Integrated Water Management Framework for Victoria

An IWM approach to urban water planning and shared decision making throughout Victoria

September 2017

VICTORIA State Government | Environment, Land, Water and Planning

Acknowledgement of Victoria's Aboriginal communities

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

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

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Minister's Foreword

Victoria is a great place to live, with stunning natural environments, green urban spaces and well-planned cities and towns. How we manage our water and land plays an important role in enhancing the liveability of our urban centres.

To do this well we need to work together, at all levels of government and across communities, to make smart investments and future-focused decisions to meet the challenges of a growing population and changing climate.

The Victorian Government supports the best use of parks, wetlands, streams and areas of urban vegetation to make our communities better places to live.

Our new Integrated Water Management Framework will help local governments and water sector partners to meet this objective.

Our state water plan, *Water for Victoria*, aims to ensure that our communities are resilient and liveable, now and in the future – and the Framework will help deliver that.

It provides a consistent process for collaborative integrated water management planning with clear roles and responsibilities to deliver effective urban water management, including water supply, wastewater, flood resilience, urban waterway health and management of public spaces.

Government organisations should work together and include local communities in planning for current and future challenges and contribute to our liveability and economy.

Water sector partners and local government are at the forefront of realising this implementation.

This document has been prepared with input from water corporations, local government and catchment management authorities, and will help support the sector to implement *Water for Victoria* at a local level.

We have clear goals to meet and strong opportunities to make positive change. By taking a collaborative approach and working with our communities as partners, we will deliver real results for our towns and cities and ensure that Victoria continues to be somewhere people choose to live well into the future.

Lisa Neville

Minister for Water

1. Introduction

The *Integrated Water Management Framework for Victoria* aims to help government, the water sector and the community work together to better plan, manage and deliver water in Victoria's towns and cities.

The Framework outlines how greater community value can be delivered by consistent and strategic collaboration within the water sector – including water corporations, local governments and catchment management authorities – and through their links with organisations involved in land use planning.

This Framework utilises the knowledge and experience of water sector organisations in applying integrated approaches to water cycle planning.

This is the first time that the systematic application of collaborative integrated water management (IWM) has been designed and promoted at a statewide scale in an Australian context. The Victorian Government is committed to working with the water sector to see it applied.

This document aims to:

- communicate the value of participating in IWM, identifying shared outcomes and driving innovative solutions
- explain the rationale for establishing collaborative IWM Forums across the State
- outline the process of identifying, prioritising and investigating IWM opportunities for inclusion in IWM Plans
- guide the development of IWM Plans that reflect community values
- outline the proposed governance approach for the forums, including DELWP's role
- explain how IWM planning contributes to the development of urban water strategies, local government strategies and catchment management activities across Victoria
- highlight the support and guidance available to embed collaborative planning.

The integrated water management approach explained in this document complements and feeds into existing water and land planning processes. It encourages collaboration where it will be beneficial and links between water planning and other planning processes that contribute to improving Victoria's resilience and liveability (including land use, transport and economic development).

The IWM process described here is adaptive and can be applied to existing collaborative forums, building on their demonstrated strengths.

This guidance has been prepared by DELWP with input from representatives of organisations active in water management. DELWP recognises the value and experience of Victorian water sector organisations and local governments, and encourages continued feedback.

Future versions of the Framework may be developed to reflect the longer-term experience of organisations implementing IWM and strengthen the Framework to achieve better outcomes for all Victorians.

Communities are central to the management of the water cycle. They are provided with water, protected from floods, interact with healthy waterways and benefit from cooler, greener cities and healthier environments. Communities can inform water cycle management by influencing the setting of service levels and place-based outcomes; determining willingness to pay, through their service providers and other stakeholders; and providing feedback on proposed solutions. Water corporations, local governments and catchment management authorities have existing relationships and engagement methods with their communities that should feed into IWM planning.

DELWP is committed to working in partnership with Aboriginal Victorians across landscapes, communities and natural resources, as stated in *Munganin – Gadhaba: 'Achieve Together'*. Reflecting this commitment, *Water for Victoria* includes an intention to recognise Aboriginal values in water management. DELWP recognises that Traditional Owners 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. DELWP will work with Traditional Owner groups as IWM Forums are established to determine the appropriate approach and level of involvement in the broader IWM planning process.

Integrated water management is a collaborative approach to planning that brings together organisations that influence all elements of the water cycle, including waterways and bays, wastewater management, alternative and potable water supply, stormwater management and water treatment. It considers environment, social and economic benefits. Figure 1 captures examples of the many different solutions or combinations of solutions.

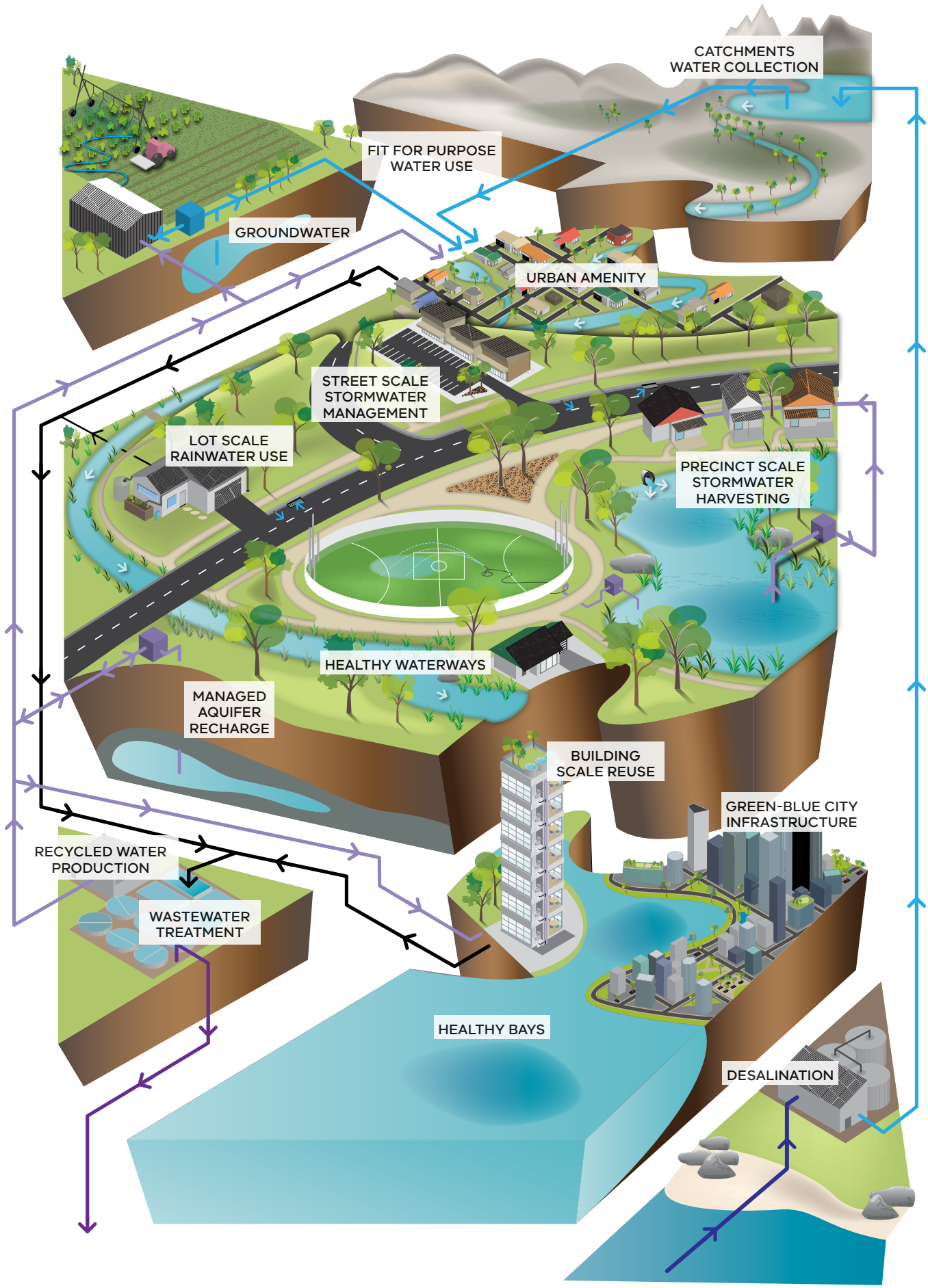


Figure 1: Examples of options and outcomes from the application of IWM in the urban environment.

2. Why integrated water management?

An IWM approach has the potential to provide greater value to our communities by identifying and leveraging opportunities to optimise the outcomes of water cycle planning and management.

The IWM approach involves understanding the water cycle, how water cycle services are provided and the drivers or constraints that influence its management, such as climate change, population growth, land use change, environmental decline and community preferences.

Figure 2 shows water-related outcomes that will build resilient and liveable cities and towns (Chapter 5, *Water for Victoria*). IWM contributes to these outcomes through collaboration-led innovation that overcomes the constraints of institutional structures. Its success depends on commitment from organisations to work together towards optimal community benefit including economic, environmental and social values. There are two clear advantages of IWM planning:

1. Collaborative solutions bridge siloed water cycle systems, leading to a greater range of solutions.
2. IWM provides better value for community investment because of the shared benefits achieved through an integrated solution.

Safe, secure and affordable supplies in an uncertain future	Effective and affordable wastewater systems	Effective stormwater management protects our urban environment	Healthy and valued urban landscapes	Community values reflected in place based planning
A diverse range of water supplies and sources	Meets public health and environmental standards	Waterway health is maintained and improved	Water is prominent in the urban landscape	Diverse urban landscapes that reflect local conditions and community values
Water quality meets regulatory standards and community expectations	Effective sewerage systems	Community and property resilient to local flood risk	Urban landscapes retain moisture for cooler, greener cities and towns	Empowered engaged community
Manage water efficiency and demand	Optimised onsite domestic wastewater	Appropriate levels of flood protection in new development	Waterways accessible as valuable open space	Local water related risks and issues understood and managed
Secure water supply for Victorian industry and the economy	Maximise waste-to-resource opportunities		Aboriginal cultural values associated with waterways are protected	
Water available to maintain valued green community assets including for climate change				

Figure 2: Water-related outcomes to deliver resilient and liveable cities and towns.

Source: Water for Victoria

An example that demonstrates this is a stormwater harvesting project that requires co-operation between water corporations, local government and the waterway manager. Given the right conditions, this could:

- reduce reliance on the potable water supply network, helping avoid or defer infrastructure upgrades, and provide resilience for local governments wanting to keep sports grounds, parks and trees watered during droughts and prolonged dry periods
- provide urban cooling through greening, canopy cover increases and increased soil moisture, leading to preventative health benefits
- reduce flooding, helping to maintain amenity, defer upgrades in the drainage network and reduce insurance liabilities
- deliver waterway health benefits from an ecology, channel morphology and water-quality perspective
- improve community education and water literacy.

To deliver this type of project in Victoria requires the involvement of a range of organisations that provide water services. The IWM approach provides the space for collaboration to develop and realise such projects.

A significant impact is possible across a catchment or region through the cumulative effect of numerous local projects within a broadly applied servicing solution. IWM planning directed by a collaborative forum provides a perspective that enables this impact to be understood across water cycle responsibilities. The opportunities provided by IWM are not limited to traditional water sector projects (see Figure 3) and can be leveraged through major projects, including, for example, transport projects (Melbourne's Metro Rail tunnel and the Level Crossings Removal). They can be initiated by a number of drivers, including growth, climate change and community preferences.

The IWM approach involves robust economic analysis that compares options against a base case (often the business-as-usual solution) to identify the best solution. This tests the effectiveness of both traditional and integrated solutions in a transparent way to increase the integrity of water infrastructure investment. It also enables externalities such as improved liveability to be considered. This contrasts with traditional water servicing approaches. In some instances, the best solution determined by an IWM process will be the one that would have been identified under a siloed approach, however the case for it will be more robust for the testing. The process of IWM analysis is discussed further in Chapter 4.

For local governments, being involved means having the chance for their community's priorities to be included in a collaborative planning effort, to deliver enhanced, more effective outcomes.

IWM planning enables comparisons of integrated options with traditional solutions. This can identify traditional costs that are avoided or deferred if an integrated solution is delivered. These avoided costs are benefits in resulting business cases and can be significant. As an example, applying IWM analysis to servicing planning for the northern growth corridor of Melbourne has led Yarra Valley Water and partners to a servicing strategy that defers a $280 million sewer tunnel, achieves energy savings, and preserves potential waterway health improvements.

The urban and urbanising areas of Melbourne and regional urban centres create significant stormwater-related issues. The IWM approach can better address these issues, together with planning for water supplies and wastewater management. This is being supported by the DELWP-led review of stormwater policy and related planning and building arrangements, as detailed in *Water for Victoria*.

Collaboration can take more time than traditional planning, which focuses on the isolated planning and delivery of a single water service. However, collaborative IWM projects are demonstrating clear value in delivering better outcomes for communities. Some examples are presented in this Framework as case studies.

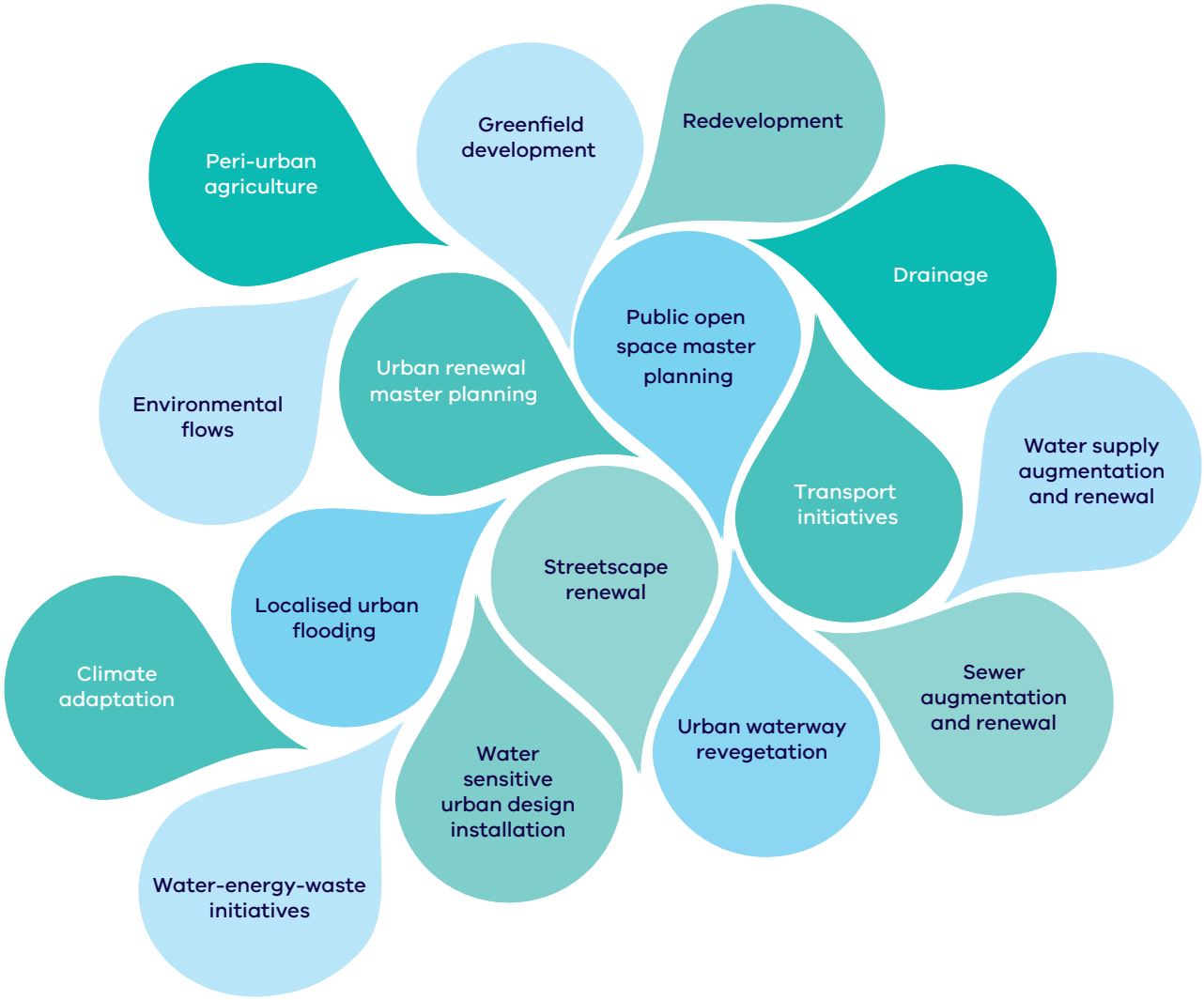


Figure 3: Examples of opportunities that can be leveraged by IWM.

3. Clear accountabilities and shared values

An IWM approach to planning requires water sector members to clearly understand their own accountabilities and those of other organisations. This clarity facilitates the allocation of benefits, costs and risks for integrated solutions.

Across Victoria, no single organisation is responsible for managing the urban water cycle. Table 1 outlines typical water cycle accountabilities. In Melbourne, accountabilities are different in response to the size of the urban area. There, the retail water corporations are customers of Melbourne Water, which provides bulk water, sewerage and some stormwater services, including development advice to manage urban flooding, and waterway management activities for the Port Phillip and Westernport catchment.

This separation of responsibilities makes a collaborative approach essential for planning that effectively recognises water cycle complexities. The water services regulatory framework and its institutional arrangements are clear about core services. However, there are a range of water management functions – such as lake management, stormwater harvesting and public open space management – where accountabilities are less clear. The IWM process provides an opportunity to work through areas of ambiguous accountabilities.

There are also organisations that are not part of the water sector but have responsibilities and activities that interface with water cycle management, such as the Victorian Planning Authority, VicRoads, developers, educational institutions, large landholders or community organisations. The collaborative nature of an IWM approach enables involvement of these organisations when relevant.

IWM planning is successful when organisations responsible for the management of elements of the water cycle collaborate, share data and work toward implementing integrated servicing solutions. It requires them to carefully consider the community benefits of the proposed options.

Where a service is needed, an IWM approach can support more efficient investment and achieve additional community value. The participants are not limited by institutional constraints in exploring servicing solutions and can focus on the community (and the environment) as the beneficiaries. Previously disregarded options may be shown to provide greater community benefits (e.g. lowest community cost) than the 'business as usual' approach (often represented by the lowest financial cost to a single organisation providing a specific service).

After a collaborative planning process determines the solution that will achieve the best value, the regulatory accountabilities will guide funding and delivery responsibilities for implementation.

More than one IWM partner may take responsibility for delivering components of the solution if an integrated option is preferred.

The value of an IWM planning approach lies in its holistic consideration of the entire water cycle. This requires each water management organisation's planning approach to recognise the outcomes and opportunities of other organisations. IWM options are present where there is overlap and interaction of these (Figure 4).

Table 1: Typical organisational accountabilities in urban water management.

Agency	Accountability
Victorian Government and Departments	Legislation Policy Regulation
Environment Protection Agency	Environmental regulation (including best practice guidelines and protection policies)
Essential Services Commission	Economic regulation
Water corporations	Water supply Wastewater man'agement (including sewerage and sewage treatment) and trade waste management Waterway and major drainage systems (Melbourne Water only)
Catchment management authorities	Waterway health Floodplain management Environmental water
Local government	Urban stormwater management Parks and gardens management Onsite domestic wastewater management Urban planning Building and planning approvals
Property owners, residents and businesses	Meeting terms and conditions of services provided Following permit conditions Onsite water management, e.g. rainwater, stormwater
Victorian Planning Authority	Urban growth structure planning for Melbourne and (where invited) regional Victoria
Developers	Construction of development scale water infrastructure

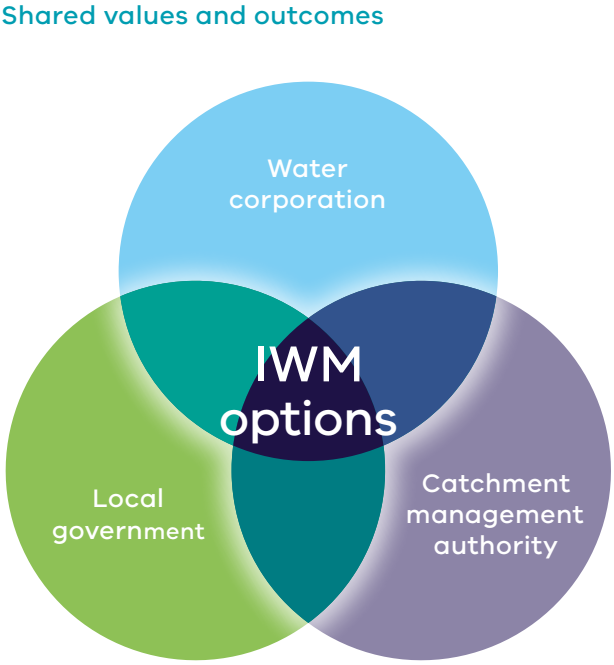


Figure 4: Collaboration can realise integrated opportunities where organisational priorities overlap and interface.

4. The IWM planning framework

IWM Forums will identify, coordinate and prioritise IWM opportunities.

IWM planning is already being used to varying extents across Victoria. There is an opportunity to build on these experiences to enhance the resilience and liveability of our cities and towns and guide place-based decisions.

The Victorian Government will support the establishment of IWM Forums to identify and prioritise areas that would most benefit from collaborative place-based planning. The forums will bring together water sector organisations to explore, prioritise and oversee opportunities to be developed into local projects and servicing strategies through IWM Plans (see Figure 5).

All participating organisations are encouraged to embed an IWM approach into their water cycle service delivery. DELWP will support organisations to do this and identify key interdependencies with other service organisations.

The following sections give an overview of expectations for the IWM Forums and IWM Plans; membership and governance is covered in the next chapter.

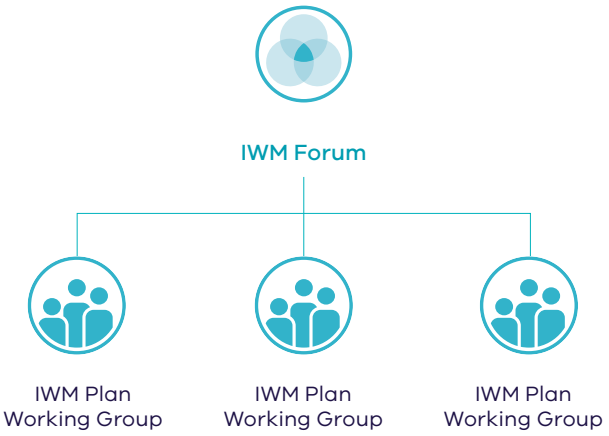


Figure 5: IWM planning governance structure.

IWM Forums

IWM Forums are collaborative groups of leaders who represent organisations with an interest in water cycle management.

IWM Forums will consider the water cycle with an urban focus that extends across peri-urban boundaries. The urban water cycle is made up of natural and constructed assets, including waterways, groundwater, water supply, sewerage and drainage. These are influenced by landscapes and land development.

The IWM Forums' objectives are to:

- facilitate enduring collaboration in water management planning across organisations, sectors and disciplines
- create a shared vision for water management at a defined geographical scale
- develop a pathway to achieve the vision, including identifying and prioritising projects
- coordinate and oversee the ongoing planning and delivery of priority projects at the IWM Forum Area scale (as illustrated in figures on page 15)
- ensure community and traditional owner values are represented in water management planning
- identify barriers to efficient IWM delivery
- ensure investment in water management projects is optimised to deliver multiple benefits and best community value solutions.

In many forum areas, a summarising overview of the region or catchment will be useful to provide a foundation for understanding water cycle complexities and identifying IWM opportunities. This can summarise the area's characteristics, identifying the water cycle elements and urban interfaces, and future changes. A range of drivers and constraints should be considered, including climate change, population growth, the state of priority waterways and community preferences. In some cases, this may include a water and pollutant balance.

Within their own organisations, forum participants will identify opportunities (such as shown in Figure 3) or may have projects already underway to bring to the forums for consideration. The IWM Forums will develop and oversee the prioritised work program for investigating these opportunities through IWM Plans. Projects already underway can benefit from the collaborative governance of the forum.

The process for IWM planning is explained in Figure 6; it can be developed and adapted by partners in specific forums. The IWM Forums may be facilitated by an appointed chairperson where appropriate. In some cases, collaborative groups may already exist; DELWP will work with their participating organisations to meet IWM objectives.

Each forum should involve organisations with an interest in the water cycle or land use planning, and consider whether involvement is more appropriate at the forum or IWM Plan Working Group level.

Community values should help define the place-based outcomes to be achieved. In many cases, organisations will already have a strong idea of their community's aspirations as a result of engagement on Council Plans, Urban Water Strategies, Regional Catchment Strategies and other planning documents. Targeted community engagement may be appropriate at the IWM Plan level.

As priority IWM Plans are finalised, the forums will revisit their objectives at the IWM Forum Area scale and agree to new priority opportunities for investigation.

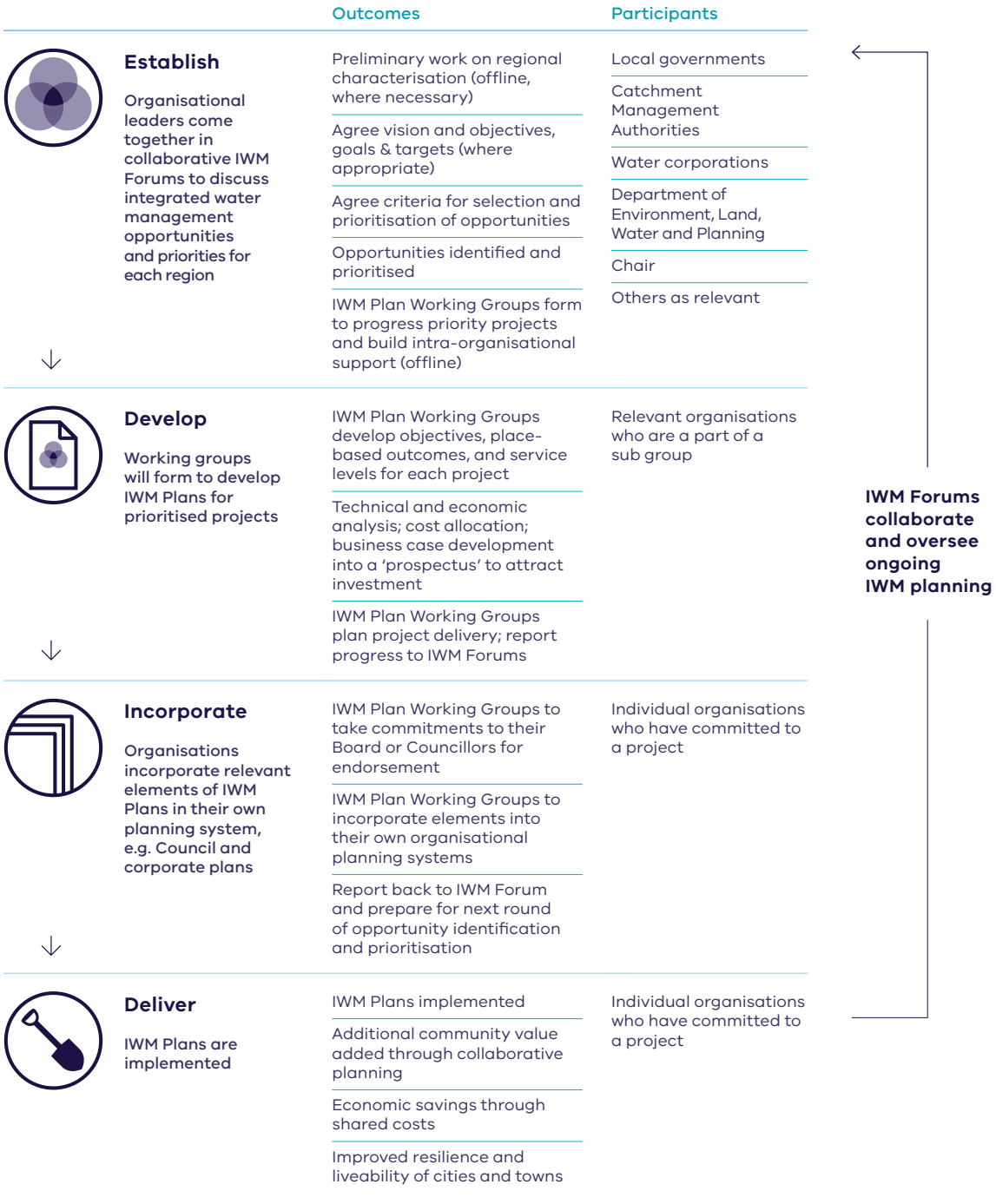


Figure 6: IWM planning process.

Greater Metropolitan Melbourne IWM Forums

The extent and density of development across Greater Metropolitan Melbourne has a major impact on the health of waterways entering both Port Phillip Bay and Westernport. The Melbourne IWM Forums will explore opportunities across the five major waterway catchments within the Port Phillip and Western Port catchments. These catchments are the Yarra River, Maribyrnong River, Werribee River, Dandenong Creek (including Western Mornington Peninsula) and Western Port (see Figure 7).

Aligning forums with catchment boundaries can contribute to better stormwater management and progressively improve the ecology of urban and peri-urban waterways. It also allows consideration of broader outcomes and context, including peri-urban agriculture and pollutant contributions from different land uses in the catchment. Catchment-scale water resource allocation from a range of sources can also be considered.

Regional IWM Forums

In regional Victoria, it may be appropriate to adapt the IWM Forum process to fit existing collaborative groups. DELWP will support the establishment of new IWM Forums where existing groups are not appropriate due to scope limitations, or are not present. IWM Forums will oversee areas defined by water corporation boundaries (Figure 8).

Figure 7: IWM Forum areas in metropolitan Melbourne.

Figure 8: IWM Forum areas across regional Victoria (indicative).

IWM Forum Strategic Directions Statement

IWM Forums will develop their shared vision through early forum meetings. This holistic understanding will bring to light challenges and windows for collaborative improvement that may not have otherwise been identified. The overlap between a forum's vision and the opportunities will lead to prioritisation and clarification of what the IWM Forum is seeking to achieve.

It is expected that each forum will create a Strategic Directions Statement that will capture the intentions of IWM planning for that area, provide a point of commitment by each organisation to the collaborative objectives, and communicate this direction to external stakeholders (this could include being used as a tool for community feedback on IWM).

It is envisaged that each Strategic Directions Statement will include a shared vision statement, key forum objectives, a summary of (prioritised) opportunities under IWM investigation and progress to date. Each forum will direct the specific form of their Strategic Directions Statement according to their needs, and adapt or revise it to reflect changing context or priorities. Forums will be expected to produce Strategic Directions Statements within a year of convening. Biennial reviews could be appropriate, but this is for the forum to decide.

The first versions of the Strategic Directions Statement may incorporate the actions of Urban Water Strategies, Regional Catchment Strategies, Council Plans, Waterway Strategies and Sustainable Water Strategies. In future, those documents may draw on and reference the Strategic Directions Statement or IWM Plan outputs.

IWM Plans

IWM Forums will coordinate, prioritise and oversee place-based IWM Plans. IWM Plans may be at any scale, and include the whole process of place-based project development from conception to delivery. Plans for a growth area or major urban renewal area may identify preferred servicing options and implementation arrangements. They may also be community-driven projects to enhance an established area, e.g. Eastbank Lake in Shepparton or the Upper Stony Creek Transformation Project (see case studies). IWM Plan outcomes are expected to include organisational business cases and implementation plans.

Working groups will be formed to progress the priority IWM Plans agreed to by the IWM Forums. Multiple IWM Plans can be directed by an IWM Forum simultaneously. The working groups should be arranged at the project scale.

To ensure that IWM Plans are delivering community values, the organisation with the closest relationship to the affected community should lead engagement activities to identify those values relevant to the specific plan.

Figure 9 shows a process to guide the IWM Plan Working Group. For example, a major residential redevelopment area may require the local government, water corporation and waterway manager to work together to deliver a range of outcomes. New assets, such as water supply augmentations, stormwater treatment systems or new treed boulevards, may be part of the preferred solution. If an integrated solution involving multiple parties is preferred, the organisations will be expected to continue their collaboration to implement that solution.

IWM initiatives identified through IWM Plans will be implemented through existing processes at individual organisations, such as business case development and implementation plans. Where necessary, agreements between the organisations will need to be struck. DELWP will work with IWM partners to develop agreement templates to support integrated solutions (*Water for Victoria*, Action 5.7).

Major IWM activities should be included in existing corporate plans and strategies. For water corporations, IWM Plan actions will be articulated in corporate plans, and in subsequent urban water strategies and pricing submissions. For catchment management authorities, they will be articulated in floodplain management strategies, waterway health strategies and potentially corporate plans. For local government, the projects may be outlined in a range of local government plans or local governments may wish to develop IWM strategies for their municipality. The flow of information from IWM planning activities is shown in Figure 10.

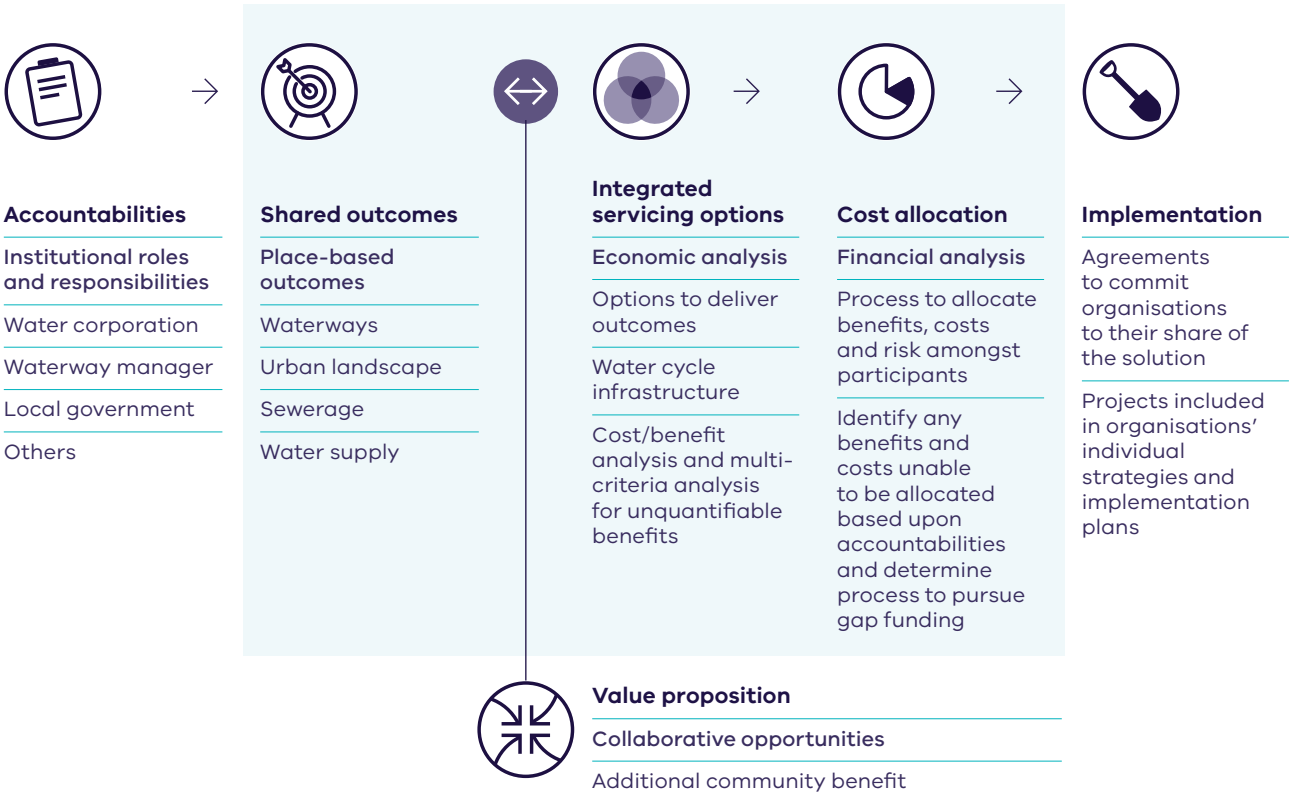


Figure 9: IWM Plan development process.

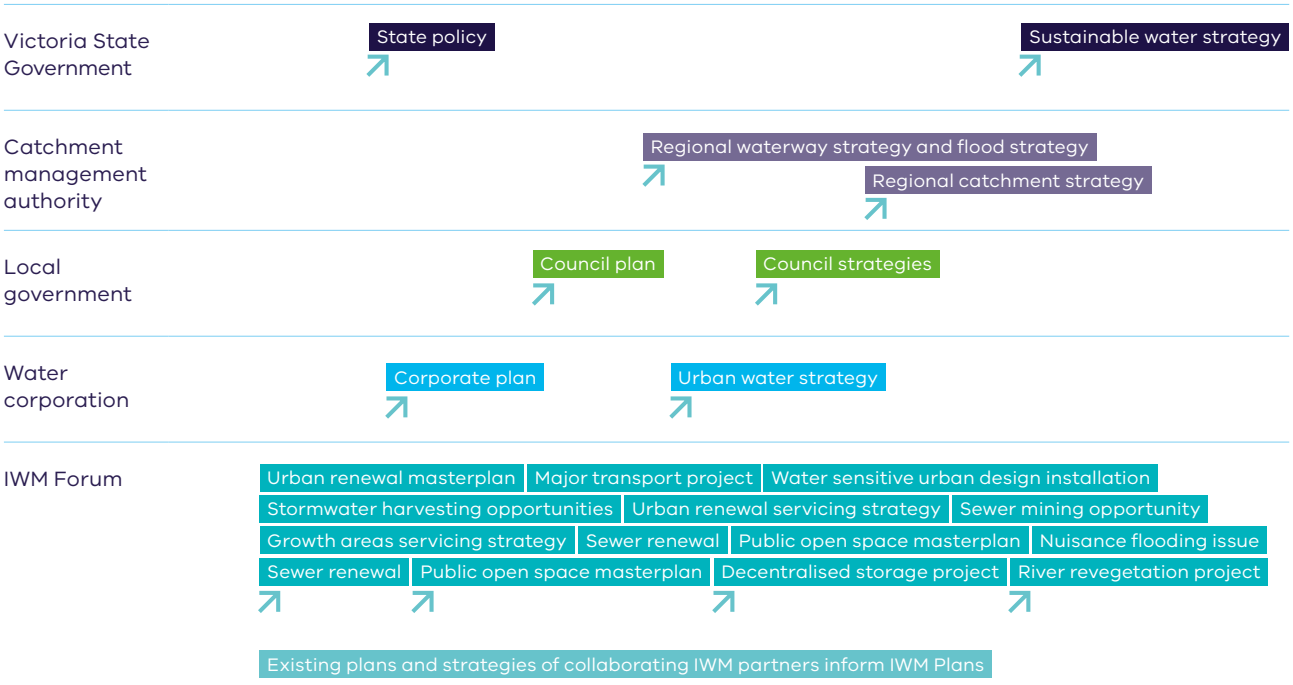


Figure 10: Water Management Planning flow of information.

IWM planning fits within the existing urban land and water planning framework. It depends, however, on organisations having a good understanding of their own systems and what their non-integrated servicing approach would be. This 'business-as-usual' approach is a critical input to the place-based IWM Plan development process.

Appendix A provides a sample IWM Plan structure.

Place-based outcome setting

Minimum service levels are often established by regulations, such as State Environment Protection Policies and Victoria Planning Provisions, however, IWM can enable communities to set service levels suited to their unique environments.

Place-based levels of service can be set or tested through other strategies, such as an urban water strategy or waterway management strategy, but can also be tested through local scale IWM Plans, depending on the scale of analysis and the appropriate cost recovery mechanisms. For example, this could include managing priority waterways (or reaches of them) and localised flooding issues, or to address specific threats and constraints.

Communication and education on the possible options and service levels should be explored at the IWM Plan stage, and organisations should be willing to evaluate the costs and benefits.

Co-investment and cost-sharing

Committing to an IWM solution can often lead to shared investment across a range of organisations. Through co-investment, organisations can leverage from each other to meet their organisation's goals more cost effectively or to a higher standard.

Co-investment by IWM partners is expected across all stages of the IWM process including planning, design and implementation and should be a focus of the collaborative process.

The challenge for IWM comes from determining the private and public benefits derived from the IWM solution and therefore the most appropriate fund source(s) for that solution. The level of investment provided by each IWM Partner will need to consider how the solution delivers a service they are responsible for, how it aligns with their organisation's objectives and customer expectations, and how it balances against competing organisational priorities. Contributions from water corporations and local government are sourced directly from customers via water bills and rates and are subject to regulatory scrutiny.

IWM solutions may also provide benefits not traditionally captured by business as usual solutions, such as carbon sequestration or public health benefits provided by open green spaces. This may attract investment not previously considered, such as from the private sector.

The role of government is policy development, overarching delivery frameworks, research and education. It is expected that funding for an IWM solution will be sourced locally; however, there may be instances where government decides to contribute. This would be where a clear public benefit or need is demonstrated and is not assignable to other sources.

5. Governance

An effective governance model is needed to translate community objectives for water management into practice.

The proposed governance structure is meant to be both flexible and adaptable to local circumstances, and is open to co-design by forum partners.

The success of collaboration depends on establishing a shared culture and team approach that is influenced by the individual and collective capability of those involved. Collaborative skills include diplomacy and the ability to promote dialogue, shared appreciations and participatory engagement.

For collaborative success, the leaders of the organisations in the IWM Forum will need to:

- clearly understand their own accountabilities and responsibilities
- have clear collaborative goals
- build inter-organisational trust
- model collegiate behaviour
- provide resources with the right skill sets and capabilities.

For IWM to be successful and enduring, IWM Forum and IWM Plan Working Group participants need to promote a collaborative and shared values culture within their own organisations to break down organisational 'silos'.

The ideal governance approach will have the right balance of structure and agility, and acknowledge turnover of individuals over time.

IWM Forums

Each organisation with core water cycle responsibilities should be represented in the IWM Forum by two participants. One would typically be at the chief executive/managing director or director/general manager level to ensure they are able to contribute with authority to discussions and decisions. They bring a 'whole of organisation' perspective and influence organisational culture. This participant would be accompanied by a manager with sufficient authority to be responsible for and allocate resources to contribute, or a key practitioner or 'champion' responsible for the delivery of IWM Plans, to ensure an operational link with the IWM Forum.

IWM Forum participants may include:

- chairperson
- representatives from urban and rural water corporations
- representatives from local governments
- representatives from catchment management authorities
- a representative from the relevant DELWP regional office
- representatives from the relevant DELWP – Water and Catchments Division
- representatives from other organisations, where relevant (e.g. Victorian Planning Authority, VicRoads, Parks Victoria, Environmental Protection Authority, Department of Health and Human Services, private health providers)
- representatives of Traditional Owner interests as determined through forum-specific discussions with Aboriginal partners.

IWM Forums will be facilitated by a chairperson, in many cases engaged by DELWP in consultation with IWM Forum participants. In some regions, the forum participants may agree to a representative from one of their own organisations performing the chair function.

The chairperson's primary role is to facilitate the IWM Forum discussions. This entails ensuring that all parties are heard, that all *Water for Victoria* liveability and resilience outcomes (see Figure 2) are considered and that all participants demonstrate a shared value mind-set and constructive collaborative behaviours. The chairperson facilitates the identification and prioritisation of IWM opportunities to be explored through IWM Plans and ensures partners undertake prioritised actions.

The chairperson will work with forum participants to ensure the community and Aboriginal values are represented in the forum. They will encourage partners to understand specific community values and incorporate them into IWM Plans.

On behalf of the IWM Forum, the chairperson will advise DELWP and the Minister for Water on the forum's progress and any other issues as required.

In addition to supporting organisations to apply IWM, and policy development, DELWP will provide secretariat support for the IWM Forum, including meeting scheduling, minute taking and following up actions.

Forums will be established in a staggered rollout, and will typically meet three or four times a year, or as determined by the participants themselves.

IWM Plan Working Groups

IWM Plan Working Groups are expected to have representation from each of the IWM Partners that have an interest. Other organisations such as community groups or key landholders may also be involved specifically at this level.

Urban water corporations will lead the collaborative IWM Plan process unless the IWM Forum determines that another organisation is in a better position to do so. This might occur if an IWM Plan is meeting another organisation's responsibility more particularly, or its skills and resourcing are more appropriate.

Ideally, each IWM Plan should have a project manager from the organisation that the group agrees will lead the project. A member of the IWM Working Group will also report back to the IWM Forum on progress as required. Working group members will be responsible for involving the key people in their home organisations as the project progresses.

Some IWM Plans may have their own management and reporting structure if they are highly complex or involve significant investment and need more support than can be provided by the IWM Forum. In these cases, a steering group of senior executives from relevant organisations may be established. DELWP may also be invited to participate in such projects.

It is recommended that the IWM Plan Working Group establish a terms of reference to manage the group's operation. The terms of reference will likely be different for each forum to reflect local circumstances and organisation capacity. An example can be provided by DELWP if Working Group members would like guidance.

Commitment to deliver on IWM Plans and opportunities detailed within them remains the responsibility of participating organisations' regular investment processes, such as through Boards and Councils.

DELWP's role in the IWM Framework

A member of the DELWP Water and Catchments Group will help establish the IWM Forums. They may also contribute support to IWM Plan development, if agreed by the partners. This person, who will have IWM facilitation knowledge and experience, will provide administrative support to the chairperson and knowledge transfer between forums. This function will be provided at establishment with a view to it transitioning to the IWM Forum partners over a 3–4 year timeframe. By this time, IWM Forums are expected to be an established element of an urban water management organisation's 'business as usual' planning practice.

The IWM Forums may also include a representative from the relevant regional office. This person will ensure that the local context and DELWP's land management functions are being considered in IWM discussions.

The DELWP Water and Catchments Group is accountable to the Government's IWM agenda in *Water for Victoria* for policy development, cross-sector and cross-region information sharing and negotiation, and addressing barriers to implementation that delivery partners uncover. DELWP will also work with government organisations involved in land use planning and land management, such as the Victorian Planning Authority and VicRoads, on defining clearer IWM roles.

DELWP's perspective provides the ability to identify common successes and barriers across the State. Given this, IWM Plans developed under the IWM Forum process will inform urban water policy development as data and lessons are collated.

Monitoring, evaluation and reporting

Monitoring, evaluation and reporting will be designed by and for each forum region.

IWM Forum partners are encouraged to put in place self-assessment measures at defined intervals during the progression of collaborative planning. Individual organisations should also consider adding IWM key performance indicators (KPIs) to their own reporting mechanisms. This could include the outcomes to be achieved in the IWM Plans.

6. Guidance and support

Water for Victoria discusses supporting urban water sector members with a range of information and tools to assist IWM planning and implementation.

Organisations are not being asked to fund more – they are being asked to demonstrate optimal value from investments.

The concept of IWM has been discussed internationally for several decades. In recent years, DELWP has become involved in projects with a range of organisations that demonstrate the benefits of a collaborative IWM approach. This has also improved understanding of barriers to its adoption. This Framework provides a foundation for the systematic application of a collaborative IWM approach at a statewide scale.

The IWM Framework and IWM Forum establishment will be supported by a statewide capacity-building program, and a range of foundation documents that have been developed over several years of IWM planning and testing.

Funding for IWM can be challenging and competes with budgets for other services, particularly within local governments. Some local governments do not have dedicated water officers and have data gaps for water-related assets.

DELWP will work with interested local governments to identify how it can best support them and understand their needs. This could include contribution of resources to the development of IWM Plans, identifying sources of co-funding for business cases for water-based projects or convening a group of water experts to support regional and rural local governments convening a group of water experts. This will complement the local partnerships already established between local government and other water sector agencies.

Building capability

DELWP is working with urban water sector organisations to support them in their transition to embedding an IWM planning approach. A key part of this support is development of a capacity-building program covering behavioural and technical elements of IWM. This program is being developed collaboratively with the water sector with the awareness that different organisations have varying IWM experiences and capabilities. It will include training programs (technical and leadership), channels for information sharing, networking events and development of tools and guidance.

A key element of the DELWP's program will be initially delivered by Clearwater (a leading water sector capacity-building program). Its contribution will promote knowledge sharing, network building and improved leadership and operational capability for IWM throughout Victoria.

DELWP welcomes ongoing feedback on capacity-building needs and activities.

Specific guidance and tools

Guidance materials and collaborative tools that will be available to IWM planning organisations include:

- IWM collaborative mapping tool
- preliminary project assessment guidelines
- guidelines for IWM planning and analysis
- economic evaluation and cost allocation framework
- externality valuation
- green-blue infrastructure guidelines
- urban forest guidelines.

These materials will be provided to forums when they are established or can be requested by emailing iwm.branch@delwp.vic.gov.au. Their content is summarised in this chapter.

IWM collaborative mapping tool

DELWP has developed a web-based collaborative mapping tool, known as Hydra, to support IWM partners to:

- understand and build on the work that has already been undertaken within the forum areas through case studies
- identify new IWM issues and opportunities
- communicate the benefits of applying a place-based IWM approach.

The tool will enable IWM Forum partners to describe and locate existing or future IWM projects within their forum area within an interactive shared workspace. It will also support organisations to identify and communicate issues and opportunities within IWM Forums. The tool may also provide a means of reporting the success of different initiatives across forum regions in terms of specific outcomes (e.g. total potable water savings, volumes of stormwater harvested, pollutant load reduced, canopy cover increased, or directly connected impervious area reduced).

The tool can capture information such as the outputs of previous work by DELWP and IWM partners for the major metropolitan Melbourne growth and renewal areas.

Guidelines for IWM planning and analysis

DELWP's *Developing integrated water management plans – a process of analysis* provides guidance on:

- engagement with different groups
- technical analysis and assumptions
- options evaluation
- drafting and finalising an IWM Plan.

These guidelines are specifically targeted at project managers and project teams as they undertake the various steps and different analyses involved in the preparation of IWM Plans. Following the approach outlined in this guidance may assist in applying the cost-benefit allocation framework and building business cases for integrated servicing solutions.

Preliminary project assessment guidelines

IWM strategies can include a wide range of management options that can affect one or multiple aspects of the water cycle. Options can be implemented at a range of scales, from regional to precinct to lot. They can utilise different sources of water, satisfy different demands for water, and use a range of local or regional infrastructure for storage and treatment.

Feedback to DELWP has indicated that the process of shortlisting these options can be challenging.

The Preliminary Assessment Method provides guidance on shortlisting options, brings together lessons and data from previous IWM strategies, and provides a methodology framework to aid shortlisting in a time-effective yet robust manner.

The Preliminary Assessment Method should not replace detailed analysis of option portfolios or underpin business case proposals. It is only intended as a high-level assessment method to aid shortlisting.

It is designed for use by groups developing an IWM Plan for:

- a major growth area (typically new developments that will add >5,000 new homes and are of a scale to significantly influence regional water management decisions)
- a servicing region for a water corporation, incorporating significant future growth or change which will require changes in regional water management arrangements.

Economic evaluation and cost allocation framework

Local projects and servicing plans developed by IWM Working Groups will proceed through economic evaluation and approval processes that are determined and accepted by the IWM partners involved. In most cases, cost-benefit analysis provides a robust method for evaluating the costs and benefits (including both market and non-market impacts) of a project. A multi-criteria analysis can also be used where the major benefits cannot be valued or are impractical to value.

IWM Plans and projects often propose innovative investments that provide multiple benefits to many different entities including:

- water corporations and their customers
- the local environment
- waterway managers
- local government
- developers
- new households
- the broader environment and community.

An integrated solution may lead to costs that would typically not have been incurred by the project partners through traditional projects under current regulatory settings. However, the additional costs do not necessarily change at the same scale as

additional benefits, and can be concentrated on one or two specific entities. Funding streams and cost-recovery mechanisms are not always apparent. This can present a barrier to some IWM projects.

DELWP has developed a cost-allocation process to respond to this issue. This provides a process to guide decision making on funding arrangements in such situations. The cost-allocation framework will be further developed and tested collaboratively by DELWP with other Victorian Government departments and the water sector. It is under continuous refinement as it is practically applied to IWM Plans. An example of this is in the IWM analysis for the Sunbury growth area (see case study).

The cost-allocation process first involves considering an identified preferred solution to allocate costs, benefits and risks of the preferred servicing solution across the accountable organisations. The allocation will be carried out in the context of accountabilities and an organisation's 'business as usual' servicing solution.

Where the benefits are required or desired by a particular organisation in its ordinary obligations, that organisation can reasonably be expected to meet the direct costs of providing those benefits.

Where benefits cannot be attributed to a particular organisation, associated costs may result in a shortfall. In this case, the collaborating organisations should develop a prospectus for investment, and expand their engagement to explore potential external funding sources (including public and private sector). This approach may identify a new interested organisation willing to co-invest to achieve the benefits identified. A strong project prospectus that describes the benefits and presents a sound value proposition can be a key tool to leverage external support. This can also be key to achieving opportunistic support and funding when the implementation context or strategic drivers change for a project or plan that has not been adopted due to funding issues.

Externality valuation

Externalities valuation focuses on assigning values to costs and benefits that are not obviously monetised, such as the community benefit of amenity improvements. *Valuing externalities for integrated water cycle management planning* is a DELWP-commissioned study that provides a first point of reference when undertaking IWM analysis that involves externalities. Although guidance on the use of externality data is provided in this document, it should be recognised that appropriate economics expertise is important when applying it. As with many technical disciplines, the 'devil is in the detail' and the robustness of the economic assessment is heavily dependent on the conditions under which the information is applied.

This topic is an acknowledged gap and work to improve understanding of this area is continuing.

Green-blue infrastructure guidelines

DELWP has partnered with the City of Ballarat to develop *Planning a Green-Blue City*, a how-to guide for planning urban greening and enhanced stormwater management. This guide has been developed to assist cities and towns in planning for increased presence and effectiveness of green-blue infrastructure in their urban areas. It is designed to assist local governments and their partners in:

- developing a robust and locally tailored evidence base for the need to promote green-blue infrastructure opportunities
- identifying green-blue infrastructure opportunities at all scales
- reviewing opportunities for greatest community benefit and value
- determining priority projects and key actions
- identifying delivery pathways and funding mechanisms.

The guide will allow local governments to develop the necessary components of a green-blue infrastructure action plan that will inform and drive local government-led initiatives.

Urban forest guidelines

The 202020 Vision (20V) is a mass collaboration of organisations working together to create 20 per cent more green space in our urban areas by 2020. DELWP partnered with City of Melbourne and 20V to develop *How to Grow an Urban Forest*. This document serves as a guide for other councils to follow in the development of their own strategy for urban greening and aims to:

- understand the process and methodology that made the City of Melbourne's Urban Forest Strategy a success – and adapt this for the benefit of other councils
- condense and simplify this into a methodology that can be applied and adapted to most urban councils in Australia, to suit where they are located, their political context and the resources they have available
- scale and replicate by providing this information as a free activity-based workbook with the key elements broken down into 10 steps.

7. Case studies

Case Study

Multiple benefits through IWM in the Fishermans Bend Precinct

The case study showcases

How collaborative, integrated planning delivers better value for the community.

Overview

Fishermans Bend, one of Australia's largest inner city urban renewal developments, will be home to 80,000–100,000 people and support 60,000 jobs by 2050. The Victorian Government's vision is for it to be "a leading example of environmental sustainability, liveability, connectivity, diversity and innovation".

Collaboration

Melbourne Water, South East Water, City of Port Phillip, City of Melbourne, the Victorian Planning Authority and DELWP collaborated to develop an IWM approach to service Fishermans Bend.

The Cooperative Research Centre for Water Sensitive Cities also provided the best practice challenges and visioning.

Outcome

The preferred IWM option has the potential to halve water and sewerage loads, reduce flooding and support a cool, green landscape resilient to heat stress while providing enhanced amenity.

The approach utilises infrastructure that provides multiple benefits. For example, rainwater tanks reduce flooding while providing a water resource; green infrastructure provides water quality outcomes while supporting amenity and urban cooling; and the proposed sewer mining plant will produce recycled water and reduce reliance on the centralised water and sewage systems.

The integrated servicing solution could be a catalyst for recycled water use across central Melbourne.

Business Case

The innovative IWM servicing strategy offers a positive benefit:cost ratio and delivers significant additional community value. Investment in this project will help to create a water-sensitive community that secures Melbourne's liveability and sets a new benchmark in sustainable urban design.

Below: Artist's impression of Fishermans Bend after development.

Source: CRC for Water Sensitive Cities

Case Study

Transforming Upper Stony Creek with multiple parties

The case study showcases

Applying a collaborative approach to precinct-scale planning and development can lead to improved water infrastructure that also provides community and environmental benefits.

Overview

The project centres on the transformation of a concrete drain in Sunshine North into a naturalised waterway and wetland, creating a revegetated recreational corridor.

Collaboration

Collaboration between City West Water, Melbourne Water, Brimbank City Council, DELWP, Places Victoria and environmental not-for-profit Greenfleet has identified, promoted and achieved full funding for the project with Commonwealth support.

Outcome

The Upper Stony Creek Transformation Project is an example of a project where collaboration is realising multiple benefits, none of which would be achieved without cooperation.

Business Case

A vision and business case built from a functional design provided the platform for partners to commit and seek gap funding. The functional design enabled partners to identify value for themselves and assign financial and in-kind contributions appropriate to their interests.

The project would not have been initiated without opportunistic visioning and negotiation between City West Water and Melbourne Water. Other key factors were collaboration to adapt planning mechanisms and develop specifications, consolidation of partner funding into a common delivery fund, and private sector investment through Greenfleet.

Concept Plan of the transformed Upper Stony Creek.

Source: Melbourne Water

Case Study

Visioning and commitment to shared values for Eastbank Lake

The case study showcases

How collaboration and integrated planning deliver better value for communities and the environment.

Overview

The Eastbank Lake project in Shepparton is a catalyst project that aims to transform an under-utilised anabranch of the Goulburn River into an environmentally sustainable urban waterfront precinct.

Collaboration

The design development, as part of the collaborative program River Connect, has involved key stakeholders including the Greater Shepparton City Council, Goulburn Valley Water, the Goulburn-Broken Catchment Management, and the local community to develop a shared vision for the area.

This shared vision, developed by stakeholders and the community, highlights Shepparton's connection to the local riverine environment, and to Aboriginal and multicultural values.

Outcome

The project will boost the local economy through new business, tourism and entertainment opportunities. The concept also involves alternative water supply through stormwater harvesting, which will reduce pollution entering the river and improve the resilience of the urban landscape with a non-potable water supply source.

Below: Artist's impression of Eastbank Lake after implementation.

Source: Spiire

Case Study

Ballarat City: Integrated Water Management Plan

The case study showcases

How project partners can facilitate planning and collaborate with stakeholders to outline a pathway to becoming a water-sensitive city.

Overview

Development of the Ballarat Integrated Water Management Plan began in July 2016. The plan aims to transform Ballarat into a water-sensitive city by outlining a range of projects that reflect the values and preferences of the local community. The key planning objectives include generating improved liveability outcomes and recreational opportunities; increasing green infrastructure; and supporting river health and a safe and secure urban water future.

Collaboration

Strategic direction, local governance and oversight of the plan is headed up by an independently chaired Project Control Group with representatives from local government, the regional water corporation, the catchment management authority and the relevant government department.

A Technical Support Group, with members from numerous project partners, provides practical input to potential projects.

Stakeholder workshops with broad representation from different community sectors are a key feature of the plan. The workshops go beyond testing community values and preferences to focus on identifying specific opportunities and options at a precinct, local and city-wide scale.

Outcome

The Ballarat Integrated Water Management Plan will be completed in 2017.

Enhanced decision support systems, expert technical knowledge and local circumstances are being used to determine preferred projects. Ultimately, the plan will deliver staged and prioritised actions for project partner organisations to implement in the short, medium and long term.

Below: Ballarat Integrated Water Management Plan development workshop.

Source: Central Highlands Water

Case Study

Collaborative networks in action – The Barwon Region IWCM Network

The case study showcases

How water-related agencies can work collaboratively to drive integrated water cycle management.

Background

The Barwon region in south-west Victoria includes some of the fastest-growing urban areas in Australia. Challenges such as drought, population growth and changing community attitudes have led to a re-think on the place and value of water and open space in the urban landscape.

The region is creating more water-resilient cities and towns by using an IWM approach. It is fortunate to have all the ingredients for this transition: natural resources, informed community, capable people and collaborative institutions.

There are many agencies involved in planning and managing key aspects of the water cycle within a regional context. While the aspects they manage are slightly different, they share a common vision to ensure the region's cities and towns are more water resilient for enhanced liveability, sustainability and productivity.

The network

The Barwon Region Integrated Water Cycle Management (IWCM) Network was established in 2012. It is a commitment by the region's lead organisations in urban and water planning to work together to apply IWCM.

Collaborating agencies include Barwon Water, Borough of Queenscliff, City of Greater Geelong, Colac Otway Shire and Surf Coast Shire. Through a Memorandum of Understanding, the partner organisations have agreed to:

- strengthen the existing relationships between the region's key urban and water planners
- work collaboratively to promote IWM approaches at policy and program levels and through actions
- work cooperatively to raise awareness of the role of water in the region's liveability, sustainability and productivity.

The network meets regularly and works closely with the Department of Environment, Land, Water and Planning and the G21 Geelong Region Alliance. It has initiated a range of projects designed to ensure cities and towns are more water resilient, including:

- Regional Atlas of Alternative Water Opportunities
- Colac IWCM Plan
- Spring Creek IWCM Plan
- Fyansford IWCM Plan
- Northern and Western Geelong Growth Areas IWCM Plans.

Map of the Barwon Region.
Source: DELWP

Case Study

Economic evaluation and cost allocation in the Sunbury IWM Project

The case study showcases

The challenges associated with the evaluation and allocation of responsibilities and costs in an integrated water management setting.

Overview

One challenge for working as a collaborative group with an IWM solution rather than separated servicing plans is the allocation of responsibilities and consequent cost sharing to the collaborating partners. This is particularly critical where potential infrastructure and its benefits do not have a clear owner, whether by lack of precedent or unclear benefit quantification.

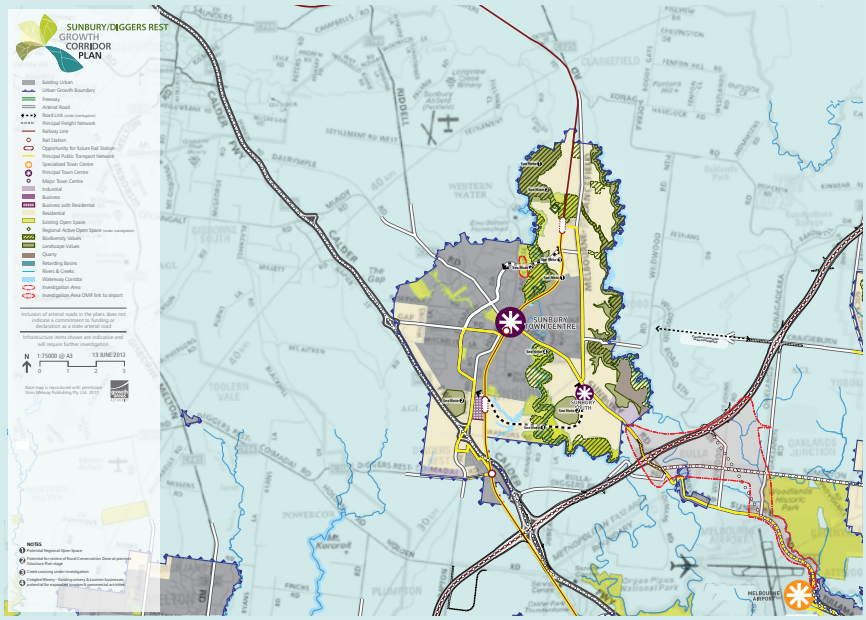
As part of existing IWM planning for western Melbourne, analysis of IWM servicing options for the expanding Sunbury area identified a range of solutions that combined infrastructure opportunities. One solution had a significant stormwater harvesting component that would positively contribute to landscape and waterway health, and water supply. The main quantifiable benefits were offset of potable demands and captured nitrogen.

Outcome

The project group worked with economic specialists to apply a cost-sharing approach for this scenario, which nominated a 'stormwater harvesting manager' and enabled the economic analysis without specifically assigning costs. This approach allowed this solution's whole-of-community costs to be compared with other solutions where the responsibilities are clearer.

Further development of who will own and share the costs for the harvesting manager role will be progressed if this solution is further shortlisted and as the costs and benefits options are further understood.

Where there is a clear 'whole of society' benefit but no clear assignable beneficiary to bear the cost of achieving that benefit, IWM Forums must work through how these funds will be raised.



Sunbury/Diggers Rest Growth Corridor Plan.

Source: Victorian Planning Authority

Case Study

Clearwater programs build capacity in IWM

The case study showcases

The successful facilitation of IWM capacity-building activities.

Overview

Clearwater is a capacity-building program that works with the water industry to build IWM leadership and vision, enhance skills and knowledge, foster networks and improve accessibility to tools and resources.

Since its inception in 2002, the Program has trained more than 10,000 Victorian water practitioners through face-to-face capacity building, guidance documentation and engagement activities.

To align with the Victorian Government's goal of 'liveable and productive places that support vibrant communities', Clearwater is now delivering capacity-building activities across Victoria.

Activities are informed by the needs of the water industry and can range from networking and knowledge-sharing events to technical tours, organisational training and provision of regular industry updates and online resources.

Outcomes

The delivery of tailored, in-house training on the maintenance of Water Sensitive Urban Design (WSUD) assets is one of Clearwater's most successful capacity-building programs. This training was designed in response to the need for both professional development and organisational strengthening activities targeted at WSUD maintenance issues faced by Councils.

The training sessions brings together staff from across Council involved in managing WSUD to build their skills, knowledge, networks and commitment to WSUD and IWM.

Outcomes for participating organisations include: improved skills and knowledge of staff, improved relationships and collaboration, increased operational efficiencies, clarified roles and responsibilities, and a more supportive culture towards WSUD and IWM.

In the past three years, Clearwater has delivered 19 training sessions to more than 400 council staff and continues to evolve the program to ensure it meets current needs.

"The Street Scale WSUD Maintenance Training was an excellent training course, pitched at the correct level with the appropriate mix of theory and practicality. This training will make a huge difference to the team here as part of our WSUD journey."

—Training participant

Clearwater WSUD technical training event.

Source: Clearwater

Case Study

Water Future West – collaborative IWM planning in practice

The case study showcases

The application of a collaborative IWM approach at a sub-regional scale.

Overview

The Water Future West IWM planning initiative focused on facilitating integrated water service planning for the western sub-region of Greater Metropolitan Melbourne. Over three years, the development and progression of Water Future West was driven by convened forums of key water sector and land planning organisations across the sub-region.

Collaboration

Facilitated by the State Government, the initiative included water corporations (rural & urban), city and shire councils, and the Victorian Planning Authority.

Vision

The Water Future West Forum collaboratively developed desired outcomes for the region that guided IWM planning. They were:

- Supported liveable and sustainable communities: promoting local agriculture and industry; community amenity; improved flood protection; valued and efficiently used natural resources; engaged and informed community.
- Enhanced environmental health of waterways and bays.
- Efficient, secure water supplies; reliable fit-for-purpose water; increased resilience and adaptability.
- Improved public health and well-being; public health and safety for all in the community; climate-resilient water and green space in the urban environment to enhance community health and well-being.
- Affordable essential water services: efficient and affordable water solutions for brownfield and greenfield sites; existing water infrastructure for the region optimised without restrictions of service boundaries.

Process

Water Future West was driven by a Project Control Group (PCG) – the equivalent of the forums proposed in this framework. This group included a State Government representative, managing directors of the water corporations, and general managers (or equivalent) of city and shire councils, and the Metropolitan Planning Authority. The PCG oversaw projects and made progression decisions based on collaborative opportunities. It also steered the organisational attitude and collaboration that set the tone of the Working Groups reporting to them.

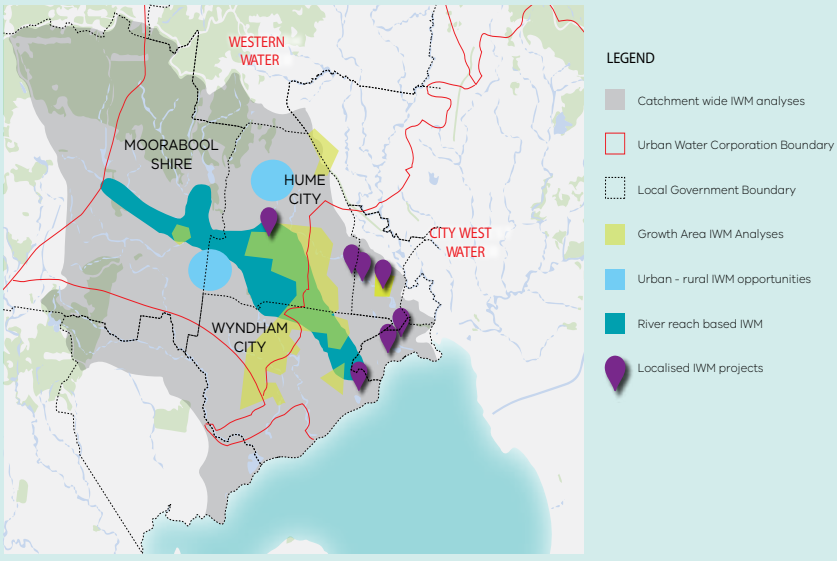
Outcomes

Under Water Future West the integrated approach to water cycle outcomes produced IWM plans at a range of scales, from local to regional. Highlights of the work directed by the forum include:

- Analysis of integrated water management options for key precincts in the western growth corridor (Sunbury, East Werribee, Melton and Wyndham North).
- Assessment of managed aquifer recharge potential for the western Melbourne region.
- Investigation of alternative water irrigated agriculture potential for the western Melbourne region.
- Development of integrated water management opportunities for the Werribee River, including ecological risk assessments.
- Development of integrated water management opportunities for the Maribyrnong River.
- Upper Stony Creek Transformation Project progression from concept to implementation.

Collaborative outputs of Water Future West IWM planning in the Werrribee Catchment.

Source: DELWP



Appendix A

Sample Integrated Water Management Plan Structure

1. Recommendations and summary
    a. Actions needed
    b. Funding arrangements
    c. Implementation timeframe
    d. Risk management
    e. Broadscale strategic alignment
    f. Benefits
2. Introduction
    a. Project description and service need
    b. Success statement (articulates the gap between current performance and objectives that led this plan to be a priority)
3. Background
    a. Scope of the plan
    b. Assumptions and constraints
4. Project partners and other stakeholders
    a. Community aspirations
    b. Aboriginal values
    c. Defined accountabilities
    d. Shared values
5. Define service levels/desired outcomes
6. Options analysis
    a. Conventional servicing approach
    b. Integrated options
7. Evaluation
    a. Quantified benefits – demonstrated meeting of service needs
    b. Qualified benefits – externalities
    c. Costs
    d. Risk assessment
    e. Quantitative and qualitative cost–benefit analysis
8. Cost–benefit and risk allocation
9. Implementation
    a. Delivery process and program
    b. Delivery partner responsibilities and financing
    c. Stakeholder impact analysis
    d. Communication
    e. Community engagement
    f. Monitoring, evaluation and feedback
10. Risk
    a. Contingency plan

Glossary

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.

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

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

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.

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

Fit-for-purpose: Water of a quality appropriate for its intended use.

Floodplain: Lowlying land adjacent to a river or stream with unique ecosystems dependent on inundation from flood events.

Local governments: Local government organisations provide a wide variety of services to their municipalities and enforce various federal, state and local laws for their communities. These include a range of urban water management services.

Integrated catchment management: (ICM): The coordinated management of land, water and biodiversity resources based on catchment areas. It incorporates environmental, social, cultural and economic considerations. This approach seeks to ensure the long-term viability of natural resource systems and human needs across current and future generations.

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 Plan: A documented analysis of an integrated water management opportunity using a collaborative integrated water management approach.

Statement of Obligations: Statements made under Section 41 of the *Water Industry Act 1994* that specify the obligations of Victoria's water corporations in relation to the performance of their functions and the exercise of their powers.

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.

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.

Urban water strategies: All urban water corporations in Victoria are required to develop strategies that detail how water supplies and water demands will be balanced over the long term. These are the next iteration of Water Supply Demand Strategies prepared in 2002 and 2007.

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

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.

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