NOVEMBER 2013

Healthy Waterways Strategy

A Melbourne Water strategy for managing rivers, estuaries and wetlands





Executive summary

Waterways are rivers, estuaries and wetlands and they play a central role in many aspects of daily life. They provide the foundation of complex ecosystems, and are important for a region's productivity and liveability.

Context

Melbourne Water is responsible for ensuring that waterways in the Port Phillip and Westernport region are protected and improved on behalf of the community. As part of this responsibility, we have taken a strategic and collaborative approach in developing this *Healthy Waterways Strategy* (HWS).

Our community engagement has highlighted how much the people of the Port Phillip and Westernport region value waterways in supporting environmental health and liveability. The importance the community places on waterways is fundamental to Melbourne Water's approach to waterway management. This strategy focuses on investing in areas that the community values and that will protect and improve environmental values and increase liveability.

The HWS outlines the role Melbourne Water will play, in partnership with the community, our customers and stakeholders, in managing waterways to ensure their value to the community is protected and improved.

The HWS guides investment in waterway health in the Port Phillip and Westernport region from 2013/14–2017/18. It defines a vision for the region, identifies priority areas and management actions, and sets out targets to measure the effectiveness of these actions and a framework for delivering the strategy.

OUR VISION FOR HEALTHY WATERWAYS

Healthy and valued waterways are integrated with the broader landscape and enhance life and liveability.

They:

- > Connect diverse and thriving communities of native plants and animals.
- > Provide amenity to urban and rural areas and engage communities with their environment.
- > Are managed sustainably to balance environmental, economic and social values.

The HWS is complemented by the *Stormwater Strategy*, which articulates Melbourne Water's role in managing rural and urban runoff. Together, these strategies provide an integrated water cycle management focus to achieve multiple outcomes for the community including healthy waterways and bays, wellbeing and amenity, alternative water supply and public health.

Strategy development

The HWS builds on work undertaken through the *Regional River Health Strategy (2005)* and *Addendum (2008)*. It's development has been guided by an understanding of community expectations, recognition of the importance of partnerships, use of best scientific research and a robust engagement process. The engagement process included consultation with the community across the region about the vision for waterways, the values of and threats to waterways, and how Melbourne Water and the community can work in partnership to achieve the vision.

Key elements of the strategy development are:

- > Expanding the strategy's asset base to include wetlands and estuaries, as well as rivers and creeks, so that waterways are managed holistically.
- > Adopting key values as the basis of the target framework to make the strategy more meaningful to the community and better reflect the vision.
- Targeting works in priority areas to achieve the most effective outcome for key values while continuing to invest across the region to maintain system health and long-term potential where possible.
- > Developing and implementing the strategy within an adaptive management framework that enables us to incorporate and act on new science as it becomes available.
- > The approach is grounded in our understanding of the relationships between management actions, waterway condition and the values that waterways support, as represented in the figure below. These relationships underpin our management approach and help to target investment.



Key values our waterways support

The strategy takes a fresh approach to setting waterway management targets by focusing on seven key waterway values: amenity, birds, fish, frogs, macroinvertebrates, platypus and vegetation.

Setting targets around key values connects the strategy with what is important to the community and with the vision we are seeking to achieve. We aim to protect and improve those aspects of waterway condition that are most important for the key values. A focus on monitoring and understanding both key value condition and waterway condition ensures our management actions are targeted most effectively to meet this aim.

The values were selected based on:

- > Their importance to the community
- > The availability of data to assess condition
- > The ability to appropriately represent the range of values found in rivers, estuaries and wetlands.

This new target framework and approach has not greatly altered the type of works proposed in the strategy, but has helped us prioritise where we undertake works to maximise their benefit.

Targets have been developed to reflect community values and what is achievable given finite resources. In the HWS, we aim to invest public funds effectively by targeting priority actions and areas to support the key values, and efficiently by taking an integrated planning approach that addresses flows, water quality, vegetation and stream bed and bank structure and connectivity.

Management approaches

A variety of approaches can be used to effectively manage waterways and to protect and improve their condition to support values. Management approaches in this strategy have been grouped into the following themes:

- > Planning, strategy and guidelines
- > Building stewardship and sharing knowledge
- > Advocacy
- > Enforcement
- > Vegetation management
- > Habitat management
- > Stormwater management
- > Asset protection and renewal
- > Environmental water
- > Diversion management.

For each management approach, the strategy outlines: responsibilities, principles for the program, key directions and activities 2013–18, key stakeholders and the target.

Catchments and systems

The region's five major catchments have been divided into 14 sub-catchments known as 'systems'. The system boundaries have been selected to follow natural catchment boundaries, enable upstream and downstream impacts to be considered as part of a connected waterway system and to provide a scale appropriate to measure change in key values. For each system the strategy outlines:

- > An overview of the system including information on waterways and values condition
- > Historic trend, current condition and proposed expected outcomes for condition of each of the key values

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- > Strategic priorities for the next 20 years
- > Priority areas for investment over the next five years
- > Implementation targets for the five year life of this strategy
- > Regional program actions.

Financial investment

With finite resources to improve waterway health, Melbourne Water has prioritised management activities based on catchment knowledge, experience, scientific and social research, consultation and expert advice. We also aim to balance environmental, social and economic values and short and long-term issues.

This strategy proposes funding of \$111.5 million of capital expenditure and \$178 million of operating expenditure from 2013/14–2017/18 to secure and improve waterway values.*

Adaptive management

Adaptive management allows us to improve the effectiveness of natural resource management by learning from experience and utilising current knowledge to inform decision making.

A key tool for managing knowledge to influence decision making is through the use of conceptual models – which document relationships between actions and outcomes, and the level of certainty in the strength of relationships. Monitoring, investigations and research help test and refine critical assumptions in these conceptual models. Continually strengthening our conceptual models is part of a robust adaptive management process and enables decision making that will result in the most beneficial outcomes for waterway health across the region.

Evaluating and reporting outcomes of monitoring, investigations and research to our partners and the community strengthens knowledge sharing and collaboration and effective collective action. It enables us to communicate information on the condition of waterways, the effectiveness of activities, investment outcomes and progress towards achieving our vision.

Delivering the strategy

This strategy sets out the direction and approach for Melbourne Water's role in protecting and improving the Port Phillip and Westernport region's waterways and waterway values over the next five years. Detailed planning is required to translate the strategy direction into a plan for on-ground works – this is known as implementation planning.

Implementation planning is an integrated process that takes the direction set in this and other related strategies (such as the *Stormwater Strategy*) and uses it to outline how targets for a system will be met, and how regional programs will be applied locally.

Melbourne Water undertakes implementation planning regularly throughout the life of the strategy to ensure we review, reassess and respond to changing climatic conditions, changing stakeholder expectations and to take advantage of emerging opportunities.

There are many individuals and organisations working to improve the health of the region's waterways. Melbourne Water recognises the importance of community and stakeholder contributions to improving waterway health, and acknowledges that the vision articulated in this strategy cannot be achieved without all of us working together.

^{*} The Essential Service Commission (ESC) has approved a price path for a three year period (2013/14–2015/16). The dollars are based on a five year period to align with the strategies that guide the Waterways and Drainage activities. Expenditure for years four and five (2016/17–2017/18) are indicative only at this time however, they are based on information in the ESC Final Determination. Final numbers for these two years will be determined at a later date as part of a future Water Plan.



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1.1 The importance of waterways

Waterways are rivers, estuaries and wetlands. Waterways play an important role in many aspects of daily life. They provide the foundation of complex ecosystems and the region's productivity is supported by waterways and the resources they provide. Waterways are also strongly linked to our sense of wellbeing as places of gathering, recreation and contemplation. Many people across the region have a story about their favourite river, creek or local waterhole. Just as our waterways connect land, towns and cities, they connect individuals and communities and enrich our storytelling and experience.

The Port Phillip and Westernport region contains a variety of waterways, from iconic rivers such as the Yarra, which meanders from forested ranges through countryside and city to the ocean; to local wetlands, such as the Edithvale-Seaford Wetlands, that provide a haven for a variety of animals and plants to breed and thrive.

Waterways are popular recreational destinations for residents and tourists, with around 90 million visits to our rivers and creeks each year. The region's waterways are highly valued for their ecological importance, and provide water for drinking, industry and agriculture as well as critical ecosystem services such as nutrient cycling.

Over the past decade, when much of Victoria was impacted by drought, many people were deeply affected by the loss of water in waterways and the aquatic life that depended on it. The breaking of the drought boosted water storages and triggered a welcome revival of our waterways.

The history of waterways includes a rich narrative of Indigenous and European culture, difficult lessons about the impact of urbanisation and the vulnerability of waterways, and the need to protect and improve them. Working with customers and stakeholders such as community groups, local government, rural landholders, government agencies, developers and individuals has helped us at Melbourne Water adapt our approach and develop a deeper understanding of waterways and what is required to care for them.

Our engagement with the community has highlighted how important waterways are to the people of the Port Phillip and Westernport region. The strong emphasis the community places on the importance of waterways to support environmental health and liveability is fundamental to the way Melbourne Water approaches waterway management. Our approach in this strategy is for a greater focus on investment in areas that provide value to the community and increase liveability, in addition to protecting and improving environmental values.

OUR VISION FOR HEALTHY WATERWAYS

The *Healthy Waterways Strategy* vision represents what we as a community value about our waterways and what we are working towards by implementing this strategy.

Healthy and valued waterways are integrated with the broader landscape and enhance life and liveability.

They:

- > Connect diverse and thriving communities of native plants and animals.
- > Provide amenity to urban and rural areas and engage communities with their environment.
- > Are managed sustainably to balance environmental, economic and social values.

1.2 Purpose and scope of the Healthy Waterways Strategy

The *Healthy Waterways Strategy* (HWS) outlines the role Melbourne Water will play, in partnership with the community, our customers and stakeholders, in managing rivers, estuaries and wetlands in the Port Phillip and Westernport region to ensure their value to the community is protected and improved (see Box 1.1: Defining waterways and Figure 1.1: Rivers, estuaries and wetlands in the landscape). The HWS identifies priority areas and management actions to improve waterway health from 2013/14–2017/18 and sets out targets to measure the effectiveness of these actions.

The HWS builds on the success of the 2005 Port Phillip and Westernport *Regional River Health Strategy* (RRHS) and 2008 *Addendum*. The RRHS and Addendum set out several implementation targets to improve the region's rivers and creeks. It takes many years to see a measurable change in waterway condition but with help from our partners, we achieved the RRHS targets and these will lead to long-term improvement in waterway health (see Section 1.5).

Melbourne Water is just one of many organisations, community groups and individuals working to care for our waterways. Everyone's involvement in improving waterway health and meeting targets is critical, because nobody can achieve this alone. We all have roles, responsibilities, resources and capabilities to put into action and share.

This is why the strategy has been developed with input from a broad cross-section of community, government, customers and stakeholders. It incorporates the shared learning we have collectively gained of waterway management needs; and provides a long-term vision for improving waterways.

This strategy outlines actions for which Melbourne Water has responsibility, while recognising the essential contribution of all stakeholders in protecting and improving waterways. With finite resources to improve waterway health, Melbourne Water has prioritised management activities based on catchment knowledge, experience, scientific and social research, consultation and expert advice. We also aim to balance environmental, social and economic values and short and long-term issues.



Figure 1.1 Rivers, estuaries and wetlands in the landscape

BOX 1.1 Defining waterways

The 2005 Port Phillip and Westernport *Regional River Health Strategy* provided strategic direction for the management of rivers; this *Healthy Waterways Strategy* guides the management of rivers, estuaries and wetlands. **Throughout this strategy, the term** *waterways* **refers collectively to rivers, estuaries and wetlands, which are further defined below.** The inclusion of estuaries and wetlands in the strategy provides a more holistic approach to waterway management.

River: This term refers to rivers, creeks and streams and their tributaries, and includes the bed, banks and streamside land. From a river management perspective, Melbourne Water's responsibility for waterway management includes all rivers and their tributaries in the Port Phillip and Westernport region (including waterways with catchments of less than 60ha which local government manages from a drainage perspective).

Wetland: A wetland is any area of land that is waterlogged or inundated with water – that may be standing or running and fresh to saline – with sufficient frequency and / or duration for the water to influence the plant and animal communities and ecological processes that occur there.

Estuary: The section of some coastal rivers and creeks where freshwater from the river meets the tidal inflow from the sea or bay, and where the freshwater and saltwater interact. For management under this strategy, an estuary must be at least 1km long or with a lagoon longer than 300m.





Riparian Forest Yarra Catchment.



Balcombe Estuary

Groundwater interacts with all of these waterway types, and ecosystems that rely on groundwater for all or some of their life cycle are called groundwater dependent ecosystems. Melbourne Water has a responsibility for managing groundwater dependant ecosystems and is investing in understanding their requirements (see Box 4.12: Managing groundwater dependant ecosystems).

1.3 Evolution of waterway management

Historically, waterways were managed to meet human needs, with a focus on providing safe and secure water supplies, flood mitigation and drainage services. Stormwater runoff from urban areas was conveyed directly to local rivers, creeks, estuaries or bays.

Over time, the community has recognised the importance of the environmental values that waterways support, along with the need to protect the values and services that waterways provide.

This broader understanding has led to a realisation that human impacts need to be managed if waterway health is to be maintained and improved.

Some waterways have sustained so much damage that they cannot be totally restored to their original condition; to aim for this would be an inefficient use of resources. However, many actions can be taken to greatly improve waterway health. In such cases, we aim to rehabilitate waterways and streamside land to a modified level that supports the uses and values of the community (See Box 1.2: What are we aiming to achieve in modified waterways).

BOX 1.2

What are we aiming to achieve in modified waterways – rehabilitation or restoration?

Waterway health management has evolved greatly over the past 50 years, from flood management and hydraulic conveyance, to stabilisation and productivity, to the more recent focus on restoration of waterways using our knowledge of pre-European conditions as the benchmark for our works.

But are we striving to 'restore' waterways and vegetation to this pre-European state, or 'rehabilitate' them to an improved condition? Studies have shown that attempts to restore waterways to a pre-European state can be costly and ineffective due to irreversible changes that have occurred in the landscape since European settlement. Such changes include the common occurrence of non-native invasive species, large-scale clearance of vegetation, and land use change and urbanisation. Climate variability compounds the impacts of these changes.

Instead of restoration to pre-European conditions, we aim to rehabilitate waterways to a level that enables them to support the community values that are appropriate at that site. In some cases, such as in forested headwaters, it is possible to improve waterways to a level close to pre-European settlement conditions. In other cases, such as more urbanised waterways, we strive for an improved but modified waterway, in keeping with the changed conditions and multiple values it supports. For example, some urban waterways may have simplified vegetation consisting of mown grass and scattered trees that supports recreation such as running, walking, cycling, games and picnics.



Lerderderg River: Some waterways are close to pre-European condition



Maribyrnong River: Modified waterways cannot be returned to a pre-European condition but support a variety of community values

1.4 Who Melbourne Water is and what we do

Melbourne Water is owned by the Victorian Government, with an independent Board of Directors. We manage Melbourne's water supply catchments, treat and supply bulk drinking and recycled water, remove and treat most of Melbourne's sewage and manage waterways and major drainage systems in the Port Phillip and Westernport region.

We are committed to understanding and listening to our customers and stakeholders and working with them to pool our knowledge and expertise to create waterway outcomes that benefit all.

The Port Phillip and Westernport region – Melbourne Water's operating area

The Port Phillip and Westernport region spans more than 12,800sqkm, with more than 24,000km of rivers, creeks and estuaries and a range of natural and constructed wetlands across the Werribee, Maribyrnong, Yarra, Dandenong and Westernport catchments (see Figure 1.2). The region extends from high up in the Yarra Ranges, across to Ballan in the west and from the Mornington Peninsula and Phillip Island to Lancefield in the north, as well as greater Melbourne. The region supports a population of about 4 million people – more than 80% of Victoria's population – with that number set to grow to more than 5 million by 2030.



Figure 1.2: The Port Phillip and Westernport region

Melbourne Water's role and responsibilities in managing waterways

Under the *Water Act 1989*, Melbourne Water is the designated caretaker of river health for the Port Phillip and Westernport region, and has responsibility for waterway management, major drainage systems and floodplain management and the management of the environmental water reserve. Melbourne Water therefore has responsibility for ensuring that the rivers, wetlands and estuaries within the Port Phillip and Westernport region are protected and improved on behalf of the community.

Melbourne Water has a dual role in the management of floodplains, which are low-lying stretches of land located beside waterways and subject to natural flooding. We provide services to minimise flooding and the impact of flooding on people and properties, but also recognise that floods can benefit waterways. Enhancing streamside and floodplain habitat is an important focus of our work, which includes activities such as creating refuges within floodplains for wetland species and planting vegetation corridors that connect habitat.

Waterways are dynamic and variable systems and a firm boundary for management responsibilities can be difficult to define. Melbourne Water is responsible for the bed and banks of waterways and shares responsibility for floodplains and wetlands with other organisations depending on land tenure. Where unclear, the boundary of this responsibility is negotiated case by case, with land tenure and stakeholder interests important considerations.

Melbourne Water and the Port Phillip and Westernport Catchment Management Authority (PPWCMA) have the same operating area and work together to protect and improve the region's rivers, estuaries and wetlands. The PPWCMA is responsible for the overall strategic management of natural resources and regional planning in the region through the development of the *Regional Catchment Strategy* (RCS). Waterways and wetlands are one of the asset classes considered by the RCS and the HWS will define the goals of the RCS in the area of waterway management.

Under the *Environment Protection Act 1970* and *State Environment Protection Policy, Waters of Victoria*, Melbourne Water has a role in managing water quality in individual waterways and protecting Port Phillip Bay and Western Port to protect and improve values.

As the waterway, drainage and floodplain authority for the Port Phillip and Westernport region, Melbourne Water is a statutory referral authority under the *Planning and Environment Act 1987* for planning applications that may affect waterways. This allows us to comment on applications and, if necessary, place conditions on planning permits to ensure that the drainage system continues to function properly and any new developments are adequately designed to protect people and property from floods and to protect the health of local waterways.

More generally, Melbourne Water has a responsibility to advocate for protection and improvement of waterway values and to work with other land managers to achieve good outcomes for waterways. For example, we work with local government and retail water businesses to maximise multiple benefits of waterways for environmental values, recreation and alternative water sources.

1.5 How this strategy fits with other strategic documents

The *Healthy Waterways Strategy* links with other strategies relevant to the Port Phillip and Westernport region and beyond (see list below). These include other Melbourne Water strategies, strategies prepared by the Port Phillip and Westernport Catchment Management Authority, the Department of Environment and Primary Industries DEPI (formally Department of Sustainability and Environment and Department of Primary Industries) and others. Although each strategy has its own discrete purpose and aim, there are linkages that the HWS recognises. Sometimes the linkages are based on scale, for example the regional HWS is influenced by the state-wide *Victorian Waterway Management Strategy*, and other times they are asset based, for example the linkages between strategies considering water supply *Melbourne's Water Future* which consider the goals of the HWS and the HWS which considers the requirements of water supply.

State and regional strategies

- Victorian Waterway Management Strategy outlines policy and strategic directions for management of waterways in Victoria, including principles reflected in the HWS
- Draft Port Phillip and Westernport Regional Catchment Strategy sets strategic direction to conserve ecological integrity and resilience across the region. Targets for the waterways and wetlands component of the RCS reflect those set in HWS and the HWS will contribute to RCS goals

- The Victorian Coastal Strategy (VCS) 2008 provides a comprehensive integrated management framework for the coast of Victoria. The HWS will help to implement VCS policy around estuaries
- A Cleaner Yarra River and Port Phillip Bay a taskforce with representatives from key government agencies and corporations, including Melbourne Water, was established by the Minister for Environment and Climate Change in March 2012 to develop an action plan for the Yarra River and Port Phillip Bay. The plan's aim to manage threats to water quality links with the Healthy Waterways Strategy, and will support healthy waterways
- Draft Melbourne's Water Future (MWF) Adopts an integrated or whole-of-water-cycle approach to the linked challenges of securing a safe and plentiful water supply, managing our stormwater runoff and wastewater discharge, reducing urban flooding, keeping our parks and gardens green and improving the health of our waterways. Melbourne's Water Future takes a whole-of-government approach that brings together and integrates the efforts and actions of government, local government, water authorities and the community. Protecting the environmental health of urban waterways and bays and supporting liveable and sustainable communities are key objectives of the plan, which the HWS will help us achieve.
- Central Region Sustainable Water Strategy (2006) (CRSWS) a plan to secure water supplies for homes, business, industry, agriculture and the environment for the next 50 years. The HWS will guide use of environmental water that has been allocated under the CRSWS
- State Environment Protection Policy (Waters of Victoria) and its schedules provide the statutory policy basis, benchmark objectives and targets for improving water quality, and nutrient, sediment and toxicant loads. Works undertaken through the HWS will contribute to meeting the objectives of this policy
- Seasonal watering plans (prepared annually) the major planning document developed by the Victorian Environment Water Holder (VEWH). The VEWH works with catchment management authorities and Melbourne Water to ensure environmental water entitlements are used to achieve the best environmental outcome with the water that is available.

Melbourne Water strategies

- Melbourne Water's Strategic Direction guides Melbourne Water's direction, and the HWS contributes strongly to the business priorities of environmental stewardship, integrated waterway management and service delivery
- Integrated Water Management Strategy (IWMS) articulates the role Melbourne Water plays in integrated water management and explains how multiple benefits and efficiencies can be gained by aligning the goals and activities of the HWS with other strategies for waterways, drainage, sewerage and drinking water. Protecting the environmental health of waterways and bays is a key objective of the IWMS
- Stormwater Strategy articulates how Melbourne Water will work with others to manage rural and urban runoff to provide multiple community outcomes: healthy waterways and bays, wellbeing and amenity, public safety and alternative water supply. Improved stormwater quality is vital to improving the health of waterways and key values identified in the HWS
- Development Planning and Developer Services Strategies consider how waterway corridors and the implementation of water sensitive urban design will be managed in creating new urban areas and redeveloping existing urban areas. Development along waterway corridors offers opportunities to contribute to the HWS vision
- Flood Management and Drainage Strategy considers how we manage floodplains and flood risk in the Port Phillip and Westernport region. Proposed activities in the HWS will not increase flood risk
- Cultural Heritage Strategy provides a framework to guide integration of cultural heritage management into business process across Melbourne Water. The strategy provides direction on cultural heritage management that will be implemented in delivering the HWS
- Waterways Communication and Engagement Strategy provides a framework for communication and engagement initiatives relating to drainage and waterways management. Communications and engagement with customers, stakeholders and the community involved in waterway management are reflected in the HWS.

1.6 Progress towards healthy waterways: Achievements from implementing the *Regional River Health Strategy and Addendum*

The *Regional River Health Strategy* (RRHS) and *Addendum* have guided investment in waterways across the region from 2005 until 1 July 2013, when this *Healthy Waterways Strategy* commences implementation. Achievements have been significant, ranging from large-scale willow removal and engineering projects to smaller revegetation and weed removal works that depend on the dedication of volunteers. The range of successful projects is considerable and is a credit to the passion and commitment to improving waterway health shown by organisations and individuals including local government, community groups and agency staff as well as Melbourne Water.

This work has been achieved during difficult times for much of the community of the Port Phillip and Westernport region, with devastating drought, fires and floods causing loss of life, income and damage to homes, property and natural assets. These circumstances have required an adaptive and flexible approach to enable changing priorities to be managed and opportunities to be taken when they arise (see Box 1.3: Adaptive management in response to extreme events).

Achievements in on-ground works

The RRHS and Addendum committed to undertake a range of activities that would lead to longer-term waterway condition improvements. These activities and on-ground works have played a vital role in improving the health of waterways.

We achieved and in some cases exceeded, our 2008–2013 implementation targets. Target achievement to June 2013 is presented in the table below.

Regional River Health Strategy Implementation Targets	Target	Achievement as at June 2013
Number of rivers with negotiated environmental flow regimes	12	15
Number of rivers with improvements made to environmental flow regimes	17	18
Area of streamside land under management agreements	10km ²	14km²
Length of streamside land revegetated	1026km	1092km
Number of fish barriers removed	31	34
Length of streamside land subject to weed management	2042km	5092km
Number of plans developed for rivers and creeks of high social value	15	63
Rivers where heritage values are protected or improved	34	34
Number of plans developed for rivers and creeks of high environmental value	11	49
Number of investigations to fill data gaps in rivers or creeks	55	55
Number of sites subject to bed and bank stabilisation	55	82
Number of IRC reaches with in-stream habitat reinstated	12	12

Our partners have made a significant contribution to achieving these targets and to the health of our waterways, for example:

- Volunteers and local government undertaking streamside improvement works achieve about 80km of revegetation and 200km of weed control per year, with support through Community Grants, Corridors of Green and the Stream Frontage Management Program.
- Community monitoring has increased our knowledge of waterways. For example, in 2009, a special project, Bushfire Waterwatch, monitored 53 sites in fire-affected areas and directly downstream of them, and in the 2011 Frog Census, more than 70 people monitored over 165 sites.
- More than 430 participants attended 11 river health seminars held in catchments across our region to share knowledge and experience.
- > We have built and registered 10,114 raingardens as part of the 10,000 Raingardens Program to reduce the impacts of pollutants on waterways.

Achievements in waterway condition improvement

The work required to meet these implementation targets is significant, with positive changes evident over time. However, there can be a time lag before the improvements in waterway health will be seen. Depending on the action and the scale at which it is undertaken, this can take anywhere from 12 months for the installation of a fishway to 25 to 50 years for the full environmental benefit of replacing vegetation along waterway corridors.

The RRHS set the target of achieving 50% of natural waterways in good or excellent condition by 2015 as measured by the Index of Stream Condition (ISC). The Department of Environment and Primary Industries (DEPI) is expected to release the statewide mid-term assessment of ISC, including results from our region, in late 2013, with future assessments measuring the outcome of the works undertaken. Given the significant impacts of the extended drought and fires over the past decade, it is unlikely that the full outcomes expected from the works will have been realised by 2015. Issues with establishing vegetation throughout the drought and the diversion of resources to rehabilitate fire-affected areas are likely to have slowed the establishment of vegetation, which forms a significant component of the ISC score. These external influences are likely to result in a lower ISC score across the region. Research and monitoring of the effect of our works locally has demonstrated the benefits of the activities we have undertaken to improve waterway health (see Figure 1.3).



Before works to remove willows and replace with native vegetation



One year after works

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Three year after works

Figure 1.3: Bass River works site. Vegetation cover has improved, however it will take much longer for other benefits, such as hollows in trees to form habitat for birds and possums, to be seen. ISC assessment for streamside zone at this site has improved from 3.6 to 4.09

BOX 1.3 Adaptive management in response to extreme events

During implementation of the RRHS, waterways have been affected by drought, fires and floods. Such events cannot be planned for in a strategy and their impacts may require priorities to be reconsidered.

The drought that gripped Victoria for more than a decade had ongoing impacts on waterway health. Rainfall was well below average for 10 years, with some areas receiving less than 20% of their average rainfall. Water levels in all types of waterways were severely depleted and animal and plant communities suffered loss.

In 2009, when the drought was at its peak, bushfires ravaged Victoria with the Yarra Ranges, Baw Baw, Nillumbik, Mitchell, Cardinia and Whittlesea areas most severely affected. In addition to devastating loss of life and property, waterway health was affected by the loss of nearby vegetation, increased sediment loads, erosion and reduced water quality. Habitat for birds, animals and fish was lost and monitoring programs for vulnerable species, such as frogs, were initiated to understand the impacts.

Significant rainfall in September 2010 and February 2011 improved Melbourne's water supply levels but some waterways, local residents and surrounding landscapes experienced flood inundation, structural damage and the deposition of debris.

These events occurred midway in the implementation of the five year RRHS, requiring Melbourne Water to reassess RRHS priorities in affected areas in line with an adaptive management approach.

Events such as these have influenced the way Melbourne Water engages with the community in fire and flood-affected areas and the delivery of our programs. One of the biggest management challenges for Melbourne Water employees and programs has been responding quickly and constructively to impacts on waterways and affected local communities as they continue to recover.

With response to these extreme events varying greatly across the catchment, monitoring to understand impacts has been critical and has enabled management to be more flexible to the needs of the environment and of the community. Melbourne Water's response to these extreme events is likely to continue for several years as catchments recover and the waterways continue to adapt to changed catchment conditions. The *Healthy Waterways Strategy* will ensure an adaptive approach continues so that the waterway health impacts of extreme events and climate variability can continue to be managed effectively into the future.



Sugarloaf Reservoir in drought

1.7 Financial investment

A significant amount of money has been invested in managing waterways across the region over the past 10 years, underpinned by clear strategic direction. In the Port Phillip and Westernport region, the majority of this investment is funded through an annual Waterways and Drainage charge paid by each household through their water bills.

With continued pressures on waterways such as urban growth, climatic variability and invasive plants and animals, as well as increasing community expectations of how waterways should be managed to contribute to the liveability of the region, it is vital to maintain public investment in waterway management programs. This strategy proposes total funding of \$111.5 million of capital expenditure and \$178 million of operating expenditure from 2013/14–2017/18 to secure and improve waterway values consistent with community expectations. Figure 1.4 outlines the expenditure per program over the life of the strategy. In addition to direct program costs, there is expenditure associated with labour, land tax and support services that is required to deliver the program. Funding for stormwater management is outlined in the *Stormwater Strategy*.

The Essential Service Commission (ESC) has approved a price path for a three year period (2013/14–2015/16). The dollars shown in the figure above are based on a five year period to align with the strategies that guide the Waterways and Drainage activities. Expenditure for years four and five (2016/17–2017/18) are indicative only at this time however, they are based on information in the ESC Final Determination. Final numbers for these two years will be determined at a later date as part of a future Water Plan.



Figure 1.4: Proposed financial investment by activity 2013/14–2017/18