9. A new approach to planning and delivering water supplies

Image: Wetlands Sale Common, Gunaikurnai Country

A new approach will be used to deliver new manufactured water supplies in the future. We need to start planning now for a range of preferred future water supply options so that new urban water supplies are ready for delivery when they are needed, with shorter lead times. When making decisions about future water supplies, we will use a quadruple-bottom-line assessment that considers cultural, economic, environmental and social costs and benefits to maximise community benefits.

9.1 Planning for our future water supplies

Our plan:

- plan, track and progress regionally significant water supply options through a new Water Grid Plan readiness framework
- develop agreed triggers to support decision-making on progressing regionally significant urban water supply options
- use quadruple-bottom-line assessments when making decisions about future urban water supplies including considering options to enable water to be returned to the environment and Traditional Owners; for regionally significant investments, this will occur through the Water Grid Plan readiness framework; for local investments, this will occur through water corporations embedding quadruple-bottom-line assessments into their own planning processes
- commence early readiness work so opportunities to return river water to the environment and Traditional Owners are well understood.

A new 'readiness' approach for urban water planning

The risks and complexities of maintaining a reliable supply of water for our cities and towns are increasing and involve considerable uncertainty. Water resources for our cities and towns (or urban water) within the region will need to be added to in the short, medium and long-term as our population grows, climate dries and seasonal variability increases. Modelling for the interconnected south-central grid – comprising Melbourne and nearby urban centres including Geelong – indicates that up to an extra 85 gigalitres of water per year could be needed by 2030 (under a high-climate and high-population growth scenario).

Planning needs to commence now to avoid the chronic water shortages and rushed decision-making that ultimately affects liveability and can cause major social and economic impacts, such as those experienced during the Millennium Drought.

We must plan for uncertainty and a range of plausible future water scenarios. Early investment in readiness activities, such as feasibility studies and business cases, is prudent investment for any large-scale infrastructure projects and helps reduce lead times to have new water supplies constructed and water flowing.

Key water management decisions need to be decoupled from crisis management. Entering a water crisis, where severe water restrictions are needed to address acute water shortages has significant economic implications – it was estimated that the impact of severe water restrictions cost Melbourne between $420 million to $1,500 million over a 10-year period during the Millennium Drought in the mid-1990s and early 2000s (Productivity Commission 2011). The economic impact could be amplified if a large-scale water infrastructure decision was also required in this timeframe, resulting in sudden increases in water bills and limiting the opportunity for community involvement in decisions on supply options.

The current planning framework does not support incremental investments or provide an adequate framework for upfront 'readiness' work to identify and robustly evaluate potential urban supply augmentation options. Further, the existing framework requires additional clarity on roles and responsibilities for addressing regionally significant water supply options across the interconnected south-central grid. These issues were recently highlighted in *Victoria's infrastructure strategy 2021-2051* (Recommendation 15 – Improve decision making for urban water investment), which identified that:

- securing Victoria's water supplies in a climate constrained future will require collaborative and integrated planning, ongoing community engagement, and clear investment and funding arrangements'; and
- ambiguous responsibilities can impede responsive and considered investment decisions, causing delays when there is ample water supply, or rushed and potentially unwise decisions when water is scarce. The Victorian Government should clearly allocate roles and responsibilities' (Infrastructure Victoria 2021, p. 62).

The context for adding to our water supplies has also changed over time. Options for large-scale supplies from rivers and dams have been exhausted and we are left with legacy impacts and historical injustices to Traditional Owners and the environment to redress. Also, technology for accessing other water sources is improving. This radically changes the options and decisions available to the government, water corporations and communities.

Looking forward, it is expected that new water supplies will need to be added more frequently. To have a suite of ready options available to increase supply regularly and incrementally, we need to adopt a readiness approach to water supply planning.

We have an opportunity now to improve urban water planning within the current arrangements and settings to address these issues and ensure a planned transition to greater use of manufactured water over time. We will achieve this by implementing a new 'readiness' approach for urban water planning.

This new readiness approach means the Victorian Government and water corporations will complete early option assessment and development well in advance of the infrastructure being needed, rather than waiting for a drought or an emergency. It will also support flexibility by creating a suite of options to choose from ensuring that options aren't developed in a rush during a crisis. This will save time, and significant investment later. This new approach will be implemented on two levels, to allow individual water corporations to use this approach in their own areas, while also allowing coordination between water corporations and government for regionally significant projects (see box below).

Readiness approach

Regionally significant projects will be identified, planned, and tracked through a Water Grid Plan framework (detailed further below). A delegated delivery lead (urban water corporation or government department) will progress readiness activities according to clearly-defined triggers for the different stages of planning and implementation where a high level of government oversight is required.

Smaller but important local projects will be progressed by urban water corporations through urban water strategies or through the IWM forums using the same readiness approach.

In both cases, potential projects will be progressed through four planning stages: (i) adaptive planning; (ii) readiness; (iii) selection and (iv) implementation, with clearly defined decision-making points at each stage. Also, options evaluation will involve the use of quadruple-bottom-line assessments to ensure economic, environmental, social and cultural costs and benefits are considered (discussed further below).

The readiness approach involves progressing options through successive stages of planning, through to final implementation with key decision points between each stage:

- **adaptive planning** – this stage entails testing preliminary options with community and regulators, early assessment and shortlisting of preliminary options, leading to a conceptual investment case focussing on problem definition, initial option concepts and feasibility
- **readiness** – this stage entails producing preliminary business cases including investment cases and conceptual delivery cases. It builds on the previous stage by providing further and more rigorous assessment of options and identifies aspects such as technical issues, required environmental and planning approvals, schedules and budgets, etc
- **selection** – this stage entails producing a full business case which includes comprehensive investment and delivery plans. It confirms and finalises all the previous analysis
- **implementation** – this stage entails making a decision on which option(s) will actually be implemented and finalising aspects such as procurement strategies and market assessments. It also covers delivery of competitive procurement and implementation of the selected option(s).

While individual urban water corporations can progress through the readiness stages largely on their own for local projects, a different approach is needed for regionally significant projects (see box below), to allow for coordination across the multiple entities who need to be involved.

The Department of Environment, Land, Water and Planning, in collaboration, with urban water corporations has therefore developed a **Water Grid Plan** – a new urban water supply infrastructure readiness framework for progressing regionally significant urban water supply augmentation options. The new readiness approach combined with the Water Grid Plan will facilitate:

- targeted upfront investments in planning and readiness to create a portfolio of future-ready water supply options
- shift from crisis decision making to proactive, collaborative and integrated planning and timely decision making
- the water sector coming into line with standard good practice for critical infrastructure planning
- implementation of a new 'business-as-usual' monitoring and public reporting process through the Water Grid Plan
- setting out and adopting a 'readiness approach' to water supply planning for regionally significant projects – that is, completing early option development steps well in advance, rather than waiting for an emergency.

What does regionally significant mean?

Water supply options in the Water Grid Plan must first meet a regional significance criterion to be included in the Water Grid Plan. To meet this criterion an urban water supply option must satisfy the following:

1. The option augments the interconnected south-central water grid;
2. The option crosses regional and/or organisational boundaries;
3. Planning and implementation of the option would require coordination between multiple partners and/or agencies; and
4. Implementation of the option may require government investment.

Figure 9.1 provides further details on how water supply options will be identified and progressed.

For options meeting the regional significance criterion, planning and option progression will occur through the Water Grid Plan framework (see third column in Figure 9.1). This will define clear governance arrangements for option progression. This includes establishing a new Executive Advisory Committee that will make recommendations to government at key decision points, including recommendations on appointing delegated 'delivery leads' (more information on the Executive Advisory Committee can be found in the Governing and implementing the Water Grid Plan section below).

For options which are not regionally significant, individual water corporations will step through the readiness framework through their own urban water strategies or IWM forums (see second column in **Figure 9.1**).

In either case, progression through the readiness planning stages will winnow down the list of preferred options and provide increasingly rigorous assessments. The timing of decisions to move on

from one planning stage to the next will be informed by robust, clear decision-making triggers, detailed further below.

This readiness framework will be implemented in the context of existing regulatory requirements. For example, depending on the option under consideration, part of this process may entail working through the Department of Treasury and Finance guidelines for new major water supply augmentations.[36]

In practice, implementing the readiness framework will look different depending on the parties involved, the problem definition, and the option under consideration. Many smaller local projects will not require a full business case to proceed to implementation. However, adoption of this framework across the industry will help ensure consistency and best practice principles are applied to all investment decisions.

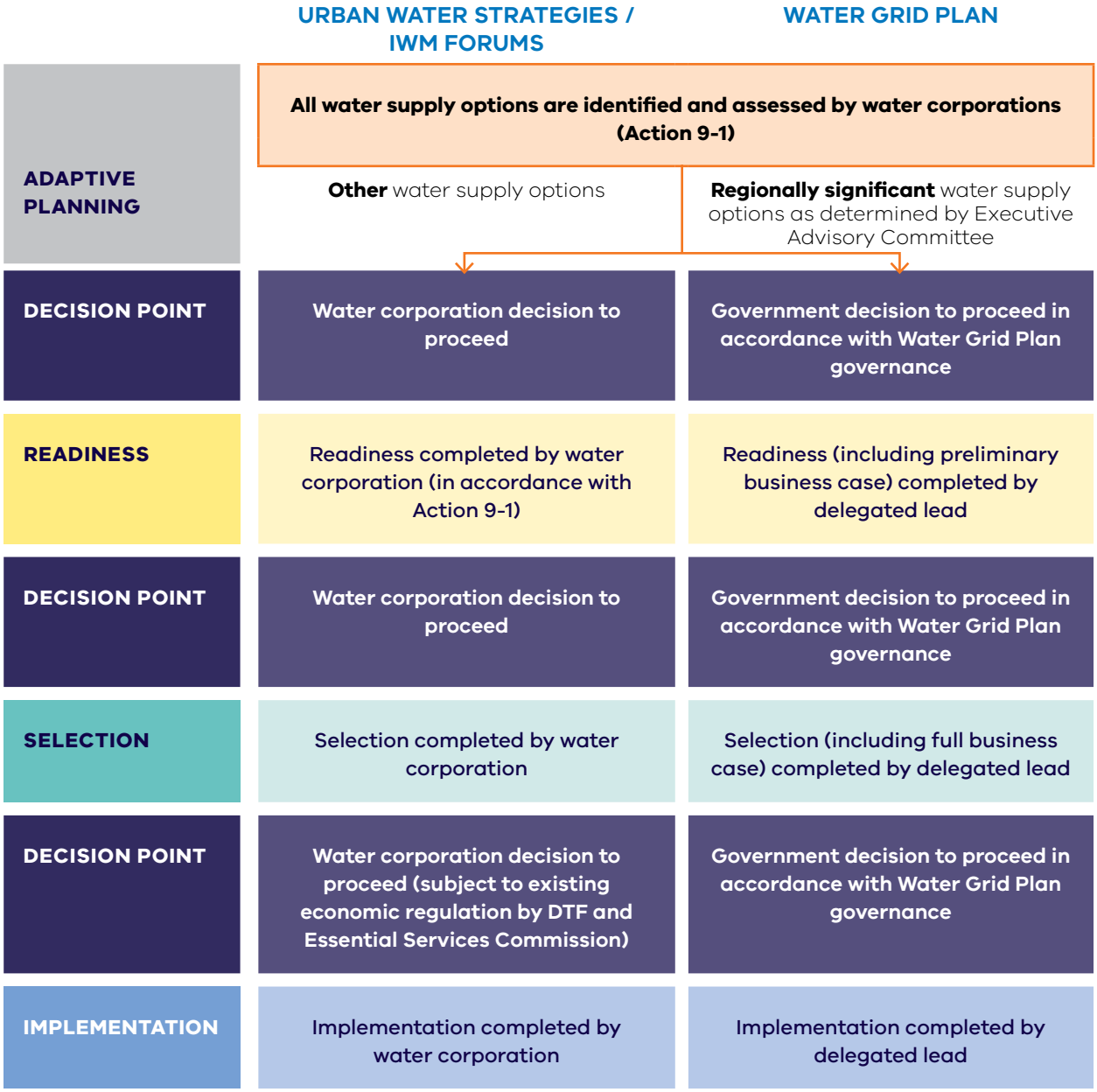


Figure 9.1: Readiness framework. Note: further detail on the Water Grid Plan and its governance is provided below

36 Such as the *Corporate planning and performance reporting requirements, government business enterprises* (DTF 2020) and *Investment lifecycle and high value high risk guidelines, business case* (DTF 2019).

Decisions around new water supplies will reflect the urban water needs of cities and towns and, for the first time, include opportunities that will enable river water to be freed up to return to the environment and Traditional Owners.

Embedded in the new readiness approach is a quadruple-bottom-line assessment process. Quadruple-bottom-line assessments will consider the potential of each potential project to deliver economic, environmental, social and cultural benefits, including identifying viable options to return water to Traditional Owners and the environment and support their further progression via appropriate decision-making and funding pathways. The box below provides further detail on how quadruple-bottom-line assessments will be undertaken within the Water Grid Plan framework.

Quadruple-bottom-line assessments consider traditional triple-bottom-line factors – such as economic sustainability and development, environmental sustainability and waterway resilience, and social values and acceptance – as well as cultural values and benefits, and opportunities for potential return of water to Traditional Owners for self-determined uses. In the future, the cultural values and benefits of returning water to Traditional Owners will be considered by applying the Cultural Benefits Framework (see **Section 6.4** and the box below).

Image: Black Swan, Sale Common, Gunaikurnai Country

Quadruple-bottom-line assessments in the Water Grid Plan framework

The Water Grid Plan will incorporate a live portfolio of options under active consideration for augmenting urban water supplies. Over time, new options can be added to the Water Grid Plan. Some included options will progress all the way through the Water Grid Plan readiness framework to implementation, whereas others may eventually be discarded (for example, if they don't 'stack up' against other options or are no longer needed or cost-effective due to a change in circumstances).

Initial quadruple-bottom-line assessments

An initial **quadruple-bottom-line assessment** will be required for any option proposed to be included into the Water Grid Plan.

The purpose of the initial quadruple-bottom-line review is to undertake a qualitative assessment of potential regionally significant urban water supply options against the four quadruple-bottom-line criteria, with the intent of shortlisting preferred projects to be included in the Water Grid Plan.

The initial quadruple-bottom-line review aims to identify whether options have the potential to deliver cultural, social, economic and environmental benefits. It also identifies where there are opportunities to better align a prospective project with the Cultural Benefits Framework (see **Section 6.4**) and government investment principles (see **Section 9.4**). It does not entail a comprehensive quantitative analysis.

The initial quadruple-bottom-line review process is a two-tiered approach.

Tier 1 - comprises assessing each option against a set of four filter questions:

1. Will the option contribute to urban water supply security?
2. Is the option 'regionally significant'? (See box above for criteria for determining whether an option is regionally significant)
3. Does the option have potential to enable return of water to Traditional Owners for self-determined uses?
4. Does the option have the potential to enable return of water to the environment and improve waterway health?

For a project to be included in the Water Grid Plan options portfolio, the assessment must meet each of these filter criteria. Options which do not meet each of the four filter criteria do not progress to the Tier 2 assessment.

Tier 2 comprises an assessment against a set of detailed criteria addressing environmental, cultural, social and economic outcomes.

Further quadruple-bottom-line assessments

As options are progressed through the Water Grid Plan readiness framework, **further quadruple-bottom-line assessments** will be undertaken, including more detailed quantitative assessments where relevant and data is available.

The quadruple-bottom-line assessment is integrated throughout the Water Grid Plan planning stages (refer **Figure 9.3** below), rather than occurring at just one stage. This means that all corresponding decision points will involve consideration of these quadruple-bottom-line assessment results. This process will confirm that shortlisted options benefit the community according to environmental, cultural, social and economic criteria, and that potential opportunities to return water to Traditional Owners and the environment are considered.

The quadruple-bottom-line assessment framework will be refined over time and used for any future regionally significant options identified. Quadruple-bottom-line assessments will be led by the Victorian Government's grid oversight function, and incorporated into the recommendations provided by the Executive Advisory Committee to government (see below for more detail on Water Grid Plan governance).

Preparing options to return water to the environment and Traditional Owners

More work is needed to understand opportunities to free up river water to be returned to the environment and Traditional Owners so that they can be considered in detail via individual business cases. The types of readiness activities required to inform future decisions on whether or not to proceed with a given option include:

- technical studies and assessments to determine if and where it is feasible to provide water to meet Traditional Owner and environmental needs. These include consideration of substitution opportunities, and what changes to the water supply system, if any, would be required
- water resource modelling to understand the relative reliability and water quality of both new manufactured water sources and existing water sources to inform decisions about appropriate substitution options
- negotiations and decisions on the percentage or volumes that will be returned to Traditional Owners and the environment from a designated water supply option. The water sharing principles for allocating water to Traditional Owners will be applied when making these decisions (see **Policy 6-1**)
- agreement on cost-sharing arrangements and assessment of the net-public benefit of government investment to ensure that the chosen investment is the most effective way to achieve customer and public benefits and that it is sustainable to operate in the long-term
- assessment of mechanisms used for water sharing through the water entitlement framework. This includes new entitlements or changes to entitlements that are needed to enable substitution options. This process may require potential updates to future legislation, to support Traditional Owners' access to water while safeguarding existing water entitlements under the Water Act
- education and literacy information to help the community understand how water will be shared and the safe uses of manufactured water sources.

As manufactured water projects progress, decisions on sharing water and costs will be based on a quadruple-bottom-line assessment that considers the investors in each project, as well as social, cultural, environmental and financial costs and benefits.

Policy 9-1:
Adopt the readiness approach for urban water security planning

Ongoing

The Victorian Government and urban water corporations will adopt the readiness approach for urban water security.

- for regionally significant projects, the readiness approach will be implemented via the Water Grid Plan framework (see **Action 9-2**). The Water Grid Plan will be supported by a governance structure which clearly defines roles and responsibilities
- for other projects, the readiness approach will be implemented via the existing five yearly urban water strategies and the Melbourne Water system strategy and IWM forums.

See **Action 4-2**, **Action 9-2**, **Action 9-5** and **Action 9-6**.

Action 9-1:
Ongoing adaptive planning activities for future water supply options

Ongoing

Urban water corporations will undertake adaptive planning and commence early readiness activities for future water supply options that also consider opportunities to return some river water to Traditional Owners and the environment. Readiness activities will include:

- early planning, preparatory work and feasibility studies on potential options, quantification of opportunities to improve urban water security as well as return water to rivers via substitution or reconfiguration of existing supply infrastructure.
- potential inputs to preliminary business cases as projects progress to the readiness stage either as regionally significant water options via the Water Grid Plan or via urban water strategies or IWM forums for local projects (see **Figure 9.1**).

See **Action 4-2**, **Action 9-2**, **Action 9-5** and **Action 9-6**.

Image: Parwan (Barwon River) rowing boat sheds, Wadawurrung Country

The Water Grid Plan: implementing the readiness approach for regionally significant water supply projects

To address limitations in the current urban water infrastructure planning framework and implement the new readiness approach for regionally significant urban water augmentation options, the Victorian government will implement a new Water Grid Plan framework. This introduces an extra tool to ensure a coordinated approach when it is needed. The box below describes how the new Water Grid Plan fits into Victoria's planning framework for water resources.

The Water Grid Plan framework will improve the planning process by:

- progressing regional water supply planning and decisions through a regularly updated Water Grid Plan, rather than through the development of sustainable water strategies (every 10 years)
- documenting a clear readiness approach to investment in climate-resilient urban water supplies in the Central and Gippsland Region, including shortlisting near-term options, and setting out clear progression steps linked to decision-making triggers
- ensuring alignment across the water sector on the planning, options, roles and governance for regionally significant new supplies such as desalination
- combining the concept of readiness with decision triggers to support better decision-making that will enable new climate-resilient supplies to be available when we need them
- getting the balance right between risk of investing too early and too late embedding the assessment of viable opportunities to return water to Traditional Owners and the environment into the option progression framework, for further progression via appropriate decision-making and funding pathways
- communicating the plan with the community, to support decisions around trade-offs between cost, water reliability and investments to secure urban water supplies and achieve additional outcomes related to the return of water to Traditional Owners and the environment.

How we will plan for Victoria's water future

Figure 9.2 sets out how we will plan for Victoria's water future using an updated framework that allows for better coordination and planning. ***Water for Victoria*** (DELWP 2016b) is the Victorian Government's existing high-level policy for water management in Victoria, and under this policy **sustainable water strategies** are developed every ten years to set the strategic direction and policy settings for the region, considering all water needs (urban, agricultural, Traditional Owners, environmental and recreational).

Further, **urban water strategies** are developed by water corporations every five years[37] and are a key planning tool for delivering safe and sustainable water supplies for our cities and towns. Urban water corporations consult with their communities and stakeholders to develop supply options for their regions through **urban water strategies**.

In addition to these existing instruments, going forward, planning for regionally significant urban water supply options will be progressed via a new **Water Grid Plan**. These options will be identified from **urban water strategies** and additional investigations undertaken by the Victorian government to meet predicted supply shortfalls and the policy directions set through this Strategy. The Victorian government's grid oversight function will work with urban water corporations and other relevant stakeholders to take a 'system-wide' view, including undertaking initial investigations into regional scale options such as future desalination. The grid oversight role will drive the preparation of the inaugural Water Grid Plan and future annual updates.

The costs of delivering safe and sustainable water supplies are set out by urban water corporations in their **pricing submissions** which are prepared approximately every five years. These costs, including any changes to water prices, are approved through a public process led by Victoria's independent price regulator, the Essential Services Commission.

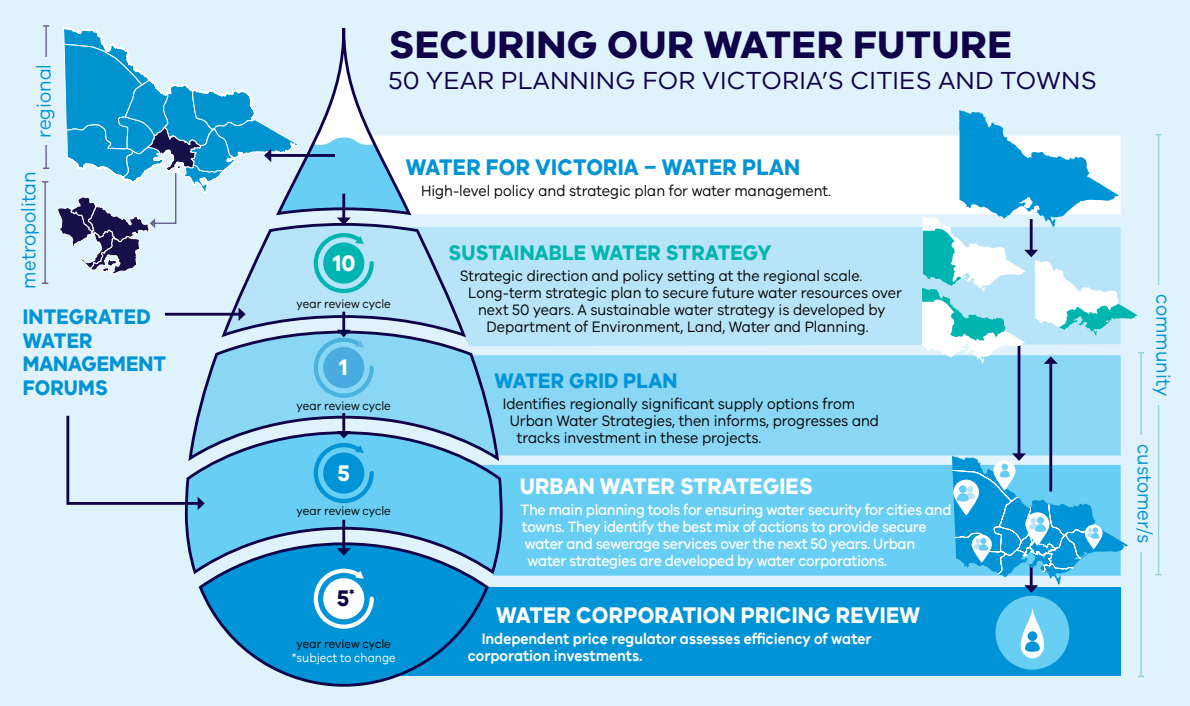


Figure 9.2: How we plan for Victoria's water future

37 Note the four water corporations across Greater Melbourne water are developing a combined strategy in 2022, known as the GMUWSS.

The inaugural Water Grid Plan will be released in 2023 (see **Action 9-2**). The plan will detail a portfolio of near-term regionally significant options to be investigated for increasing our urban water supplies. Going forward, the Water Grid Plan will be updated regularly. As readiness work progresses, more detail and new water supply options will be added to the Water Grid Plan.

The regularly updated Water Grid Plan will inform, progress and track investment in new climate resilient urban water supply projects and additions to the State water grid at a regional scale. This regional approach will ensure planning and investment in new major infrastructure and supplies are made at the right time so that we have the best options ready when we need them. It will provide a decision-making and governance framework for the progress of regionally significant urban water projects, and track the progress of options through from early-stage readiness planning through to implementation.

Assessing new water supply options

The Water Grid Plan will build on the work undertaken by urban water corporations to identify all future water supply options through their urban water strategies. Options included in urban water strategies reflect community feedback and willingness to pay. In the future new water supplies will largely come from manufactured water resources – desalination, treated stormwater and recycled water.

Quadruple-bottom-line assessments for the Water Grid Plan

The Victorian Government and water corporations will work with communities, Traditional Owners and waterway managers, and use quadruple-bottom-line assessments to identify which options should be included in the Water Grid Plan, and also to inform which options from the Water Grid Plan portfolio will ultimately be implemented. This means that quadruple-bottom-line assessments will be used at multiple stages to support decision-making:

- at the outset of the process, an initial quadruple-bottom-line assessment will be conducted to shortlist options for inclusion in the Water Grid Plan
- as options are progressed through the Water Grid Plan readiness framework, further quadruple-bottom-line assessments will be undertaken, including more detailed quantitative assessments where relevant and where quantitative data is available.

While the primary purpose of the Water Grid Plan is to ensure we have enough potable water for our cities and towns, regionally significant options will also be assessed for their potential to support the broader Strategy policy directions to return water to Traditional Owners and the environment. This means that, while the primary focus of the Water Grid Plan will be to identify urban water supply augmentations, there will also be an opportunity to 'piggyback' broader outcomes, if such benefits are identified and the government and/or water corporations are willing to bear the additional costs of pursuing broader benefits.

Towards the inaugural Water Grid Plan: options of regional significance

The Victorian government and urban water corporations have already been undertaking extensive consultation, planning and analysis to determine the best urban water supply options for further investigation to address current and future demands both at a local and regional scale. This work will help ensure that only viable options are able to address the extent and timing of projected urban water supply shortfalls (up to 85 gigalitres by 2030) are included in the inaugural Water Grid Plan for further investigation.

As at July 2022, the preliminary work to select the options for inclusion in the inaugural Water Grid Plan undertaken to date has comprised:

1. identifying a 'long list' of potential water supply options from urban water corporations' urban water strategies
2. conducting an initial quadruple-bottom-line assessment, comprising the two-tier process set out in the box above. This work involved compiling a 'long list' of potential options by reviewing water supply options contained in urban water strategies, and applying the two-tier initial quadruple-bottom-line assessment process to identify a 'short list' for further consideration as the initial portfolio of options to be considered for inclusion in the inaugural Water Grid Plan.

3. seeking endorsement from the Victorian Government to continue work on these shortlisted options through the remainder of 2022, with a view to including them in the inaugural Water Grid Plan, to be released in 2023.

Further detail on work undertaken to prepare the Water Grid Plan will be released with the plan itself in 2023.

From this process, two short- to medium-term regionally significant water supply options passed the initial quadruple-bottom-line assessment, and have been identified for further consideration in the inaugural Water Grid Plan:

1. expansion of the region's desalination capacity
2. upgraded capacity of the Melbourne-to-Geelong Pipeline, from 16 gigalitres per year to 22 gigalitres per year, to enable Geelong to draw additional water from the Melbourne water supply system – including desalinated water.

These options are not mutually exclusive, and one or more options could be progressed concurrently.

Ensuring we are ready in time – triggers to support decision making

To support readiness, the Water Grid Plan will set out a framework for understanding and tracking the steps to implementation. Early-option development stages generally cost relatively little, compared to the later phases. Investing a small amount in early planning is a prudent approach that can save significant investment later. Investing in early readiness activities on multiple options at the same time ensures more options are available and allows flexibility to adapt to future change and uncertainty.

Factors to be considered during the early readiness activities could include:

- volumes of water that could be supplied
- lead times
- performance under a range of climate scenarios
- community support
- opportunities to use substitution arrangements to return some river water to the environment and Traditional Owners (see **Chapter 4**).

Determining when to progress option-readiness can be a complex decision. One tool that can assist with these decisions is a series of decision-making triggers that can be used to send a signal that it is time to move an option to the next stage of development. Triggers do not automatically make decisions, but they ensure that urban water corporations and the government are informed when pre-agreed risk thresholds are crossed, and a decision needs to be made. Water Grid Plan triggers will be defined in relation to the risk of failing to meet customer levels of service, particularly around whether the system is able to reliably meet customer needs during dry conditions or other critical events. For example, a decision-making trigger could be defined in relation to a specified risk threshold being exceeded, such as the risk of being unable to meet a specified level of service. Decision-making triggers will likely be different for each planning stage; in particular, because cost implications increase progressively between planning stages, and threshold for meeting decision-making triggers are also likely to increase at each progressive stage. This is consistent with one of the key objectives of this new framework, which is to better provide for less costly, early readiness work to proceed in a timely manner.

Due to the nature of the system, a single set of decision-making triggers for new urban water supplies need to be applied across the connected south-central region (**Figure 9.3**). While new regional urban water supply projects may enable water to be returned to Traditional Owners and the environment, the specific timing of investment will be determined on the basis of urban supply-demand projections and maintaining urban customer levels of service.

Developing supply augmentation decision-making triggers for the Water Grid Plan

The Victorian Government's grid oversight function (embedded within the Department of Environment, Land, Water and Planning) will lead work and collaborate with Melbourne Water, Yarra Valley Water, Greater Western Water, South East Water and Barwon Water to develop a set of pre-determined quantifiable metrics, referred to as 'decision-making triggers', to support large-scale supply augmentation investment decisions in the south-central system.

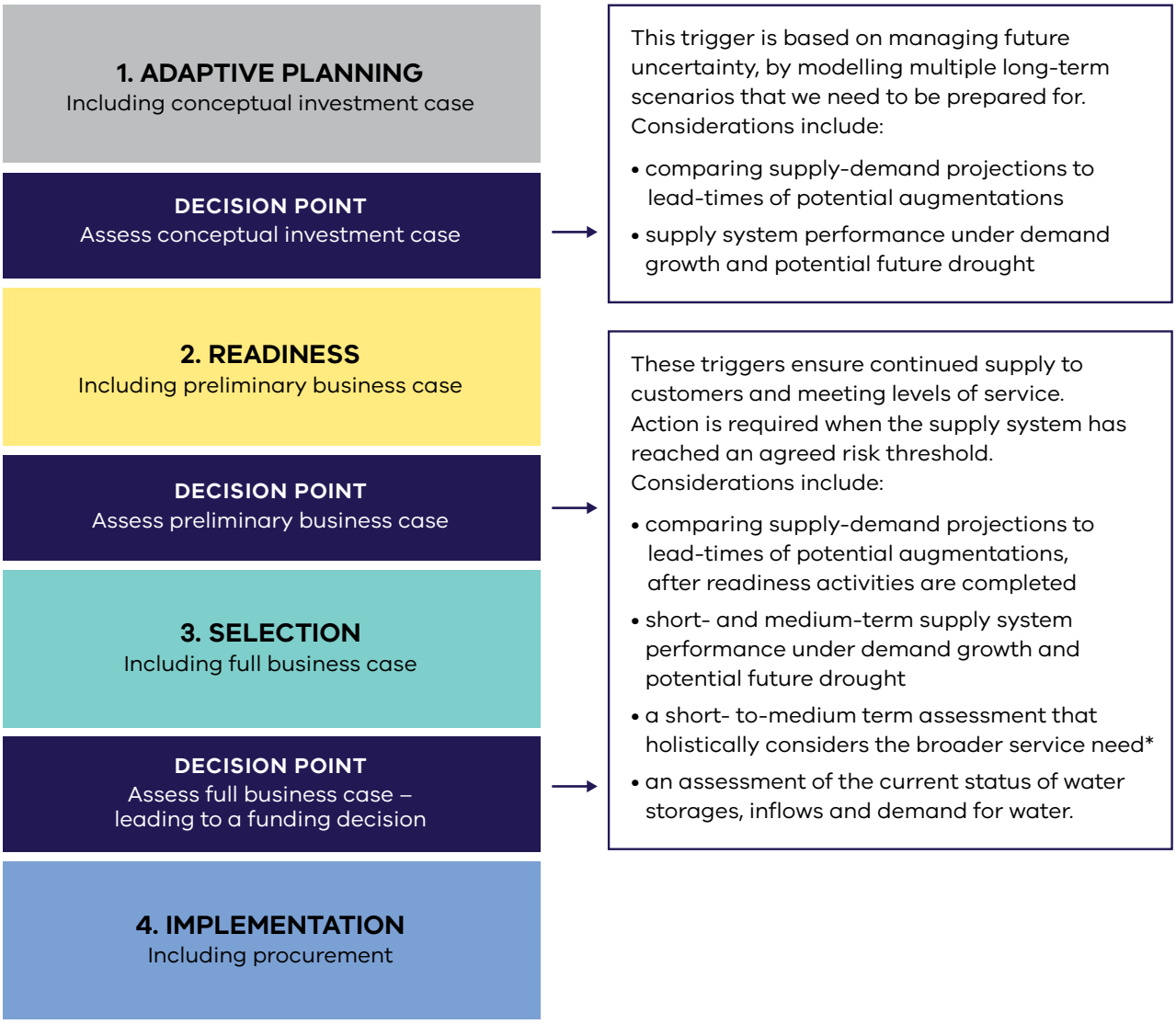
The inaugural Water Grid Plan will set out decision points (see **Figure 9.3**) that indicate when an augmentation option will be reviewed to determine if it should progress to the next stage of development in the readiness planning framework. To support

decision-making at these points, further work will be undertaken to:

1. confirm the set of trigger indicators for each decision point; and
2. further define the risk threshold or critical value for each trigger indicator.

Trigger metrics will be monitored by water corporations and government. The triggers will not automatically make decisions, but tell water corporations, government and the community when a pre-agreed risk threshold is met.

The decision-making triggers will be incorporated into the inaugural Water Grid Plan.



* Additional water requirements may include environmental water requirements, water for Traditional Owners and broader regional requirements.

Figure 9.3: Three decision points, which each require a trigger to be met to continue

Governing and implementing the Water Grid Plan

Implementing the Water Grid Plan will require coordination across various government department and the water sector. Roles and responsibilities for each step of the readiness activities, through to implementation, is described in the governance framework (see **Figure 9.4**). This framework aligns with Department of Treasury and Finance guidelines and processes and supports decision-making that is more transparent, streamlined and adaptable.[38] This will ensure that the right decisions can be made at the right time.

Government has always and will continue to take the lead responsibility for decisions on supply augmentations that are of regional significance. Water supply options within the Water Grid Plan require a greater level of government oversight than local scale options typically require. The Department of Environment, Land, Water and Planning oversees strategic regional and system-wide (across water corporation boundaries) water resource planning and investment decisions through its grid oversight function and does this in partnership with water corporations and key stakeholders. This means that the Department of Environment, Land, Water and Planning will play a coordinating role and ensure that all parties are fulfilling their agreed roles and functions in a timely and effective manner.

To support collaboration between government and the water industry, an Executive Advisory Committee, consisting of senior representatives from Department of Environment, Land, Water and Planning and Managing Directors from urban water corporations, will make recommendations to government on:

1. the initial set of regionally significant water supply options that will form the options portfolio for the inaugural Water Grid Plan
2. adopting Water Grid Plan decision-making triggers;
3. allocating an appropriate delivery lead for each project in the Water Grid Plan portfolio;
4. business cases and when to progress options to the next stage of development (that is, when decision-making triggers are met); and
5. any changes to the portfolio of near-term options included in the Water Grid Plan.

Environment and Traditional Owner working groups will be established to provide iterative and ongoing advice to support decisions around projects that return water to the environment and or Traditional Owners, or where there is expected to be an impact on the environment or Traditional Owners.

Consultation with the broader community will take place at key decision points, starting with water corporations engaging with their customers on the development of their urban water strategies and before any decision is made to implement an augmentation option.

38 Processes include the *Corporate planning and performance reporting requirements, government business enterprises* (DTF 2020) and *Investment lifecycle and high value high risk guidelines, business case* (DTF 2019).

Image: Melbourne CBD over the Birrurung (Yarra River), Wurundjeri Woi-wurrung Country

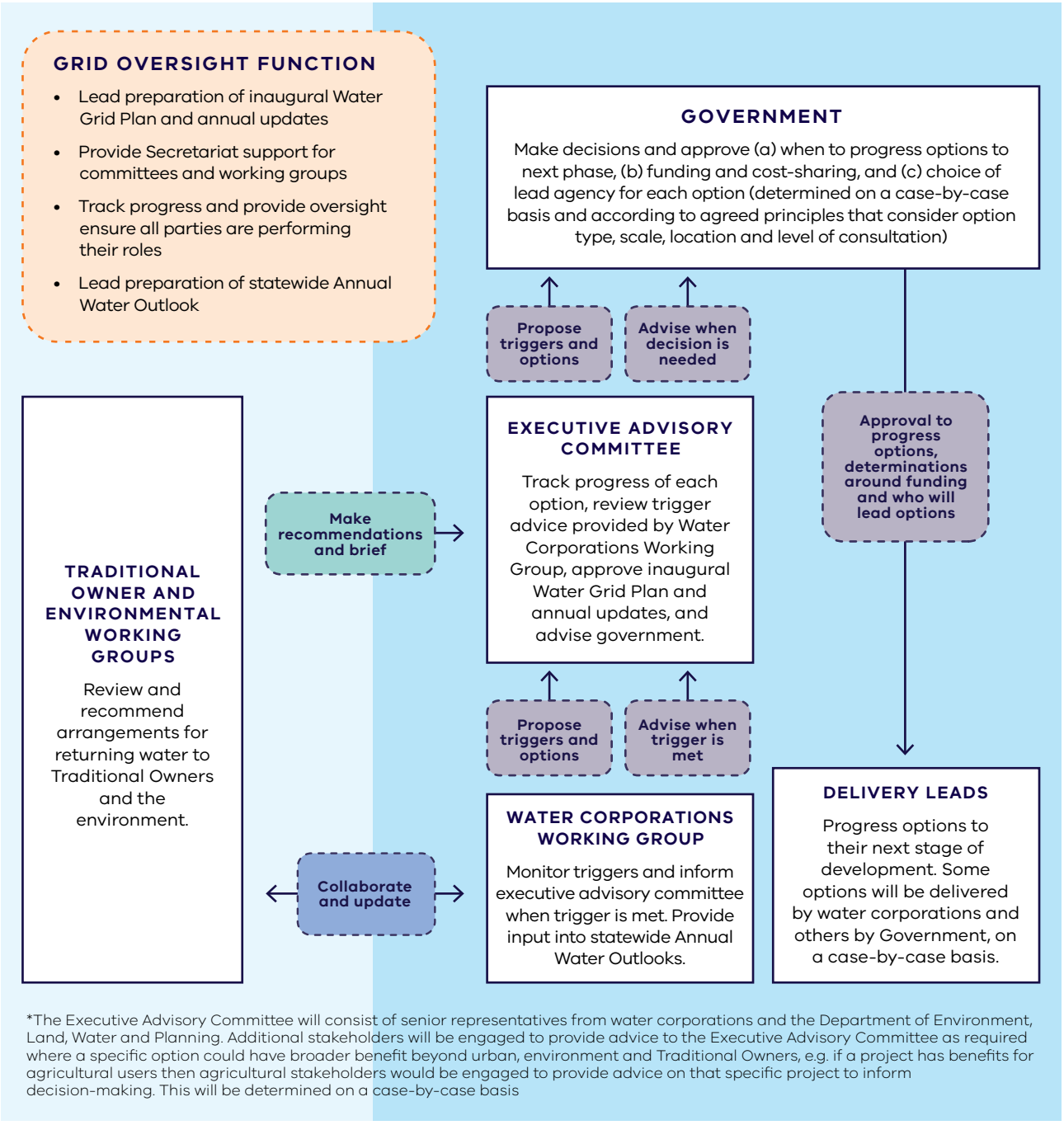


Figure 9.4: Governing and implementing the Water Grid Plan

Action 9-2: Publish a Water Grid Plan

The Victorian Government will work with urban water corporations to produce an inaugural Water Grid Plan in 2023, including decision-making triggers.

Inaugural Water Grid Plan: by 2023

Once this is in place, the Victorian Government will then work with urban water corporations to track progress of the portfolio of options included in the inaugural plan, and adaptively update a Water Grid Plan.

Annual updates: Ongoing

The Water Grid Plan (as updated annually) will identify potential future urban water supply options and guide incremental readiness investments in climate-resilient water supplies when triggers are met. It will also ensure that, as options are developed, work is completed to identify opportunities to enable a proportion of substituted water entitlements to be returned to the environment and Traditional Owners on the completion of projects.

Decision-making triggers: by end of 2022

9.2 Sharing urban water supplies in the Melbourne Supply System

Our plan:

- improve water sharing arrangements for towns in the connected central region (connected to the Melbourne Supply System)
- review Melbourne Water's diversion limit compliance method

Urban bulk water entitlements

As the region transitions towards greater use of desalinated water, and manufactured water more generally, bulk entitlements will need to be updated. Currently none of the regional urban water corporations that hold entitlements in the Melbourne Supply System hold entitlements to desalinated water. In the future, climate change and population growth will mean that the region increasingly relies on desalination. Significant policy development is needed to determine how water and costs from existing and future desalination projects will be shared between metropolitan and regional urban water corporations. This will be necessary to ensure that all cities and towns that are connected to the Melbourne Supply System can benefit from desalination water supplies and that costs are shared fairly.

To realise these benefits and optimise the use of all water resources, bulk entitlements must be flexible and reflect future needs. We are working with bulk entitlement holders in the connected Melbourne Supply System to reform existing entitlements arrangements, combining the major supply sources from the Yarra–Thomson system and the Victorian Desalination Project, to create a 'south-central pool entitlement'. While this will not change the volume or conditions of extraction from different sources, it will increase the efficiency and flexibility of entitlement arrangements, particularly as we add additional supplies over time.

This will ensure water sharing arrangements are in place long-term, simplifying the process as both the need to introduce more manufactured water to the Melbourne system increases and the dependence on the Melbourne system by connected regional urban water corporations grows. Various aspects of the current entitlement system will also be investigated to ensure arrangements support the creation of an effective south-central pool. Feasibility assessments have revealed the absence of the fundamental conditions for an effective urban water market in south-central Victoria and will not be investigated further as part of the current investigation.

The creation of a south-central pool entitlement will also assist future returns of river water to Traditional Owners and the environment through a more simple, consistent and transparent process for sharing water from future augmentations. Any reform will be supported by transitional arrangements to ensure a smooth changeover that keeps customer impacts to a minimum.

Action 9-3:
Create a south-central pooled resource and associated reforms

By 2025

The Victorian Government will work with bulk entitlement holders in the connected Melbourne Supply System to reform existing entitlements arrangements to create a south-central pooled resource and appropriate supporting entitlement arrangements.

The pooled resource will combine the Yarra-Thomson system and Victorian Desalination Project, simplifying the process as both the need to introduce more manufactured water to the Melbourne system increases and the dependence on the Melbourne system by connected regional urban water corporations grows.

This action will investigate various aspects of the current system to ensure arrangements support the creation of an effective south-central pool. This will involve a work program to review:

- bulk entitlements
- existing seasonal allocation method
- current carryover rules
- sharing and trading processes
- cost sharing arrangements, for both existing supplies and new supplies
- any other measures that would support the creation of an effective south-central pool.

Feasibility assessments have revealed the absence of the fundamental conditions for an effective urban water market in south-central Victoria and will not be investigated further as part of this action.

The creation of a south-central pool supports the aims of the Central and Gippsland Region Sustainable Water Strategy by assisting future returns of water to the Traditional Owners and the environment through a more simple, consistent and transparent process for sharing water.

Revise upper limit on consumptive diversions from the Melbourne Supply System

The bulk entitlements for the Melbourne Water system have an upper limit on consumptive diversions (referred as diversion limits) to protect unregulated flows and environmental, social and Traditional Owner values. In order to comply with the bulk entitlements, Melbourne Water has developed a diversion limit compliance method for consumptive diversions.[39,40]

Diversions from the Thomson, Yarra and Goulburn (Silver Creek and Wallaby Creek) systems are measured at compliance points specified in the Melbourne Water Supply System Bulk Entitlement Metering Program. Actual diversions are then compared to diversion limits which are generally estimated using hydrological models. The modelled diversion limits under the current method are set at future level of demands. Therefore, there is potential for large account credits to be accumulated against the diversion limits in the initial years before that level of demands is reached. The accumulated credits could be used to divert above the diversion limits for a number of years before the credit is exhausted and the method begins constraining diversions.

If diversions were to exceed the diversion limits this would reduce unregulated flows (spills) in the downstream waterways. Reducing unregulated flows would affect the frequency and duration of high flow events in the downstream waterways, which is likely to result in ecological impacts and potentially affect

39 The term 'Bulk Entitlements' refer to the Bulk Entitlement (Yarra River – Melbourne Water) Order 2014, Bulk Entitlement (Thomson River – Melbourne Water) Order 2014, and the Bulk Entitlement (Silver & Wallaby Creeks – Melbourne Water) Order 2014.

40 The term 'system' refers to the Thomson, Yarra and Goulburn (Silver and Wallaby Creek) systems

social and Traditional Owner values. It is important that diversions are managed sustainably within the diversion limits to avoid these potential impacts.

Key stakeholders will be engaged to revise the current diversion limit compliance method. The revised method will sustainably manage water resources in the system and protect environmental, social and Traditional Owner values.

Action 9-4: Revising Melbourne Water's diversion limit compliance method

Melbourne Water will work collaboratively with the Victorian Government and other stakeholders to ensure that the revised diversion limit compliance method meets its long-term objectives. These are the sustainable management of water resources in the system, and stakeholders' expectations, while Melbourne Water meets its other diversion limit compliance related obligations under its bulk entitlements.

By 2026

9.3 Stronger community involvement in water management

Our plan:

- strengthen the community's role in water management decisions through better data and engagement on future supply options.

To prepare for a future with less water we need to make important decisions about how we use, share, and invest in water across the Central and Gippsland Region. Community involvement in those decisions is critical, including engagement with all parts of our community on any trade-offs that are needed. Engagement with this strategy from individuals, community organisations and related industries demonstrates there is strong interest in the state of our water supplies and water conservation programs as well as the condition of our waterways and bays.

We will build on that interest by improving how we share water data and information and look for opportunities to strengthen how the community can inform decisions about the region's long-term water needs. Planned programs including 'Changing behaviours at home' and 'Building community confidence in recycled water and stormwater' are critical parts of the conversation about water security (see **Chapter 3**). We will complement that work with additional focus on reaching groups whose feedback has been historically under-represented including young people and culturally and linguistically diverse communities, so that we can be sure that future decisions on long-term water supply options reflect the interests of all.

Image: Recreation on the Birrarung (Yarra River), Wurundjeri Woi-wurrung Country

Action 9-5: Building community knowledge and involvement in water management

Ongoing

The Victorian Government, CMAs and water corporations will commit to a program of work to improve ongoing dialogue with Victorians about meeting the region's long-term water needs. By 2024 this will include:

1. a review of public data and information sources about water.
2. a review of community engagement programs.
3. recommendations to build community knowledge about water and improve multi-way dialogue between the water sector, Traditional Owners and the community.

Traditional Owners will self-determine their participation in this program of work.

9.4 Investments to deliver water supplies

Our plan:

- clarify the steps for future investments in new water supply options
- use a quadruple-bottom-line assessment when making decisions about future water supply options
- apply principles for public investment to water supply infrastructure to give greater certainty to the water industry and community around which projects could be eligible for government co-funding.

Investments to increase water supplies to meet urban water needs are primarily made by water corporations. Future investments in water supply options, especially the ones that have regional significance, will need to consider the potential for broader benefits from these new urban water supply options. Additional water supplies could enable some river water entitlements to be returned to the State for reallocation to Traditional Owners, or to the environment, boosting river health, as well as the social and recreational use of rivers (see **Chapter 4**). Investments can create jobs and economic opportunities for water dependent industry and businesses, generating broader economic benefits for the region. For these reasons, future decisions about water supply options will reflect a quadruple-bottom-line assessment and may need to consider appropriate cost allocation to water customers, both present and future, and the broader community who share the benefits (see **Section 9.1**).

Future government co-investment in new water supply options will require the development of a full business case for government consideration. It is at this stage that details around the need for the investment, the benefits, interventions, estimated costs and the delivery process will be prepared. The implementation plan (see **Appendix E**) identifies where we are expecting to develop business cases in the coming decade, consistent with Department of Treasury and Finance guidelines, to secure funding to deliver these projects.

Business cases for future water supplies will need to consider how water and costs can be shared equitably to minimise any potential trade-offs. Government decision-making will be guided by the principles for public investment (see **Action 9-6**), availability of public funding, as well as the latest urban demand and supply projections. A quadruple-bottom-line assessment will ensure that decisions consider cultural, economic, environmental and social costs and benefits to maximise community benefits. As shown in the implementation plan (see **Appendix E**), additional community engagement on options will feed into this process.

Principles guiding public investment in water supply infrastructure

In most circumstances, water corporations use funds raised from customer water bills to invest in essential infrastructure. Public co-investment is considered on a case-by-case basis where there are significant community benefits and funding is available in the State Budget.

In the future, public investment in water supply infrastructure will be guided by new investment principles to give greater clarity to the water industry and community, around which projects could be eligible (see **Action 9-6**). Financial contributions could include infrastructure funding or funding to support vulnerable customers. Funding agreements must be consistent with relevant legislation, policies and strategies and, where applicable, business cases must be consistent with Department of Treasury and Finance guidelines. Commonwealth funding will also be sought for eligible water infrastructure projects, for example via the National Water Grid Authority.

How we share the cost of new water supplies will also shape future investment decisions. For example, larger cities and towns have a greater capacity to fund infrastructure and further work is needed to consider how costs can be shared fairly across all users who will benefit from future investments, either directly or indirectly.

Action 9-6: Apply principles for public investment in water infrastructure projects

Ongoing

The Victorian Government will apply the following principles for public investment in water infrastructure projects:

- Government funding will be considered where there are net public benefits such as:
  - providing water affordability for urban water customers
  - providing cultural benefits (applying the Cultural Benefits Framework) and enabling water to be returned to Traditional Owners
  - enabling water to be returned to the environment to meet identified water deficits
  - providing economic benefits to the region
  - improving environmental and climate adaptation
  - providing social, wellbeing or recreational benefits.
- The selection of water infrastructure projects will use a quadruple-bottom-line assessment, that considers cultural, economic, environmental and social costs and benefits to maximise community benefits (see **Section 9.1**), demonstrating that the chosen project is the most effective way to achieve customer and public benefits.
- Victorian Government funding agreements must be consistent with relevant legislation, policies and strategies.
- Where applicable, business cases must be consistent with Department of Treasury and Finance guidelines.

Public investment in stormwater and recycled water

In most cases, recycled water and stormwater supplies cost more than river water, due to past infrastructure decisions that were focussed on moving this 'waste product' away as quickly as possible, and therefore the higher cost now of treating, storing and distributing these water sources (WSAA 2020). Unlike water sourced from desalination, which can be supplied directly into the drinking water system, stormwater and recycled water require separate water distribution infrastructure (including purple pipes). This contributes to the higher costs of supplying these sources and remain a key barrier to greater use of stormwater and recycled water.

To date, the viability of recycled water schemes has been determined by customer willingness to pay and whether those costs can be attributed to water savings or to delaying major infrastructure investments. The environment also benefits from new water infrastructure that reduces stormwater and recycled water discharges into waterways. Because customers who use recycled water or stormwater are often not the only beneficiaries, the cost can mean these schemes are not financially viable for water corporations. This is despite the benefits extending beyond the customer to the broader water sector, community and the environment.

Not all public benefits are easily quantified or converted into a monetary value for the purpose of preparing a business case or completing a cost-benefit analysis. Examples of these public benefits include:

- greater resilience of the overall water system, due to the diversification of supply sources
- contribution to the circular economy from re-using different parts of wastewater – the water itself, and also by-products such as biowaste for fuel
- environmental protection and improvement through reduced discharge of stormwater pollution into local waterways
- liveable green open spaces that provide urban cooling and improve health and wellbeing.

For this reason, in many instances, stormwater and recycled water schemes or projects, which will deliver broader public benefits, require government co-investment to be viable. This is already happening through government co-investment in projects identified through the IWM forums.

Public co-investment in recycled water and stormwater schemes will continue to be supported to encourage greater use of all water sources and to reduce the region's reliance on drinking water supplies and potentially to enable river water to be returned (see **Section 4.1**). Future investments will consider whether the higher treatment and delivery costs of recycled water and stormwater have broader public benefits that may not be easily quantified in an economic assessment and that warrant government co-investment (see **Chapter 3**).

Public investment in rural water infrastructure

Investments in rural water infrastructure can bring significant public and private benefits. Upgrades to old irrigation systems can improve water efficiency, and new rural water supplies can increase food production and productivity and improve the wellbeing of rural communities.

Public co-investment in rural water infrastructure will continue where there are significant public benefits, and the project is consistent with principles for public investment (see DELWP 2016b, Table 4-1). Water corporations can also maintain and upgrade rural water infrastructure under current cost-recovery arrangements.

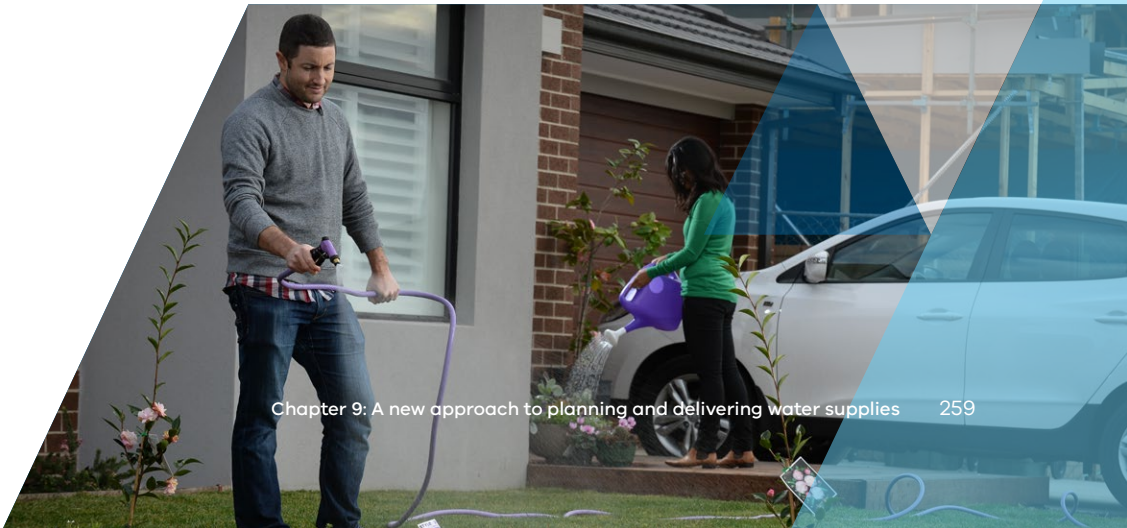


Image: Watering garden with recycled water, Geelong Region, Wadawurrung Country (Photo provided by Barwon Water)

Cost considerations

Although water is widely regarded as a valuable and increasingly scarce resource, water pricing doesn't always reflect the broader costs of using water. Historically consumptive users have paid less for water as its importance to the community, environment and Traditional Owners was not fully taken into account when setting prices to access water. These broader costs are recognised, to some extent, in current water pricing, as the water sector works to minimise these impacts, for example by funding projects to offset the environmental harms caused by water extraction. In economic terms, however, it can be difficult to fully account for these costs, when comparing the cost of taking water from a river to the cost of new manufactured water sources. Current and future generations will bear the costs of addressing environmental degradation caused by past actions.

Water prices in Victoria are based on recovering the full financial cost of providing services and are regulated by the Essential Services Commission. In most circumstances water corporations recover the cost of growing demand due to population growth through fees for new customer connections and/or from their customer base. This practice is expected to continue, however the cost burden of climate change, addressing environmental degradation and restoring Traditional Owner water justice are arguably things that should be funded by the whole community. This is why we have developed the public investment principles (see **Action 9-6**).

Affordability

Keeping water bills affordable and easing cost of living pressures is central for decisions on the region's future water supplies. Typical household water bills in Victoria have remained stable in recent years and Victorians pay among the lowest water bills for each size category of water corporation across Australia, from major urban to small regional (BOM 2022). Melbourne households pay, on average, the same as in Sydney and over $500 per year less than in Perth (BOM 2022). Water corporations are also required to provide financial assistance and rebates to customers who are vulnerable and experiencing hardship.

Actions within this Strategy will help keep water prices affordable and as stable as possible by:

- supporting households and businesses to use water more efficiently which can save money on water bills
- using a quadruple-bottom-line assessment when making decisions about new urban water supplies, including considering impacts to customer water bills
- considering public co-investment in new urban water supplies where a wider public benefit can be demonstrated
- helping water corporations to plan their future investments, and smooth-out any potential water price rises, by identifying a pipeline of regional-scale urban water supply projects in the Water Grid Plan.

Funding for construction of new water supply options will be subject to the outcomes of detailed business cases and is not expected to impact water bills over the next five years. Any future price changes will require community consultation by water corporations and approval from Victoria's independent price regulator, the Essential Services Commission. Feedback from the community tells us that where additional expense is justified, water customers prefer gradual price rises over several years, rather than a large increase in a single year. The planned, incremental approach to investments in future water supplies, through the Water Grid Plan, will support this objective.

Image: Victorian Desalination Plant, Wonthaggi, Bunurong Country