

# Western Port

## 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

Water is central to how we live, work and play in Victoria. We have a long and proud history of effectively managing water resources to meet the needs of our communities, our economy and the environment.

Through the Western Port Integrated Water Management Forum, our vision is to carry on with this tradition in the face of pressures such as unprecedented demand on water supply, the uncertainty of climate change and rapid population growth.

The Western Port IWM Forum seeks to progress the benefits of collaboration across multiple aspects of water management, from the cultural importance of water for Aboriginal people through to innovations that keep our food growing regions strong and productive, and our communities healthy and liveable.

Across Victoria, IWM Forums design and deliver solutions to the complex urban water management challenges of our times. They are potential game changers for regional scale planning and delivery of water infrastructure across the state.

The members of the Western Port IWM Forum have made a bold commitment to collaborate for positive outcomes for our region. As a resident of this region, it is an honour to Chair the inaugural Western Port IWM Forum. I am grateful for the commitment of the water and land managers of the Western Port catchment who make up our Forum and to their respective organisations, who, united by their desire for best practice integrated water management for the Western Port region, have committed to work together through this Forum.

This Strategic Directions Statement outlines our shared goals and drivers for IWM across the Western Port region and commits the Forum to our vision to deliver a secure, affordable and sustainable water cycle for this beautiful place in Victoria.

It is a privilege to present this Strategic Directions Statement on behalf of the Western Port IWM Forum.



**Gillian Sparkes**

Chair of the Western Port IWM Forum

# Acknowledgements

The Western Port Integrated Water Management Forum was the first Integrated Water Management (IWM) Forum convened in metropolitan Melbourne and is leading the way towards systematically embedding IWM across the region.

The inaugural Western Port IWM Forum was convened in November 2017 with subsequent Forums meeting throughout 2018 to discuss and prioritise integrated water planning and management in the Western Port Forum Area.

The Forum Area covers the traditional lands of the Wurundjeri people and the Bunurong people of the Kulin Nation. The Forum Area is abundant in Aboriginal cultural sites with a majority of these found near waterways and the coast. The Western Port IWM

Forum acknowledges these Traditional Owners as traditional custodians who have managed land and water sustainably over thousands of generations and maintain an active connection to Country.

The Western Port Integrated Water Management Strategic Directions Statement has been developed by the Western Port Integrated Water Management Forum. Members of this Forum include the Chief Executive Officers and Managing Directors of the following organisations:





# Chapter 1

## The way forward

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

# Introduction

## Overview

The Western Port catchment is a vast geographic area encompassing richly diverse, protected and internationally-recognised marine and coastal environments, fertile agricultural lands, natural woodlands and densely populated urban areas. The extent of urban growth and development across Greater Metropolitan Melbourne, considered alongside challenges posed by global climate change, will further impact on the water cycle and the health of waterways entering both Western Port and Port Phillip Bay. Balancing the needs and function of the catchment's water cycle with future growth and development is a complex challenge requiring careful management.

The region's water sector, local governments and Traditional Owners are working collaboratively to plan and deliver projects and strategies that will enhance the resilience and liveability of the Western Port catchment and deliver enduring environmental, economic and social benefits to local communities. Through ongoing engagement with their communities, these organisations have heard that thriving waterways are inextricably linked to community identity, amenity, value and sustained economic benefit for the Western Port catchment.

The way in which land use and water planning occur will be fundamental to ensuring these aspirations are realised.

The urban water cycle in the Western Port catchment is overseen and managed by several agencies. Enhanced communication and collaboration is therefore required to ensure plans and investments are optimised to enable shared community outcomes.

This approach is Integrated Water Management (IWM). The central premise of IWM is the overall acceptance that managing urban liveability and resilience is a shared responsibility.

The *Integrated Water Management Framework for Victoria 2017* is designed to help local governments, water corporations, catchment management authorities, Traditional Owners and other organisations work together to ensure that the water cycle efficiently contributes to the region's liveability, with communities at the centre of decision-making.

To assist with this, IWM Forums have been established across the state to identify, prioritise and oversee the implementation of critical collaborative water opportunities.

## What is a Strategic Directions Statement?

This Strategic Directions Statement (SDS) articulates the regional context, shared vision and strategic water-related outcomes for the Western Port catchment.

It includes a prioritised list of IWM opportunities developed in collaboration by the Western Port IWM Forum partners.

Partners of the Western Port IWM Forum are committing their best endeavours to:

- Ensure priority opportunities are progressed in line with the shared vision and strategic outcomes of the Western Port catchment; and
- Support the Department of Environment, Land, Water and Planning 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 Western Port IWM Forum's current priorities and opportunities.

## Integrated Water Management

IWM 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.



# Enduring collaboration

## How we're working together

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

The Forum brings together 16 organisations with an interest in Western Port's water cycle management. These organisations include five water corporations, seven local governments, the Port Phillip and Westernport Catchment Management Authority, representatives of two Traditional Owner organisations, the Department of Environment, Land, Water and Planning (DELWP) and the Victorian Planning Authority.

To ensure IWM is successful and enduring across the region, the Western Port IWM Forum partners commit to promoting a collaborative and shared values culture within their own organisations and through their work with local communities and water cycle delivery partners.

The Western Port IWM Forum is governed by an open and transparent IWM planning process.

This process assumes a holistic, whole-of-cycle approach to determine water cycle solutions and delivery responsibilities.

Each organisation has an important role to play in the decision-making and management of the catchment's water, resources and assets.

Collaboration across IWM Forum partners will ensure balanced consideration of the complex economic, environmental, cultural and community benefits and impacts associated with the range of proposed IWM projects and strategies. This collaborative process allows for integrated solutions that respond to individual organisations' needs, as well as the needs of the broader catchment.

The Western Port IWM Forum partners will continue to work together to build inter-organisational trust and develop productive, enduring relationships to realise the shared vision for integrated water management and delivery in the Western Port catchment.

Further information on the IWM Forum's governance and planning framework is outlined in the *Integrated Water Management Framework for Victoria 2017*, available on the internet at [www.delwp.vic.gov.au](http://www.delwp.vic.gov.au).

## Recognising Aboriginal values in water planning and management

The Western Port 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 metropolitan Melbourne catchments, including the Bunurong, Wadawurrung and Wurundjeri people of the Kulin Nation, 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. The Forum will continue to work with Traditional Owner groups to determine the appropriate approach and level of involvement in the broader IWM planning process for each Forum Area.



Phillip Island. Photographer: Sakaret

## Guiding principles for collaboration

The purpose of the Western Port IWM Forum is to provide a collaborative platform for overseeing, supporting and, where necessary, facilitating water's contribution to resilience and liveability in Victoria.

Applying an IWM approach, the Forum will:

- Consider the collective community needs in the regional context and develop an overall strategic direction accordingly.
- Complement and feed into existing water and land planning processes, collaborative networks, forums and associations.
- Commit best endeavours to facilitate multi-stakeholder initiatives, share organisational expertise and advance sectoral learnings.
- Respect Traditional Owner rights in water management planning.
- Ensure multiple benefits can be delivered to the community and the economy.
- Optimise investment in water management projects and strategies to deliver multiple benefits and best community value solutions.



### IWM Forum governance structure

Further information on IWM Forum collaboration and planning can be found in Chapter 3 of this SDS.



Hastings foreshore. Courtesy View Factor Images





## Chapter 2

# IWM in the region

Understanding why an integrated approach to water planning and management is critical to achieving better economic, environmental, cultural and community outcomes for the Western Port catchment.

# Regional context

The Western Port IWM Forum Area lies 70 km to the southeast of Melbourne, Victoria. The catchment covers an area of approximately 3,207 km<sup>2</sup>, extending from Mount Dandenong in the west and following the southern slopes of the Great Dividing Range to San Remo.

The eastern extent of the Forum Area follows through to the centre of the Mornington Peninsula and includes Phillip Island. The Forum Area excludes French Island, which is unincorporated land located to the north of Phillip Island.

A unique feature of the Victorian coastline, Western Port's semi-closed embayment supports an abundant array of plant and animal species and a range of ecosystem services. Fringed by the world's southernmost mangroves and saltmarshes, Western Port is designated as a wetland of international importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention). The region is home to several of Australia's iconic and protected species of migratory and resident shorebirds, as well as diverse aquatic plants, fish and invertebrates.

The landscape of the Western Port catchment varies greatly from agricultural areas, parks, natural woodlands and sandy beaches, to densely populated and expanding urban areas on the fringe of Melbourne.

The region sustains a range of commercial and recreational activities, including tourism, fishing and aquaculture, viticulture, boating and international and domestic shipping.

The catchment includes areas of significant value where Aboriginal people have lived for thousands of years.

## Population

The Western Port IWM Forum Area has an estimated population of more than 250,000 people and is predicted to double by 2040. Much of the greenfield growth for southeast Melbourne will occur here over the next two decades. Significant densification is predicted for many suburbs across the region, particularly those surrounding Pakenham, Cranbourne and Beaconsfield. Large population increases are also anticipated in the suburbs of Frankston, Warragul and the Casey Clyde area. This considerable population growth and development raises numerous challenges for the region's built and natural water systems over the coming years.

## Climate change

By 2040, temperature changes encompassing the Western Port catchment are expected to rise by an average of 1.3°C under a medium climate change scenario. This will increase the impact of the urban heat island effect. Higher density urban areas will experience higher heat vulnerability than more rural areas.

Whilst the Western Port catchment will experience greater frequency and intensity of short duration rainfall events, the region is predicted to see an overall reduction in average annual rainfall by 2040.

To meet the challenge of climate change and prepare Victoria's water system for a range of possible climate futures, climate change mitigation and adaptation actions will be embedded in all IWM Forum decisions.

Climate change and rising sea levels will also pose a serious threat to the marine landscapes of Western Port. The bay's gently sloping shoreline make it particularly susceptible to rising sea levels, with high storm surges further increasing the risk of shoreline erosion, impacting coastal communities and industries.

Water quality will also be impacted by climate change and, coupled with the impacts of changing land use activities, will impact the marine ecosystems of Western Port.





### POPULATION GROWTH

**250,000** NOW (2018)

**500,000** BY 2040



**100%**  
INCREASE



### THE REGION

- URBAN AREAS 6%
- FORESTED 25%
- AGRICULTURE 69%



**3** MARINE  
NATIONAL  
PARKS



MORE THAN

**15,000**

MIGRATORY BIRDS VISIT  
RAMSAR-LISTED WESTERN PORT



SEA LEVEL

RISE BY

**1m**

IN THE NEXT  
80 YEARS



TEMPERATURE

AN INCREASE OF

**1.3°C**

BY 2040

WATERWAYS

**2,232 KM**



# Vision and strategic outcomes

Working together to deliver a secure, affordable and sustainable water cycle across the Western Port catchment for the betterment of all communities and the environment.

## Collaboration to develop the shared vision and strategic outcome areas

The IWM Forum demonstrates a robust and transparent process of collaboration amongst local governments and a range of stakeholders with an interest in water.

Central within this process are the community values, local interests and place-based opportunities represented by each Forum Member organisation.

The IWM Forum recognises the valuable contribution of these many and diverse actors in supporting a transformative approach to the planning and management of our wider water cycle. Each of these organisations played a leading role in determining a shared vision for IWM unique to each of the five metropolitan Melbourne catchments.

The seven primary strategic outcome areas to achieve this vision, as well as the secondary outcome areas nested beneath each primary area, were developed collaboratively by the IWM Forum partners.

These outcomes acknowledge the breadth of water plans, environmental strategies and land use plans developed by each partner organisation.



Enoplosus armatus, the old wife (pair). Photographer: Julian Finn





# Strategic outcomes for IWM

## Outcomes



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

A diverse range of water supplies and resources for fit for purpose human, industrial and agricultural consumption

Water quality meets regulatory standards and community expectations

Efficiently managed water and demand

Secure water supply for both agricultural and non-agricultural industry and economy under all climatic conditions, including droughts

Water is available to maintain valued green community assets

All water resources, including groundwater, are managed in a balanced and sustainable way



### **Effective and affordable wastewater systems**

Exceed public health and environmental outcomes

Effective sewerage systems for both septic and non-septic systems

Waste-to-resource opportunities are maximised



### **Opportunities are sought to manage existing and future flood risks and impacts**

Community and residential, business/industry and agriculture properties resilient to local flood risk and climate change

Emergency information is shared, available and understandable by both practitioners and the community

Water system networks resilient to extreme weather and climate change



### **Healthy and valued waterways and marine environments**

Fishable and swimmable marine environments and swimmable recreational waterways

Waterways in the catchment are managed for long term ecological resilience, balancing the needs for regional flood mitigation, agriculture, industry and urbanisation

Reduced nutrients, sediments and discharges to both waterways and Western Port

Traditional Owner and Aboriginal values, knowledge and practices are integrated and protected in waterway management and planning



The Western Port Forum is seeking to achieve seven strategic outcomes through IWM. Each of these will have a significant role in shaping the liveability, prosperity and resilience of Victoria's cities and towns. These outcome areas provide a guide to identify and prioritise the various IWM opportunities included in Chapter 3 of this SDS.



### 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 urban, rural, agricultural and green 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

Waterways and coastal environments accessible as valuable open space

Aboriginal cultural values associated with waterways and urban landscapes are protected

Diverse and abundant native animals and plants are supported through connected habitats within and along waterways and across landscapes



### Community values are reflected in place-based planning

Diverse urban landscapes that reflect local conditions and community values

Local water related risks and issues, including emerging and legacy issues, are understood and managed

Stakeholders and the broader community are knowledgeable, engaged, empowered and working together



### Jobs, economic growth and innovation

Jobs and economic growth supported by water

Innovative planning and operation

Strong governance, collaboration and performance support water quality trading, common understanding at the catchment scale and urban and agriculture offset options

Actions in *Water for Victoria 2016* with specific regard to Traditional Owner and Aboriginal consultation, engagement, employment and economic development have been comprehensively implemented

# The case for IWM in the Western Port catchment

Over the coming years, significant change in the region will put pressure on Western Port catchment's water cycle and resources, impacting urban landscapes and communities, marine environments and industries. Translating community objectives for water management into practice will

involve working across organisational boundaries to achieve the following strategic outcomes. These outcomes are aligned with those reflected in the strategic plans and environmental strategies of the Forum's partner organisations.

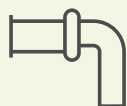


## **Safe, secure and affordable supplies in an uncertain future**

Five water corporations oversee water supply and sewerage services for the Western Port catchment. These include South East Water, Melbourne Water, Southern Rural Water, Westernport Water and South Gippsland Water.

Melbourne's second largest reservoir, Cardinia Reservoir, is found in the northwest reaches of the catchment. The Tarago Reservoir serves communities and industries in the northeast. There is an opportunity now to plan for the provision of improved water security for urban areas, agriculture and viticulture industries into the future.

Changes to the water cycle driven by projected population growth and climate change will raise numerous challenges to built and natural water systems across the catchment. The total demand for potable water is expected to rise, creating a need to identify opportunities to increase the use of alternative, fit for purpose water sources.



## **Effective and affordable wastewater systems**

The catchment is served by many wastewater treatment plants, including several operated by South East Water located at Somers, Blind Bight, Pakenham, Koo Wee Rup, Lang Lang and Longwarry. Treated water from these plants is recycled or discharged into the region's waterways.

Onsite domestic wastewater systems (septic systems) are located throughout the catchment. Failing systems that discharge pollutants to groundwater and waterways on parts of the Mornington Peninsula are problematic for the Western Port catchment.

Investment in wastewater management is required to continue serving the region's growing population and mitigate harmful impacts to the Western Port catchment's waterways and the breadth of marine species they support.



## **Seeking opportunities to manage existing and future flood risks and impacts**

The Western Port catchment contains several areas familiar with the risks and impacts of flood events. Approximately 18 per cent of the region lies in areas subject to inundation or overland flow paths during periods of heavy rain when water build up swells beyond the capacity of drainage systems. These areas include the large and populous shire of Cardinia, communities near the Bass River and the former Koo Wee Rup swamp.

The catchment is expected to see more intense and frequent short duration rainfall events in the summer months, raising further concerns for flood-prone coastal communities along Western Port and the Mornington Peninsula. Under a medium climate change scenario, sea levels will rise by one metre in the next 80 years, increasing the incidence of high storm surges, coastal flooding and risk of shoreline erosion.

Climate change and rising sea levels further threaten the ecological health of the catchment's waterways and marine species, including the unique mangrove, saltmarsh, seagrass and intertidal rocky reef landscapes important to the health of the bay.

Reducing stormwater volumes and limiting the release of nutrients and sediments to Western Port are significant challenges facing the region.



### Healthy and valued urban, rural, agricultural and green landscapes

The Western Port catchment contains 2,232 km of waterways ranging from iconic coastal beaches, large rivers and small creeks popular as fishing, swimming and tourism destinations.

Three of Victoria's 13 Marine National Parks are located in the catchment, including the Ramsar-listed Western Port, recognised nationally and internationally for its rich marine ecosystems and diverse habitats.

To the south, Phillip Island is home to the world's smallest penguin species, the Little Penguin, and supports a range of protected animal species.

Unique to Western Port are some of the world's most southernmost mangrove forests where fish, birds, crabs and land animals such as skinks and wallabies are found. Large tracts of coastal saltmarsh also exist in and around Western Port. These contain a breadth of aquatic plants and provide habitat for numerous bird species, including Black Swans and the critically endangered Orange-bellied Parrot.

The region's seagrass meadows are also ecologically important, giving refuge to a range of marine animals, including seahorses, seadragons and juvenile whiting. These areas perform an essential role in maintaining the health of Western Port's waterways by stabilising sediment released by changing land use and recycling nutrients through the bay.

Extensive soft sediment environments cover about two thirds of the bay and

comprise the dominant marine habitat in Western Port. Areas including intertidal mudflats contain several hundred micro-organisms and offer important foraging grounds for migratory and local shorebirds such as the Red-necked Stint and the Hooded Plover.

Together, these impressive vegetation communities support some 15,000 migratory birds visiting the region each year.

However, the region faces a decline in the health and function of waterways due to climate change, pollution and changing land use. In general, waterways in the upper reaches of the catchment and within Mornington Peninsula are in moderate condition, while those in the southeast discharging to Western Port are either poor or very poor.

Changing rural and urban land use activities have led to reduced flows in the catchment's rivers and streams.

An increase in nutrients, sediments and pollutants from high-intensity rainfall could disrupt the ecological balance of the bay. Increased chance of algal blooms in Western Port, coupled with increasing salinity levels due to current and ongoing intensive agricultural activity, further threaten these interlinked ecosystems.

**Ramsar sites** (or Ramsar wetlands) are wetlands of international importance listed under the Ramsar Convention on Wetlands. This international intergovernmental treaty provides a framework for the conservation and wise use of designated wetland ecosystems worldwide. There are 12 Ramsar sites in Victoria, including Western Port.



### Healthy and valued urban and rural landscapes

The landscape of the Western Port catchment varies greatly from agricultural areas, parks, natural woodlands and sandy beaches, to densely populated and expanding urban areas accounting for around 6 per cent of the region. A quarter of the catchment area remains forested and around 69 per cent of the area is devoted to agriculture, with the majority of this used for dairy farming.

The catchment also includes the viticulture region on the Mornington Peninsula and the intensive food production zone known as the Bunyip Food Belt, which contains some of Australia's most fertile soils and is a significant supplier of fresh food for Victoria.

An increase in native vegetation is sought at the catchment scale, with the management of weeds along priority waterways, as well as the restoration of wildlife corridors, two key areas of improvement for the Western Port catchment.



## Community values are reflected in place-based planning

The Western Port catchment holds a wide range of values for Victorians, including recreational, agricultural, tourism, cultural heritage and aesthetic appeal.

The catchment encompasses the Traditional lands of the Wurundjeri, Boon Wurrung and the Bunurong people of the Kulin Nation. It boasts a rich indigenous history, including the belief of Too-roo-dun, the bunyip, which was said to occupy the former Koo Wee Rup swamp, a lowland area in the northeast of the catchment.

Over 2,000 Aboriginal cultural sites have been recorded in the region, many of which are along waterways and coastal areas.

Residents across five of the seven local government areas included in the Western Port catchment rate their general wellbeing above the Victorian average, according to the most recent *VicHealth Indicators Survey* examining public health and wellbeing across in the state.

The Western Port Forum Area includes part of the Southern Metro Region collaborative partnership, an initiative that brings together community and business representatives with state and local governments to identify priorities for jobs, services and infrastructure within the region.

Local governments are working alongside their communities to create connected green corridors to improve local amenity and enrich liveability in the catchment.

An area of focus for this work includes maintaining the breadth of existing parks, natural woodlands, beaches and other assets unique to the catchment.

Balancing resiliency and liveability with population growth, community planning and development is a complex challenge for the region. Effective stormwater infrastructure assets to safely manage stormwater and wastewater from residential development will be crucial to minimise community flood hazards and deliver improved environmental, commercial and social benefits to the catchment.



## Jobs, economic growth and innovation

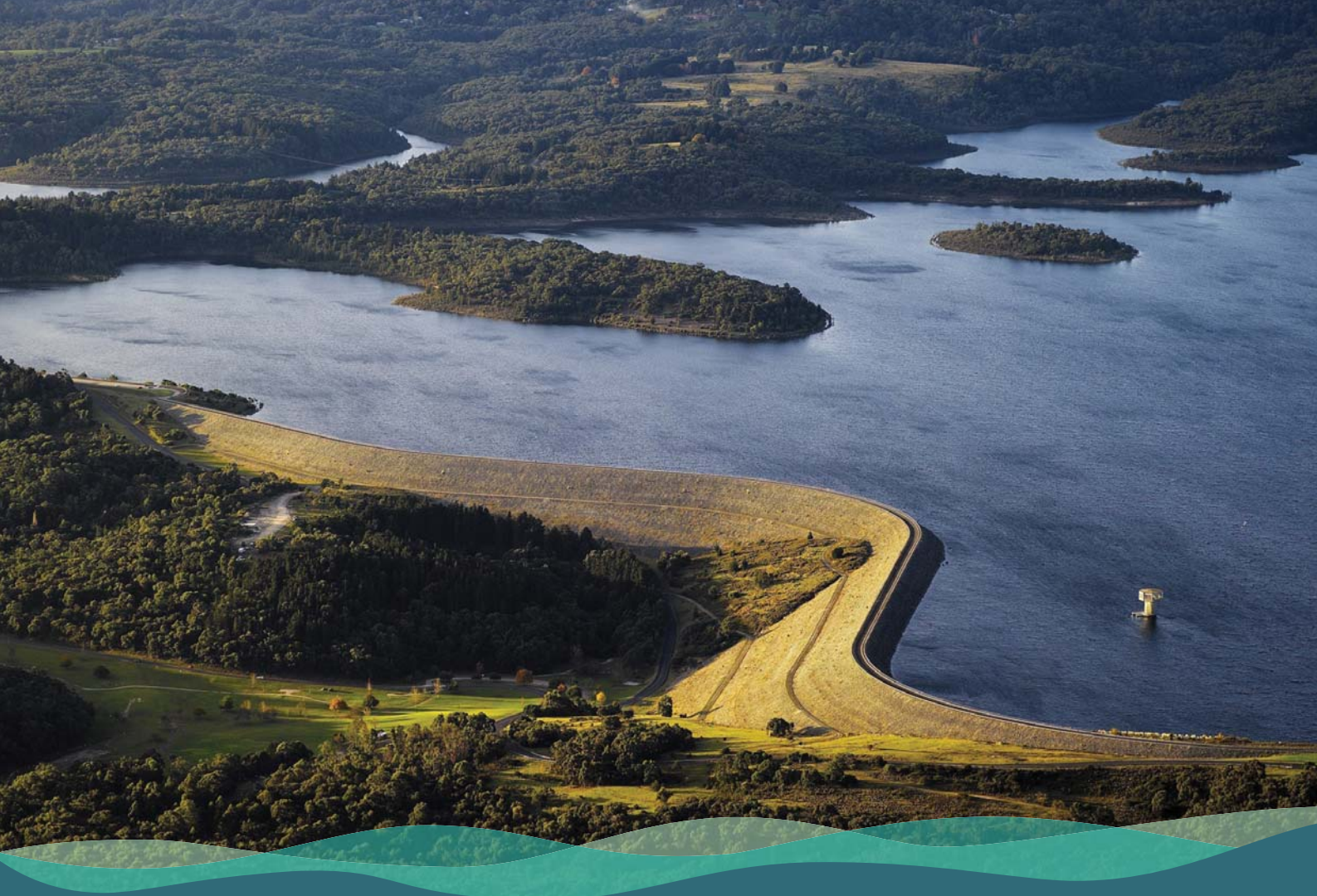
The population of the Western Port catchment is expected to double over the next 20 years. With new residents will come new jobs and economic opportunities for the region.

State Significant Industrial Precincts identified in the catchment include the areas of Pakenham, Officer and Hastings.

Agriculture will continue to be a key area of economic growth for the region. Other major industries in the Western Port catchment include fishing, aquaculture, tourism and international and domestic shipping.

Secure water supplies, adequate water storage and distribution infrastructure to support these industries will be critical areas of focus for the region moving forward.





## Chapter 3

# IWM opportunities

A portfolio of priority IWM opportunities that the Western Port Forum's collaborative partners have committed their best endeavours to progress.

# Priority Portfolio

The following portfolio of priority projects and strategies represents a suite of IWM opportunities for which the Western Port IWM Forum's collaborative partners are committed to progress within the next 12 to 18 months.

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

Additional opportunities that require further assessment are included in the Appendix of this SDS.

In developing this portfolio, the collaborative governance of the Forum recognises the water cycle complexities of the region and considers the balance of outcomes, opportunities, resource availability, roles and responsibilities for Forum Members and their communities.

A Forum Area (or catchment-wide) IWM Strategy is yet to be developed. The Western Port IWM Forum has agreed to initiate development of a strategy over the next 12-18 months.

The projects and strategies listed within the Priority Portfolio have not been guided by a catchment scale IWM Strategy, rather they were developed based on the experience and knowledge of the Forum Members

and the relevant strategies and plans of their organisations, and in consideration of their potential to impact on the seven strategic outcomes for IWM sought for the Western Port region.

In addition, consideration was given to the urgency of taking such actions, particularly where opportunities could be lost if no action was taken, as well as the level of commitment demonstrated by partner organisations to progress IWM opportunities over the next 12-18 months.

The projects and strategies within acknowledge a number of existing metropolitan-wide strategies and plans, such as the *Melbourne Water Systems Strategy* and the draft *Healthy Waterways Strategy 2018*, as well as the clear and measurable targets identified in the existing strategies. Targets may include alternative water use and stormwater harvesting and infiltration. Further, climate change mitigation goals, including low emission IWM solutions and those that support urban cooling and greening, will be considered by the Forum during the evaluation of projects and strategies.

The IWM Forum recognises that the contribution of this Priority Portfolio to the seven strategic outcomes, including the targets identified in the existing metropolitan-wide strategies, has not yet been quantified. It is the intention of the Forum to consider a targeted evaluation of these IWM opportunities where the Forum agrees this is necessary.

This work may occur in tandem with the development of a catchment-wide strategy.

The Forum acknowledges that this is a dynamic list of IWM opportunities and is subject to further assessment by the IWM Forum Members.

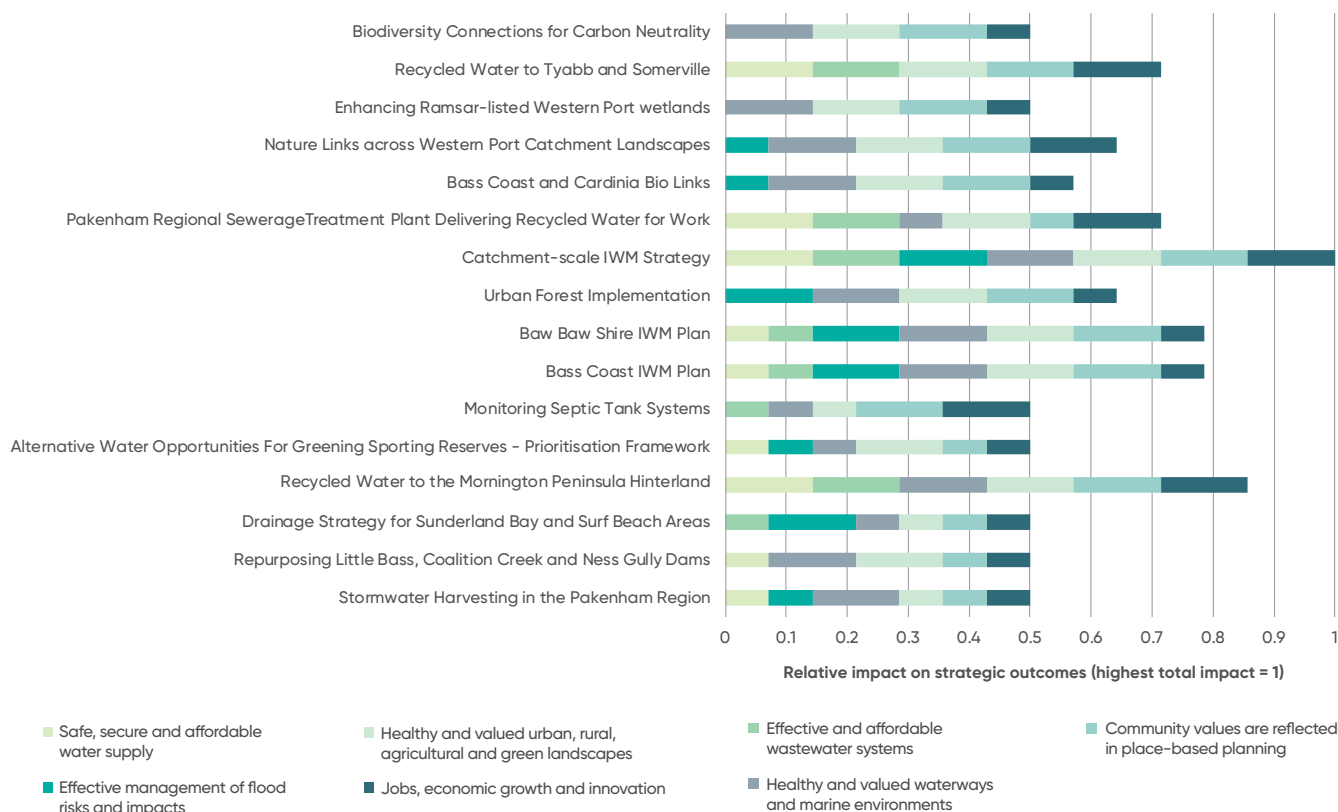
By co-delivering a range of water planning and management opportunities, the Western Port IWM Forum seeks to build on the strengths of the community, the water sector and governments to achieve better value and long term shared benefits for the region.

The Western Port IWM Forum presents an unparalleled opportunity for these organisations to build lasting partnerships across sectors and geographical boundaries to enhance, accelerate and generate greater visibility for water cycle opportunities that will improve Victoria's resilience and liveability.



















































































































Superb Fairy-wren.  
Photographer: David Paul

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



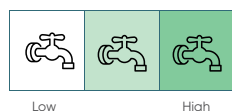


# IWM opportunities: An overview of projects and strategies

IWM opportunity	Strategic outcomes								Location	Spatial scale
Catchment-scale IWM Strategy									Western Port catchment	Forum area
Stormwater Harvesting in the Pakenham Region									Pakenham	Growth area
Repurposing Dams at Little Bass, Coalition Creek and Ness Gully									Poowong	Sub-catchment
Drainage Strategy for Sunderland Bay and Surf Beach Areas									Sunderland Bay and Surf Beach	Sub-catchment
Alternative Water Opportunities for Greening Sporting Reserves - Prioritisation Framework									City of Casey	Sub-catchment
Monitoring Septic Tank Systems									Mornington Peninsula	Sub-catchment
Bass Coast IWM Plan									Bass Coast	Inter-forum
Urban Forest Implementation									City of Frankston	Sub-catchment
Pakenham Regional Sewerage Treatment Plant Delivering Recycled Water for Work									Pakenham	Sub-catchment
Bass Coast and Cardinia Bio Links									Bass Coast and Cardinia Shires	Green wedge
Nature Links across Western Port Catchment Landscapes									Western Port catchment	Forum area
Enhancing the Ramsar-listed Western Port Wetlands									Western Port	Forum area
Recycled Water to Tyabb and Somerville									Tyabb and Somerville	Growth area
Baw Baw Shire IWM Plan									Baw Baw Shire	Sub-catchment
Recycled Water to the Mornington Peninsula Hinterland									Mornington Peninsula	Sub-catchment
Biodiversity Connections for Carbon-Neutrality									Western Port catchment	Forum area

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



Level of shading refers to the degree of impact the IWM opportunity has on each strategic outcome area. Dark shading represents highest impact.



Collaborative partners	Status
All Western Port IWM Forum partner organisations	
South East Water, Melbourne Water, Cardinia Shire Council, Bunurong Land Council Aboriginal Corporation (LCAC), VPA, Wurundjeri Land and Compensation Cultural Heritage Council Aboriginal Corporation (L&CCHCAC)*	
South Gippsland Water, South Gippsland Shire Council, Port Phillip and Westernport CMA (PPWCMA), West Gippsland CMA, Southern Rural Water, Bunurong LCAC, local communities	 
Bass Coast Shire Council, Melbourne Water, VicRoads, Westernport Water, Surf Beach and Sunderland Bay Community Coast Care volunteers, Committee of Management for Surf Beach Community Park, Bunurong LCAC	   
City of Casey, Melbourne Water, Bunurong LCAC, Southern Rural Water, Wurundjeri L&CCHCAC*	   
Mornington Peninsula Shire Council, Melbourne Water, South East Water, Bunurong LCAC	  
Bass Coast Shire Council, Melbourne Water, Westernport Water, VicRoads, Bunurong LCAC	 
Frankston City Council, South East Water, Melbourne Water, PPWCMA, Bunurong LCAC	
South East Water, Cardinia Shire Council, Melbourne Water, Bunurong LCAC, Southern Rural Water, Wurundjeri L&CCHCAC*	 
Bass Coast Shire Council, Cardinia Shire Council, PPWCMA, Westernport Water, Bunurong LCAC, Wurundjeri L&CCHCAC*	   
PPWCMA, Bunurong LCAC, Wurundjeri L&CCHCAC*, Westernport Water, Melbourne Water, Parks Victoria, South East Water, Western Port Catchment Landcare Network, Bass Coast Landcare Network, Mornington Peninsula Landcare Network, Mornington Peninsula Shire Council, City of Casey, Cardinia Shire Council, Baw Baw Shire Council	   
PPWCMA, Parks Victoria, Conservation Volunteers Australia, Birdlife Australia, Phillip Island Nature Park, French Island Landcare, Zoos Victoria, Bass Coast Landcare Network, Bunurong LCAC, Mornington Peninsula Shire Council, City of Casey, Mornington Peninsula and Western Port Biosphere Reserve Foundation, Western Port Catchment Landcare Network	   
Mornington Peninsula Shire Council, South East Water, Melbourne Water, Bunurong LCAC, Southern Rural Water, Wurundjeri L&CCHCAC*	 
Baw Baw Shire, PPWCMA, West Gippsland CMA, Gippsland Water, Southern Rural Water, Bunurong LCAC	
Mornington Peninsula Shire Council, South East Water, Melbourne Water, Bunurong LCAC, Southern Rural Water	 
PPWCMA, South East Water, Bunurong LCAC	

\*The Wurundjeri Land and Compensation Cultural Heritage Council Aboriginal Corporation will remain informed of progress related to this IWM opportunity.

#### Project opportunity status



#### Strategy opportunity status



# Priority Portfolio of IWM opportunities

All the IWM opportunities included in the Priority Portfolio demonstrate value for the Western Port catchment.

All these projects and strategies will be enhanced and accelerated by collaboration and visibility through the IWM Forum process. They will all benefit from additional resources and support through the IWM Forum, and from generating new, or enhancing existing, cross-organisational collaboration.

Some projects and strategies in the Priority Portfolio offer unique additional values. These include: the potential to generate important cross-organisational learnings and capacity-building benefits for current and future IWM opportunities; the ability to be a mechanism for further IWM advocacy and policy innovation; and a contribution of substantial benefits to the region as a whole, or specifically to its iconic natural assets, including the Ramsar-listed Western Port.

## ACTION 1

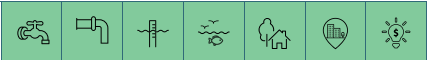
### Catchment-scale IWM Strategy

A catchment-scale IWM Strategy will support the Western Port IWM Forum Members to effectively contribute to the achievement of the Forum's vision and strategic outcomes. This project will define a plan to deliver an IWM Strategy in collaboration with all Western Port IWM Forum Members and Working Group members.

The catchment-scale IWM Strategy will develop a framework to inform/guide investment decisions regarding place-based IWM opportunities.

#### Unique value:

This strategy has the potential to generate cross-organisational learnings and capacity-building benefits for IWM opportunities. It will contribute substantial benefits to the Western Port region and its iconic natural assets.

						
Status		<div></div>				
Collaborative partners		Western Port Forum partner organisations				
Location		Western Port catchment				
Spatial scale		Forum area				

## ACTION 2

### Stormwater Harvesting in the Pakenham Region








This project investigates the possibility of harvesting stormwater from the Pakenham East area and diverting it for treatment at Pakenham Water Recycling Plant to use as a source for Class A recycled water for local towns.

There is a potential to divert approximately 700 ML/year of stormwater which would otherwise discharge into waterways and ultimately to Western Port.

This project has strong links with Action 9, which investigates the possibility of upgrading the Pakenham Water Recycling Plant to supply recycled water to agribusiness and industrial uses in Cardinia.

#### Unique value:

This project has the potential to generate cross-organisational learnings and capacity-building benefits for IWM opportunities. It may be a mechanism for further IWM advocacy and policy innovation for alternative water. This project will contribute substantial benefits to the Western Port region, particularly to its iconic natural assets at Western Port.

						
<b>Status</b>						
<b>Collaborative partners</b>						
South East Water, Melbourne Water, Cardinia Shire Council, Bunurong LCAC, Wurundjeri L&CCHCAC*, VPA						
<b>Location</b>						
Pakenham						
<b>Spatial scale</b>						
Growth area						

## ACTION 3

### Drainage Strategy for Sunderland Bay and Surf Beach Areas








A draft drainage strategy for the Sunderland Bay and Surf Beach Areas has been developed with an aim to minimise flood hazards to the community, reduce stormwater overflow discharges to the sea and reduce stormwater ingress to the sewer network from localised flooding and inundation.

This strategy seeks to develop a cost-effective network of stormwater assets that will manage stormwater flows in a safe manner that minimises local flood risks. The strategy and associated assets will help improve water quality, environmental conditions and drainage in the Sunderland Bay and Surf Beach areas.

Finalisation of the draft strategy will be undertaken over the next 12-18 months which will involve detailed analysis of different stormwater management options by considering their functionality and cost effectiveness.

#### Unique value:

This strategy has the potential to generate cross-organisational learnings and capacity-building benefits for IWM opportunities. This strategy will contribute substantial benefits to the Western Port region, particularly to its iconic natural assets at Western Port.

						
<b>Status</b>						
<b>Collaborative partners</b>						
Bass Coast Shire, Melbourne Water, VicRoads, Westernport Water, Surf Beach and Sunderland Bay community Coast Care volunteer group, Committee of Management for Surf Beach Community Park, Bunurong LCAC						
<b>Location</b>						
Sunderland Bay and Surf Beach						
<b>Spatial scale</b>						
Sub-catchment						

## ACTION 4

### Alternative Water Opportunities for Greening Sporting Reserves – Prioritisation Framework

The supply of alternative water resources will help the City of Casey meet future irrigational demands of open green spaces and recreational reserves. This ‘future-proofing’ strategy develops a process to identify priority projects on alternative water supply to recreational reserves in the City of Casey. It implements a prioritisation process as a tool to coordinate capital works plans, including across council boundaries to enable collaboration and collective funding applications to benefit multiple councils at one time. There are opportunities to share the tool with other organisations.

#### Unique value:

This strategy has the potential to generate cross-organisational learnings and capacity-building benefits for IWM opportunities.

<b>Status</b>		<div><div></div><div></div><div></div><div></div><div></div></div>				
<b>Collaborative Partners</b>		City of Casey, Melbourne Water, Bunurong LCAC, Southern Rural Water, Wurundjeri L&CCHCAC*				
<b>Location</b>		City of Casey				
<b>Spatial scale</b>		Sub-catchment				

## ACTION 5

### Repurposing Dams at Little Bass, Coalition Creek and Ness Gully

Following the upgrade of water supply infrastructure in the region, a number of dams serving the towns of Poowong, Loch, Nyora and Korumburra will be available for re-purposing for a variety of community recreational uses, as well as stormwater harvesting for fit for purpose supplies. Repurposing these dams may also support a range of agricultural and cultural benefits.

This project seeks to understand opportunities to determine how these dams can be re-purposed to best suit the needs of local communities.

#### Unique value:

This project has the potential to generate cross-organisational learnings and capacity-building benefits for IWM opportunities.

<b>Status</b>		<div><div></div><div></div><div></div><div></div><div></div></div>				
<b>Collaborative Partners</b>		South Gippsland Water, South Gippsland Shire Council, PPWCMA, West Gippsland CMA, Southern Rural Water, Bunurong LCAC, local communities				
<b>Location</b>		Poowong				
<b>Spatial scale</b>		Sub-catchment				



## ACTION 6

### Monitoring Septic Tank Systems

Over the next three years, Mornington Peninsula Shire Council will work collaboratively with South East Water and industry stakeholders to use a proprietary digital application called 'Septic Track' to effectively log the servicing and maintenance of septic systems. Data acquired with the App confirms the location of septic assets and will allow better targeting and education of septic system owners who have not serviced their septic systems. This will help mitigate the environmental impacts of poor-performing systems and provide additional information regarding on-site bores, stormwater management and assets to include in property sale documents.

#### Unique value:

This project has the potential to generate cross-organisational learnings and capacity-building benefits for IWM opportunities. It may be a mechanism for further IWM advocacy and policy innovation regarding septic tank wastewater management.

<b>Status</b>						
<b>Collaborative Partners</b>						
Mornington Shire, Melbourne Water, South East Water, Bunurong LCAC						
<b>Location</b>						
Mornington Peninsula						
<b>Spatial scale</b>						
Sub-catchment						

## ACTION 7

### Bass Coast IWM Plan

Bass Coast Shire Council is embarking on the development of an Integrated Water Management Plan in line with the vision and strategic outcomes of the Western Port and Central and South Gippsland IWM Forums. An IWM Plan will help direct the Shire to effectively address water-related challenges with relevant regional partners.

#### Unique value:

This strategy has the potential to generate cross-organisational learnings and capacity-building benefits for IWM opportunities. It will contribute substantial benefits to the Western Port region, particularly to its iconic natural assets along the Bass Coast.

<b>Status</b>						
<b>Collaborative Partners</b>						
Bass Coast Shire, Melbourne Water, Westernport Water, VicRoads, Bunurong LCAC, Wurundjeri L&CCHCAC*						
<b>Location</b>						
Bass Coast Shire						
<b>Spatial scale</b>						
Inter-forum						

## ACTION 8

### Urban Forest Implementation

This project seeks to ensure that the objectives of the Metropolitan Urban Forest Strategy, currently in development by Resilient Melbourne and supported by all Forum members, are consistently implemented across relevant IWM projects within the Western Port Forum Area.

The Urban Forest Strategy outcomes aim to achieve a significant increase in the tree canopy cover of all Melbourne metro municipalities. Key actions include tree planting and vegetation management in publicly owned reserves, street tree provision and the provision of trees on privately owned land. The urban forest will deliver substantial social, environmental and economic benefits to the metropolitan Melbourne area and its communities.

#### Unique value:

This project has the potential to generate cross-organisational learnings and capacity-building benefits for IWM opportunities.

<b>Status</b>						
<b>Collaborative Partners</b>						
Frankston City Council, South East Water, Melbourne Water, PPWCMA, Bunurong LCAC						
<b>Location</b>						
City of Frankston						
<b>Spatial scale</b>						
Sub-catchment						

## ACTION 9








### Pakenham Regional Sewerage Treatment Plant Delivering Recycled Water for Work

A secure water supply is key for economic growth in the Western Port catchment. There are a number of Sewerage Treatment Plants (STPs) in the region that produce Class A recycled water. This project will investigate sourcing recycled water from Pakenham STP and other regional STPs to secure the supply of water for agribusinesses in Cardinia Shire, as well as residential and non-residential uses in neighbouring towns.

This project has strong links with Action 2, which investigates the possibility of utilising stormwater harvested from Pakenham region to source recycled water.

#### Unique value:

This project has the potential to generate cross-organisational learnings and capacity-building benefits for IWM opportunities. It may be a mechanism for further IWM advocacy and policy innovation. It will contribute substantial benefits to the Western Port region.

						
<b>Status</b> <div><div></div><div></div></div>						
<b>Collaborative Partners</b> South East Water, Cardinia Shire Council, Melbourne Water, Bunurong LCAC, Southern Rural Water, Wurundjeri L&CCHCAC*						
<b>Location</b> Pakenham						
<b>Spatial scale</b> Sub-catchment						

## ACTION 10

### Bass Coast and Cardinia Bio Links

This project seeks to increase the amount of native vegetation cover in Victoria's southeast region through a network of Bio Links connecting open green spaces and wildlife corridors through the landscape. This project also seeks to create and enhance vegetated riparian zones to capture, filter and retain water in the landscape, providing habitat for birds, fish and animals, improving water quality, and mitigating flood related issues in the Bass Coast and Cardinia regions.








Lead organisations will collaborate with other stakeholders by sharing learnings. By working together, they will ensure a consistent approach to bio links implementation where they cross local government boundaries.

Cardinia and Bass Coast Shires will engage with stakeholders and the community to develop a shared vision and prepare a draft plan of implementation.

This project demonstrates strong linkages with Action 11. There are opportunities for collaboration in the future design and implementation of these two projects.

#### Unique value:

This project has the potential to generate cross-organisational learnings and capacity-building benefits for IWM opportunities.

						
<b>Status</b> <div><div></div><div></div><div></div><div></div></div>						
<b>Collaborative Partners</b> Bass Coast Shire Council, Cardinia Shire Council, PPWCMA, Westernport Water, Bunurong LCAC, Wurundjeri L&CCHCAC*						
<b>Location</b> Bass Coast and Cardinia Shires						
<b>Spatial scale</b> Green wedge						

## ACTION 11

### Nature Links across Western Port Catchment Landscapes

This project will continue and build upon revegetation work undertaken over the past decades by many organisations and community groups to reconnect fragmented vegetation and rejuvenate landscapes in the Western Port region. This project aims to develop priority Nature Links in the Western Port catchment over the long term, particularly along the Mornington Peninsula, the upper Bunyip catchment and from Western Port to Mount Worth.

This project demonstrates strong linkages with Action 10. There are opportunities for collaboration in the future design and implementation of these two projects.

#### Unique value:

This project has the potential to generate cross-organisational learnings and capacity-building benefits for IWM opportunities. It may be a mechanism for further IWM advocacy and policy innovation. It will contribute substantial benefits to the Western Port region and its iconic natural assets, particularly along Western Port.

<b>Status</b>						
<b>Collaborative Partners</b>						
PPWCMA, Bunurong LCAC, Wurundjeri L&CCHCAC*, Westernport Water, Melbourne Water, Parks Victoria, South East Water, Western Port Catchment Landcare Network, Bass Coast Landcare Network, Mornington Peninsula Landcare Network, Mornington Peninsula Shire Council, City of Casey, Cardinia Shire Council, Baw Baw Shire Council						
<b>Location</b>						
Western Port catchment						
<b>Spatial scale</b>						
Forum area						

## ACTION 12

### Enhancing the Ramsar-listed Western Port Wetlands

Western Port is recognised globally as a Wetland of International Importance under the Ramsar Convention. It currently faces increased pressures and stressors, including invasive species, climate change, urban development and pollution, that directly affect the critical components, processes and ecological services that the wetlands provide.

In order to maintain or improve these important wetlands, management intervention and conservation actions are required to address known priority threats that impact or take away from the ecological character of Western Port.

This project will assist in improving the condition of coastal saltmarsh vegetation communities, as well as help support and stabilise the trajectories of several threatened species.

#### Unique value:

This project has the potential to generate cross-organisational learnings and capacity-building benefits for IWM opportunities. It may be a mechanism for further IWM advocacy and policy innovation. It will contribute substantial benefits to the Western Port region and its iconic natural assets, particularly the Western Port Wetlands.

<b>Status</b>						
<b>Collaborative Partners</b>						
PPWCMA, Parks Victoria, Conservation Volunteers Australia, Birdlife Australia, Phillip Island Nature Park, French Island Landcare, Zoos Victoria, Bass Coast Landcare Network, Bunurong LCAC, Wurundjeri L&CCHCAC*, Mornington Peninsula Shire Council, City of Casey, Mornington Peninsula and Western Port Biosphere Reserve Foundation, Western Port Catchment Landcare Network						
<b>Location</b>						
Western Port						
<b>Spatial scale</b>						
Forum area						








## ACTION 13

### Recycled Water to Tyabb and Somerville

The Tyabb and Somerville area has been recognised as an important horticultural region in the Western Port catchment. However, the potential growth of the horticulture industry is restricted by the availability of reliable water. This project will update a business case developed in 2014 and evaluate the construction of a pipeline to deliver approximately 1,555 ML of recycled water to Tyabb and neighbouring Somerville. This project has the potential for significantly increased revenue and job creation for the region from the delivery of recycled water.

#### Unique value:

This project may be a mechanism for further IWM advocacy and policy innovation.

						
<b>Status</b>		<div><div></div><div></div></div>				
<b>Collaborative Partners</b>		Mornington Peninsula Shire, South East Water, Melbourne Water, Bunurong LCAC, Southern Rural Water				
<b>Location</b>		Mornington Peninsula Shire				
<b>Spatial scale</b>		Growth area				

## ACTION 14

### Recycled Water to the Mornington Peninsula Hinterland








Economic and agricultural growth in the Mornington Peninsula hinterland is limited by water availability. Currently, the only source of water available is groundwater and there is a need to reduce the demand on this supply due to sustainable limits on groundwater usage, particularly in the southern end of the peninsula.

This project investigates diverting recycled water from the South Eastern Outfall (SEO) pipeline to the Hinterland region and southern end of the Mornington Peninsula, and develops a business case by considering full market feasibility and triple bottom line costs and benefits.

This project has the potential to realise new horticulture opportunities in highly productive land currently limited by the availability of water. Further environmental benefits of the water can be realised as waterways and aquifer levels benefit from additional water availability.

#### Unique value:

This project may be a mechanism for further IWM advocacy and policy innovation.

						
<b>Status</b>		<div><div></div><div></div></div>				
<b>Collaborative Partners</b>		Mornington Peninsula Shire Council, South East Water, Melbourne Water, Bunurong LCAC, Southern Rural Water				
<b>Location</b>		Mornington Peninsula				
<b>Spatial scale</b>		Sub-catchment				










## ACTION 15

### Baw Baw Shire IWM Plan

Recognising the value of integrated water management, Baw Baw Shire Council has successfully delivered several place-based IWM projects. However, utilisation of ad-hoc funding and opportunities have meant that there is currently no medium-term strategy or prioritisation of projects to provide a stable direction or funding base to ensure the full benefits of IWM are realised across the municipality.

The development of an IWM Plan for Baw Baw Shire Council will ensure that its departments with an interest in water can effectively collaborate and coordinate IWM opportunities across the organisation and throughout the shire alongside water industry partners. This IWM Plan will consider a regional perspective to implementing IWM in Victoria and will be aligned with the vision and strategic objectives of the Western Port Forum. It has the potential to raise the profile of IWM amongst council and the community to ensure water management is included in the decision-making process in peri-urban local government.

						
<b>Status</b>						
<b>Collaborative Partners</b>						
Baw Baw Shire, PPWCMA, West Gippsland CMA, Gippsland Water, Southern Rural Water, Bunurong LCAC, Wurundjeri L&CCHCAC*						
<b>Location</b>						
Baw Baw Shire						
<b>Spatial scale</b>						
Sub-catchment						








## ACTION 16

### Biodiversity Connections for Carbon-Neutrality

Victoria's water authorities are committed to becoming carbon neutral. Achieving this will require various actions to reduce carbon emissions. It will also likely require some offsetting of carbon emissions.

Work has been under way over the past two years between water authorities and catchment management authorities to develop and trial arrangements that see carbon offsets being achieved through revegetation whilst also providing other environmental and social benefits in local areas.

This collaborative project will trial a process for revegetation in priority areas of the Western Port catchment that can contribute to carbon offsets. It will also assess the costs and benefits to enable improved decision-making regarding carbon offsets in the future.

						
<b>Status</b>						
<b>Collaborative Partners</b>						
PPWCMA, South East Water, Bunurong LCAC, Wurundjeri L&CCHCAC*						
<b>Location</b>						
Western Port catchment						
<b>Spatial scale</b>						
Forum area						

# Strategic enablers to put IWM into practice

The IWM Forums were established in Victoria to identify, coordinate and prioritise place-based and catchment-wide opportunities that would most benefit from collaborative water cycle planning and management.

Alongside these opportunities, the IWM Forum Members identified a range of barriers that could prevent effective implementation of IWM across metropolitan Melbourne and regional Victoria.

The DELWP Water and Catchments Group is responsible for addressing these barriers to implementation in a holistic manner alongside relevant government organisations involved in land use planning and land management.

Advisory groups drawing on industry and independent expertise support DELWP in the development and implementation of strategic initiatives to fill knowledge gaps and address issues identified through the IWM Forum process.

Barriers to IWM are reviewed, with local implications and potential state-wide resolutions, or strategic enablers, discussed. These discussions will help DELWP determine potential options for policy reform and associated areas of impact for industry sectors and organisations.

Advisory groups provide advice regarding areas where planning, water, local government and other arms of government need to work more collaboratively to maintain and enhance the liveability and resilience of Victoria's cities and towns.



Agriculture in the Western Port Green Wedge. Photographer: John Krutop

# Success stories

## Sustainable Water Use at Casey Fields

Casey Fields is an 88-hectare premium multi-sport precinct in the City of Casey, 45 kilometres south-east of Melbourne's CBD. Set amongst vast parklands, this prominent sporting hub provides a range of active and passive recreation opportunities in Cranbourne East, one of Australia's fastest growing suburbs.

Together with South East Water, Casey City Council have invested in sustainable water initiatives to ensure Casey Fields can continue to serve communities as one of the region's top sporting facilities. A network of swales and wetlands within the precinct capture, filter and retain stormwater on-site. The wetland lakes have become a popular recreation destination for residents and visitors, offering seasonal rainbow trout fishing and playful interactions at the water's edge.

To date, 60 ML/year of recycled water is used in conjunction with up to 15 ML/year groundwater from on-site bores to irrigate the ovals and surrounding parklands, providing high quality

playing surfaces at Casey Fields and greening and cooling benefits for the broader region. The current water infrastructure saves approximately 70 ML of potable water each year, an important addition for the growing community's drinking water supplies. Since the site was established in 2003, Casey Fields has saved approximately 1 GL of potable water, the equivalent of 400 Olympic size swimming pools, and reduced significant pollutant loads to downstream waterways, keeping approximately 310 tonnes of sediment, 750 kg of phosphorous and over 500 kg of nitrogen out of waterways that flow to Western Port.

In future, irrigation demand is predicted to increase to 108 ML per year as the site expands. Casey City Council aim to use the stormwater captured on-site to bridge the gap in demand for total sportsground irrigation, eliminating use of potable water supplies. The collaborative partners will also explore the use of Aquifer Storage and Recovery (ASR) as a strategic storage option for alternative water, returning water resources to Casey's communities to meet future demand.

## Greening the fields at Bellbird Park

Bellbird Park is a multi-sport and community facility in the West Gippsland region, 90 kilometres east of Melbourne. With over 130,000 visitations annually to its seven outdoor sportsgrounds, three indoor sport pavilions, two playgrounds and equestrian facilities, Bellbird Park is a sporting hub for regional Victorians. A network of walking tracks through scenic bushland and picnic areas contribute to the popularity of the park as a year-round passive and active recreation destination. However, with limitations to current rainwater harvesting at the site, Bellbird Park could not meet its summer irrigation needs, leaving sports fields and surrounds at risk of drying out.

Together with the Bellbird Park Committee of Management, resident sporting clubs and Gippsland Water, Baw Baw Shire Council embarked on a project to utilise treated water from a nearby wastewater treatment plant for sportsground irrigation. Filtration and UV disinfection technology, pumps and storage infrastructure helped bring treated water to the site. Project outcomes include; estimated cost savings of \$50,000 per annum, 36 ML/year reduction in potable water use and year-round green, quality sporting fields for the community. By repurposing the treated wastewater, Baw Baw Shire helped prevent excess discharge from the treatment plant to local waterways, protecting aquatic environments and improving waterway health in the upper Western Port catchment.



Aerial of Casey Fields. Photographer: Peter Glenane

# 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. The IWM Forum cycle is summarised at right.

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.

Phase Two of the IWM Forum cycle will assume a more strategic approach to successful IWM planning and implementation for the Forum Area. This phase will include the development of catchment-wide IWM strategy to inform IWM investments.

Phase Two will also provide an opportunity for IWM Forum Members to update relevant organisational policies, plans and strategies to reflect the outcomes of the IWM Forum.

It is anticipated that the IWM Forum collaborative partners will continue to use their best endeavours to advance priority IWM opportunities through regular meetings and future Forums. Forum Members will also assess the feasibility of additional IWM opportunities identified in Phase One (refer to Appendix).







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.

Phase Three prepares the Forum to refresh the Strategic Directions Statement and review the progress of strategic enablers for IWM.



Girls fishing. Photographer: John Krutop



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

←

**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

# Appendix

## Additional IWM opportunities in the Western Port catchment

Action	Project	Collaborative partners
17	Clyde-Cardinia Treated Water Management	South East Water, Melbourne Water, Cardinia Shire, City of Casey, Victorian Planning Authority, Southern Rural Water, Bunurong LCAC, Wurundjeri L&CCHCAC*
18	Regional Aquifer Storage and Recovery Feasibility Study	City of Casey, South East Water, Southern Rural Water, Melbourne Water, Westernport Water, Bunurong LCAC, Wurundjeri L&CCHCAC*
19	Environment Account for Western Port	PPWCMA, Commissioner for Environmental Sustainability, Melbourne Water, Parks Victoria, Councils, Wentworth Group, Bunurong LCAC, Wurundjeri L&CCHCAC*
20	IWM Growth Area Analysis	City of Casey, South East Water, Melbourne Water, Victorian Planning Authority, Southern Rural Water, Bunurong LCAC, Wurundjeri L&CCHCAC*
21	Manuka Road - Berwick Drainage Scheme Water Quality Improvements	City of Casey, Melbourne Water, Parks Victoria, Bunurong LCAC, Wurundjeri L&CCHCAC*
22	San Remo Recycled Water Project	Westernport Water, Bass Coast Shire Council, Melbourne Water, PPWCMA, Bunurong LCAC
23	Water Stewardship for Western Port	PPWCMA, Mornington Peninsula, Western Port Biosphere Reserve Foundation, Bunurong LCAC, South East Water, Melbourne Water, Councils, Parks Victoria, Westernport Water, Southern Rural Water, Environment Protection Authority, Aus Veg Vic, Nursery and Garden Industry Victoria, Bunurong LCAC, Wurundjeri L&CCHCAC*
24	Small Property Improved Soil and Land Management Initiative	PPWCMA, Councils, Melbourne Water, Westernport Water, Melbourne Polytechnic, various local Landcare and environmental groups, Bunurong LCAC, Wurundjeri L&CCHCAC*

\*The Wurundjeri Land and Compensation Cultural Heritage Council Aboriginal Corporation will remain informed of progress related to this IWM opportunity.

The following list of additional IWM opportunities was identified by the Western Port IWM Forum in the first phase of the IWM Forum cycle. The list captures potential future priorities for the Western Port IWM Forum.

Further assessment will be required by the collaborative partners to progress these opportunities through the IWM Forum.

Strategic outcome areas							

**Shade scale**

LowHigh

Level of shading refers to the degree of impact the IWM opportunity has on each strategic outcome area. Dark shading represents highest impact.



Red-capped Plover. Photographer: David Paul

# 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.

## 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.

## Central business district (CBD)

Melbourne's original 'Hoddle Grid' street layout bounded by the Yarra River, Spring Street, La Trobe Street and Spencer Street, as well as the triangular area to the north bounded by Victoria, Peel and La Trobe streets.

## 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.

## Coastal flooding

Inundation along the coastline mainly due to flooding from the sea associated with storm surge. It may also include additional flooding caused by heavy rainfall.

## Community

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

## Connectivity

Connections between natural habitats, such as a river channel and adjacent wetland areas. Connectivity is a measure or indicator of whether a waterbody (river, wetland, floodplain) has water connections or flow connections to another body.

## 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 Water and Catchments group of the Department assists the Minister for Water, 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, generally on the fringe of metropolitan Melbourne.

### **Groundwater**

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

### **Growth areas**

Locations on the fringe of metropolitan Melbourne designated in planning schemes for large-scale transformation, over many years, from rural to urban use.

### **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.

### **Integrated Water Management strategic enabler**

A policy, framework or tool that enables putting IWM into practice.

### **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.

**Metropolitan Melbourne**

The 31 municipalities that make up metropolitan Melbourne, plus part of Mitchell Shire within the urban growth boundary.

**National employment and innovation clusters (NEIC)**

Designated concentrations of employment distinguished by a strong core of nationally significant knowledge sector businesses and institutions that make a major contribution to the national economy and Melbourne's positioning in the global economy.

**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.

**State-significant industrial precincts (SSIP)**

Strategically located land available for major industrial development linked to the Principal Freight Network and transport gateways.

**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.

