounds, floundering gardens and community event cancellations. It was a city struggling to maintain its basic drinking water needs. The impact of the loss of aquatic recreational events and tourism due to a dry or depleted Lake Wendouree and restricted irrigation of the Ballarat Botanical Gardens during the drought had an \$18.9 million per year impact on the local economy.

Over the past decade, the planning paradigm has shifted from responsive crisis mode to a systematic planning approach. This evolution of planning maturity initially created a series of collaborative projects and initiatives that alleviated drought impacts and generated support and leverage to create long term plans and build a secure water future. This commitment to strengthening the community through collaboration and sustainable

planning has culminated in an ongoing commitment to utilising integrated water management approaches to create green-blue community infrastructure.

In 2005 a long term solution was developed for Lake Wendouree comprising the provision of 600ML/year of recycled water from the Ballarat North Wastewater Treatment Plant and 250ML/year from stormwater harvesting. Following the success of this solution, the City of Ballarat identified that lake water could be used for irrigating not only the Ballarat Botanical Gardens, but a range of sporting facilities and local parks. As a result, an enlarged stormwater harvesting and distribution scheme was progressively implemented from 2010 to 2012, to provide a secure supply of non-drinking water to maintain Ballarat's major gardens and sports venues.

Since then Ballarat has furthered its integrated water management journey with the delivery of key strategies, plans and projects for the Ballarat community, including:

- Ballarat North Class A Recycled Water Facility
- Greening Schools Project
- Ballarat West Groundwater Project
- Greening Ballarat, A Green-Blue City Action Plan
- A Greener More Vibrant and Connected Ballarat
- Flood Risk and Opportunity Mapping
- Central Highlands Water Urban Water Strategy
- Ballarat Integrated Water Management Plan

Moving forward the focus remains around implementing integrated water management actions, investigations and projects to deliver on the community's vision of "a greener, more liveable and prosperous water future for the city and towns of the Ballarat region".



Greening Schools Project. Courtesy: Central Highlands Water



Ballarat North Class A Recycled Water Facility. Courtesy: Central Highlands Water



## 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.

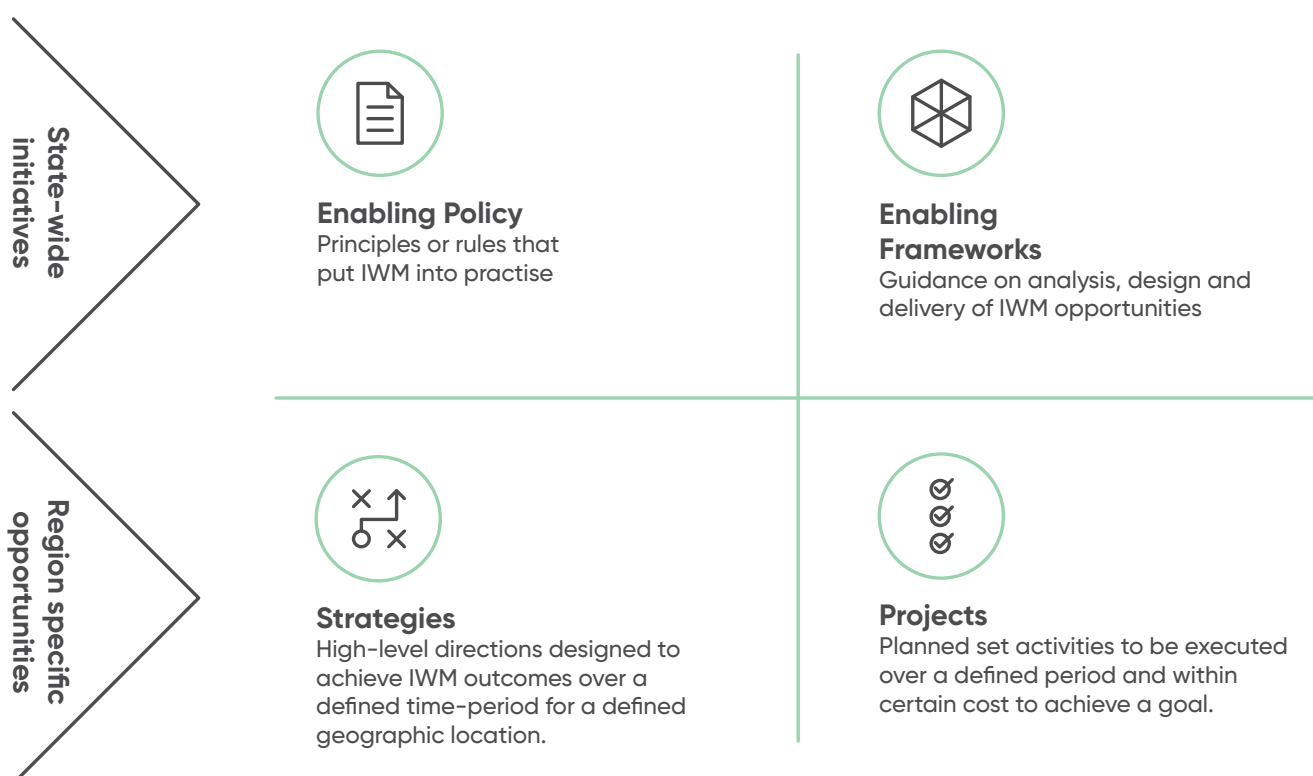
# State-wide and region specific initiatives

This document outlines priority IWM opportunities for the Central Highlands 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 Forum members are identifying 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 has been 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

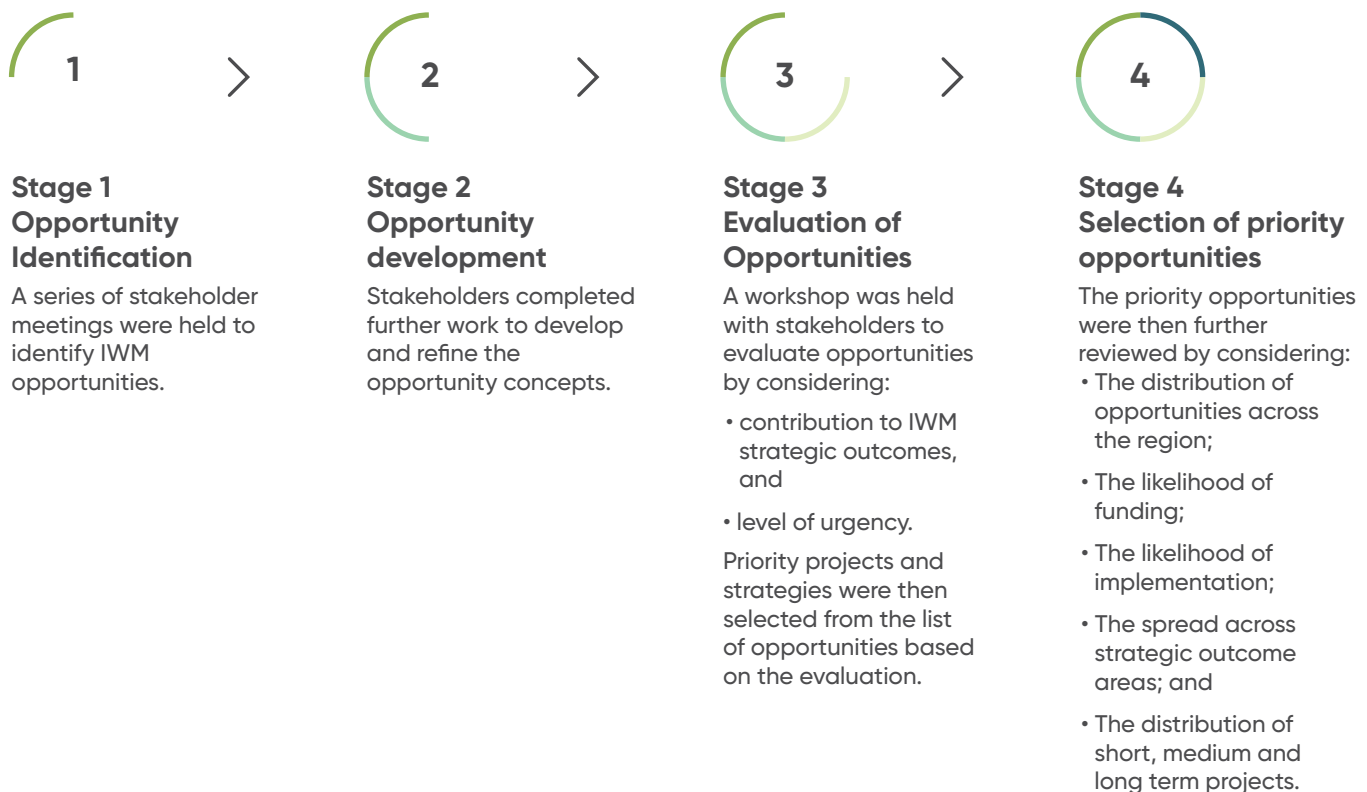


# IWM opportunities: How were they selected?

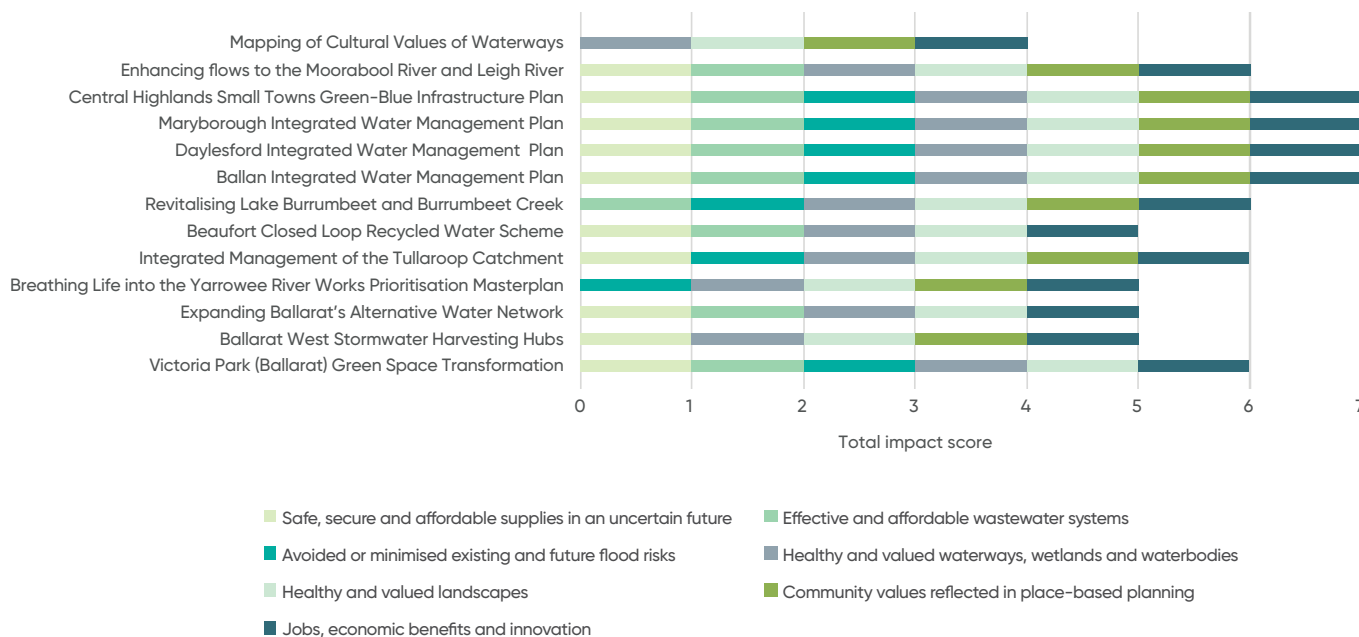
IWM opportunities that link to and address IWM challenges for the region were identified and developed by the nominated practitioners of participating organisations. The process was an iterative, transparent and inclusive approach, as outlined below.

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

## The IWM opportunity prioritisation process



# Impact of IWM opportunities on the Forum's strategic outcomes

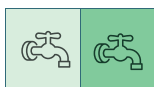


# IWM project & strategy opportunities – overview

IWM opportunity	Strategic outcomes							Location	Scale
Mapping of Cultural Values of Waterways								Wadawurrung and Dja Dja Wurrung Country	Inter-forum
Enhancing flows to the Moorabool River and Leigh River								Ballarat and Moorabool River	Inter-forum
Central Highlands Small Towns Green-Blue Infrastructure Plan								Region-wide	Forum area
Maryborough Integrated Water Management Plan								Maryborough and Carisbrook	Town/City
Daylesford Integrated Water Management Plan								Daylesford	Town/City
Ballan Integrated Water Management Plan								Ballan	Town/City
Revitalising Lake Burrumbeet and Burrumbeet Creek								Burrumbeet catchment	Sub-catchment
Beaufort Closed Loop Recycled Water Scheme								Beaufort	Town/City
Integrated Management of the Tullaroop Catchment								Tullaroop Creek catchment	Sub-catchment
Breathing Life into the Yarrowee River Works Prioritisation Masterplan								Yarrowee River	Sub-catchment
Expanding Ballarat's Alternative Water Network								Ballarat	Lot scale
Ballarat West Stormwater Harvesting Hubs								Ballarat West	Lot scale
Victoria Park (Ballarat) Green Space Transformation								Ballarat	Lot scale

The status of each IWM opportunity included in the Priority Portfolio reflects the phase of work to be undertaken in this time period.

## Shade scale



No Impact    Impact



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 Central Highlands Region IWM Forum's priorities and opportunities.

The projects are grouped in four themes, but are not ranked. 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 IWM Forum.

Lead agency for collaborative opportunity	Quick win	Status
Wadawurrung AC and Dja Dja Wurrung AC	Y	
Corangamite CMA, Wadawurrung AC	N	
Central Highlands Cluster of Councils	N	
Central Highlands Water	Y	
Central Highlands Water	N	
Central Highlands Water	N	
DELWP Grampians and Glenelg Hopkins CMA	Y	
Pyrenees Shire Council	Y	
North Central CMA	Y	
City of Ballarat	Y	
Central Highlands Water	Y	
City of Ballarat	Y	
City of Ballarat	Y	

**Project opportunity status**



**Strategy opportunity status**



# Priority Portfolio of IWM projects and strategies

## Regional enablers

Three projects have been identified which would 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.

### ACTION CH1

#### Mapping of the Cultural Values of Waterways

There is an opportunity to identify and map cultural sites and values along waterway corridors in the region. This will create a knowledge base that can be managed by traditional owner groups and used to inform management of waterways and water bodies.

This knowledge base can feed into Cultural Heritage Management Plans to streamline the process, but can also provide a clear pathway for traditional owner involvement and management of information.

A similar process has been piloted by the Murray Lower Darling Rivers Indigenous Nations (MLDRIN) group of Traditional Owners to facilitate collaboration.

This project is an initial stage whereby Traditional Owners can build a knowledge base and resources to ultimately support Care for Country teams taking an active role in waterway management. Priority reaches will be identified as first projects, and these may include other waterway projects listed in this document.

#### Next steps

1. Assemble stakeholders and secure commitment to an agreed initial scope of works
2. Secure funding and resources
3. Identify initial waterways for survey and mapping

<b>Status</b>	<div style="width: 20px; height: 10px; background-color: #c8e6c9;"></div>
<b>Lead Agency</b>	Wadawurrung + Dja Dja Wurrung Clans Aboriginal Corporation
<b>Implementation Partners</b>	North Central Catchment Management Authority, Corangamite Catchment Management Authority, Glenelg Hopkins Catchment Management Authority, DELWP Grampians, Central Highlands Water, Local Councils
<b>Location</b>	Wudawurrung and Dja Dja Wurrung Country
<b>Cost</b>	To be estimated
<b>Timeframe</b>	Complete initial waterway mapping in 1-3 years
<b>Scale</b>	Inter-forum



Mooroobull Yaluk Kuwin River Day with Wadawurrung Community. Courtesy: Wadawurrung

## ACTION CH2

### Enhancing flows to the Moorabool River and the Leigh River

The Moorabool and Leigh River are on the Traditional Lands of the Wadawurrung people who have had an ongoing connection with the river for thousands of generations.

The Moorabool River is one of the most stressed waterways in the state, and the Leigh River is heavily influenced by stormwater and treated wastewater inflows from Ballarat. Both rivers flow into the Barwon and Lower Barwon River which contains RAMSAR listed wetlands. Climate change and growing populations in both Ballarat and Geelong will continue to place further pressure on these significant river systems. Improvements to the volume and timing of inflows to these rivers will protect the plants and animals dependent on them. Protecting the diversity of life dependent on the rivers is critical to maintaining both environmental and cultural values into the future, particularly as climate change and other impacts influence natural flows.

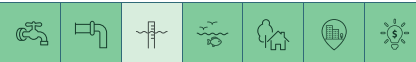
The Ballarat IWM Plan examined possible long term options to capture and harness both recycled water and stormwater flows from urban Ballarat to supplement flows in the Moorabool River, either via offsets supplied from Lal Lal Reservoir in lieu of local alternative water supplies in Ballarat, or by direct transfer. This management of urban flows from Ballarat could also benefit the Leigh River. The following actions were recommended by the plan to determine a preferred strategy, in the next 2-3 years:

- Undertake a study for the Yarrowee–Leigh to understand the cultural and environmental flow needs of the river. Flow recommendations and water recovery targets are already in place for the Moorabool River.
- Once new local diverse supply options have been identified and the corresponding water recovery volumes and timing are calculated, environmental and cultural outcomes to the Moorabool and Yarrowee/Leigh Rivers will be able to be assessed against the flow requirements of these important river systems.

The Long Term Water Resource Assessment (LTWRA) and Central Region Sustainable Water Strategy (SWS) will consider the overall strategy for the rivers and associated supplies across the broader area, but this project will produce important information to feed into the SWS.

#### Next steps

1. Secure resources and/or funding
2. Complete investigations required to underpin feasibility of offset or transfer options

	
<b>Status</b>	
<b>Lead Agency</b>	Corangamite CMA, Wadawurrung
<b>Implementation Partners</b>	Central Highlands Water, City of Ballarat, Moorabool Shire Council, Southern Rural Water, DELWP, Barwon Water
<b>Location</b>	Moorabool and Leigh River Catchments
<b>Cost</b>	<\$100,000 for system modelling \$100,000 for improved monitoring
<b>Timeframe</b>	Short-term investigations to be completed within 2 years to support the long-term options
<b>Scale</b>	Inter-forum



Moorabool River.  
Courtesy: Corangamite CMA

## ACTION CH3

### Central Highlands Small Towns Green-Blue Infrastructure Plan

While the major urban areas in the Central Highlands Region (Ballarat, Maryborough, Daylesford and Ballan) will be the subject of dedicated IWM Plans, there are many other smaller towns across the region where there are excellent opportunities to deliver IWM outcomes, especially green-blue infrastructure.

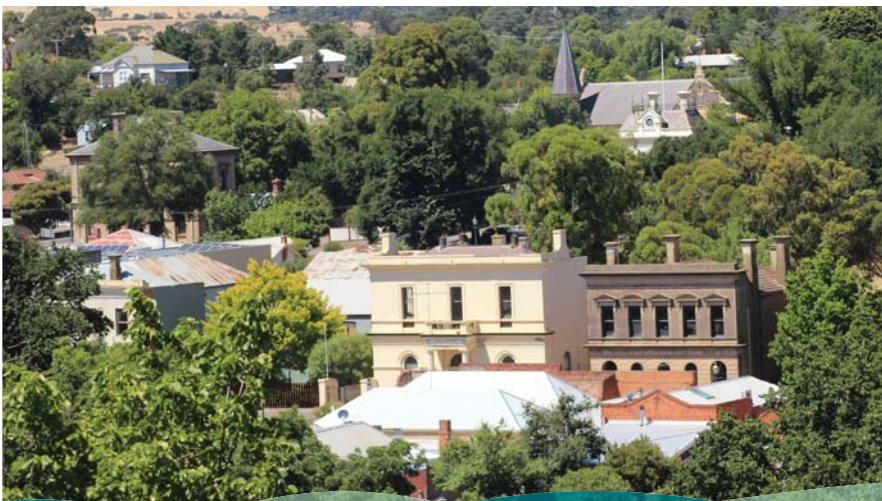
This plan for small towns in the region would identify, review and prioritise opportunities against a consistent set of criteria and then include case studies and design templates for delivery of common types of green-blue infrastructure that are appropriate to small towns. By developing this plan at a region wide scale, it will become an efficient analysis, and allow the best investments to be taken forward by partners. It is also an opportunity for capacity building and knowledge sharing in shire councils. As this is a collaborative project across councils in the region, seed funding is needed to support the project.

It is expected the key green-blue infrastructure opportunities in small towns will include:

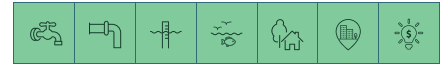
- Urban water alternative supply schemes for ovals, parks and local industry;
- Street tree and urban greening projects supported by water;
- Urban waterway restoration and improvement;
- WSUD and stormwater management projects;
- Planning controls and policies to influence developments in greenfield and infill areas.

### Next steps

1. Develop scope with partners
2. Obtain funding for collaborative project and assign project officer
3. Assemble project control group



The town of Clunes. Courtesy: Hepburn Shire Council



<b>Status</b>	██████████
<b>Lead Agency</b>	Central Highlands Councils Victoria (CHCV)
<b>Implementation Partners</b>	Hepburn Shire Council, Moorabool Shire Council, Golden Plains Shire Council, City of Ballarat, Central Goldfields Shire Council, Pyrenees Shire Council, Central Highlands Water, DELWP, Dja Dja Wurrung Clans Aboriginal Corporation, Wadawurrung
<b>Location</b>	Region-wide
<b>Cost</b>	\$50,000 - \$100,000
<b>Timeframe</b>	Medium-term
<b>Scale</b>	Forum area

## Prioritising action in major urban centres

Alongside Ballarat, where prioritisation of IWM projects has recently been done under the Ballarat IWM Plan, there are three major urban areas in the region where opportunities need to be scoped and prioritised for action. IWM Plans are planned for each town, with work already underway in Maryborough.

### ACTION CH4


#### Maryborough Integrated Water Management Plan

An IWM Plan is currently being developed for Maryborough (including the neighbouring areas of Carisbrook and Flagstaff). The objectives of the Plan are to enhance water resources, support urban greening and liveability, improve the health of local waterways and water bodies and drive economic and social benefits in the area. The Plan considers all aspects of the urban water cycle and will prioritise a series of IWM projects for detailed analysis. The priority projects emerging from the Plan which will deliver the greatest benefits to Maryborough include:

- Creation of a non-potable water supply network to key demands across the town.
- Harnessing stormwater for local irrigation demands and as a strategy for salinity reduction in recycled water.
- Enhancement of Lake Victoria through improvement of amenity and water quality.
- Linking of urban lakes including Lake Victoria, Phillips Gardens and Goldfields Reservoir to provide additional storage and amenity.
- Support of tree planting through passive irrigation to enhance amenity and greening through utilisation of stormwater.
- Support of flood mitigation initiatives prioritised through the Carisbrook and Maryborough Flood Management Plans.

#### Next steps

1. Complete IWM Plan
2. Release for public comment and finalise Plan
3. Implement recommended projects

Status	
<b>Lead Agency</b>	Central Highlands Water
<b>Implementation Partners</b>	Central Goldfields Shire Council, North Central CMA, DELWP, Dja Dja Wurrung Clans Aboriginal Corporation
<b>Location</b>	Maryborough
<b>Cost</b>	\$100,000 (Funded)
<b>Timeframe</b>	Completed in 2018/19
<b>Scale</b>	Town/city



Maryborough.  
Courtesy: Central Goldfields Shire Council

## ACTION CH5

### Daylesford Integrated Water Management Plan

Daylesford is the third largest urban area in the Central Highlands region, and a town where ongoing growth is forecast. Daylesford and the surrounding communities are an important regional hub with a strong tourism, visitor economy and active communities.

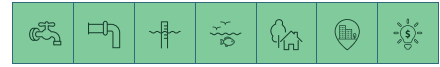
An IWM Plan for Daylesford, Hepburn Springs and surrounding townships would articulate a community vision and identify IWM opportunities to deliver the vision. The IWM Plan will outline priority projects for implementation by Hepburn Shire Council, Central Highlands Water and North Central CMA

These IWM projects would enhance amenity and health of green assets, waterways and waterbodies in the area.

Building on the methodologies established for the Ballarat and the Maryborough IWM Plan, the Daylesford IWM Plan will be delivered in 2019/20. It will consider the whole water cycle and identify and prioritise IWM projects and actions.

#### Next steps

1. Assemble project control group
2. Develop scope of works for Plan
3. Consult with stakeholders and community
4. Develop IWM Plan



<b>Status</b>	<div style="width: 100%; height: 10px; background-color: #ccc;"></div>
<b>Lead Agency</b>	Central Highlands Water
<b>Implementation Partners</b>	Hepburn Shire Council, North Central CMA, DELWP Grampians, Goulburn Murray Water, Regional Development Victoria, Dja Dja Wurrung Clans Aboriginal Corporation.
<b>Location</b>	Daylesford
<b>Cost</b>	\$100,000 - \$150,000
<b>Timeframe</b>	Planned for 2019/20
<b>Scale</b>	Town/city



Lake Daylesford. Courtesy: Hepburn Shire Council

## ACTION CH6

### Ballan Integrated Water Management Plan

Ballan is a growing urban area in the Central Highlands Water region, which also lies in the Werribee IWM Forum area. There is opportunity to collaborate across Forum areas to develop a holistic IWM Plan for the town, which is forecast to grow substantially. The town's water supply is drawn from the same network that supplies Ballarat and also impacts on the flow-stressed Moorabool River.

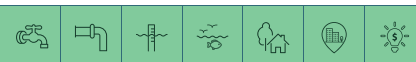
Ballan is an important regional town and a growth area close to Melbourne. There is opportunity for IWM projects to enhance amenity and health of green assets, waterways and waterbodies in the town.

The plan would articulate a community vision and identify IWM opportunities to deliver the vision and outline priority projects for implementation by Moorabool Shire Council, Central Highlands Water and Melbourne Water.

Building on the methodologies established for the Ballarat and the Maryborough IWM Plan, the Ballan IWM Plan will be delivered in 2020/2021. It will consider the whole water cycle and identify and prioritise IWM projects and actions. This project would be coordinated with the Werribee IWM Forum since Ballan sits on the border of the forums.

#### Next steps

1. Assemble project control group
2. Develop scope of works for Plan
3. Consult with stakeholders and community
4. Develop IWM Plan

	
<b>Status</b>	<div style="width: 100%; height: 10px; background-color: #ccc;"></div>
<b>Lead Agency</b>	Central Highlands Water
<b>Implementation Partners</b>	Moorabool Shire Council, Melbourne Water, Southern Rural Water, Wadawurrung, Werribee IWM Forum
<b>Location</b>	Ballan
<b>Cost</b>	\$100,000
<b>Timeframe</b>	Planned for 2020/2021
<b>Scale</b>	Town/city



Ballan new tank and old basin. Courtesy: Central Highlands Water

## ACTION CH7

### Revitalising Lake Burrumbeet and Burrumbeet Creek

There is an opportunity to revitalise sections of Burrumbeet Creek and improve Lake Burrumbeet through collaborative planning and investment, bringing great benefit to communities in Ballarat and Traditional Owners as well as visitors, protecting and enhancing natural and cultural values and improving these priority assets.

Lake Burrumbeet and its feeding creek, Burrumbeet Creek (which runs through northern Ballarat) are currently managed and influenced by a range of organisations, but no overarching action plan exists. This project will work with the community and key stakeholders to develop a coordinated plan for action for creek and the lake.

Specific actions for Lake Burrumbeet:

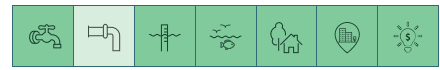
- An integrated plan for management and use that will take into account natural, cultural and recreational values and future aspirations for the Lake;
- Consideration of influence of flows and water quality from Ballarat North Waste Water Treatment Plant and local runoff to determine possible actions for enhancement.
- A management and enhancement plan for Lake environs, including wetlands on private land.

Specific actions for Burrumbeet Creek:

- Prioritisation of sites for waterway stabilisation and ecological restoration based on recommendations in the Ballarat IWM Plan.
- Identification of sites that can incorporate or enhance cultural values and support use by Traditional Owners and offer education for the broader community.

### Next steps

1. Appointment of DELWP project officer to undertake initial community engagement and develop a management framework for Lake Burrumbeet (underway)
2. Secure funding for collaborative project
3. Appoint collaborative project group
4. Undertake broader engagement with community, Traditional Owners and key stakeholders
5. Undertake management and works prioritisation planning
6. Implementation



<b>Status</b>	
<b>Lead Agency</b>	DELWP Grampians and Glenelg Hopkins CMA
<b>Implementation Partners</b>	City of Ballarat, Central Highlands Water, Wadawurrung, Southern Rural Water, land holders, Parks Victoria, Friends of Lake Burrumbeet, Department of Fisheries, Community Groups
<b>Location</b>	Burrumbeet catchment
<b>Cost</b>	Project Officer funded, additional costs to be estimated
<b>Timeframe</b>	Opportune time for delivery and completion of first planning and prioritisation stage in next 18 months
<b>Scale</b>	Sub-catchment



Tullaroop Creek.  
Courtesy: North Central CMA



## ACTION CH8

### Beaufort Closed-Loop Recycled Water Scheme

This project will enable a closed loop recycled water scheme to manage all of the Beaufort community's wastewater within the urban environment through irrigation for the local golf course, school, recreation reserve and numerous sporting facilities.

This project will utilise recycled water from the Beaufort's wastewater treatment plant for greening of local community assets. Utilisation of an alternative water source for irrigation will achieve environmental outcomes, make use of fit-for-purpose water and enhance amenity and recreation outcomes for the town.

The project is a partnership between Central Highlands Water and Pyrenees Shire Council. To date, a feasibility study of the scheme has been completed, but further funding is required to complete detailed design.

#### Next steps

1. Secure co-investment funding
2. Undertake detailed design
3. Implement project

	
<b>Status</b>	<div style="width: 100%; height: 10px; background-color: #c8e6c9;"></div>
<b>Lead Agency</b>	Pyrenees Shire Council
<b>Implementation Partners</b>	Central Highlands Water, Beaufort Golf Club, local schools, Wadawurrung
<b>Location</b>	Beaufort
<b>Cost</b>	Capital cost of \$2.7 million (including \$300,000 for detailed design)
<b>Timeframe</b>	Detailed design to be delivered next year and could be implemented within 2 years, funding dependant.
<b>Scale</b>	Town/city

## ACTION CH9

### Integrated Management of the Tullaroop Catchment

A number of water management challenges and opportunities for enhancement exist within the Tullaroop Creek catchment including water quality management, environmental flow requirements, flood risk management, incorporating indigenous values, water trading opportunities and groundwater resource management.

Through collaboration, shared objectives will be formed, and management actions outlined to respond to catchment stressors and enhance the health of Tullaroop Creek. The Tullaroop Creek catchment is a closed system of a manageable scale where multiple tangible benefits can be delivered in the short term to support longer term objectives.

Discussions between organisations have identified that the challenges can be managed through greater collaboration and a more integrated management approach. There is also an opportunity for Dja Dja Wurrung to play a central role in the project as a custodian of the creek. Lessons learned from this project could be transferred to other catchment areas.

#### Next steps

1. Assemble project control group
2. Develop project scope
3. Secure funding
4. Undertake strategy

	
<b>Status</b>	<div style="width: 10%; height: 10px; background-color: #c8e6c9;"></div>
<b>Lead Agency</b>	North Central Catchment Management Authority
<b>Implementation Partners</b>	Goulburn-Murray Water; Central Highlands Water; Dja Dja Wurrung Clans Aboriginal Corporation; Hepburn Shire Council; Central Goldfields Shire, City of Ballarat
<b>Location</b>	Tullaroop Creek Catchment
<b>Cost</b>	To be estimated
<b>Timeframe</b>	Short-term: 1-3 years, with the business case delivered in the next year.
<b>Scale</b>	Sub-catchment

## Building on momentum in Ballarat

Ballarat is one of the country's leaders in IWM principles and practice, with a wide range of projects that have been delivered and which are already underway to diversify urban water sources, improve environmental outcomes and enhance liveability and economic value in the City. Four projects have been selected as priorities to extend, complement and enhance IWM activities in Ballarat, to keep driving forward the City as an exemplar of integrated water management.

### ACTION CH10

#### Breathing Life into the Yarrowee River: Works Prioritisation Masterplan

The Yarrowee River is the centrepiece of Ballarat. However, it's a landscape and ecological feature which could be greatly enhanced. To date, works have focussed on river health improvements, but it is now recognised as a prime opportunity to delivery IWM objectives by enhancing ecological systems, delivering enhanced canopy cover and amenity, enhancing cultural values, revitalising neighbourhoods and commercial areas and supporting active transport and recreation. The Ballarat Plan (City Strategy) and the Ballarat IWM Plan identify the river as a major priority which will deliver multiple benefits.

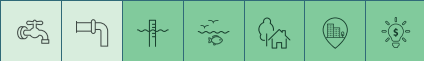
Work has begun as part of the Breathing life into the Yarrowee River project which was funded in 2013, and delivered a series of targeted works to improve vegetation, access and water quality. The project has generated high levels of community interest and engagement and has been highly successful in delivering community outcomes.

An opportunity exists to build on existing momentum and develop a Master Plan that will engage community members, key stakeholders and Traditional Owners to develop a prioritised plan of future investments to reinvigorate and breathe life into the urban reaches of the Yarrowee River corridor. This will ensure that future projects can be implemented in the context of a holistic community vision that delivers maximum benefit along the entire urban reach of the river.

A project working group has been established and a scope of works has been developed.

#### Next steps

1. Finalise commitment and funding from project partners
2. Commission works prioritisation Masterplan
3. Implement priority works

	
<b>Status</b>	<div style="width: 100%; height: 10px; background-color: #4CAF50;"></div>
<b>Lead Agency</b>	City of Ballarat
<b>Implementation Partners</b>	Corangamite CMA, Central Highlands Water, Wadawurrung, DELWP Grampians
<b>Location</b>	Yarrowee River
<b>Cost</b>	\$150,000 - \$200,000 for Master Plan and initial phase implementation
<b>Timeframe</b>	Ready for delivery in 2018-2019
<b>Scale</b>	Sub-catchment



Yarrowee River.  
Courtesy: Central Highlands Water

## ACTION CH11

### Expanding Ballarat's Alternative Water Network

The existing non-potable network in Ballarat has potential for expansion to support irrigation of schools, sporting grounds, parks and commercial purposes.

Concept design work has been completed to demonstrate the feasibility of extending the existing recycled water supply network from Ballarat North Wastewater Treatment Plant to two priority locations for greening in Ballarat:

- Wendouree West Reserve
- Ballarat Secondary College (Mt Rowan Campus)








These schemes will extend non-potable water use in Ballarat and support local communities by providing a fit-for-purpose irrigation source for key recreational spaces.

Further sites have been identified to be connected to the non-potable water network in Ballarat and the network will continue to expand across the city. These two sites have been selected as immediate priorities.

There is future potential to link to the Ballarat West Employment Zone non-potable supply network.

### Next steps

1. Secure co-investment funding
2. Complete detailed design
3. Construct extensions to the network and irrigation systems

      	
<b>Status</b>	<div style="width: 100%; height: 10px; background-color: #4CAF50;"></div>
<b>Lead Agency</b>	Central Highlands Water
<b>Implementation Partners</b>	City of Ballarat, Mt Rowan High School, Wadawurrung
<b>Location</b>	Ballarat
<b>Cost</b>	\$550,000 for Wendouree West Reserve \$250,000 for Mt Rowan Campus
<b>Timeframe</b>	Delivery within 2 years
<b>Scale</b>	Lot scale



Ballarat North Wastewater Treatment Plant. Courtesy: Central Highlands Water

## ACTION CH12

### Ballarat West Stormwater Harvesting Hubs

Ballarat West Growth Area is growing significantly in the next 20 years over numerous PSP sub-precincts and the development will almost double the urban footprint of Ballarat. The additional stormwater runoff from the new development areas will have fundamental impacts on Winter Creek (adjacent to development) and the Yarrowee River (downstream). New development areas will include irrigated open space and recreation areas and stormwater treatment wetlands. Due to early intervention in the planning process it has been ensured there is opportunity for local stormwater harvesting from wetlands for irrigation, by locating recreational areas within 600m of wetlands. Detailed design and coordination are now required to secure transfer infrastructure to connect stormwater supply to the recreation areas during the development process.

An opportunity exists to create a stormwater harvesting hub with multiple schemes utilising treated urban stormwater to irrigate open spaces in these new development areas. Proactive funding, planning and design can lead to widespread on-ground implementation where infrastructure is installed in a cost-effective manner to derive greatest community benefit.

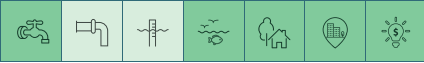
In the next 5 years, there are focus areas for co-delivery of stormwater harvesting in new development areas. Delacombe Sports Precinct (on-ground 3-5 years), is a large opportunity, where it would be prudent to complete detailed design in coming 12-18 months to be shovel ready.

#### Next steps

1. Secure funding for transfer mains and stormwater harvesting systems
2. Develop coordination process between Council, Developer and Central Highlands Water
3. Undertake detailed design for Delacombe Sports Precinct Construct extensions to the network and irrigation systems



Design and layout for local stormwater harvesting. Courtesy: City of Ballarat

	
<b>Status</b>	<div style="width: 100%; height: 10px; background-color: #4CAF50;"></div>
<b>Lead Agency</b>	City of Ballarat
<b>Implementation Partners</b>	Central Highlands Water, developers, Corangamite CMA, Wadawurrung
<b>Location</b>	Ballarat West
<b>Cost</b>	\$400,000 capital cost for Delacombe scheme
<b>Timeframe</b>	Coordination process between stakeholders to be established in next 6 months. Detailed design for Delacombe in next 12-18 months.
<b>Scale</b>	Lot scale

## ACTION CH13

### Victoria Park (Ballarat) Green Space Transformation

Feasibility assessments have been completed to harness an alternative water source to provide irrigation to Victoria Park, the key green space in Ballarat. This project will transform Victoria Park, Ballarat's key recreational reserve into a year round green space to support numerous community clubs and attract events as well as enhancing existing lakes and public amenity.

Victoria Park is the major open space for Ballarat and an important asset for communities in the region. City of Ballarat recently developed a Master Plan for the park which identified additional active recreation areas and irrigation needs. The Ballarat IWM Plan identified possible alternative water supplies for irrigation of the park, from either adjoining stormwater drains or the adjacent Lake Wendouree (which is fed by both stormwater and recycled water), utilising existing lakes in the park for storage.

Enhancement of the lake storages and natural treatment and conveyance systems in the park could also significantly improve flood management and amenity in the park. Concept designs and feasibility assessments have been conducted for the proposals.

There is also potential to extend the non-potable water supply network from the park to service other areas.

#### Next steps

1. Secure funding
2. Detailed design
3. Implementation

<b>Status</b>	<div style="width: 100%; height: 10px; background-color: #4CAF50;"></div>
<b>Lead Agency</b>	City of Ballarat
<b>Implementation Partners</b>	Central Highlands Water, DELWP Grampians, Wadawurrung, user groups
<b>Location</b>	Ballarat
<b>Cost</b>	\$600,000 capital cost
<b>Timeframe</b>	Detailed design can be delivered in next 18 months, and could be implemented within 2-3 years, funding dependant.
<b>Scale</b>	Lot scale



Victoria Park. Courtesy: City of Ballarat

# References

- i Central Highlands Water (2017) *Urban Water Strategy*
- ii DELWP (2016) *Climate Ready Victoria – Loddon Mallee Fact Sheet*
- iii Central Highlands Water (2017) *Urban Water Strategy*
- iv Central Highlands Water (2017) *Urban Water Strategy*
- v Central Highlands Water (2017) *Annual Report 2016/2017*
- vi North Central Catchment Management Authority (2014) *Waterways Strategy*,  
Corangamite Catchment Management Authority (2014) *Waterways Strategy*,  
Glenelg Hopkins Catchment Management Authority (2014) *Waterways Strategy*



