**Victorian Government Submission to**

**Productivity Commission, National Water Reform Inquiry Issues Paper**

**INFORMATION REQUEST 1 Assessing jurisdictional progress**

**The Commission welcomes feedback on:**

- **whether the signatories to the NWI are achieving the agreed objectives and outcomes of the agreement**
- **which elements of the NWI have seen slow progress**
- **whether there are cases where jurisdictions have moved away from the actions, outcomes and objectives of the NWI**
- **any other data and information sources that might be useful for assessing progress.**

Victoria has completed its commitments under the *Intergovernmental Agreement on a National Water Initiative 2004* (**NWI**) to increase the productivity and efficiency of water use, to service rural and urban communities, and to ensure the health of river and groundwater systems by establishing clear pathways to return all systems to environmentally sustainable levels of extraction. The Victorian Government has continued to drive reform through *Water for Victoria* to ensure it is positioned to meet the current and emerging challenges of climate change and population growth and that our water system is modern and efficient, innovative, future-focused and affordable.

*Water for Victoria*[1] (**WfV**) is the Victorian Government's long term direction for managing Victoria's precious water resources and builds on elements of the NWI and earlier reforms with contemporary actions. WfV sets out what we will do to address the challenges of climate change, protecting waterways and catchment health, safeguarding water for agriculture, delivering resilient and liveable cities and towns, recognising recreational values, and ensuring a robust water entitlement framework. WfV sets out 69 actions that are consistent with and build on the agreed objectives and outcomes of the NWI and are consistent with its principles.

Of the 69 actions under WfV, 26 actions are already complete and work is well underway on the remaining actions. These range from flagship waterway projects that are protecting and restoring waterway health, to supporting farmers' resilience with new infrastructure and skills, and building understanding of Traditional Owner and Aboriginal ecological knowledge in water management. These actions are consistent with NWI principles and have been developed with, and are being implemented through partnerships with water corporations, and catchment management authorities.

The Victorian Government's approach focusses on strengthening local relationships and putting community at the centre of decision making and delivery of priority water projects in conjunction with a strong system of planning, governance and reporting.

The *Water for Victoria Status Report 2020* provides the most recent snapshot of our progress against these actions with this submission highlighting key reform directions that Victoria has undertaken to

[1] *Water for Victoria* (2016), https://www.water.vic.gov.au/__data/assets/pdf_file/0030/58827/Water-Plan-strategy2.pdf

better support social, economic and environmental outcomes consistent with the principles of the NWI.[2]

**INFORMATION REQUEST 2** ***Assessing the adequacy of the NWI to meet current and emerging challenges***

- **Is the NWI adequate to help Governments address the identified challenges?**
- **Are there any other current or emerging water management challenges where the NWI could be strengthened?**

The NWI remains relevant to maintaining the key foundations of water management and setting out principles for water resource management. However as the Productivity Commission found in its last assessment there is a need to maintain the key foundations of water management while also revising and enhancing policy settings to ensure greater efficiency, improved liveability and a more sustainable environment that takes account of changing community expectations along with new and emerging challenges.

Over the long term, climate change will be a significant challenge with more extreme climatic events, less rainfall and potentially a 50 per cent reduction in streamflow in some of Victoria's catchments by 2065.

It is important that governments take action to ensure we manage water to support a healthy environment, prosperous economy and thriving communities.

WfV sets out contemporary actions that address these challenges and commits the Victorian Government to:

- Making better use of alternative water resources – like recycled water and stormwater – to reduce the impact on our rivers and environment.
- Recognising that water plays many roles in our communities, and that we must seek to make the most of our water, including for agriculture, the environment, Traditional Owners and Aboriginal peoples and recreation.
- Recognising that water has cultural importance for Traditional Owners and Aboriginal peoples, and the we must provide opportunities for greater Aboriginal participation in water planning and management.

**INFORMATION REQUEST 3** ***Future reform directions***

- **The Commission welcomes feedback on the matters that should be considered for inclusion in a renewed NWI.**

The remainder of this submission sets policy reforms and actions undertaken by Victoria since the Productivity Commission's 2017 National Water Reform Inquiry and recommends these as matters that should be considered for inclusion in a renewed NWI.

[2] *Water for Victoria Status Report* (2020), https://www.water.vic.gov.au/__data/assets/pdf_file/0023/457061/WfV-Action-Status-Report-January-2020.pdf

**INFORMATION REQUEST 4 *WATER ENTITLEMENTS AND PLANNING***

- **How effective are water plans at managing extreme events such as severe drought?**
- **Are NWI principles being applied at these times?**
- **What steps have been undertaken — or should be undertaken — to plan for long term changes in climate?**
- **What lessons have recent extreme events (bushfires and COVID 19) provided for planning?**

The Victorian Government's *Drought Preparedness and Response Framework,* which is consistent with NWI principles, guides informed decision-making to support Victorian farmers, businesses and communities manage and recover from the impacts of drought.

The framework, which includes both plans and actions is based on the principle that drought is a risk for which water entitlement holders should take reasonable steps to prepare, and drought support should only be directed to farmers and other businesses that have taken reasonable steps to prepare for drought. Under the framework, drought assistance:

- will be considered in the context of national drought program reforms and on-going services provided by the Australian Government;
- will be considered in the context of on-going Victorian Government programs that help communities, farmers and businesses prepare for drought;
- should target household welfare and support communities with social and economic infrastructure; and
- should avoid placing additional stress on land and natural resources during drought.

Key elements of the framework are; drought preparedness plans, low-flow contingency plans, drought reserves, irrigation modernisation, improving on-farm efficiency, restrictions and qualification of rights.

*Drought preparedness plans*

Under the *Water Industry Act 1994*, the Minister for Water makes statements of obligations to urban water corporations: one such obligation is the requirement to prepare a drought preparedness plan. The plan describes how the corporation will prepare for and manage each of its urban water supply systems in response to water shortages or events that reduce water events.

A plan specifies actions to prepare for and meet people's essential water needs in the event of a water shortage. Actions may include water restrictions and other demand-reduction measures and supply-enhancement measures.

*Low-flow contingency plans*

Action 8.9 of *Water for Victoria* commits the Victorian Government to improve rural water supply planning by requiring system operators to work with other entitlement holders and the community to develop low-flow contingency plans (also called dry inflow contingency plans). These plans provide for the management of priority river, floodplain and wetland values in a catchment if there are lower than average flows.

This will help prepare rural communities for future droughts, with a more complete picture of what happens in a system when river flows decrease substantially.

*Drought reserves*

Water held under entitlement is utilised to provide supplementary water during dry times, effectively a 'drought reserve'.

For example, the Latrobe Reserve was established to protect the reliability of supply and reduce the risk of water shortages to existing water entitlement holders within the Latrobe system, including irrigators, power companies, Gippsland Water and the environment.

*Irrigation modernisation*

Several projects aim to improve the delivery of water and help prepare for drought. These processes involve upgrading or evolving components specific to each project, while ensuring the impact to the environment and economy are minimised.

*Improving on-farm efficiency*

Businesses need to remain agile and able to adjust to long-term water security challenges associated with a changing climate. Embracing technologies that increase efficiency in farming is an important path forward.

*Restrictions*

Urban water corporations sometimes use water restrictions to help manage demand when water supplies are low. There are four stages of restrictions, from stage one (mild) to stage four (severe). Restrictions are implemented according to statewide guidelines, although a corporation might make minor variations to account for local conditions. Water restrictions only apply to those on a piped water (reticulated) supply.

*Qualification of rights*

In very dry conditions, the Minister for Water can make a temporary qualification of rights under the *Water Act 1989* (Vic) to ensure critical water needs are met to water-sharing arrangements in a specified area in extreme circumstances.

*Water for Victoria* sets actions for climate change adaptation as a priority so that Victorians can continue to have safe and reliable water systems, and to optimise our investments in environmental outcomes.

The Victorian water sector has a long history of dealing successfully with the resource challenges of a variable and sometimes extreme climate and is developing plans and actions that consider climate change adaptation across all operations including resource, asset and risk management. Evidence-based decision making and monitoring will be important in leading climate change adaptation for the coming decades. Steps already undertaken in the Victorian water resource management framework include:

*Planning by urban water corporations*

The Statement of Obligations for water corporations has been amended to require consideration of climate change in the development of Urban Water Strategies. Urban water corporations are currently preparing their next iteration of UWSs which are due for submission in early 2022, which as with earlier iterations will account for the impact of climate change on both supply and demand.

The strategies are required to reflect guidance contained in the updated *Guidelines for Assessing the Impact of Climate Change on Water Availability in Victoria*,[3] which contains the latest research in climate science and hydrology specific to the Victorian water sector. They provide a long-term outlook of 50 years that looks at a range of climate change scenarios and future demands, the also include drought preparedness planning.

In developing these plans, water corporations work with their communities to find the best way of securing supply for each water supply system. By being involved, the community better understand the likely water security risks over coming years.

*Water grid oversight*

WfV commits to preparing statements every two years which describe levels of water security throughout the State. These statements, known as Biennial Statements, describe whether the extent to which long-term climactic changes have been experienced in recent years and outline the augmentations that might be required to address declining supplies or increasing demands.

Biennial statements include a forward view of water availability, demand, risks and level of water security, and portfolio of potential future grid augmentation options and are co-designed with water corporations recognising that the challenges faced by the sector are shared challenges with sometimes shared solutions.

The first biennial statement was published to coincide with the Water Grid Partnership's establishment in 2018.

*Leading on climate change science, adaptation, and emissions reduction*

WfV includes key priority actions for the water sector to prepare for and respond to climate change as:

- achieving net-zero emissions in the water sector;
- understanding and apply climate science to water management; and
- leading climate change adaptation across Victoria's water system.

*Achieving net-zero emissions in the water sector*

The Victorian water sector is committed to leading on climate change by achieving net-zero emissions by 2050. To set the sector on the right pathway towards net-zero, all 19 Victorian water corporations committed to achieving ambitious emissions reduction targets by 2025. The Victorian Government has formalised these targets in the Statement of Obligations (Emission Reduction).[4] Collectively they represent a reduction in annual emissions to or below 504,828 tonnes of carbon dioxide emissions equivalent greenhouse gases (t CO2-e) by 1 July 2025, or a 42 per cent reduction in the sector's total emissions from an aggregated baseline period of 2011-2016. By reducing the sector's contribution to climate change, the sector is playing its part in avoiding the climate change impacts influencing Victorian water security concerns and affecting Victorian communities.

Victoria's water entities are scoping and implementing a range of initiatives to achieve these targets and reduce their direct emissions, the sector is also beginning to explore ways in which water corporations can encourage significant additional emissions reductions beyond those they are

[3] DELWP Climate and water resources research https://www.water.vic.gov.au/climate-change/research
[4] Statement of Obligations (Emission Reduction). https://www.water.vic.gov.au/__data/assets/pdf_file/0017/120671/Statement-of-Obligations-Emission-Reduction.pdf.

traditionally responsible for. For example, Australia's first Renewable Organics Network is currently being built in Colac and will result in high-strength organic waste from industry being used to produce electricity and hot water. Led by Barwon Water, the project will take the Colac Water Reclamation Plant off grid electricity and offset industrial water-related energy consumption by approximately 21.4tJ per year. Overall, the project estimates emissions being reduced by 3,600t CO2-e annually, demonstrating *Water for Victoria's* commitment for the water sector to be leaders in climate change adaptation.

Another example is the involvement of the Victorian Government and metropolitan water corporations in the Net Zero Water Cycle Program. The Net Zero Water Cycle Program involves a consortium led by the Monash Sustainable Development Institute to research behavioural, regulatory, economic and technological factors influencing water-related energy use. This presents an opportunity for the Victorian water sector to encourage emission reductions more broadly across residential households, industry and urban precincts that are outside of their immediate control.

*Understanding and apply climate science to water management*

The Victorian Water and Climate Initiative[5] is helping to better prepare Victoria's water sector and communities to address the impacts of climate change and variability. The initiative is a four-year research program that began in 2017. The results of this research will provide a clearer picture of what Climate Change means for Victoria's water resources.

The initiative is managed by DELWP's Hydrology and Climate Science Team, and has been developed with researchers from the University of Melbourne, the Bureau of Meteorology and CSIRO. The team works closely with water sector stakeholders to determine priority research questions and translate the research findings into practice. Tools and guidelines are being developed to apply the research to short and long-term planning.

A key enabling element of Victoria's approach to support application of the research is the *Guidelines for Assessing the Impact of Climate Change on Water Availability in Victoria*, which set out a consistent approach for assessing the impact of climate change on water availability, supply and demand in Victoria. The guidelines have recently been updated to reflect advances in climate and hydrology research, changes to the legislative and policy context and lessons learnt in the application of previous iterations of the guidance.

The updated guidelines are an important input to the development of key water plans and policy. They are used in the development of Urban Water Strategies by Victorian Water Corporations and will be used in the development of the Central and Gippsland Region Sustainable Water Strategy. These are key documents to guide the future use of Victoria's water resources.

The team is also compiling a Synthesis Report, which integrates the findings from the whole program into a succinct, easy to read report. Other products for communicating the climate science with the water sector are a series of regular webinars and newsletters, fact sheets, and summary sheets targeted for different parts of the water sector, for example, environmental water managers, agriculture practitioners and floodplain managers.

*Leading climate change adaptation across Victoria's water system*

[5] Victorian Water and Climate Initiative, https://www.water.vic.gov.au/climate-change/climate-and-water-resources-research/the-victorian-water-and-climate-initiative

The Victorian Government has committed to developing pilot adaptation actions plans for three of the seven systems identified as vulnerable to the impacts of climate change. The *Pilot Water Sector Adaptation Action Plan*[6] was released in 2018 and outlined 20 actions to deliver more resilience services to water sector customers, while having a minimal impact on greenhouse gas emissions. Through this plan the water sector continues to build knowledge of how climate change is impacting the water sector, developing the policies and tools we need to adapt to climate change, and enhancing our ability to apply climate change adaptation to business decisions.

Building on the *Pilot Water Sector Adaptation Action Plan*, the Victorian Government is developing its first legislated Water Sector Adaptation Action Plan by 31 October 2021. The plan will identify actions to be implemented over a five-year period (2021-2026), that address gaps between existing water policies and the priorities set by Victoria's overarching Climate Change Strategy. In accordance with the *Climate Change Act 2017,* Water Sector Adaptation Action Plans will be developed every 5 years until 2046 to meet the changing needs and priorities of a complex and uncertain future. While each five year plan sets out actions to meet immediate needs, plans also include medium and long term objectives to ensure the sector continued to progress towards longer term objectives that integrate climate change adaptation considerations into all relevant business decisions in the water sector.

Victoria's water sector emergency management preparation includes the simulation of extreme events and taking steps to mitigate their impact before they are experienced. This process is enshrined in Victoria's water resource management framework and has ensured our water entities have been well prepared for recent extreme events.

A key example can be found in Victoria's Water Grid Partnership which has facilitated a cross-industry workshops for the purpose of testing the resilience of grid-connected systems in southern Victoria.

'Severe but plausible' scenarios were simulated to gauge how participants would respond and to determine the point at which the system fails. Failure was ascertained by predetermined metrics including, but not limited to, storages dropping to dangerously low levels, waterway health declines, and unacceptable surges in the costs of operating the water supply network.

A 15-year hypothetical scenario of extremely low inflows, extremely high growth in consumptive demands and a severe bushfire was adopted as the basis for this exercise.

Though the industry found that the south-central water supply system is vastly more resilient than it once was due to the diversity of sources from which it is able to draw (including the Victorian Desalination Project) it is not immune to future shocks. Improving preparedness to cope with these shocks involves:

- becoming augmentation-ready by exploring ways to reduce the lead-times and overall costs associated with major grid investments
- continuing to invest in fit-for-purpose alternative water sources
- improving water literacy so that household water use is efficient.

Experience from recent major bushfires and emergencies have been applied to planning to strengthen:

- emergency management response structures

[6] Pilot Water Sector Climate Change Adaptation Action Plan, https://www.water.vic.gov.au/__data/assets/pdf_file/0019/410851/WSAAP-Web-version-FINAL_v2.pdf

- mutual aid arrangements
- capability and capacity
- protocols for the management of power outages.

In 2018 A major warehouse fire at Stony Creek, in a western Melbourne suburb provided an example of the importance of establishing a single line of control to one incident controller. Transfer of control protocols were established in the 2019 state water emergency response plans, applied to the 2019/20 major bushfires. This means the water industry incident controller will convert to an agency commander and transfer control to the emergency services incident controller when appointed.

Australian Water Sector Mutual Aid Guidelines were developed in 2009/10 and used by the water industry in Victoria during the 2019/20 bushfires[7], to guide resource sharing of specialist personnel, water decontamination equipment, and for delivery of an emergency relief tank water program. Learnings were incorporated into a revision of the guidelines, timely for application to record keeping and linkages between states and national coordination for the COVID-19 pandemic.

Planning for capability and capacity development includes mentoring and upskilling water sector personnel during emergencies and structured training. In addition, the 'all hazards-all sectors' emergency management framework has enabled early response and recovery planning for emergencies, as well as regularly testing these plans though multi-agency exercises. Considering the demands on the water sector due to the significant increase in the frequency and severity of major emergencies, capability development remains a priority for the water sector.

The adoption of an all-hazards planning framework proved particularly beneficial when system shocks such as the COVID-19 pandemic struck shortly after the extreme bushfire event. It tested the resilience of the water sector to manage events that are of unprecedented scale and intensity.

The communication channels between the state water duty officer and state energy duty officer strengthened during and post the Code Red bushfires in November 2019, whereby the energy duty officer advocates for private power companies to prioritise re-instatement of power to water corporations, after triaging risks and consequences to energy customers. The management of power outages over the summer 2019/20 bushfires, and during August 2020, benefited from these protocols. The 2019/20 bushfires, as they progressed, resulted in improved planning for power redundancy such as pre-positioning of generators and liquid fuel to service areas forecast to be impacted by severe bushfires. However, these recent bushfires act to highlight the importance of backup power, and consideration to redundancy provisions should become a priority.[8]

**INFORMATION REQUEST 5** ***Water markets and trading / Water accounting and compliance***

- **How could the NWI be amended to support best practice monitoring and compliance across jurisdictions?**

[7] Attorney-General's Department Submission to the Environment and Communications References Committee, available at:
http://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi1iJb22sLrAhUwlEsFHUINBZcQFjAJegQIAxAB&url=http%3A%2F%2Fwww.aph.gov.au%2FDocumentStore.ashx%3Fid%3D83e99e9b-f7bf-4c6e-afcc-549d60598a8a&usg=AOvVaw3XnAzM4sPHS2hSCIJBSrlN

[8] Inspector General for Emergency Management (2020) *Phase 1 Victorian Bushfire Inquiry (Confidential draft – yet to be published by the Victorian Government)*

Victoria supports the NWI principles for water accounting and has been publishing its annual Victorian Water Account since 2003-04.

Victoria's water register is based on conventional accounting practice, i.e. chart-of-accounts, double entry bookkeeping, continuous accounting, clearly separating roles and responsibilities, and retaining the history of all applications including the respective responsible processing officers.

Basing water accounting on conventional accounting practices and standards enables:

- Rigour and integrity in entitlement record keeping and for this to be demonstrable;
- Victoria's water register to be eminently auditable by qualified financial auditors;
- Water allocation trades to be reconciled (this is done in real time);
- Tracking water allocation trades from source to destination;
- Reconciling changes in entitlement volumes and the transaction that resulted in the change (Victoria's practice is to do this quarterly);
- Tracking use including where and when water was used and where it was extracted;
- Holders of water allocation know in close to real time their available water allocation;
- Continuous and close to real time reporting of water availability, use, and trades including the source and destination of trades. These are reported publicly on the Victoria water register website and critical for an informed water market; and
- Reporting on compliance including at the individual entitlement holder level, the bulk level, and against caps on water systems.

Victoria's approach to water accounting includes regular public reporting which are underpinned by rigorous accounting practice. These include:

1. **The annual Victorian Water Account**, which is a comprehensive report of Victoria's annual water availability and use with:
    - Reporting on the water balance for each of Victoria's river basins. This covers the change in storage volume, inflows by category, and outflows by category.
    - Reporting for each groundwater system the total licence volume and the total volume extracted.
    - Reporting on compliance, namely that:
        - Entitlements issued do not exceed formal caps and have not been increased without appropriate approvals;
        - Water taken does not exceed the volume available for use; and
        - Holders of bulk entitlements do not breach the provisions detailed in their bulk entitlement order.
    - Reporting on water held and used for environmental purposes. Further information on this is included by the Victorian Environmental Water Holder's watering plan and in their annual report.

Victoria is moving to providing its annual Victorian Water Account as an online digital product. This will expand the reach of the accounts and enable users to self-serve. Victoria is also moving for its annual Accounts to have more emphasis on statements of compliance.

2. **The annual Victorian trade report**, provides a comprehensive public report. The report shows the number and volume of all trades, and details and reconciles all trades including their source, destination and median price. The trades are categorised by type, ie private, environmental and water corporation.

Victoria considers each jurisdiction should provide comprehensive public reports (underpinned by rigorous water accounting) on its water availability and use, and statements of compliance. Further, it is one thing providing statements of compliance and another being able to demonstrate compliance.

Being able to demonstrate compliance requires rigorous water registers/water accounting systems based on proven and trusted conventional accounting practice. It may also require some independence in the reporting process.

Victoria supports independent reviews and audits of annual statements of compliance and for nationally agreed standards on what compliance means.

Victoria aims to keep real-time balances of water allocation in individual allocation accounts. This includes recording use when the water was taken. This enables determining if the account holder had sufficient allocation to account for their use. It is Victoria's policy that water can only be taken in accordance with rules including the account holder having sufficient allocation. If there is insufficient allocation to account for the use then the take was unauthorised, and an offence made.

Victoria recommends that NWI supports this rigorous approach to water resource management including the real-time recording of usage.

**Compliance**

Victoria is recognised as a leader in compliance and enforcement across the Southern Connected Murray Darling Basin. Since the inception of the National Water Initiative there has been continuous improvement in the way non-compliance is managed, reported on and responded to in Victoria.

Major initiatives coming out of the NWI relevant to Compliance & Enforcement included:

- national non-urban water metering framework including a new non-urban water metering standard AS4747 and a metrological assurance framework (MAF); and
- national framework for compliance and enforcement in water resource systems

Recently these have been built on by the Basin Compliance Compact, which is to be reviewed by December 2020. The MDBA is leading a review of the MAF, which is due to be completed in 2020/21.

The National Water Initiative and the Murray–Darling Basin Compliance Compact require states and territories to implement national metering standards to ensure relative equity around water sharing and for protecting our scarce water resources.

Any recommendations will need to be consistent with the Compliance Compact. Victoria recommends the NWI focus on where there is the greatest risk to best practice monitoring and reporting. The NWI should be cognisant of the different contexts each State is operating in and should aim at providing strategic advice on compliance and monitoring rather than operational level advice. We have also improved our penalties and infringement notices.

Victoria considers renewal of NWI could be an opportunity to bring all other states on board with a consistent level and standard for compliance. This would resolve outstanding equity in access to water across the MDB and would also provide assurance to Victorian irrigators that they do not face a stricter or harsher compliance regulations or penalties.

In August 2019, Victoria passed the Water and Catchments Legislative Amendment Act 2019 (Vic) (**Amendment Act**) that strengthens penalties and enforcement measures and makes it easier to prosecute offences. The Amendment Act has:

- increased the maximum fine for intentional water theft and related offences if they cause substantial harm, to $990,000 for companies and $198,000 for individuals,
- allowed for the suspension or cancellation of licences for taking water and works, and
- enabled water corporations to issue penalty infringement notices for less serious offences.

With tougher penalties and new enforcement measures, the Amendment Act makes it clear offences such as misuse of water or water theft will be addressed seriously. The Amendment Act came into effect on 9 October 2019.

Water corporations are responsible for the compliance and enforcement of the rules and legislative requirements for the take and use of water and construction of works on a waterway. Water corporations are expected to have compliance strategies that demonstrate how they will meet their obligations to effectively manage and prioritise compliance risks and enforce the *Water Act 1989* (Vic).

*Principles for good compliance strategies*

The Victorian Government has guidelines for water corporations to establish effective compliance strategies. The *Non-urban Water Compliance and Enforcement Guidelines for Water Compliance* set out five principles for maintaining strong compliance in Victoria.

Victoria maintains high standards in water compliance by updating its policies, systems and legislation to be more effective in the face of changes in climate, reduced water availability and increased demand for water.

Risks to compliance can increase during drought when there is more competition for water or where there are constraints on delivering water during peak demand. The temptation for some people to make poor decisions and take and use water illegally may increase. Effective and strong compliance will deter people from doing so.

Allegations of significant water theft and poor regulation in the northern Murray-Darling Basin in 2017 highlighted the importance of having effective compliance and enforcement systems across the Basin. All Basin States and the Australian Government have committed to a Basin Compliance Compact that will improve transparency and accountability of water management regimes and put in place more consistent compliance and enforcement practices in the Basin. Victoria is now close to completing all actions in the Compact in accordance with COAG principles of best practice regulation.

*Water Monitoring*

Victoria has an extensive network of both surface water and groundwater monitoring. Currently, there are approximately 1,400 groundwater state observation bores, 850 surface water gauges and approximately 180 surface water gauges that also measure components of water quality.

Victoria operates an outsourced model for water monitoring. All water monitoring services and laboratory analysis services are outsourced through public tender. The contracts are administered by DELWP on behalf of the Regional Water Monitoring Partnership (**RWMP**). The RWMP consists of approximately 45 organisation that come together to share the cost of monitoring. Organisations included in the RWMP are water corporations, catchment management authorities, local councils with flood management responsibilities, Bureau of Meteorology, MDBA and DELWP.

Approximately 50 per cent of the surface water gauges are telemetered and 30 per cent of the groundwater network are telemetered. Telemetered sites are transmitting data in real time. Telemetered surface water sites collect data every 15 minutes and transmit data every hour. Telemetered groundwater sites collect data every hour and transmit once per day. Surface water sites

that are not telemetered are visited on average monthly, while non telemetered groundwater sites are visited on average quarterly.

All data is published on the Water Management Information System (**WMIS**) website and all data is freely available. DELWP has commenced a program to upgrade the WMIS website, as it no longer meets many user requirements. This revision will be concentrating on making the website easier to use and to translate data into information.

**INFORMATION REQUEST 6** ***Environmental water management***

- **Are environmental outcomes specified clearly enough in water plans to guide management actions, monitoring and accountability?**
- **Are institutional and administrative settings effective in supporting these outcomes?**
- **Do environmental water managers have the necessary authority, resources and tools to achieve agreed outcomes?**
- **Is environmental water management (including planning for use of held water, delivery of held water, use of markets and compliance with planned environmental water) sufficiently integrated with complementary natural resource planning and management frameworks?**
- **Can environmental outcomes be more cost-effectively achieved with greater and more innovative use of water markets and market-like mechanisms?**
- **Is the monitoring and assessment of environmental outcomes sufficient?**
- **How effective has adaptive management and planning decision-making been during the recent drought?**
- **Do environmental water managers maximise opportunities to achieve social or cultural outcomes alongside environmental watering? How could this be improved?**

In Victoria, environmental outcomes are clearly specified at the state level in *Water for Victoria* and *Victorian Waterway Management Strategy* (**VWMS**),[9] and at the regional level in Regional Waterway Strategies that set outcomes and priorities for environmental water management and complementary management activities in a single, integrated regional plan for waterway health.

In turn these Regional Waterway Strategies guide the development of site-specific Environmental Water Management Plans (**EWMPs**) for rivers and wetlands that receive water for the environment. EWMPs, in turn, inform strategic planning at the site level, containing specific site-based ecological objectives and setting out the watering regime required to achieve these, as well as other management actions, monitoring requirements and roles and responsibilities. The EWMPs are also used to develop annual environmental watering proposals, called Seasonal Watering Proposals, (**SWP**) submitted by waterway managers to the Victorian Environmental Water Holder (**VEWH**) for consideration in its annual Seasonal Watering Plan.

Within the Murray-Darling Basin, the site-based objectives from Victoria's EWMPs are also aggregated in long-term watering plans (**LTWPs**) for each Water Resource Plan area, which were developed and submitted in 2015 to meet Basin Plan requirements. LTWPs identify priority environmental assets and

[9] Victorian Waterway Management Strategy, https://www.water.vic.gov.au/__data/assets/rtf_file/0016/52540/VWMS_Vision-Aust-accessible-version.rtf

use the waterway-scale information in the EWMPs and are reported on annually via Matter 10a in the Basin Plan. Victoria released a report on progress against the LTWP objectives in December 2017.[10]

Environmental outcomes consistent with Victoria's LTWP objectives and Basin Plan requirements are being demonstrated by Victoria's two environmental water intervention monitoring programs, the Victorian Environmental Flows Monitoring and Assessment Program and Wetland Monitoring and Assessment Program in 2018/19 including:

- LTWP objective of maintaining species richness of native fish: e.g. abundances and distributions of juvenile Murray Cod and Murray Darling rainbowfish have increased in both the Broken and Campaspe rivers;
- LTWP objective of improving the condition of riparian EVCs: e.g. where livestock grazing is absent, water for the environment increases soil moisture and support a wider riverside vegetation zone and increased cover and recruitment of native plant species;
- LTWP objective of improving the species richness of aquatic vegetation in wetlands: e.g. populations of significant plant species (ridged water-milfoil, spoon-leaf mud-mat, spurred arrowgrass and cane grass) are showing a positive response to environmental water deliveries at Carapugna Swamp in the Wimmera-Mallee region; and
- LTWP objective of improving movement of native fish: e.g. increased native fish movement detected during freshes delivered through the Loddon System.

The relevant water plans incorporate adaptive management and continuous improvement, for example updating ecological objectives and associated flow recommendations as understanding of each system improves.

Victoria's institutional and administrative settings for supporting environmental outcomes have their foundation in the Catchment Management Framework[11]. These strong and well tested institutional and administrative settings are established by legislation under the *Catchment and Land Protection Act 1994*. The framework provides for integrated catchment management through the coordinated management of land, water and biodiversity resources based on catchment areas and establishes a catchment management authority for each region. It incorporates environmental, economic, cultural and social considerations. This approach seeks to ensure the long-term viability of natural resource systems and human needs across current and future generations. More specific institutional arrangements for waterway management are in place at state, regional and site-specific levels as set out in section 18.2 of VWMS.[12]

A key element supporting implementation of the framework is the Environmental Contribution (**EC**), which is a legally required contribution from water corporations that is hypothecated for the purposes of funding initiatives that seek to promote the sustainable management of water or to address adverse environmental impacts of water consumption and extraction.

Funds provided from the EC support CMAs to undertake their waterway management functions, including environmental water management. The EC also supports the Victorian Environmental Water Holder's activities, as set out under the *Water Act 1989* (Vic).

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[10] *Victoria's Basin Plan Environmental Report Card*, https://www.water.vic.gov.au/reportcard

[11] *Overview of Victoria's Catchment Management Framework Fact Sheet 1* (March 2016), https://www.water.vic.gov.au/__data/assets/pdf_file/0023/52439/FINAL-Fact-sheet-1_Overview-of-Victorias-CMF_Apr-2016_1.pdf.pdf

[12] https://www.water.vic.gov.au/waterways-and-catchments/rivers-estuaries-and-waterways/strategies-and-planning) sets out the institutional arrangements for waterway management in Victoria

In Victoria, environmental watering is directed by legislation and strategies that give the responsible entities the necessary authority to achieve agreed outcomes, including the *Water Act 1989* (Vic), the *Water Act 2007* (Cth), the *Victorian Waterway Management Strategy* (DEPI, 2013) and *Water for Victoria* (DELWP, 2016). Management of environmental water is a state-wide partnership between the VEWH, CMAs, Melbourne Water, DELWP, Parks Victoria and local councils, water corporations, Traditional Owners, and interstate agencies including the Commonwealth Environmental Water Holder and the Murray Darling Basin Authority.

As noted above, the Victorian government funds DELWP, VEWH and CMAs to undertake waterway management activities, including environmental water planning, delivery and monitoring. CMAs are also funded to engage with Traditional Owners, communities and stakeholders to support meaningful participation in environmental water management. Over the past four years, the Victorian government has invested $222 million to improve the health of the regional waterways and catchments. Restoring waterway health is a long term and large-scale commitment and, in the future, there will be increased pressure from population growth and a changing climate.

The framework also provides independence and transparency with the VEWH established as an independent statutory authority under the *Water Act 1989* (S33DB) in 2011 to hold and manage Victoria's environmental water entitlements.

*Regional Waterway Management*

In Victoria, there are ten catchment management regions and each has a catchment management authority to co-ordinate integrated management of land, water and biodiversity. Catchment management authorities also have specific responsibilities for waterway management except in the Port Phillip and Westernport region where Melbourne Water has the waterway management responsibilities. Collectively, the nine catchment management authorities and Melbourne Water are referred to as the 'waterway managers'. The waterway managers have the lead role in developing and delivering regional programs for waterway management with clear, legislated functions outlined in s.189 *Water Act 1989*.

Each region also has Environmental Water Reserve Officers who work specifically to plan for and deliver environmental water with VEWH and other partners. Environmental Water Reserve Officers also implement environmental water policy, such as local actions in sustainable water strategies, engage in monitoring, complete works and measures projects, and undertake stakeholder and community engagement, in order to best manage environmental water outcomes in their waterways.

Victoria considers that effective collaboration and communication among key agencies is essential to the success of environmental water management programs. The VEWH engages directly with waterway managers through the development their seasonal watering proposals and the development and implementation of its seasonal watering plan. The proposals and plan are provided to other water holders to ensure planning is aligned and co-ordinated. Additionally, the VEWH is involved in the Murray-Darling Basin Authority's Environmental Watering Group which is responsible for planning the delivery of *The Living Murray* program environmental water (see Section 1.2.3).

Community engagement is also a critical part of the environmental water management framework. It provides an understanding of what the community values about waterways and supports the planning for, and delivery of, environmental water management programs. Waterway managers also engage public land managers and storage operators to ensure that appropriate delivery arrangements are possible or in place to enable environmental watering.

Other stakeholders with an interest in environmental watering include Traditional Owners, environmental groups, recreational users, local government, other water entitlement holders, landholders and local communities. It is important that the interests and values of these groups are incorporated in planning for, and management of, environmental water.

Victoria's long–standing approach has been to make sure that the water for environment is managed efficiently and effectively to get the best environmental benefits from the least amount of water. Guiding principles for environmental water management in Victoria are set out in the VWMS and aim to preserve the environmental values and health of aquatic ecosystems. The principles support:

- an integrated approach to waterway management;
- efficient use, including opportunities for multiple benefits;
- transparent and sound decision-making; and
- planning for future conditions

DELWP and the VEWH work closely with CMAs to ensure that environmental water is managed with other complementary works like protecting drought refuges, improving habitat connectivity for fish, improving landholder management practices and stronger integrated catchment management. Regional waterway strategies (statutory plans required under the *Water Act 1989*) are the key mechanism for integrating environmental water and other complementary actions for priority waterways in each region.

The VEWH has the statutory right to trade its water entitlements and allocations; this is a critical tool to manage seasonal and spatial variability in meeting priority environmental water demands. The VEWH also uses carryover to meet early season (winter/spring) water demands when water allocations are at their lowest and to set water aside to maintain key refuge areas and avoid catastrophic events in drought periods. The VEWH is also able to trade water on the temporary water market. This generally means selling water in wetter times when it is not required to meet priority watering actions. In northern Victoria, the VEWH has sold water in six out of the past nine years and has purchased water once. The VEWH publishes its annual trade strategy on its website each year.

Victoria has also taken steps to ensure environmental outcomes can be achieved in a manner that is most cost-effective. For example, the VEWH has the statutory right to trade its water entitlements and allocations; this is a critical tool used to manage seasonal and spatial variability in meeting priority environmental water demands. While established water markets make trading easier in northern Victoria, but the VEWH has also traded in southern regions. To date, the VEWH has generally sold allocation, but has also occasionally made water purchases to address high-priority shortfalls.

The use of market mechanisms is continuously evolving and it should be noted that development of market-based options to improve environmental outcomes could be costly and outweigh the environmental benefit provided. Particularly where under NWI pricing principles, beneficiaries (in this case the environment) would be expected to pay for market improvements.

The Victorian Government's approach to environmental monitoring and evaluation is three-fold, including surveillance monitoring, management intervention monitoring and strategic research. There are several long-term environmental water monitoring programs in Victoria, including the Victorian Environmental Flows Monitoring and Assessment Program (VEFMAP) and Wetland Monitoring and Assessment Program (WetMAP), as well as The Living Murray (a joint initiative of the Commonwealth, Victorian, NSW and SA Governments) and the CEWH's Long Term Intervention Program (LTIM). Victoria also has dedicated long-term monitoring programs to assess the effectiveness of complementary activities such as riparian restoration and wetland management.

Catchment management authorities (CMAs) run additional monitoring and research programs to inform best-practice management of environmental flows. Outcomes from these programs complement the results from WetMAP and VEFMAP. The VEWH also undertakes some monitoring activities.

Panels of experienced, independent, research scientists annually review monitoring and evaluation plans and regularly assess results to ensure the approach and outcomes are defensible and scientifically robust.

Victoria continues to apply a seasonally adaptive approach to environmental water management that considers recent climate history, climate outlook and available environmental water. This approach was established during development of the *Northern Region Sustainable Water Strategy 2009* as a flexible way to manage rivers and wetlands.

This has proved effective during the recent drought when environmental water has been targeted to the sites that need it most. For example, in West Gippsland earlier this year, the WGCMA decided not to deliver the usual autumn fresh in three rivers to promote fish spawning, focusing instead on using available environmental water to maintain base flows and water quality.

In Victoria, consideration of recreational and Aboriginal cultural values into the planning and operations of water resource managers, including environmental water managers, was recently embedded in legislation with amendments to the Victorian Water Act[13] last year providing for:

- greater consideration of the recreational values of water and waterways for communities; and
- greater recognition and involvement of Traditional Owners (TOs) and Aboriginal Victorians in the management and planning of waterways and catchments.

Waterway managers engage with Traditional Owners, key stakeholders and the local community to provide local knowledge, views and solutions to inform annual environmental watering priorities during the preparation of their seasonal watering proposals and throughout the year. These proposals form the basis of the Victorian Environmental Water Holder's (**VEWH**) Seasonal Watering Plan, which sets the scope of potential environmental watering across Victoria for the water year. Watering actions that are developed in partnership with TOs and for other shared benefits are highlighted in the Plan.

For example, Traditional Owner groups across northern Victoria have been involved in developing an update now underway to the guidelines for Environmental Water Management Plans (**EWMP**). This update will guide partnership of Traditional Owners and Aboriginal Victorians in the EWMP development process. This change will then propagate into the Long-Term Watering Plan updates that are also now underway. Further examples of watering actions developed in partnership with Traditional Owners and for other shared benefits are highlighted in annual Seasonal Watering Plans.[14]

Engagement occurs with a broad range of interested parties, including through established community-based Environmental Water Advisory Groups (**EWAGs**), Traditional Owner groups, community groups, Committees of Management, and through direct engagement with interested individuals and private landholders. Information obtained through this engagement, such as observations, monitoring results and risk identification and management, is used to shape the

[13] *Water and Catchment Legislation Amendment Act 2019* (Vic), https://content.legislation.vic.gov.au/sites/default/files/2dd0230e-7f04-3924-bd01-cf1f23f67bf8_19-023aa%20authorised.pdf

[14] https://www.vewh.vic.gov.au/watering-program/seasonal-watering-plan

implementation of environmental watering. Further to these regional engagement activities, the VEWH engages regularly with state-wide peak bodies and stakeholders, including Environment Victoria, the Victorian Farmers Federation, the Federation of Victorian Traditional Owners Corporation, the Field and Game Association, Victorian Fisheries Authority, VRFish (Victorian Recreational Fishing peak body) and the Game Management Authority.

Victoria's CMAs have an established network of stakeholders from local communities and peak bodies that are engaged on a range of issues, including the development and implementation of regional waterway strategies, environmental water management plans and annual seasonal watering proposals. These networks have been established for many years and continue to be an effective mechanism to engage with local communities. In more recent years, as the environmental water portfolio has expanded, some waterway managers have established specific EWAGs through public advertisements, nominations and/or recommendations. In some instances, additional stakeholders have also been identified as opportunities require.

Basin Plan annual reporting[15] is another place where Vic demonstrates this. Matter 6b specifically reports on how engagement and local knowledge influence planning and delivery of environmental water, including maximising opportunities for shared social and cultural benefits.

*Case study: The Ranch Billabong*

The Ranch Billabong, adjacent to the Wimmera River at Dimboola, contains important environmental values and was identified as a culturally significant site by the local Aboriginal community during an Aboriginal Waterways Assessment in 2017. Wimmera CMA worked in partnership with Barengi Gadjin Land Council Aboriginal Corporation (BGLC), the land manager of The Ranch Billabong, to arrange delivery of environmental flows and a community event in December 2018. Follow-up watering occurred in March 2019. The Ranch Billabong watering triggered responses by native wildlife and halved salinity levels, which improved the growth of aquatic plants. Wimmera CMA and BGLC are planning to build on these outcomes by delivering additional water in 2019. In addition to the planned environmental benefits, watering The Ranch Billabong will improve the site's amenity and suitability for gatherings and events (such as earth oven and bark canoe re-creations).

The resources required to engage with Traditional Owners and the broader community in a meaningful way needs to be sustained to enable ongoing development of participants' capacity and capability.

**INFORMATION REQUEST 7 *Indigenous water use***

- **What progress are States and Territories making on including Indigenous cultural values in water plans, and how are they reporting progress?**
- **How could a refreshed NWI help Indigenous Australians realise their aspirations for access to water, including cultural and economic uses?**

In addition to amending the *Water Act* 1989 to legislate the inclusion of Aboriginal values in water management and planning, the Victorian Government's water sector has been partnering with

[15] https://www.mdba.gov.au/sites/default/files/pubs/2018-19-Basin-Plan-Annual-Report-schedule12-Victoria.pdf

Traditional Owners and Aboriginal Victorians to support genuine progress and self-determination in Aboriginal water reform in the management of the state's water resources.

A key enabler in supporting Aboriginal water-reform is the establishment of the Aboriginal Water Program (**AWP**). The AWP commenced in June 2016 to support local research projects with Traditional Owners and Aboriginal Victorians to better define and document Aboriginal values, uses and aspirations of Victoria's waterways and catchments. The program supports initiatives that enable Traditional Owners and Aboriginal Victorians to work in water management, and understand and promote Aboriginal water values, uses, aspirations and requirements, including but not limited to:

- recognising Aboriginal values and objectives of water;
- embedding Aboriginal values and traditional ecological knowledge in water planning, where appropriate;
- resourcing Traditional Owners and Aboriginal Victoria's to increase participation in the water sector (Water corporations and catchment management authorities have also been developing traineeship and employment programs for TOs and AVs);
- supporting Aboriginal access to water for economic, spiritual and social purposes
- supporting and researching economic development opportunities for the use and ownership of water; and
- increasing participation of Traditional Owners and Aboriginal Victorians in water management and planning.

Additionally, following passage of the *Yarra River Protection (Wilip-gin Birrarung murron) Act 2017* (Vic), the Birrarung Council was established in September 2018 to advise the Government on matters associated with the ongoing protection of the river, and implementation of the legislation), including regard for the cultural principles in the Act. Three Wurundejri Woi Wurrung Elders are members of the Council.[16]

The first Aboriginal Water Commissioner to the Victorian Environmental Water Holder (VEWH), Rueben Berg was appointed in November 2017 and has now successfully been appointed for a second year. Rueben leads the VEWH on supporting decision making about Aboriginal Traditional Ecological Knowledge and values associated with environmental water.

The Victorian Government worked with Traditional Owners and Aboriginal Victorians during 2015-2016 to develop a new Aboriginal Water policy which became a cornerstone of *Water for Victoria*. The policy was developed in partnership with the Traditional Owners through a specially formed Aboriginal Reference Group, extensive consultation under the Victorian Water plan Aboriginal reference group, and supplementary commentary from community sessions and submissions over an 18-month period. The aims were to ensure greater Aboriginal inclusion in decision making, and to incorporate Aboriginal values and uses of water and ecological knowledge into the state's water management and planning framework.

[16] *Birrarung Council – the 'voice of the Yarra*, https://www.water.vic.gov.au/waterways-and-catchments/protecting-the-yarra/birrarung-council-the-voice-of-the-yarra

The Aboriginal water policy sought to redress the very limited opportunity Traditional Owners had previously had to be involved in decision-making around water planning and management. It included investment to help identify Aboriginal water objectives, and to work in partnership with Traditional Owners and Aboriginal Victorians to develop a roadmap for access to water for economic development. The Victorian Government committed to identify seed funding and business finance opportunities to support Aboriginal enterprises investing in water.

While there is currently a strong focus on the ownership of water by Traditional Owners or Aboriginal organisations, the following are also central to achieving Aboriginal water objectives in Victoria:

- Enhancing water literary for TOs or Aboriginal organisations with a particular emphasis on the rules and costs associated storage and delivery of water.
- Delivery mechanisms – given much of the northern Victoria is highly regulated, the ability for TOs (like the environment) to get water to where they want it is challenging. They may need to access/install pumps, regulator and channels to deliver water to and manage it achieve the desired outcomes.
- Capacity enhancement within TOs or Aboriginal organisations so that once they have water, they know what, and have a choice about to do with it. This could be cultural, spiritual, environmental or economic outcomes through on-ground projects and trial.
- Shared benefits - achieving TOs or Aboriginal outcomes through the use of other water (e.g. water for the environment).
- NRM activities – many TO groups have stated they want greater involvement and influence in NRM activities to complement the use/ownership of water. We have heard that management of land and water cannot be separated.

**INFORMATION REQUEST 8 *Water Services***

- **Are the institutional arrangements for metropolitan water service providers fit for purpose?**
- **Is there evidence of inefficient pricing or investment decisions?**

The existing institutional arrangements for metropolitan Melbourne continue to provide high quality services for the lowest typical bill of any Australian capital city (as seen in the BoM Urban National Performance Report). Victoria continues to seek improvements to institutional arrangements. For example we are exploring the scope for realising the potential of the interconnected water grid and markets (Chapter 9 of Water for Victoria).

There is a series of checks and balances to ensure that the risk of inefficient investment is minimised.

Water corporation prices are determined by Victoria's independent economic regulator, the Essential Services Commission (**ESC**).[17] It examines whether capital expenditure proposed by a water corporation would be incurred by a prudent service provider acting efficiently to achieve the lowest cost of delivering service outcomes, taking into account a long-term planning horizon. The ESC engages an independent consultant to scrutinise water corporation proposals. Where actual construction costs are found to exceed their efficient level, the Commission will not roll these

[17] Essential Services Commission, *Water price reviews*, https://www.esc.vic.gov.au/water/water-prices-tariffs-and-special-drainage/water-price-reviews

inefficient expenditures into the regulatory asset base. Inefficient costs will be worn by the business and will not be recovered from customers.

In addition, large infrastructure investments are subject to the Department of Treasury and Finance Victoria's High Value High Risk Project Assurance Framework.[18] This framework seeks to verify that robust project planning and procurement processes have been followed to support quality project planning and procurement processes and documentation and provide impartial and informed advice to Government on deliverability risks.

**INFORMATION REQUEST 9** ***Best practice pricing***

- **How can small regional providers best balance affordability with longer term service quality?**
- **Are there barriers to effective local planning?**
- **Is there scope for greater collaboration between small providers?**
- **When might government support be warranted, and how should it be provided?**

Due to the structure of the water sector Victoria is not home to 'small providers' of water services. The ESC's PREMO pricing approach places emphasis on customer engagement. Water corporations are incentivised to thoroughly explore their customers' expectations for service outcomes, including affordability. This is underpinned by the ESC's examination of the water corporations' expenditure plans for prudency and efficiency and the obligation to provide for the ongoing financial sustainability of the corporations.

An independent review carried out for the ESC (Farrier Swier 28 March 2019) found that the PREMO approach was successful in achieving the following outcomes:

- To promote the best outcomes for Victorian customers
- To incentivise water businesses to provide the services and outcomes that matter most to their customers
- To adopt a pricing approach with strong incentives for water businesses to operate efficiently and innovatively, while providing for their long-term viability.

*Water for Victoria* committed the Victorian Government to enhancing local planning through integrated water management and associated action 5.7 "represent community values and local opportunities in planning".

Integrated water management promotes collaborative planning and management of water, land and related services to maximise economic, social and ecological benefits to the community. This planning is based on local values and priorities, with a focus on opportunities to efficiently achieve results. Integrated water management supports 'green and blue infrastructure' such as parks, wetlands, streams and urban vegetation, and can deliver multiple benefits including flood mitigation, urban cooling, clean air, healthy streams and increased biodiversity, as well as contributing to recreation and amenity.

Integrated water planning is now being applied systematically across the state to enhance the resilience and liveability of our cities and towns and guide place-based decisions. The outcomes of this

[18]Department of Treasury and Finance, *Investment Lifecycle and High Value and High Risk Guidelines*, https://www.dtf.vic.gov.au/infrastructure-investment/investment-lifecycle-and-high-value-and-high-risk-guidelines

planning will be included in the next iteration of urban water strategies of all water corporations and in the Melbourne Water Systems Strategy prepared by Melbourne Water

The new integrated water management planning framework has addressed may of the barriers to effective local planning through broad-scale forums including people from different agencies and people from a variety of disciplines (for example, urban planning and engineering), to identify priority locations for the development of integrated water management plans.

Water corporations have generally led the development of integrated water management plans, working with local government, catchment management authorities and other partners, as well as the local community. However, other organisations may lead the process if they are better placed to do so.

Due to the structure of the water sector Victoria is not home to 'small providers' of water services. That said recent initiatives over the past decade have improved opportunities for collaboration amongst Victoria's water corporations. Such initiatives include Integrated Water Management forums across the state to improve collaborative planning, enhanced requirements for water corporations to consult with neighbouring water corporations during the development of their Urban Water Strategies and the continued support of the Intelligent Water Networks Program (IWN). The IWN program investigates new technologies and innovations to meet common challenges such as population growth, ageing infrastructure and climate variability in a more efficient manner. IWN is a partnership between, VicWater, 16 Victorian water corporations, and Department of Environment, Land, Water and Planning. Its vision is that "the Victorian Water Industry's shared opportunities will be delivered through collaboration and leadership".

All Victorian water corporations operate as non-profit businesses with water prices that are set to recover the costs of the services they provide and to maintain their assets. Direct government funding is not provided to water corporations to deliver their services, however funding contributions towards specific projects outside of the core functions of water corporations are considered on a case by case basis and in line with relevant DTF funding guidance.

**INFORMATION REQUEST 10** ***Safe and reliable water supply***

- **Do water service providers supply high quality water services in regional and remote areas?**
- **Are there examples of poor water quality, service interruptions, or other issues?**
- **Have regional water service providers adequately planned for extreme events?**
- **Are there sources of data that could be used to benchmark smaller providers' water service levels (with fewer than 10 000 connections)?**

Victoria has some of the best quality drinking water in the world. Victoria has invested significantly in reforming the water sector and building infrastructure to increase productivity, improve water reliability and ensure the health of river and groundwater systems over the years. This investment has helped Victoria continue to maintain quality water services in metropolitan, regional and rural areas.

Recent investments by the Victorian Government to ensure high quality water services in regional and remote areas include the additional $65 million to provide water security for communities across the state, build irrigation and water supply infrastructure, provide more opportunities for people to enjoy our waterways, protect the environment and support farmers and jobs. This investment included $32 million for Victoria's share of the $85.2 million East Grampians Water Supply Project which will build

1,600 kilometres of stock and domestic pipeline for up to 530,000 hectares of land in the Grampians region, and $10.2 million to fund the state's share of a $29 million project to build a secure water supply for the Mitiamo district, expanding the water grid and improving the efficiency of local irrigation.

The Budget also provided $4 million to support smarter use of water in our cities and towns across the state, including recycling and stormwater harvesting and a further $2 million to continue water efficiency measures in schools and local communities.

Victoria has a strong legacy of modernising and upgrading rural water supply systems to provide multiple benefits to water users, the environment and communities. Many projects have been funded by a mix of State, Commonwealth and Water Corporation contributions to maximise outcomes for Victorian communities and ensure appropriate cost-sharing.

The $2 billion GMW Connections Project, that the Victorian government contributed over $830 million, is on track to recover 429 GL of long term water savings by October 2020. This recovered water will be shared between the environment, irrigators and Melbourne water retailers and will also ensure the Goulburn Murray Irrigation District continues to be a vibrant and productive agriculture district.[19]

Key rural water infrastructure projects that have been delivered include:

- Sunraysia Modernisation Project Stage 1 and 2
- Werribee Modernisation Project
- Bacchus Marsh Modernisation Projects
- Macalister Irrigation District 2030
- South West Loddon Pipeline

Infrastructure projects recently funded or underway include:

- Mitiamo and District Reticulated Water Supply Project
- Macalister Irrigation District Phase 1B and 2
- East Grampians Water Supply Project
- Western Irrigation Network
- Lindenow Valley Water Supply Scheme

The Victorian Department of Health and Human Services considers that the management of water quality as one of the key elements to protect human health from potential harms; recognising the primacy of prevention is paramount. This should be considered in the context of One Health, with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.

The focus on water quality is becoming increasingly important with the emergence of chemicals and pathogens of concern. There needs to be greater attention on understanding of the fate of these chemicals and pathogens in our environment and their impacts on agriculture, human health and the environment.

Although Victoria's water corporations are vigilant in their risk management and, in collaboration with the department, promptly address issues and take corrective and preventive actions to minimise risk,

[19] https://www.water.vic.gov.au/water-for-agriculture/investment-in-irrigation-efficiency

occasionally, incidents such as floods, bushfires, blooms of cyanobacteria (blue-green algae), and treatment plant operational issues will impact water quality and service delivery.

Some examples in Victoria's recent history have included:

- Following fires in the Buchan region between January and February 2019, water quality in the Buchan river was significantly impacted. The Buchan Water Treatment Plant was unable to cope and had to be temporarily switched off, resulting in the surrounding communities needing to boil water during this period.[20]
- In early 2019 areas of the Goulburn and Tongala systems which had historically been unaffected by algae experienced a significant algae bloom event. The algae had a rapid early growth stage which resulted in Goulburn Valley Water experiencing water treatment challenges at the Tatura, Kyabram, Rushworth and Tongala water treatment plants.
- Between May and August 2019 Coliban Water's Kyneton treatment plant failed to comply with its EPA licence conditions causing an environmental hazard resulting in further action being taken by the EPA.
- In February 2020 a storm-related event at the Moe water treatment plant resulted in a Gippsland Water being unable to guarantee that reticulated water delivered to the affected towns fully meets Australian Drinking Water Quality Guidelines and therefore the issuing of a precautionary boil water alert for Hernes Oak, Moe, Moe South, Newborough, Trafalgar East, Westbury, Yallourn, Yallourn Heights and Yallourn North to minimise any risk to public health.
- In August 2020, storms caused power outages resulting in loss of power to Melbourne Water's Silvan Water Treatment Plant. When power was initially lost, the onsite backup generated started however subsequently failed. This resulted in undisinfected water entering the supply system and a boil water advisory to consumers in the eastern and northern suburbs of Melbourne.

These events have resulted in 'boil water' or 'do not drink' advisories. Victoria's Department of Health and Human Services can be contacted to provide further narrative on these events should the Productivity Commission seek further information

In addition the prevalence and impact of harmful and nuisance algal blooms is a threat to the safety and security of drinking water supplies that is increasing with climate change and extreme events. New species of algae are emerging and the state of knowledge on their health effects on humans and animals is limited.

Some species of harmful algae can produce chemical compounds that can challenge the effective operation of water treatment plants and affect drinking water quality, commonly imparting a musty odour and taste. More significantly, some species produce toxins that have serious health implications for humans, animals, birds and livestock.

A renewed NWI should include objectives and outcomes that seek to improve source water quality for drinking through improved catchment management practices and planning controls to prevent potential sources of water quality contamination.

Victoria's regional water service providers invest significantly in planning for extreme events with emergency management arrangements set out in the *Emergency Management Act 1986* and the *Emergency Management Act 2013* and detailed in the Emergency Management Manual Victoria

[20] https://www2.health.vic.gov.au/public-health/water/drinking-water-in-victoria/drinking-water-quality-annual-report

(**EMMV**) and other regulatory instruments. Together these documents establish the "all hazards, all agencies" approach underpinning Victoria's emergency management arrangements.

The Victorian water industry maintains a state of emergency preparedness through cross agency collaboration exercises that examine different scenarios affecting water supplies. Water agencies regularly conduct these exercises in conjunction with the department, and at times, local government, Victoria Police, fire agencies, EPA Victoria, SES and other relevant government departments.

When extreme events occur, the department, water corporations and stakeholders work together to respond to and manage emergencies affecting the safety and quality of water supplies and to enact emergency management plans. Response measures include protecting key infrastructure, increasing treatment, providing alternative drinking water supplies and providing advice to affected communities.

Victoria's water corporation are also preparing for climate change through programs such as the pilot Water Sector Climate Change Adaptation Action Plan.

The Victorian water industry services 2.8 million residential water connections. The smallest urban residential water supplier is Westernport Water with 17,000 connections, the largest Yarra Valley Water with 2,074,000 connections.

All Victorian residential water suppliers, and Victoria's bulk water supplier, Melbourne Water, are benchmarked in the Urban Water National Performance Report (NPR), supporting the commitment under the National Water Initiative, that states and territories report independently, publicly and on an annual basis.

**INFORMATION REQUEST 11** ***Planning for major supply augmentation / Integrated water cycle management***

- **What steps have been undertaken to address the priority areas for urban water reform identified in 2017?**
- **Is further guidance on implementing an integrated water cycle management approach for delivering water supply, wastewater and stormwater management services required?**
- **How does jurisdictional urban water service planning interface with urban land use planning at different scales?**
- **Are the roles and responsibilities clearly set out?**
- **Is the role of water in delivering amenity and liveability outcomes clear?**
- **How are the trade offs with other NWI outcomes considered?**
- **Is it clear how the level and type of amenity delivered by urban water services will be funded?**

Since 2017, Victoria has continued urban water reforms set out in *Water for Victoria* and other strategic policy documents. The Integrated Water Management Framework for Victoria gives guidance and case studies to clarify roles and responsibilities. We are working with our delivery partners to continuously improve guidance. The IWM program has seen establishment of IWM Forums across the state to bring all agencies within an interest in urban water management together to set an agreed vision, identify critical project to meet that vision and determine how they will work together. This work has also informed the development of a policy program, which is now being implemented to see the progress of key policy reform areas such as increased uptake of recycled water, the management of stormwater and clearer funding and financing frameworks for IWM programs.

The interface between planning and urban water is complex and we are working across the public sector and local government to better integrate urban water and planning. An example includes the Stormwater Management Advisory Committee, established in 2018 and tasked with providing policy direction on strengthening the links between urban water management and the planning and development system. The Committee's recommended planning amendments were implemented in 2018, and we are progressing the longer term reforms.

The role of water in delivering amenity and liveability outcomes are clearly recognised in our policy documents. Trade-offs with other NWI outcomes are mainly considered through our IWM forums and shared investment of projects. A key challenge for IWM comes from determining the private and public benefits derived from the IWM solution, compared to the costs. The Environmental Contribution levy is one of the most important funding tools assisting Victorians to manage water sustainably, however, IWM projects are funded by a range of organisations (DELWP, Water Corporations, local governments, Catchment Management Authorities) and sources.

*Water for Victoria*[21] is the overarching policy document to address priority areas for all water reform. along with recent strategic policy documents that guide urban water reforms, including:

- The Yarra River Action Plan[22]
- Integrated Water Management Framework for Victoria[23]
- Port Phillip Bay Environmental Management Plan 2017-2027[24]
- Plan Melbourne 2017-2050[25].

In 2018, the Minister for Planning established the Improving Stormwater Management Advisory Committee to provide independent advice on stormwater reform. This resulted in amendments to the Victorian Planning Provisions to increase the types of development required to manage stormwater pollution impacts.

The Victoria IWM Forums have been critical in identify critical policy reform areas to progress urban water reforms. These reforms have been prioritised and resourced by DELWP in partnership with key agencies and are being progressed generally using a case study or piloting approach. These ensure that urban reforms can be realised in the current climate.

Victoria continues to work through its Integrated Water Management Forums (IWMF) as outlined in the *Integrated Water Management Framework for Victoria*. This framework gives guidance and case studies to clarify roles and responsibilities for implementing place based IWM plans.

In addition, there are active locally based projects and working groups looking at partnership approaches to collaborative project delivery, necessary for realising integrated water management solutions.

A review is currently taking place of the Precinct Structure Planning Guidelines for Victoria's growth areas including improved guidance related to integrated water management.

[21] https://www.water.vic.gov.au/water-for-victoria
[22] https://www.planning.vic.gov.au/policy-and-strategy/waterways-planning/yarra-river-protection?_ga=2.18207869.591275188.1596589178-479769216.1591678356
[23] https://www.water.vic.gov.au/liveable/integrated-water-management-program/integrated-water-management-framework-for-victoria
[24] https://www.marineandcoasts.vic.gov.au/coastal-programs/port-phillip-bay?_ga=2.57054190.591275188.1596589178-479769216.1591678356
[25] https://www.planmelbourne.vic.gov.au/

Victoria continues to explore with our delivery partners where further policy guidance is needed, for example, in modelling, funding and financing and business case development for IWM projects.

The Victoria Planning Provisions (**VPP**) made under the *Planning and Environment Act 1987* (Vic) set state standard provisions (e.g. state policy, zones, overlays), which councils must select from in their local planning schemes.

The Stormwater Management Advisory Committee was tasked with providing policy direction on strengthening the links between urban water management and the planning and development system. The Committee's recommended immediate planning reforms came into effect in October 2018, and include:

- new provisions under the VPP to expand the current stormwater management requirements to:
    - commercial subdivisions and developments
    - industrial subdivisions and developments
    - public use developments
    - residential multi-dwelling subdivisions and developments.
- a new Integrated water management clause in the state's Planning Policy framework (PPF) to embed IWM objectives and strategies into urban land-use planning. [26]

DELWP is also collaborating with our delivery partners to progress the Committee's sixteen longer-term policy directions, including to:

- establish effective offsetting arrangements
- clarify local government's roles and responsibilities
- set stronger performance objectives
- build technical expertise and improve awareness of the VPP amendments.

The IWM forums include representatives from the Victorian Planning Authority (**VPA**) and local councils in their planning capacity and this enables a link between water service planning and urban land use at the local level.

Responsibilities are set out in the IWM framework, and the IWM forums are used to work through cases where there are overlapping responsibilities. An IWM approach to planning requires water sector members to clearly understand their own accountabilities and those of other organisations. Across Victoria, multiple organisations have responsibilities for managing the urban water cycle. This 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 can be less clear or overlapping. The IWM process provides an opportunity to work through areas of otherwise 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 VPA, VicRoads, developers, educational institutions, large landholders or community organisations. The collaborative nature of an IWM approach enables involvement of these organisations when relevant.

[26] https://www.planning.vic.gov.au/__data/assets/pdf_file/0033/398715/PAN75-Amendment-VC154-Stormwater-Management.pdf

The VPA also has a role to work closely with councils, government departments and the community to assist in the implementation of the initiatives in Plan Melbourne 2017-2050. The VPA's program focuses on land use and infrastructure planning for strategically important precincts. This includes providing guidance for greenfields sites that present particular opportunities for Integrated Water Management.[27]

*Water for Victoria* sets the direction to manage Victoria's water resources to support a healthy environment, a prosperous economy and thriving communities. Chapter 5 *Resilient and liveable cities and towns* sets out Victoria's commitment to ensure that our cities and towns remain as liveable and productive places that support vibrant communities[28]. The urban water sector provides services that are fundamental to the health and wellbeing of Victorians who live in cities and towns. These services include providing safe and secure drinking water, managing and treating wastewater, managing water to protect the urban environment from floods, and contributing to healthy and valued urban landscapes.

Through *Water for Victoria*, we are making progress to:

- Use diverse water sources to protect public spaces
- Better urban water planning to address key challenges
- Reinvigorate water efficiency programs for Melbourne and regional Victoria
- Make the most of our investment in wastewater
- Improve stormwater management for greener environments and healthier waterways
- Work across government for healthy and resilient urban landscapes
- Represent community values and local opportunities in planning
- Put integrated water management into practice.

Plan Melbourne also sets out the direction for Melbourne as a sustainable and resilient city, including Directions 6.3 and 6.4 to integrate urban development and water cycle management and to make Melbourne cooler and greener. Amenity and liveability outcomes of good urban water management are understood and being implemented as described above in practice however there is some variation in application across local governments and water corporations. Some organisations are less proactive in incorporating water's amenity and liveability role into their planning processes due to capacity and capability challenges. The water pricing regulatory context of Victorian water corporations also presents some challenges for them to deliver amenity outcomes within their business model.

A key challenge with delivering liveability outcomes around waterways and waterbodies is that there are multiple parties and beneficiaries involved. Local governments play a lead role in the provision of amenity services in their municipalities, but they are only responsible for the section of the river corridor that is within their geographic boundaries. In fast growing greenfield urban areas, planning happens for communities that do not yet exist, so there is often not strong advocacy for the role urban waterways can play in wellbeing, through social connection and connection to nature.

The IWM forums and shared investment of projects are the main vehicles where communities consider trade-offs. A key 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.

[27] https://www.vpa.vic.gov.au/wp-content/Assets/Files/D%2011%206016%20%20Integrated%20Water%20Management%20PSP%20NOTE%20-%20FINAL%20APPROVED%20-%20BOOKLET%20%20PDF%20VERSION%20-%20July%202011.pdf

[28] See chp 5 in https://www.water.vic.gov.au/__data/assets/pdf_file/0030/58827/Water-Plan-strategy2.pdf

Each IWM Partner needs 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.

Victoria is also guided by the best available science and modelling, for example in the Victorian Water Register[29], which is a public register of all water-related entitlements in Victoria. It has been designed and built to record water entitlements with integrity and provide crucial information for managing Victoria's water resources.

The Environmental Contribution Levy is one of the most important funding tools assisting Victorians to manage water sustainably, and a means of accounting for the environmental costs associated with the provision of water-based services. The funds are collected from water corporations under the *Water Industry Act 1994* (Vic), and are hypothecated to fund initiatives that promote the sustainable management of water or address adverse water-related environmental impacts.

There is an expectation that IWM projects including amenity will be delivered through shared investment by delivery partners with opportunities for the State to co-fund IWM projects where funding gaps exist. A list of the projects co-funded during 2018-19 is available on the DELWP website[30].

On 1 January 2004, the Essential Services Commission (**the Commission**) commenced its role as the economic regulator of the Victorian water sector. The Commission's role involves regulating the prices and service standards of the 19 businesses supplying water, sewerage and related services to residential, industrial and commercial, and irrigation customers throughout the state.

The Commission's pricing powers and functions in Victoria's water sector are informed by the Water Industry Regulatory Order (WIRO), which sits within the broader context of the *Water Industry Act 1994* (Vic) and the *Essential Services Commission Act 2001* (Vic).

Within the framework established by these instruments, the Commission undertakes price reviews every five or so years to establish the maximum prices water businesses may charge their customers.

The WIRO specifies the following services as being prescribed services for which the Commission has the power to regulate prices:

- retail water services — the supply of water by a water business to a retail customer
- retail sewerage services — the removal, treatment and disposal of sewage and trade waste by a metropolitan retailer or a regional water authority
- retail recycled water services — the supply of recycled water by a water business to a retail customer
- storage operator and bulk water services — the supply of bulk water from one water business to another
- bulk sewerage services — the conveyance, treatment and disposal of wastewater by Melbourne Water for another water business
- bulk recycled services — the supply of recycled water by Melbourne Water
- metropolitan waterways and drainage services — the supply of waterways and drainage services by Melbourne Water
- irrigation drainage services — the removal and disposal of run-off of irrigation by a rural water authority

[29] https://waterregister.vic.gov.au/water-availability-and-use/water-use-trends
[30] https://www.water.vic.gov.au/liveable/integrated-water-management-program/forums/iwm-projects

- connection services — the connection of a serviced property to a water supply or sewerage system
- services to which developer charges apply — contributions to the cost of works for connections services
- diversion services — the management, extraction or use of groundwater or surface water by a water business.

The Commission's role of regulating prices does not extend to other services that water businesses may provide.

**INFORMATION REQUEST 12** ***Investment in new water infrastructure***

- **Are there examples of projects that have not met the NWI criteria for new water infrastructure investment?**
- **What principles should inform government funding or financing of new water infrastructure?**

Most of the rural water infrastructure projects highlighted in this submission include co-funding from the Commonwealth National Water Infrastructure Development Fund (**NWIDF**) – Capital Component. All NWIDF funded projects must be compliant with the National Water Initiative as a condition of funding.

*Water for Victoria* outlines the following principles for public investment in rural water infrastructure projects:

**Long-term viability**

- Net benefits will be achieved under a range of future water availability scenarios
- User demand and support for the proposed service is demonstrated, including commitment to meet all future operation and maintenance costs, and costs to source water through the new infrastructure
- It is consistent with regional strategic plans, regional growth plans, regional catchment strategies and land use planning
- It is consistent with any relevant land use suitability assessments and agricultural policy

**Net public benefit**

- No adverse impact on reliability and capacity to deliver existing entitlements. The health of the environment must be maintained or improved
- Net public benefits to the Victorian economy and community values must be demonstrated

**Value for money**

- It has undergone a positive cost-benefit analysis of social, cultural, economic and environmental outcomes, including water savings and market value of water, economic growth and environmental sustainability
- Cost-share with proponents for construction is proportionate to the public and the private benefits ('user pays' principle)[31]

[31] Water for Victoria, chp 4, p. 67.

The following set of principles were developed by DELWP and canvassed with the National Water Grid Authority in response to its *Draft Infrastructure Investment Evaluation Framework*. They were developed for the consideration of the NWGA only and draw heavily on principles adopted by Victoria as part of its planning for rural water infrastructure projects however they are worthwhile including within this context.

- Outcomes: Water infrastructure investments will help drive the following outcomes for communities:
- Adapt to a changing climate by providing a greater security of supply and building resilience through diversifying sources
- Be better prepared for emergency situations such as bushfires and drought by ensuring continuity of essential services
- Grow agricultural productivity and improved food security
- Overcome physical impediments (minimising losses) to water markets by improving deliverability and efficiency of systems

Victoria also considers that the Authority's scope of work should include (but not be limited to):

- alternative water, including recycled water
- exploration of new irrigation areas
- off-stream dams
- groundwater opportunities
- consideration of mutual benefits, such as cultural and recreational water

The Authority should commit to robust investigations and utilisation of sound evidence with regard to, as a minimum:

- availability of the resource
- water quality implications
- logical and well-developed business cases

The Authority should avoid funding:

- ongoing operation and maintenance activities
- projects which contravene Basin Plan requirements and the policy objectives of each State and territory
- business-as-usual activities
- projects with unreasonably adverse third-party impacts

**INFORMATION REQUEST 13 *Other issues***

- **Are there any areas for future reform of the NWI that have not been raised in this issues paper that should be investigated for inclusion?**

Victoria remains committed to the objectives and outcomes of the National Water Initiative while noting the significant reform has continued as outlined in *Water for Victoria* and its implementation over the past four years to meet the challenges of climate change and population growth. Planning now to respond to the impact of climate change and a growing population will support a healthy environment and prosperous economy with growing agricultural production.