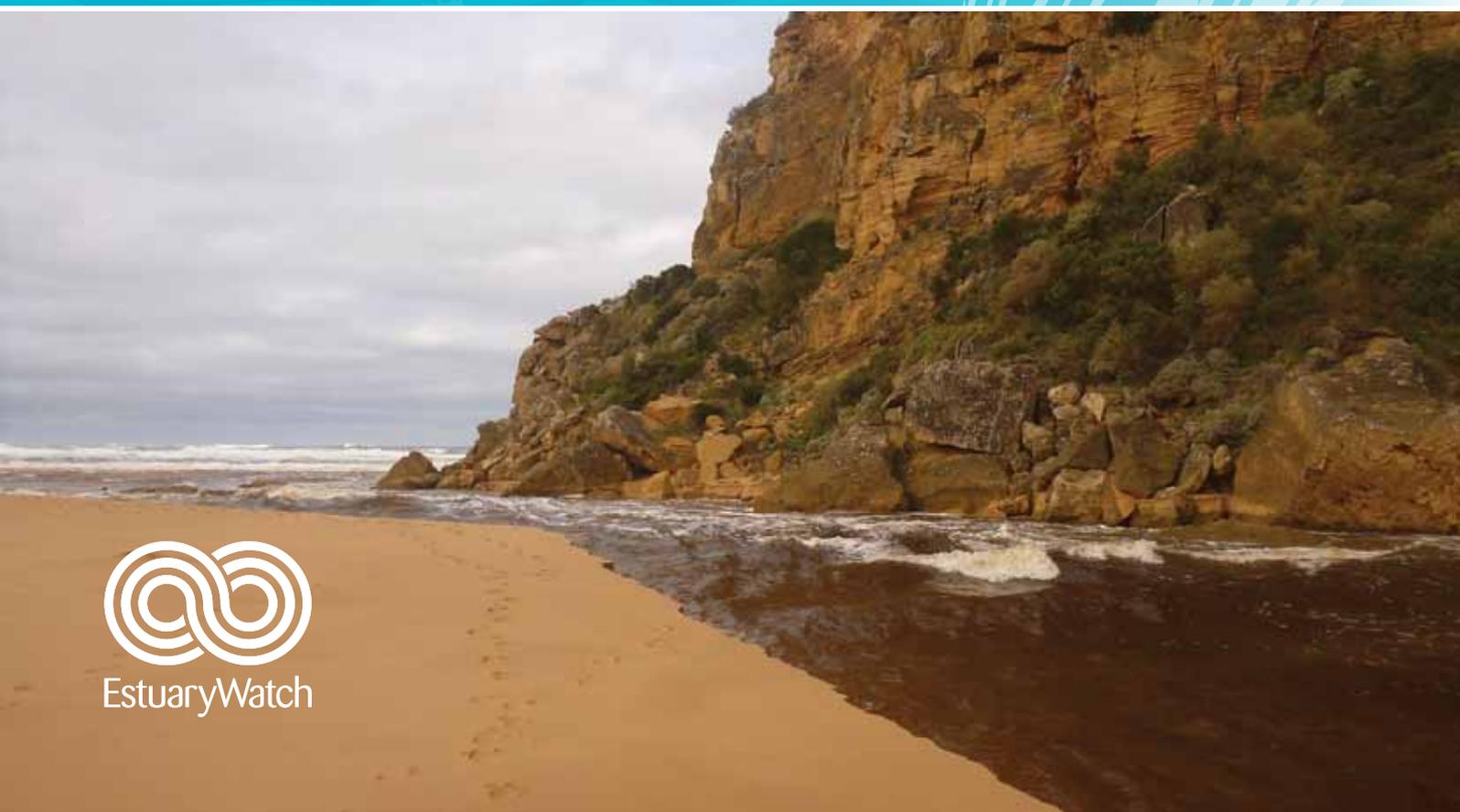




The Plan for EstuaryWatch Victoria



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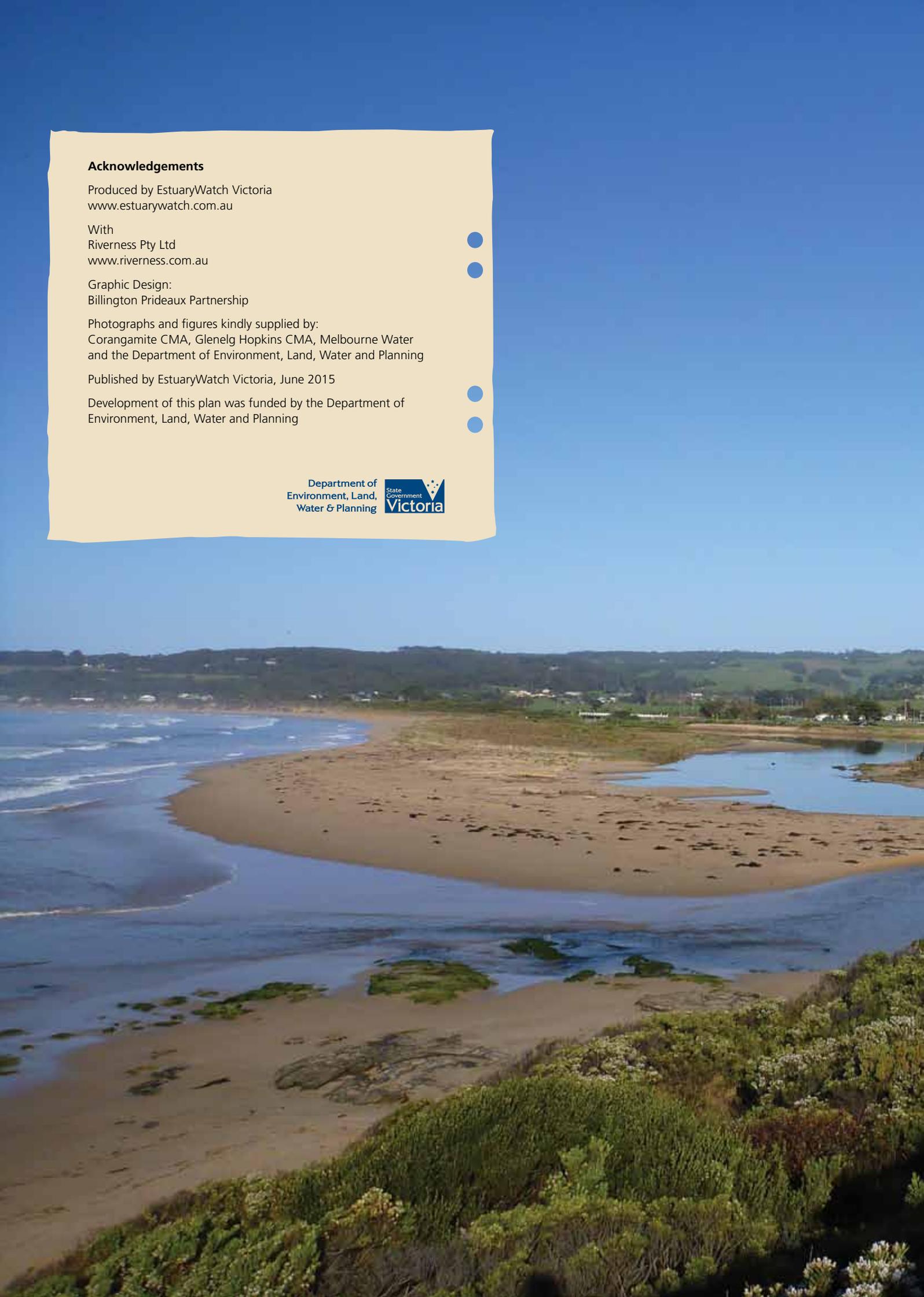
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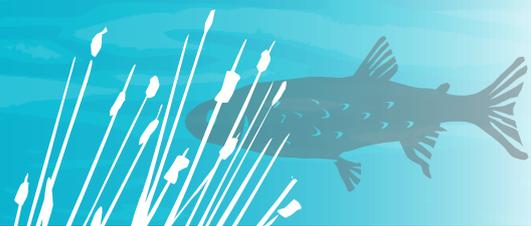




The Plan for EstuaryWatch Victoria



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In 2006, the Corangamite Catchment Management Authority and the Western Coastal Board set up EstuaryWatch, a community estuary monitoring program aiming to help local communities learn more about the unique structures, functions and health of individual local estuaries and gather information to inform estuary management. The success of the Corangamite program sparked the expansion of the program in 2009, with EstuaryWatch information sessions and monitoring now occurring across the Victorian coast. In September 2013, there were 96 volunteers monitoring 17 estuaries.

The Plan for EstuaryWatch Victoria (the Plan) provides the directions for the future Victorian EstuaryWatch Program over the next eight years. The Plan will support implementation of the *Victorian Waterway Management Strategy*¹ (VWMS). The VWMS outlines the framework for government in partnership with the community, to manage rivers, estuaries and wetlands so that they can support environmental, social, cultural and economic values now and into the future.

The overall purpose of the Plan is to clarify the state policies and actions relating to state EstuaryWatch coordination; and define the implementation framework that will:

- inform regional implementation delivered in partnership with the community
- ensure statewide consistency in program delivery to gain efficiencies
- support regional autonomy to ensure the EstuaryWatch Program remains relevant and effective in delivering regional outcomes
- complement monitoring, evaluation and reporting processes to demonstrate successes and inform continuous improvement.



Gellibrand River EstuaryWatcher conducting photopoint monitoring.
Courtesy Corangamite CMA

Implementation of the EstuaryWatch Program will rely on effective partnerships between the Victorian Government, regional agencies, waterway managers and ultimately the volunteer community that participates and undertakes EstuaryWatch activities. These partnerships are recognised in the Plan and will be supported through state and regional coordination activities.

The EstuaryWatch Program will continue to build on its established and valued role as a key community engagement program, connecting local communities with estuary management and to encourage stewardship. It will also continue to enhance its program to provide credible, relevant and accessible data to increase knowledge and inform management decisions.

Over the next eight years, the management objective of the EstuaryWatch Program is to increase the knowledge of the community and waterway managers to inform estuary management decisions and encourage waterway stewardship. It will achieve this by:

- increasing community participation in estuary based engagement events and monitoring activities
- increasing community knowledge and skills on how to monitor estuary condition
- increasing the availability of reliable and relevant estuary condition data and information to the community and waterway managers
- increasing community awareness and knowledge of estuary management and condition.

The EstuaryWatch Program will undertake the following activities:

- establish, maintain and review estuary monitoring sites, monitoring plans, information management systems and partnerships with the community and waterway managers
- engage the community through estuary monitoring, events and a variety of media including publications, interpretative information and displays.

The EstuaryWatch Program will be sustained through the ongoing implementation of planning, monitoring, reporting, evaluation, research, capacity building activities and coordination of monitoring standards and processes.



EstuaryWatch activities will contribute to engaging the community and collecting data and information within priority estuaries across various management issues including:

- recreational use of waterways
- environmental water management
- riparian management
- water quality
- the river channel
- wetlands
- waterways in urban areas
- extreme events of flood and bushfire
- invasive species management in waterways.

The EstuaryWatch Program will be conducted within the adaptive management framework that underpins the Victorian Waterway Management Program. Implementation of the framework will ensure that EstuaryWatch will be delivered in line with key state and regional estuary management priorities and thereby make significant contributions to the management of Victoria's estuaries. It will also ensure the EstuaryWatch Program will be able to monitor, evaluate and demonstrate its successes and inform continuous improvement. This will support a sustainable EstuaryWatch Program into the future.

What is EstuaryWatch?

EstuaryWatch supports community members to actively participate in estuary health monitoring and provides a pathway for community members to increase their knowledge about estuaries through regular seminars, information days and training.

EstuaryWatch volunteers with a passion for the environment collect data and information from estuaries across Victoria. The data benefits the community and waterway managers by increasing their knowledge of estuary condition. This knowledge informs management decisions that ultimately improve waterway condition that supports environmental, social, cultural and economic values.

Community data collected by EstuaryWatch participants is actively used by waterway managers to inform decisions regarding artificial estuary entrance openings.



Barwon River estuary. Courtesy of Corangamite CMA



1.1 Purpose of the Plan

The Plan for EstuaryWatch (the Plan) provides the directions for the future Victorian EstuaryWatch Program. The Plan will support implementation of the *Victorian Waterway Management Strategy*¹ (VWMS).

The Plan outlines:

- the EstuaryWatch Program objectives, management outcomes, outputs and activities
- guiding principles to work towards the EstuaryWatch objectives and the vision for Victoria's waterways
- the implementation framework defining:
 - the adaptive management framework
 - institutional arrangements
 - relevant state and regional policies, strategies and plans
 - actions relating to strategy and planning, implementation and monitoring and evaluation and reporting.

The overall purpose of the Plan is to clarify the state policies and actions relating to state EstuaryWatch coordination; and to define the framework that will:

- inform regional implementation delivered in partnership with the community
- ensure statewide consistency in program delivery to gain efficiencies
- support regional autonomy to ensure the EstuaryWatch Program remains relevant and effective in delivering regional outcomes
- complement monitoring, evaluation and reporting processes to demonstrate successes and inform continuous improvement.

1.2 The Plan development process

The Plan has been developed through collaboration with the Department of Environment, Land, Water and Planning (DELWP) and the state and regional EstuaryWatch coordinators.

The content of the Plan has been informed by:

- the policies outlined in the VWMS
- a survey of regional EstuaryWatch coordinators clarifying regional perspectives of the past, present and future for EstuaryWatch
- a workshop with regional coordinators clarifying the program logic, current strengths and opportunities for the EstuaryWatch Program, and investigating options for monitoring, evaluation and reporting processes
- the provision of an opportunity for key stakeholders to provide feedback on the draft Plan.

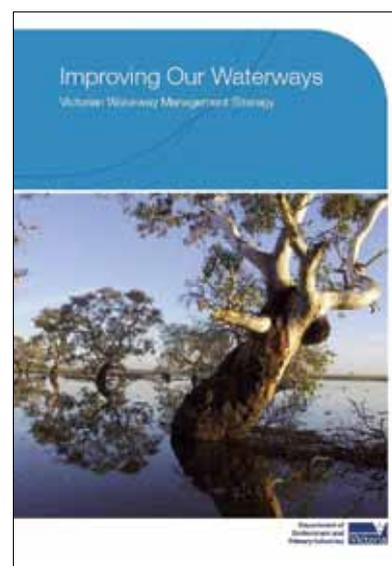
1.3 Policy context

1.3.1 State

The *Victorian Coastal Strategy*² (VCS) previously provided the statewide direction for managing coastal, estuarine and marine environments. The VCS is prepared in accordance with the *Coastal Management Act 1995*. Under new planning arrangements the VWMS will provide the leading statewide strategic direction on the management of the environmental condition of estuaries. The VCS will continue to provide strategic direction for coastal land use planning and sustainable development issues. The new arrangements provide a consistent, strategic direction for the management of the environmental condition of Victoria's estuaries that is integrated with rivers and wetlands.

The VWMS outlines the framework for government, in partnership with the community to manage rivers, estuaries and wetlands so that they can support environmental, social, cultural and economic values now and into the future. The VWMS defines key state policies that relate to the EstuaryWatch Program.

The approach to managing Victoria's rivers, estuaries and wetlands defined in the VWMS is implemented through the Victorian Waterway Management Program. The DELWP is primarily responsible for oversight of the Victorian Waterway Management Program and establishing the state policy framework for waterway management. Regional implementation of the Victorian Waterway Management Program is led by the regional waterway managers (that is, nine catchment management authorities and Melbourne Water in the metropolitan region).



The *Victorian Waterway Management Strategy*.



1.3.2 Regional

In Victoria, there are ten Catchment Management Regions (see Figure 1) and each has a catchment management authority to co-ordinate integrated management of land, water and biodiversity. CMAs also have specific responsibilities for waterway management (under the *Water Act 1989*), except in the Port Phillip and Westernport region where Melbourne Water have the waterway management responsibilities.

The *Catchment and Land Protection Act 1994* establishes regional catchment strategies (RCSs) as the primary framework for integrated management of land, water and biodiversity in each of the ten catchment regions of Victoria. CMAs are responsible for preparing a RCS for their region and co-ordinating and monitoring its implementation. The RCS is the overarching strategy, under which there are a range of sub-strategies and actions plans for each region.

The long-term objectives and priorities in the RCS that relate to waterways are implemented through the statutory plans recently developed under the *Water Act 1989*, called regional waterway strategies (RWSs). The exception to this is the Port Phillip and Westernport region, where the Healthy Waterways Strategy³ (HWS) developed by Melbourne Water identifies priority areas to improve waterway health across rivers, estuaries and wetlands. RWSs identify priority Estuary Management Plans for development (or updating) and nominate the organisation to develop and implement the plans (in conjunction with key stakeholders).

Coastal Action Plans may also provide guidance for Estuary Management Plan development (or updating) regarding land use planning for land use and development. Estuary Management Plans have the capacity to deliver outcomes under the RWSs and Coastal Action Plans and will help provide a clear picture of the management activities required to maintain or improve the condition of priority estuaries. Future Estuary Management Plans will also consider upstream catchment influences, influences on marine receiving waters and the potential impacts of climate change on the environmental condition of estuaries.



EstuaryWatchers on the Painkalac Creek.
Courtesy of the Corangamite CMA

The functions of the RWSs include:

- identify high value waterways (based on environmental, social, cultural and economic values)
- determine priority waterways for the eight-year planning period
- include a regional work program of management activities for priority waterways (including environmental water management)
- guide investment into multi-year projects and annual work programs
- are developed in consultation with regional agencies and boards, Traditional Owners, the regional community and other key stakeholders.

Regional coastal boards will continue to provide strategic direction, in partnership with local government, for coastal land use planning and sustainable development issues through implementation of the Victorian Coastal Strategy and Coastal Actions Plans. At the regional level, waterway managers, regional coastal boards and public land managers (that is, the DELWP, Parks Victoria, local government and coastal committees of management) will undertake a coordinated approach to estuary management.

The key legislation and new planning arrangements for estuary management are summarised in Figure 2.



Figure 1. The ten catchment management regions in Victoria

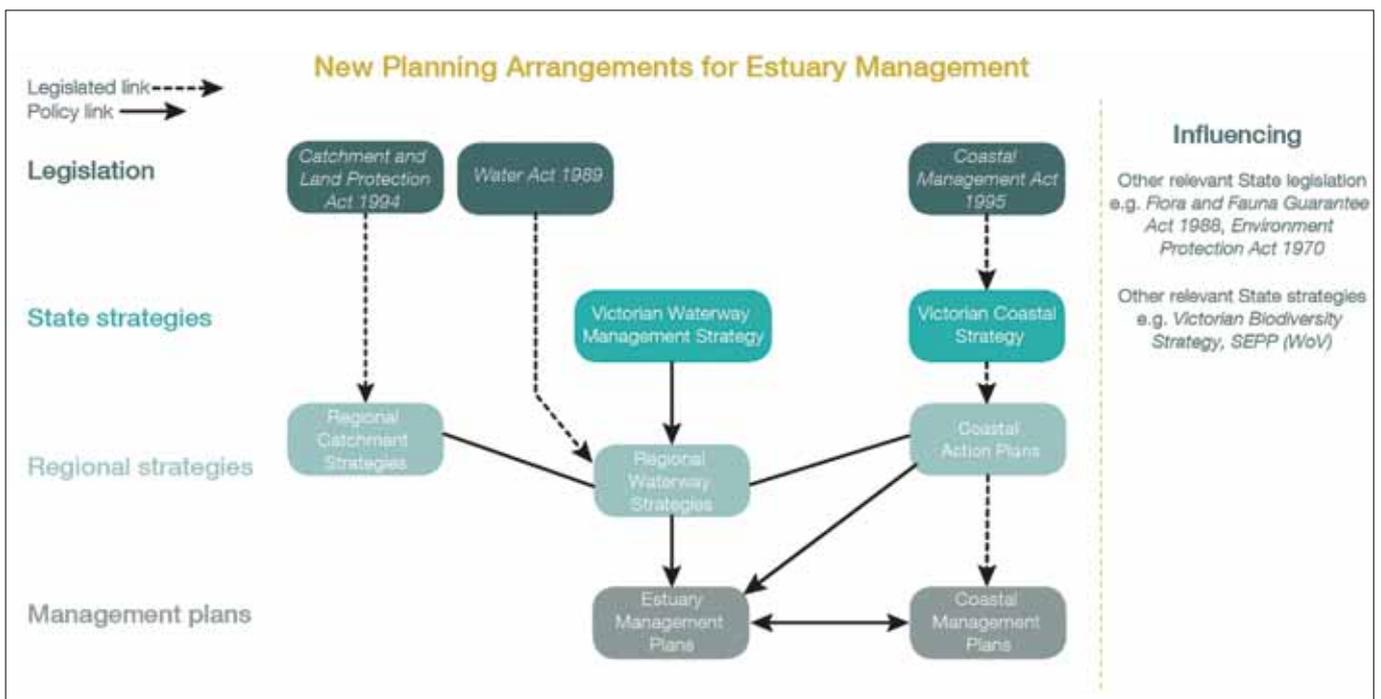


Figure 2. Key legislation and new planning arrangements for estuary management¹



2.1 Waterway management in Victoria

Many of the values provided by waterways rely on the environmental condition of those waterways. When environmental condition is degraded, some of these values may be diminished or lost. This means that communities are less able to enjoy and use waterways and, in some cases, significant social and economic costs can be incurred.

The environmental condition of waterways is determined by key drivers such as habitat, water quality, water regimes and connectivity (see Figure 3). Broader catchment condition, land use, natural events such as floods and bushfire, development and the potential impacts of climate change can all directly influence the environmental condition and values of waterways.

The management objective for Victoria's waterways (Policy 3.1 of the VWMS) is to maintain or improve the environmental condition of waterways to support environmental, social, cultural and economic values.

Management activities will focus on maintaining or improving the environmental condition of priority waterways to provide public benefits.

The approach for managing waterways involves four key elements (Policy 3.2 of the VWMS):

- recognising the importance of waterways with formal international, national and state significance
- implementing and maintaining onground works and managing environmental water in priority waterways
- fostering strong community partnerships
- using regulation (legislation and statutory processes).

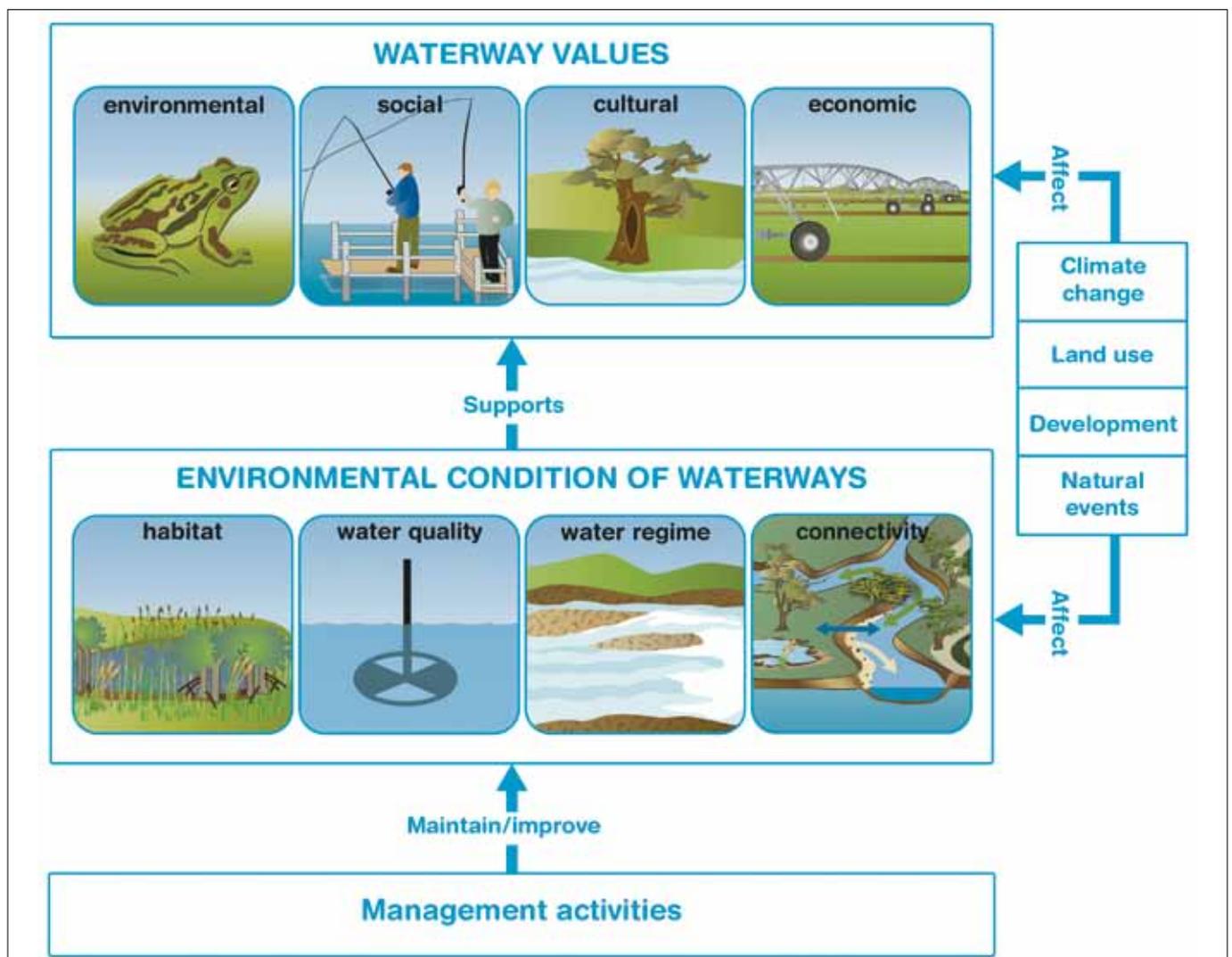


Figure 3. The drivers of environmental condition that support the values of waterways¹



2.2 The role of EstuaryWatch in waterway management

A key element to managing waterways involves fostering strong community partnerships. Waterway management is an ongoing task that requires both long-term commitment and a true partnership between Government and communities.

All individuals across Victoria can be actively involved in improving waterway condition by participating in community groups and networks, such as Waterwatch, Landcare, EstuaryWatch and 'Friends of' groups. These groups often take part in habitat restoration or monitoring activities to help inform decision making and waterway management. They also provide an opportunity for interested community members to increase their knowledge about waterways and be actively involved in improving the environmental condition of areas that are of high local importance to them or their group.

In 2010, the *My Victorian Waterway* survey was carried out with 7,140 Victorians taking part⁴. The results offer an insight to community expectations, attitudes and behaviours regarding waterway management. The results provide waterway managers with critical information for developing regional waterway management programs and for guiding community engagement activities.

Ninety-nine per cent of survey respondents had high aspirations for our waterways. Nearly all participants (98 per cent) agreed that it is important for waterways to be as healthy as possible so they continue to provide for our needs and 99 per cent of respondents want healthy waterways in their areas.

Although local communities feel highly connected to their local waterways and are generally concerned about waterway health, the *My Victorian Waterway* survey showed that actual knowledge about waterway health issues is lacking in some areas. While the majority of respondents had good knowledge, less than 14 per cent of respondents had excellent knowledge. However, there is goodwill in the community, with 87 per cent of respondents saying that they have a commitment and 96 per cent a personal responsibility, to do the right thing for waterways. Therefore, increasing knowledge and community understanding about waterways and waterway health could result in a significant increase in community stewardship of waterways and more sustainable waterway behaviour.

Many community members are actively involved in monitoring waterways through the Waterwatch and EstuaryWatch programs. These community monitoring programs are supported by the Victorian Government through the establishment of state and regional coordinators, development and maintenance of databases, purchase of equipment and hosting of capacity building events. The regional coordinators play a vital role in running these programs and facilitating the participation of interested community members.

The Waterwatch and EstuaryWatch community monitoring programs are also part of the broader waterway monitoring framework in Victoria and can provide credible data to assist in waterway management. For example, in the Corangamite CMA region, Waterwatch and EstuaryWatch volunteers have played an active role in assisting with monitoring of estuary condition following estuary openings, early detection of blue-green algae outbreaks in the lower Barwon River and assessing the effect of management activities undertaken in waterways in the region.

Waterwatch, EstuaryWatch and Landcare volunteers also act as trusted conduits of information to waterway frontage landholders. Community involvement in resource monitoring therefore has multiple benefits such as:

- enhancing community and stakeholder knowledge regarding waterway health and related issues
- multiplying the spatial coverage and sampling frequency of formal data collection (where community collected data quality meets certain standards)
- providing an 'early warning system' for waterway management issues (such as algal blooms and weed invasion) through frequent surveillance and knowledge of local waterways
- providing data regarding long term trends in catchment health.

Efforts to maintain or improve estuary condition require community support. Several initiatives that raise community awareness of waterway management issues already exist, such as Waterwatch, EstuaryWatch, Coastcare Victoria, Land for Wildlife, Fishcare and Landcare.

Of these, EstuaryWatch is the only program specific to estuaries. EstuaryWatch is a community-based estuary monitoring program that collects water quality and other estuary data. It aims to help local communities learn more about the unique characteristics and health of individual local estuaries and to provide information to inform estuary management. Community data collected by EstuaryWatch participants is also used to inform decisions regarding artificial estuary entrance openings.



2.3 Achievements of the EstuaryWatch Program

In 2006, Corangamite CMA and the Western Coastal Board set up EstuaryWatch to help local communities learn more about the unique structures, functions and health of individual local estuaries and gather information to inform estuary management. The success of the Corangamite program sparked the expansion of the program in 2009, with EstuaryWatch information sessions and monitoring now occurring across the Victorian coast. In September 2013, there were 96 volunteers monitoring 17 estuaries.

EstuaryWatch allows community members to actively participate in estuary health monitoring and provides a pathway for community members to increase their knowledge about estuaries through regular seminars, information days and training. Additionally, community water quality data collected by EstuaryWatch participants is now being incorporated into the Estuary Entrance Management Support System (EEMSS) which is used to make decisions regarding artificial estuary openings. EstuaryWatch data has also been incorporated into the Index of Estuary Condition, assisting evaluation of the environmental condition of Victoria's Estuaries. To ensure the data collected through EstuaryWatch is accessible to the public and waterway managers, it is recorded in an online database available at: www.estuarywatch.com.au.

The success of EstuaryWatch has been recognised through a range of awards including:

- winner of the Community Government Partnerships Award, Clean Beaches Awards 2010
- winner of the Community Action Award, Clean Beaches Awards 2009
- finalist for the Innovation Award, Victorian Coastal Awards for Excellence 2008
- finalist for the Government Partnerships Award, Tidy Towns Sustainable Communities Awards 2013
- finalist for the Clean Beach Award, Tidy Towns Sustainable Communities Awards 2013
- finalist for the Natural Environment Category, Victorian Coastal Awards, 2014.

2.4 The next steps for EstuaryWatch

EstuaryWatch Victoria will aim to continue its role in fostering strong community partnerships between government and the community through awareness raising events and supporting community participation in monitoring activities.

The VWMS defines key policies that relate to the EstuaryWatch Program. These key policies outline that the Victorian Government will:

- continue support for community participation in planning, implementation and monitoring activities
- maintain water quality monitoring programs that will:
 - provide fit-for-purpose, high quality data that is the basis of informed decision-making and reporting
 - Include ongoing development of high quality community monitoring programs that can be used to inform regional decision-making and waterway management.
- support Waterwatch and EstuaryWatch to manage data and information
- ensure data and information collected by Waterwatch and EstuaryWatch will be targeted to priority waterways and associated management activities to help inform decision-making processes.

The future EstuaryWatch Program will focus on the delivery of this policy direction to ensure it maximises outcomes for Victoria's waterways. It will undertake this task to demonstrate outcomes and seek efficiencies through state and regional coordination. Delivery of these policy objectives is contingent on appropriate resourcing (Figure 4).

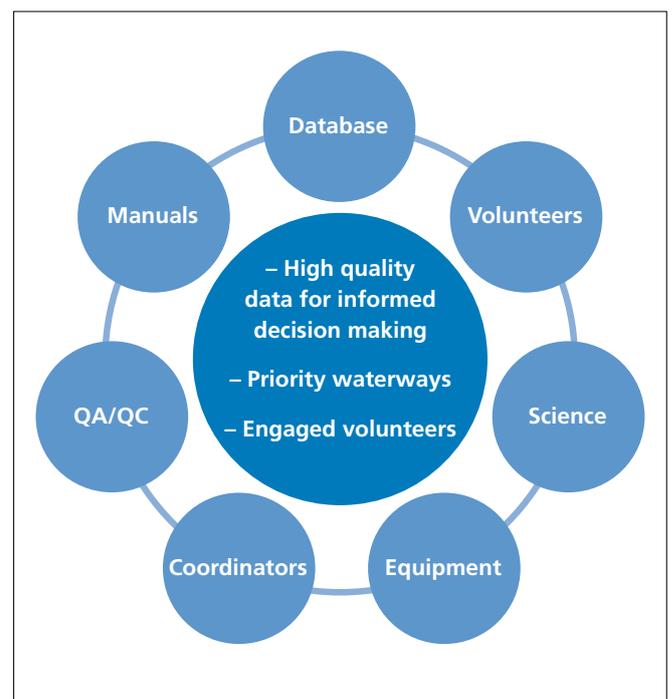


Figure 4. To meet policy objectives (inner circle), key foundational activities (outer circle) must be adequately resourced



3.1 Program Logic

Program logic is an approach to planning that uses a diagram to demonstrate the rationale for a program and express how change is expected to occur⁵. The program logic for the EstuaryWatch Program, illustrated in Figure 5, is based on best available knowledge and defines the relationships (known or assumed) between outputs, management outcomes and long-term resource condition outcomes. The logic also demonstrates how the EstuaryWatch Program contributes to the goal and long-term resource condition outcomes for the broader Victorian Waterway Management Program. The detailed program logic for the VWMS is presented in Appendix 1.

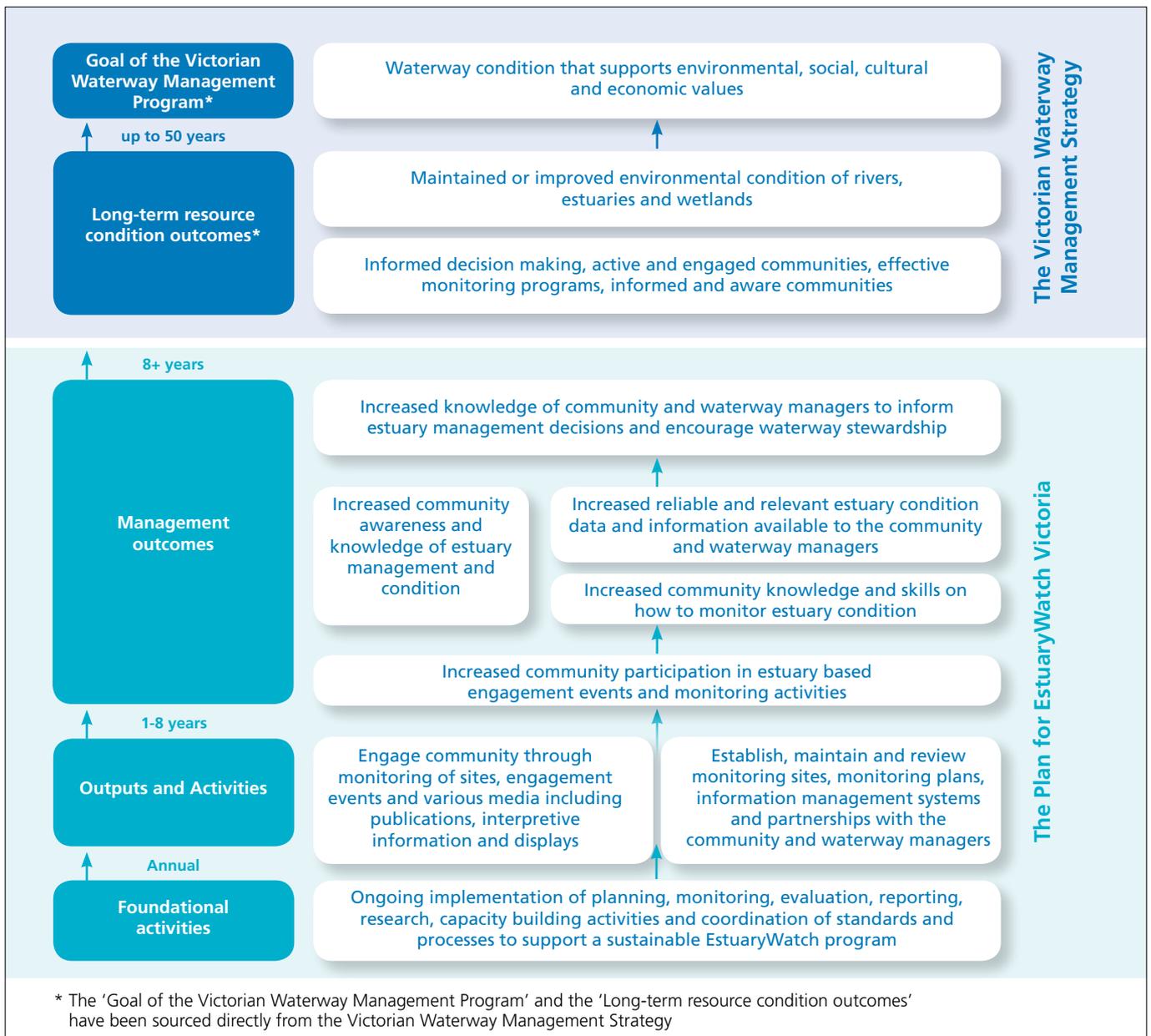


Figure 5. Program logic for the Victorian EstuaryWatch Program



3.2 The EstuaryWatch Program

The EstuaryWatch Program is coordinated through the Corangamite CMA (on behalf of the Victorian Waterway Management Program) and implemented through regional waterway managers in partnership with the community.

The EstuaryWatch Program will continue to build on its established and valued role as a key community engagement program, connecting local communities with waterway management and stewardship. It will also continue to enhance its program to provide credible, relevant and accessible data to increase knowledge and inform management decisions.

Over the next eight years, the management objective for the EstuaryWatch Program is to increase the knowledge of the community and waterway managers to inform estuary management decisions and encourage waterway stewardship. It will achieve this by:

- increasing community participation in estuary based engagement events and monitoring activities
- increasing community knowledge and skills on how to monitor estuary condition
- increasing the availability of reliable and relevant estuary condition data and information to the community and waterway managers
- increasing community awareness and knowledge of estuary management and condition.

The EstuaryWatch Program will undertake the following activities:

- establish, maintain and review estuary monitoring sites, monitoring plans, information management systems and partnerships in collaboration with the community and waterway managers
- engage the community through estuary monitoring, events and a variety of media including publications, interpretative information and displays.

The EstuaryWatch Program will be sustained into the future through the ongoing implementation of planning, monitoring, reporting, evaluation, research, capacity building activities and coordination of standardsⁱ and processesⁱⁱ. This document will help shape regional work plans based on funding available in that financial year.

ⁱ A set of specifications adopted to promote consistency and an agreed level of quality.

ⁱⁱ A defined series of steps taken in order to achieve a particular outcome.

Management objective of the EstuaryWatch Program

The management objective of the EstuaryWatch Program is to increase the knowledge of the community and waterway managers to inform estuary management decisions and encourage waterway stewardship.

EstuaryWatch activities will contribute to engaging the community and collecting data and information within priority estuaries across various waterway management issues including:

- recreational use of waterways
- environmental water management
- riparian management
- water quality
- the river channel
- wetlands
- waterways in urban areas
- extreme events of flood and bushfire
- invasive species management in waterways.

These waterway management issues and their related policies and actions are defined in the VWMS.



Monitoring on the Anglesea River estuary.
Courtesy of the Corangamite CMA



3.3 Guiding principles

The EstuaryWatch Program will be guided by the overarching principles listed in Box 1.1 that support the implementation of the Victorian Waterway Management Program. The EstuaryWatch Program will also adopt the following key principles specifically relating to community participation (VWMS Policy 5.1):

- Community participation in waterway management programs and activities will:
 - **be inclusive** – all individuals and stakeholder groups will have reasonable and meaningful opportunities to participate
 - **seek out affected and interested communities** – those organising public participation activities will make additional efforts to facilitate the involvement of those potentially affected by, or interested in, a decision or activity
 - **strive for balanced representation** – working groups, committees and other forums will seek to include relevant stakeholders with a wide range of views
 - **have clear objectives** – the objectives of participation will be clearly articulated to the communities being engaged.



Merri River EstuaryWatchers. Courtesy of the Glenelg Hopkins CMA

Box 1.1 Guiding principles of the Victorian Waterway Management Program that will guide implementation of the Victorian EstuaryWatch Program¹.

- Partnership approach – waterway management will continue to be a partnership between government, industry and the community.
- Community involvement – communities will have the opportunity to be involved in waterway management and this participation can help foster increased stewardship of waterways.
- Integrated catchment management – integrated management of waterways will occur within a broader framework of integrated catchment management. Management will recognise the importance of waterways as a connection between catchments, groundwater, coasts and the receiving marine environment and the strong influence of land use and catchment condition on waterway condition.
- Appropriate tools – the full complement of tools and approaches will be considered to improve waterway condition including; direct Government investment in onground works, grant and incentive programs, management agreements, market-based instruments, information and extension programs and regulation.
- Value for money – Government will direct investment to regional priority management activities that provide the most efficient and effective long-term improvements in waterway condition and the greatest community gain.
- Regional waterway strategies – facilitate regional decision-making with community input and use a risk-based approach to identify high value waterways and priority management activities. They will:
 - consider environmental, social, cultural and economic values of waterways
 - be holistic and integrate onground works with environmental water management
 - ensure efficient and effective management of environmental water
 - include maintenance as a vital activity to secure both past and future investment in onground works
 - be flexible in response to seasonal climatic variation and plan for the potential impacts of climate change.
- Evidence-based decision-making – best available knowledge will underpin decision making, policy and waterway management programs.
- Adaptive management – policy and programs are part of a broader framework of adaptive management (supported by effective monitoring, reporting, evaluation and research) to ensure continuous improvement.



3.4 Adaptive management

The Victorian Waterway Management Program is based on an eight-year adaptive management cycle, where learning occurs at all stages and is used to update and improve the program in subsequent cycles (see Figure 6). The exception is Melbourne Water, which operates on the five-year cycle regulated by the Essential Services Commission. In the context of the adaptive management cycle, the Victorian Waterway Management Program involves the following stages and components:

- **Strategy and Planning** – state policy framework and targets, planning for waterway management through regional waterway strategies with priorities and regional targets
- **Implementation and Monitoring** – Government and other investment in regional priorities, implementation of priority management activities, monitoring of management activities (intervention monitoring) and long-term resource condition assessment
- **Evaluation and reporting** – management reporting, resource condition reporting, program evaluation and improvement.

Community participation and research and innovation occur across all parts of the cycle.

Learning occurs at all stages and knowledge is used to improve the program in subsequent cycles. Effective monitoring, reporting, evaluation and strategic research are key elements of this adaptive management cycle.

The EstuaryWatch Program will be conducted within this adaptive management framework and a supporting monitoring, evaluation and reporting plan will ensure its effective and efficient implementation.

What is adaptive management?

Adaptive management is a systematic process for improving management by 'learning from doing'.

The approach uses real-life actions (such as projects, management activities or policy) to test and improve understanding of how these actions contribute to achieving desired outcomes or objectives. The knowledge gained then provides the basis for continuing with, or adapting, actions in response to what has been learnt.



Figure 6. The eight year adaptive management cycle of the Victorian Waterway Management Program¹



3.5 Implementing the Plan

3.5.1 Institutional arrangements

Implementation of the Plan will be administered by the DELWP through the EstuaryWatch Program. The EstuaryWatch Program is implemented through a state coordinator and a network of regional coordinators typically hosted either by a CMA, water authority or non-government organisation. Regional coordinators act as the key contact for the region and also liaise at the state level. The coordinators at the regional level provide support for community groups and individual volunteers and are advocates for the use of EstuaryWatch data in their region. They also conduct a wide range of community and education programs. Regional coordinators report to their line manager in their host organisation and are supported by the state coordinator. Models of operation vary across regions as a consequence of regional priority setting, resources and organisational structure. The state coordinator supports the network at a state level providing training, networking opportunities and strategic support. Figure 7 summarises the current coordination structure supporting the EstuaryWatch Program.

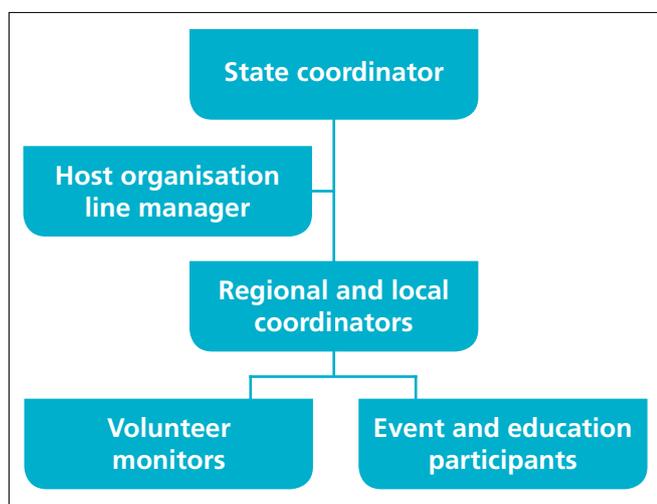


Figure 7. Coordination structure supporting the Victorian EstuaryWatch Program

3.5.2 Strategy and planning

Statewide waterway management policy and targets

Policy

The framework for managing Victoria’s waterways is defined in the VWMS. Box 1.2 identifies the key policies from the VWMS of direct relevance to the EstuaryWatch Program. The EstuaryWatch Program will incorporate this policy direction to align with the VWMS and maximise outcomes for Victoria’s estuaries. This Plan will support the implementation of these policy statements for the EstuaryWatch Program over the next eight years.

Targets

At the state level, the VWMS identifies aspirational targets which been developed to assess progress of the Victorian Waterway Management Program against the vision; management outcomes and long-term resource condition outcomes (see Appendix 2 for a list of the targets in the context of the program logic).

The EstuaryWatch Program will focus on contributing to the two state level management outcome targets displayed in Table 1. Table 1 presents the target values to be delivered across the Victorian Waterway Management Program. The expected contribution of the Program to the VWMS targets are displayed in the trajectory graphs presented in Figure 8 and Figure 9. These trends are conditional on adequate resourcing of the program.

Table 1. Management outcome targets from the Victorian Waterway Management Strategy that the Victorian EstuaryWatch Program contributes to¹

Target	2016	2020
Number of sites with improved waterway knowledge	1,280	1,920
Number of community members with increased capacity	4,190	7,990

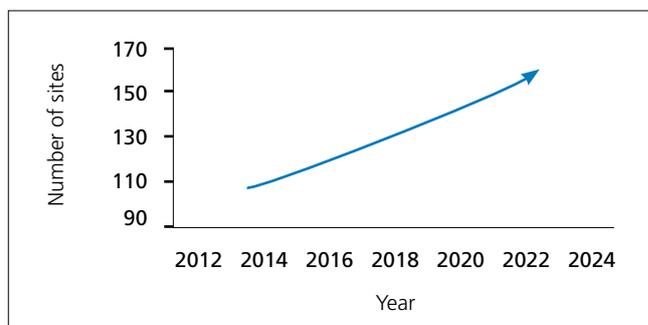


Figure 8. Expected number of sites with improved waterway knowledge to be delivered through the Victorian EstuaryWatch Program. Note that multiple sites may be located on the same estuary

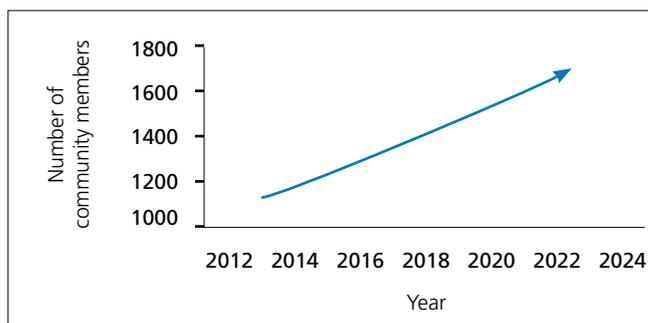


Figure 9. Expected number of community members with increased capacity to be delivered through the Victorian EstuaryWatch Program



Box 1.2 Key policies in the Victorian Waterway Management Strategy that provide direction to the Victorian EstuaryWatch Program¹.

Policy 5.1 – The Victorian Government will continue to support community participation in planning, implementation and monitoring activities for waterway management programs.

Community participation in waterway management programs and activities will:

- Be inclusive – all individuals and stakeholder groups will have reasonable and meaningful opportunities to participate
- Seek out affected and interested communities – public participation activities will make additional efforts to facilitate the involvement of those potentially affected by, or interested in, a decision or activity
- Strive for balanced representation – working groups, committees and other forums will seek to include relevant stakeholders with a wide range of views
- Have clear objectives – the objectives of participation will be clearly articulated to the communities being engaged.

Policy 5.4 – The Victorian Government will continue to support community-based waterway monitoring through regional delivery of the Waterwatch and EstuaryWatch programs.

Community monitoring will be aligned with waterway management programs so that the data collected can increasingly be used to inform the management of waterways and will be publicly available.

Policy 5.6 – Waterway managers will undertake community engagement activities and provide educational material to further improve community understanding of waterways and increase the capacity of landholders to implement improved management practices.

Waterway managers will continue to act as a communication link between local communities and other relevant stakeholder groups on waterway management issues.

Policy 10.4 – Water quality monitoring programs will:

- Provide fit-for-purpose, high quality data that is the basis of informed decision-making and reporting.
- Be undertaken by organisations that manage for and report progress against regional or national water quality targets. Currently, these are the Department of Environment, Land, Water and Planning, waterway managers, water corporations and the Environment Protection Authority Victoria.
- Be largely funded under a co-operative monitoring partnership that shares costs appropriately among those organisations that benefit from the data collection. The appropriateness and sustainability of the cost-share arrangement will be reviewed on an as-needs basis. Current partners include, the Department of Environment, Land, Water and Planning, waterway managers, water corporations, Gippsland Lakes Ministerial Advisory Committee, Environment Protection Authority Victoria, Bureau of Meteorology and some local governments. Additional water quality monitoring may be undertaken by individual organisations to complement data from the monitoring partnership.
- Take place at sites and frequencies as necessary to meet the objectives of the Victorian Water Quality Monitoring Network. The appropriateness of monitoring sites, the quality and the type of information collected will be reviewed every eight years by the organisations in the co-operative monitoring partnership.
- Include ongoing development of high quality community monitoring programs that can be used to inform regional decision-making and waterway management.

Policy 13.7 – The EstuaryWatch program will be supported to:

- provide opportunities for the community to participate in estuary monitoring activities that help inform decision-making
- increase community awareness of estuary management issues, particularly the management of estuary entrances.

Policy 17.9 – Water resource and waterway-related data will be publicly available through the Water Management Information System (WMIS).

Waterwatch and EstuaryWatch volunteers and co-ordinators will be supported to better manage their data and information. Data and information collected by these programs will be targeted to priority waterways and associated management activities to help inform decision-making processes.



State EstuaryWatch Program planning

This Plan will be further supported by an annual work plan for the coordination of the EstuaryWatch Program at a state level. This annual work plan will outline the activities and outputs to be delivered by the EstuaryWatch Program through the state coordination role funded by the DELWP. The work plan is intended to support the development of annual work plans for regional EstuaryWatch coordination activities and will therefore be distributed to the regional host EstuaryWatch organisations.

Regional waterway management policy and targets

Policy

The RWSs (and the HWS in the Port Phillip and Westernport region) provide a single planning document for river, estuary and wetland management in each region.

The RWSs have been developed by waterway managers in partnership with other regional agencies and boards involved in natural resource management, plus Traditional Owners, regional communities and other key stakeholders. For coastal regions, the RWS includes the management of estuary condition, highlighting the importance of estuaries as the link between catchments, coasts and the marine environment.

The RWSs are also supported through Coastal Action Plans, Coastal Management Plans and Estuary Management Plans.

The RWSs outline regional goals for waterway management. High value waterways are identified and, from those, a subset of priority waterways have been determined for the eight-year planning period. A strategic regional work program of management activities for priority waterways has been developed and guide investment over an eight-year period (five-year period for Melbourne Water).

The regional work program considers the full range of tools and approaches available for waterway management, including market-based instruments, government investment in onground works or environmental water management, research and community awareness raising or information provision and regulation.

Targets

Targets in the RWSs reflect the program logic of the Victorian Waterway Management Program and are set at three levels; long-term resource condition outcomes, management outcomes and outputs. Examples of regional targets at each level of the logic are presented in Appendix 2. The regional EstuaryWatch programs will contribute to these targets through implementation of program activities.

The outputs delivered through the regional EstuaryWatch programs are expected to contribute to the state level targets highlighted in Table 1, Figure 8 and Figure 9.

Action 1.1: Development of an annual work plan for EstuaryWatch Victoria

Who: DELWP – state EstuaryWatch coordinator

Timeframe: Annual



Regional EstuaryWatch program planning

The RWSs, HWS, Coastal Action Plans and Estuary Management Plans will guide and support regional planning and implementation of the EstuaryWatch Program. The extent to which EstuaryWatch is incorporated into the RWSs may vary across the regions depending on priorities and approaches adopted for waterway management. The extent to which EstuaryWatch has been incorporated into the RWSs and the HWS may determine how active EstuaryWatch will be in each region as it is the regional work program that guides much of the investment in waterway management by the Victorian Government.

These work priorities will also provide guidance to local governments, the Australian Government and private or philanthropic donors about where investment is required in the region over an eight-year period. This provides investors with confidence that their annual funding of management activities is linked to a longer-term, strategic plan.

Priority setting is a core activity in planning. Planning for regional EstuaryWatch activities should focus on alignment with the priority waterways defined in the RWSs and the HWS as the majority of Victorian Government investment in regional waterway management is directed to priority waterways. However, the Victorian Government does acknowledge that there are also circumstances when investment can occur on non-priority waterways such as where there are dedicated community groups who are actively working to improve the environmental condition of their local waterway. Box 1.3 outlines the priority setting process underpinning the development of the RWSs, and Figure 10 summarises the outcomes of the regional priority setting process in the context of waterway management.

Box 1.3. The regional priority setting process underpinning development of the regional waterway strategies¹:

- develop regional goals for waterway management
- identify high value waterways (based on environmental, social, cultural and economic values)
- filter the high value waterways and select those that align with the regional goals
- identify threats to the values of those waterways and assess the level of risk
- determine priority waterways for the eight-year planning period
- identify high level management activities and assess their feasibility and cost effectiveness
- select priority management activities to form a regional work program for the eight-year planning period.

	Low risk to values	High risk to values
Priority waterways	Management activities to maintain waterway condition	Management activities to reduce threats to waterway condition
Other waterways	Not a priority within the eight-year planning period	Management activities only if they: <ul style="list-style-type: none"> • reduce threat to high value waterways • provide connectivity • protect public infrastructure or reduce risks from extreme events • maintain or strengthen community commitment to improving the condition of local waterways • are required to meet statutory or regulatory obligations.

Figure 10. Summary of outcomes of the regional priority setting process in the context of waterway management¹



3.5.3 Implementation and monitoring

Investment

State coordination of the EstuaryWatch Program will primarily be supported and funded through the DELWP. Regional EstuaryWatch coordination will be supported and funded through the CMAs and other host organisations such as water authorities. Both state and regional coordination and implementation have the opportunities to source further investment from sources such as the Australian Government, other State government funding initiatives, local government, industry and philanthropic funds.

The state and regional EstuaryWatch programs are funded on the basis that they can clearly demonstrate direct benefit and alignment with the state and regional plans and the fund sources that support them. In the case of the state EstuaryWatch Program, this is about demonstrating alignment with the Victorian Waterway Management Program. In the case of CMAs, it is alignment with the regional RWSs and associated regional work programs. For the Port Phillip and Westernport region it is about demonstrating alignment with the HWS.

The Victorian Government provides funding to the DELWP and CMAs specifically for river, estuary and wetland management from two major sources:

- core funding to undertake statutory functions (required by legislation) and waterway management activities as part of the Victorian Waterway Management Program
- funding from the Environmental Contribution (EC), which is a legally required contribution from water corporations 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.



St George River estuary. Courtesy of Corangamite CMA

Funds provided from these sources support CMAs to undertake the range of waterway management functions.

The waterways charge collected by metropolitan retail water corporations on behalf of Melbourne Water is used in the Port Phillip and Westernport region to:

- manage and improve the health of rivers, creeks, estuaries, wetlands and floodplains
- manage urban development planning and approvals to ensure sustainable growth
- provide grants to landholders and community groups to improve waterways
- deliver drainage maintenance and improvements
- provide appropriate levels of flood protection and warning systems for communities.

The Essential Services Commission reviews this charge every five years based on a plan submitted by Melbourne Water to ensure that the program meets community expectations and is efficient.



State and regional implementation

Implementation of the EstuaryWatch Program relies on effective partnerships between the Victorian Government, regional agencies, waterway managers and ultimately the Victorian volunteer community that participates and undertakes EstuaryWatch activities. These partnerships are supported through state and regional coordination and leadership activities managed through the EstuaryWatch Program.

State coordination and leadership

The role of the state EstuaryWatch coordinator is to undertake state coordination activities and largely relates to the foundation activities in the program logic in Figure 5 that support regional implementation of EstuaryWatch. This role will ensure the EstuaryWatch Program will be sustained into the future through the ongoing implementation of planning, monitoring, reporting, evaluation, research, capacity building activities and coordination of standards and processes. The primary aim of state coordination is to identify opportunities to undertake activities that benefit implementation of the EstuaryWatch Program across multiple regions to maximise efficiencies and program outcomes.

The specific activities include:

- the provision of scientific advice and QA/QC support to regional EstuaryWatch programs e.g. data confidence plans
- strategic level policy directions for EstuaryWatch
- state level advocacy
- coordination of statewide EstuaryWatch data and information management
- supporting the link between regional coordinators including coordination of statewide events including meetings and training
- development and maintenance of statewide media including publications, interpretative information and displays
- coordinating state level planning, monitoring, evaluation and reporting processes.



Barwon River EstuaryWatcher. Courtesy of Corangamite CMA

Action 1.2: Ensure EstuaryWatch data is made publicly available via the Water Management Information System (WMIS)

Who: DELWP – state EstuaryWatch coordinator, regional EstuaryWatch coordinators

Timeframe: Ongoing

Action 1.3: Implement and review the monitoring, evaluation and reporting plan for the Victorian EstuaryWatch Program

Who: DELWP – state EstuaryWatch coordinator, regional EstuaryWatch coordinators

Timeframe: Ongoing



The following two specific actions for the state-wide coordination role have been defined to ensure effective coordination of statewide monitoring data and implementation of the EstuaryWatch Program MER Plan:

- ensure EstuaryWatch data is made publicly available via the Water Management Information System (WMIS)
- implement and review the monitoring, evaluation and reporting plan for the Victorian EstuaryWatch Program.

Regional coordination and leadership

The regional EstuaryWatch activities are determined by the RWSs and the HWS. These activities are expected to include delivery of the outputs and activities defined in the program logic presented in Figure 5. These activities are expected to:

- establish, maintain and review waterway monitoring sites, monitoring plans, information management systems and partnerships with the community and waterway managers
- engage the community through waterway monitoring, events and a variety of media including publications and interpretative information and displays.

The regional programs will also need to undertake foundation activities including ongoing implementation of planning, monitoring, reporting, evaluation, research, capacity building activities and coordination of standards and processes. Implementation of these foundational activities will ensure the regional programs can be sustained into the future.



Wye River estuary. Courtesy of Corangamite CMA

3.5.4 Intervention monitoring

Intervention monitoring involves monitoring the implementation of activities and outputs delivered through the EstuaryWatch Program and the outcomes that result from these. The focus is on monitoring the delivery of activities, outputs and management outcomes defined in the program logic diagram presented in Figure 5.

Some of the methods that will be used to monitor implementation of the EstuaryWatch Program are:

- output/activity statistics e.g. number of active monitoring sites and volunteers
- surveys and interviews of event participants, regional volunteers, coordinators and waterway managers
- collection of case studies and 'most significant change stories' from event participants, regional volunteers, coordinators and waterway managers.

Monitoring of the EstuaryWatch Program will be managed by the state EstuaryWatch coordinator, however it will need to be supported by the regions through the provision of data and information associated with delivery. The specific requirements for monitoring at a state and regional level is defined in the Monitoring, Evaluation and Reporting (MER) Plan⁶ that has been developed in association with this Plan.

Monitoring processes will be targeted to support the evaluation and reporting processes defined for the EstuaryWatch Program.



3.5.5 Evaluation and reporting

The strategy and planning phase of the adaptive management cycle includes development of pre-determined key evaluation questions (KEQs) by which to assess the EstuaryWatch Program. These KEQs cover five categories including; impact, appropriateness, effectiveness, efficiency and legacy.

The KEQs address assumptions in the program logic and their evaluation provides direction and improved knowledge for subsequent planning cycles.

The following are the KEQs that have been defined for the Victorian EstuaryWatch Program:

Impact – changes to resource condition, management activities, institutions, groups or individuals.

- To what extent has the program achieved its management outcomes?
- Were there any unintended outcomes, either positive or negative?

Appropriateness – addressing the needs of beneficiaries and against best practice.

- To what extent were the delivered activities/outputs aligned with state and regional waterway priorities?
- To what extent were the monitoring activities undertaken to standard?
- To what extent were the approaches to communication, engagement of stakeholders successful?

Effectiveness – achievement of desired outputs and outcomes.

- To what extent has the program delivered its outputs?
- To what extent did the state coordination role meet the needs of regional coordinators
- To what extent did the regional coordination role meet the needs of regional volunteers?
- To what extent are the systems and processes that support the program effective at supporting program implementation?

Efficiency – value or return from investment.

- To what extent did the program attain the best value out of available resources e.g. based on benchmarking against past performance, relative to other equivalent programs and/or performance over the life of the plan?

Legacy – after the activity/program ends.

- How sustaining and enduring are the outcomes of the program expected to be?

The process and frequency for undertaking program evaluation and reporting has been defined in the Monitoring, Evaluation and Reporting (MER) Plan⁶. The process will align evaluation and reporting processes with existing and proposed arrangements for evaluation and reporting against the VWMS and RWSs to maximise efficiency and effectiveness.

These include potential opportunities to align and contribute to the following actions identified in the VWMS¹:



Monitoring on the Balcombe Creek estuary (Courtesy of Melbourne Water) and Wye River EstuaryWatchers with their Community Estuary Monitoring Methods Manual (Courtesy of the Corangamite CMA).



- **Action 17.8** – Report statewide progress against the targets outlined in the VWMS through the ‘Report Card’ series (to be undertaken by the DELWP and supported by CMAs in 2016 and 2020)
- **Action 17.11** – Complete an independent review for the VWMS to inform development of the next strategy (to be undertaken by an independent reviewer and supported by the DELWP and CMAs in 2020)
- **Action 17.9** – Review interim progress of implementing management activities in the regional waterway strategies (to be undertaken by CMAs in 2017)
- **Action 17.10** – Undertake an independent review of the regional waterway strategies (management activities and targets) to inform the development of the next regional waterway strategies (to be undertaken by an independent reviewer and supported by CMAs in 2021).

Regional EstuaryWatch programs can utilise the following existing processes to demonstrate achievements:

- regional EstuaryWatch coordinator meetings
- regional newsletters
- annual investment reports
- CMA and Melbourne Water Annual Reports.

An important component of evaluation and reporting processes is to ensure that it supports the exchange of knowledge and thereby build capacity. Regional EstuaryWatch coordinator meetings, Waterwatch conferences and maintaining state network communication through other media will continue to support this exchange of knowledge across the state. At a regional level this will be undertaken through ongoing communication with EstuaryWatch volunteers and regional waterway managers.

Annual reporting for the EstuaryWatch Program will involve the development of an annual EstuaryWatch Victoria achievements report. This report will be an opportunity to demonstrate EstuaryWatch Program achievements from across the state. Its development will be aligned with existing and proposed arrangements for regional reporting undertaken through the Victorian Waterway Management Program. The primary audience will be the Victorian Waterway Management Program, CMAs and other EstuaryWatch host organisations, funding organisations (existing and potential), regional EstuaryWatch Coordinators and EstuaryWatch volunteers.

Action 1.4: Development of an annual EstuaryWatch Victoria achievements report

Who: DELWP – state EstuaryWatch coordinator, regional EstuaryWatch coordinators

Timeframe: Annual

Action 1.5: Provide opportunities for the EstuaryWatch coordinator network to share information and knowledge of EstuaryWatch Program implementation to inform planning, monitoring, evaluation, reporting and program improvement processes e.g. meetings and training events

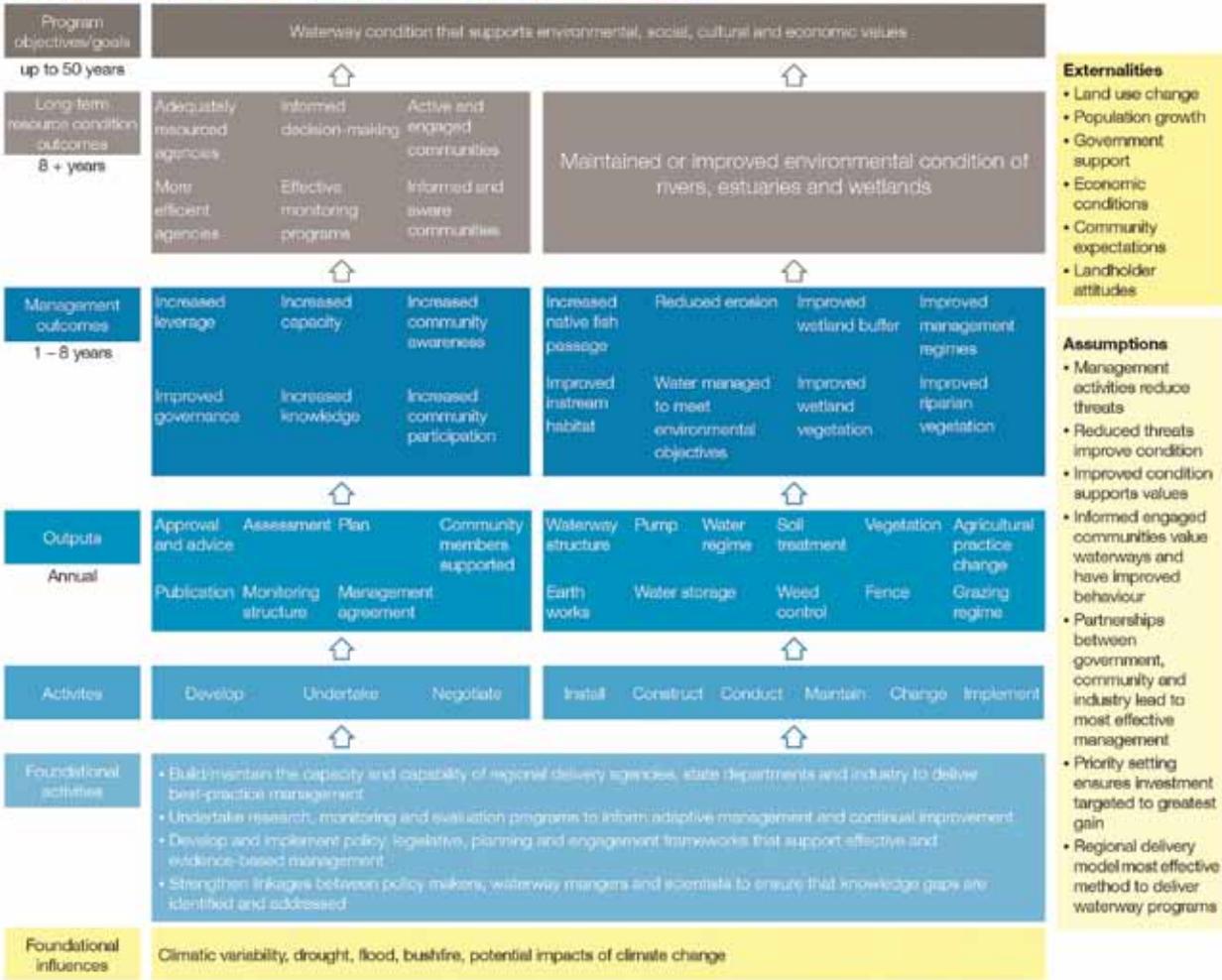
Who: DELWP – state EstuaryWatch coordinator, regional EstuaryWatch coordinators

Timeframe: Ongoing



Appendix 1. Full program logic for the Victorian Waterway Management Program¹

Full program logic for the Victorian Waterway Management Program



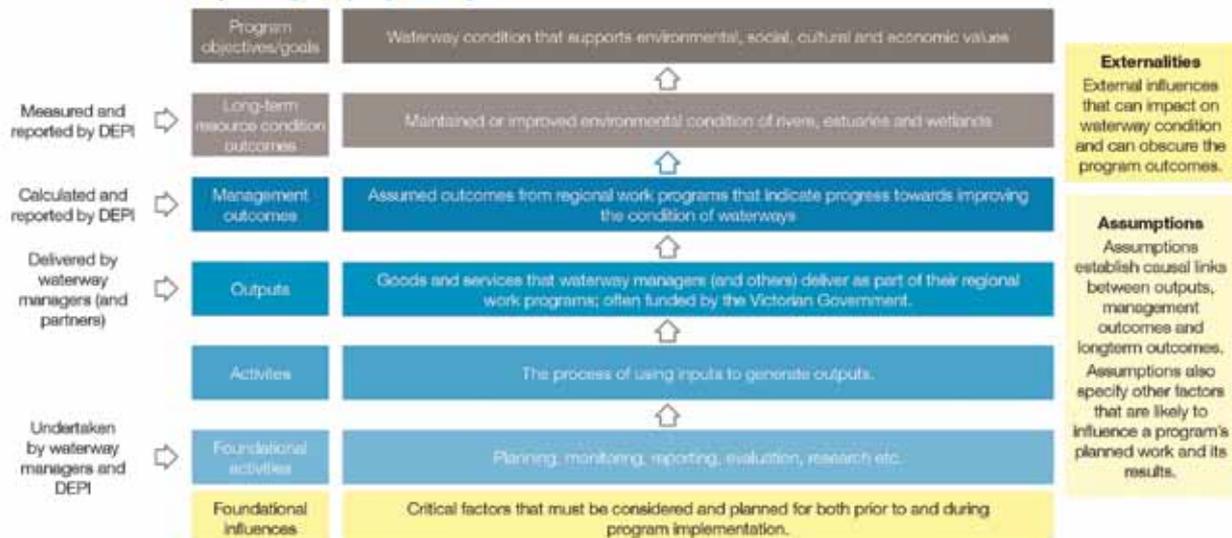
Externalities

- Land use change
- Population growth
- Government support
- Economic conditions
- Community expectations
- Landholder attitudes

Assumptions

- Management activities reduce threats
- Reduced threats improve condition
- Improved condition supports values
- Informed engaged communities value waterways and have improved behaviour
- Partnerships between government, community and industry lead to most effective management
- Priority setting ensures investment targeted to greatest gain
- Regional delivery model most effective method to deliver waterway programs

Explaining the program logic



Externalities

External influences that can impact on waterway condition and can obscure the program outcomes.

Assumptions

Assumptions establish causal links between outputs, management outcomes and long-term outcomes. Assumptions also specify other factors that are likely to influence a program's planned work and its results.



Appendix 2. Aspirational Strategy targets within the context of the program logic for the Victorian Waterway Management Program¹

	Victorian Waterway Management Strategy aspirational targets	Example RWS Targets																																	
<p>Program objectives/ goals</p> <p>up to 50 years</p>	N/A – change generally not measurable at this level of a program logic so targets are not set here, refer to achievement of the vision	N/A – change generally not measurable at this level of a program logic so targets are not set here, refer to achievement of the regional goals																																	
<p>Long-term resource condition outcomes</p> <p>2020</p>	<p>Maintained or improved condition of priority river reaches</p> <p>Maintained or improved condition of high value wetlands</p> <p>Maintained or improved condition of high value estuaries</p>	Population of Trout Cod in Seven Creeks is increased or maintained (either abundance or distribution) with evidence of recruitment																																	
<p>Management outcomes</p> <p>2016 & 2020</p>	<table border="1"> <thead> <tr> <th></th> <th>2016</th> <th>2020</th> </tr> </thead> <tbody> <tr> <td>ha improved riparian vegetation</td> <td>2,730</td> <td>5,450</td> </tr> <tr> <td>ha improved wetland vegetation</td> <td>5,780</td> <td>7,220</td> </tr> <tr> <td>Number of sites with environmental water managed</td> <td>53</td> <td>70</td> </tr> <tr> <td>ha managed for pest plants and animals</td> <td>29,400</td> <td>42,800</td> </tr> <tr> <td>Number of sites with improved instream habitat</td> <td>92</td> <td>168</td> </tr> <tr> <td>ha land with management agreements</td> <td>16,900</td> <td>31,400</td> </tr> <tr> <td>Number of community members with increased capacity</td> <td>4,190</td> <td>7,990</td> </tr> <tr> <td>Number of sites with improved waterway knowledge</td> <td>1,280</td> <td>1,920</td> </tr> <tr> <td>% advice and approvals completed within statutory timeframes</td> <td>95</td> <td>95</td> </tr> <tr> <td>% management activities undertaken on priority waterways (as defined in the regional Waterway Strategies)</td> <td>70</td> <td>70</td> </tr> </tbody> </table>		2016	2020	ha improved riparian vegetation	2,730	5,450	ha improved wetland vegetation	5,780	7,220	Number of sites with environmental water managed	53	70	ha managed for pest plants and animals	29,400	42,800	Number of sites with improved instream habitat	92	168	ha land with management agreements	16,900	31,400	Number of community members with increased capacity	4,190	7,990	Number of sites with improved waterway knowledge	1,280	1,920	% advice and approvals completed within statutory timeframes	95	95	% management activities undertaken on priority waterways (as defined in the regional Waterway Strategies)	70	70	<p>Instream habitat is improved from marginal to good</p> <p>Livestock access is reduced from major impact to minor impact</p> <p>Altered streamflow seasonality is reduced from moderate to minor</p>
	2016	2020																																	
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<p>Outputs & Activities</p> <p>Annual</p>	N/A – regional agencies responsible for delivering outputs and activities	<p>Install 1 waterway structure (fish ladder)</p> <p>Install 3 waterway structures (instream habitat structures)</p> <p>Deliver environmental water</p> <p>Construct 5 km of riparian fencing</p>																																	
<p>Foundational activities</p>	N/A – ongoing implementation of planning, monitoring, reporting, evaluation and research activities to inform assessment against targets and improve confidence in target setting	N/A – ongoing implementation of intervention monitoring, reporting and evaluation activities to inform assessment against targets, improve logic models and improve confidence in target setting																																	



CMA	Catchment Management Authority
DELWP	Department of Environment, Land, Water and Planning (previously Department of Environment and Primary Industries)
EEMS	Estuary Entrance Management Support System
HWS	Healthy Waterways Strategy
KEQ	Key evaluation questions
MER	Monitoring, Evaluation and Reporting
RCS	Regional Catchment Strategy
RRHS	Regional River Health Strategy
RWS	Regional Waterway Strategy
VWMS	Victorian Waterway Management Strategy



Catchment

The region from which all rainfall flows, other than that removed by evaporation, into waterways and then to the sea or terminal lake.

Catchment Management Authorities

Statutory authorities established under the *Catchment and Land Protection Act 1994* to provide coordinated management of land and water resources.

Catchment and Land Protection Act 1994

Sets Victoria's framework for the integrated management and protection of catchments, including the development and implementation of regional catchment strategies.

Coastcare

Coastcare is national program that involves community volunteers caring for their coast.

Community

Community is a group of people living in the same place or having certain attitudes and interests in common.

Coastal Management Act

Sets the framework for co-ordinated strategic planning and management for the Victorian coast.

Connectivity

Refers to links between different habitats and species within a landscape.

Environmental Water

Water to support environmental values and ecological processes.

Estuary

The zone where a river meets the sea, influenced by river flows and tides and characterized by a gradient from fresh to salt water.

Estuary Entrance Management Support System

The EEMSS is a decision support tool that guides estuary managers when making the decision whether or not to artificially open an estuary.

Friends of groups

A friends of group is a team of people who are interested in and support a particular park, conservation reserve or species of native flora or fauna.

Habitat

The natural home or environment of an animal, plant or other organism.

Landcare

Landcare is a unique grass-roots movement that started in the 1980s through initiatives to tackle degradation of farmland, public land and waterways.

Riparian

Refers to land or vegetation that adjoins a river, creek, estuary, lake or wetland.

Stewardship

The act of taking care of or managing something.

Traditional Owner(s)

Traditional Owner(s) is an Aboriginal and Torres Strait Islander person or group of Aboriginal and Torres Strait Islander people directly descended from the original Aboriginal and Torres Strait Islander inhabitants of a culturally defined area of land or country, and has a cultural association with this country that derives from the traditions, observances, customs, beliefs or history of the original Aboriginal and Torres Strait Islander inhabitants of the area.

The Water Act 1989

Provides the legal framework for managing Victoria's water resources.

Water regime

The range of flows experienced by a waterway throughout the seasons and years which may include base flow, low flows, high flows, overbank flow and cease to flow (drying) events.

Waterways

Rivers and streams, their associated estuaries and floodplains (including floodplain wetlands) and non-riverine wetlands.

Waterway condition/waterway health

Waterway condition (or waterway health) is an umbrella term for the overall state of key features and processes that underpin functioning waterway ecosystems (such as species and communities, habitat, connectivity, water quality, riparian vegetation, physical form and ecosystem processes such as nutrient cycling and carbon storage).

Water quality

Water quality describes the condition of the water, including chemical, physical, and biological characteristics, usually with respect to its suitability for a particular purpose such as drinking or swimming.

Wetland

Wetlands are areas, whether natural, modified or artificial, subject to permanent or temporary inundation that hold static or very slow moving water and develop, or have the potential to develop, biota adapted to inundation and the aquatic environment. They may be fresh or saline.



- ¹ Department of Environment and Primary Industries (2013) *Victorian Waterway Management Strategy – Improving Our Waterways*. Victorian Government Department of Environment and Primary Industries, East Melbourne.
- ² Victorian Coastal Council 2008, *Victorian Coastal Strategy*, Victorian Coastal Council, East Melbourne.
- ³ Melbourne Water (2013) *Healthy Waterways Strategy – A Melbourne Water Strategy for Managing Rivers, Estuaries and Wetlands*. Melbourne Water, Victoria, Docklands.
- ⁴ Pisarski, A. & Cary, J. 2010, *Victorian Waterway Health Social Condition Benchmarking Project*. A Report prepared for the Department of Sustainability and Environment.
- ⁵ Roughley, A (2009), *Developing and using program logic in natural resource management – user guide*. Australian Government, Canberra.
- ⁶ Riverness Pty Ltd (2015) *Victorian EstuaryWatch Program – Monitoring, evaluation and reporting plan*. Report prepared for EstuaryWatch Victoria.



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