

Improving the region's rivers and creeks

In protecting and improving the region's rivers and creeks, the main objectives are to:

- Achieve an improvement in river health so that by 2025 all natural rivers and creeks will in good or better condition
- Enhance opportunities for the community to enjoy their rivers and creeks
- Work collaboratively with the community and key stakeholders to protect and improve rivers and creeks.

As noted, the most significant risks to river health include changes in catchment land use; poor quality streamside vegetation; changes in flow; fish barriers; poor water quality; the uncontrolled access by farm livestock; invasion by weeds, and bed and bank erosion (see attached Resource CD for detailed description of risks to rivers and creeks).

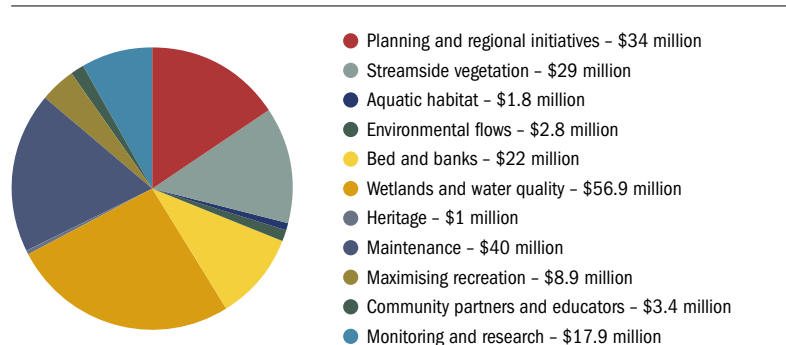
The challenge is to manage these risks so as to re-establish healthy rivers and creeks and help increase opportunities for community use and enjoyment. The broad priorities of the five-year program are:

- River health planning and regional initiatives
- Community engagement, partnerships and education
- Monitoring and investigations
- Improving river and creek vegetation
- Improving aquatic habitat
- Establishing and managing environmental flows
- Improving beds and banks
- Improving water quality
- Protecting heritage
- Maximising recreation opportunities.

Planning for the improvement and implementation of waterway works is undertaken at a range of different scales depending on the threats or issues being managed. For instance, planning for environmental flows is usually undertaken for a whole catchment and creates benefits for the rivers and creeks throughout that system. Revegetation, bed and bank erosion control and habitat improvement are usually planned and undertaken on specific targeted sections of the rivers and creeks.

A summary of the five-year program is provided in the following pages for each catchment. The program targets are described throughout this summary and shown in Appendix 5. The detailed five-year and long-term (20-year) program of broad actions and priorities are presented in the attached Resource CD.

Figure 6: Estimated five-year program costs



River health planning and regional initiatives

The Regional River Health Strategy sits under the Regional Catchment Strategy and alongside a number of other plans focused on natural resource management issues such as salinity, improving native vegetation and managing pest plants and pest animals.

It is vital that the delivery of these plans is undertaken in an integrated manner. Strong coordination between the relevant organisations involved will ensure effective implementation, the best outcomes and the best value for money.

In line with this, the prioritisation of actions and the timelines for implementing these plans and strategies are flexible so that integrated implementation can be achieved, opportunities can be capitalised on and emerging issues can be addressed.

This strategy has identified several key regional planning needs that are outlined in detail in section four of the Resource CD. The section below provides an overview of these regional planning needs.

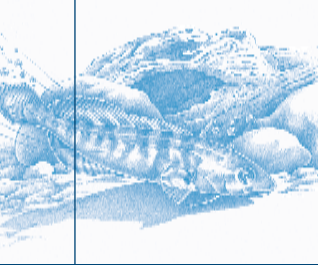
EPA Victoria and Melbourne Water, in partnership with Department of Environment and Heritage, are developing a “*Better Bays and Waterways*” – *water quality improvement plan for the Port Phillip and Westernport region*. The plan will integrate current water quality activity and knowledge with new ideas to create a water quality plan for our major bays, rivers, creeks and estuaries. A draft of the plan will be prepared by late 2008 and will assess risks to water quality, and set priorities and targets for improvement. The plan will integrate outcomes of six smaller projects including: institutionalising water sensitive design, beach monitoring, options to offset pollution against, agricultural and rural water management practices, a decision support system to simulate the benefits of behavioural and management changes and a new pollutant loads monitoring program.

The development of regional wetlands and estuarine management plans are a priority as is a flood and drainage strategy for the entire region.

Melbourne is expected to grow by up to 1 million people by 2030. Sound planning is an important factor in enabling the sustainable management of rivers in an urban environment. The *Melbourne 2030* sustainable growth plan has the aim of reducing major environmental pressures associated with urban growth and development within the catchments of Port Phillip Bay and Western Port. On the ground, council referrals to designated bodies are an important part of allowing regulation of works and activities affecting river health.

A review of the planning policies and controls on urban development for priority rivers including the Yarra and Maribyrnong rivers (see case study page 18) and Merri Creek are priority projects already underway.

More detailed plans and river health projects are needed to assist in implementing the broad programs and targets identified in this strategy. Waterway plans will be prepared for priority rivers and creeks. These plans are used to develop works programs for Melbourne Water and for other landowners, managers and community groups targeting individual reaches of waterways and identifying site-specific actions. These plans are developed in consultation with local government, government agencies and community groups.



Case Study

Review of Planning Policies and Controls for the Yarra and Maribyrnong Rivers

A review of the planning policies and controls on urban development for the Yarra and Maribyrnong Rivers was identified as a key priority of *Melbourne 2030*. The Department of Sustainability and Environment, relevant councils, Melbourne Water and Parks Victoria undertook a review of current regulatory and policy frameworks that oversee developments in both the Yarra and Maribyrnong River areas. The resulting reports provide detailed guidelines to aide development of water sensitive urban design as well as recommendations for an appropriate policy framework to assist in ensuring the future protection and enhancement of the rivers and their associated environments (www.dse.vic.gov.au).

The Maribyrnong River Vision and Design Guidelines Project also developed a long-term vision and series of objectives to guide the on-going preservation and enhancement activities for the Maribyrnong River valley. To this end the Department of Sustainability and Environment project team consulted widely with local councils, community groups and other associated organisations for over 18 months. A 3D model of the river valley was also produced to assist in the process of identifying the vision and goals for the river valley, and will be used to help to raise awareness and educate the local community about the vision and the conservation goals for the Maribyrnong River valley. The model will also be a valuable tool in the assessment of future development proposals.

Both reviews, and their outcomes, have met with considerable support from both the public and those agencies directly involved in the preservation and enhancement of these major rivers.

Community engagement, partnerships and education

The Port Phillip and Westernport region is home to more than 3.4 million people. The population of the region is diverse in terms of economic status, age, education, ethnic background and religion.

The communities of the region were involved in determining the strategy's priorities for rivers and creeks. A commitment to community and stakeholder engagement in the implementation of the strategy and its review, and any associated plans for implementation will remain a high priority.

Melbourne Water has reformed its Waterways Advisory Committee to include a wider representation of stakeholders within the region.

Under this, a local community and stakeholder engagement framework is being developed.

Community members, landholders and members of 'Friends of' and Landcare groups play a vital role in improving rivers and creeks. Many landowners have chosen to voluntarily commit to the preservation and enhancement of natural values on the land they own and manage.

These active groups and landowners provide a significant contribution towards meeting our river health targets. Authorities with a role in river health, including Melbourne Water, Parks Victoria, local government and the Port Phillip and Westernport CMA, offer grants and work closely with community members to assist them to plan and implement improvement works. In particular, Melbourne Water's Waterways Group will have frequent contact and consult with landholders and community groups in implementing the actions of this strategy.

Across the region, education programs are continuing to be developed and implemented to raise community awareness and understanding of the values of our rivers and creeks, the issues they face and the actions being implemented to protect and enhance these valuable assets.

Some 30,000 people, mainly from school and community groups, take part in Melbourne Waterwatch to assess the water quality of their local rivers and creeks. The Melbourne Water Frog Census is another popular education program in which volunteers monitor the distribution of frogs, an important indicator of river health (see Monitoring and Investigations).



Community tree planting day at Westmeadows.

The Port Phillip and Westernport region lies on the country of the Woiworung (Maribyrnong, Dandenong and Yarra), Boonerwung (Westernport) and Wathaurong (Werribee) people. Aboriginal communities have a vital role to play in developing and implementing river health programs. The Aboriginal cultural values and customary practices remain valid, even though there has been a loss of knowledge, a significant change in the natural geography and the desecration of many significant sites. Aboriginal knowledge and oral histories of stories associated with the rivers and creeks will be documented in a joint project between the Koorie Heritage Trust and Melbourne Water.

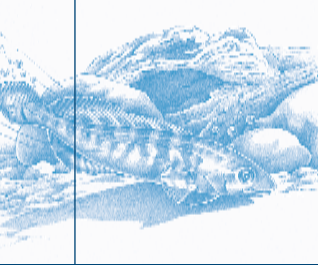
Monitoring and investigations

A comprehensive program of fixed site monitoring, waterway investigations, fish surveys and research projects provide information on the condition of rivers and creeks to help managers and the community develop and measure performance of river health programs.

Toxicants, nutrients, suspended solids, dissolved oxygen, *E. coli* and other water quality indicators are measured every month at 86 sites throughout the region a part of Melbourne Water's major monitoring program and the State Water Quality Monitoring Network. Monitoring results are compared against the State environment protection policy objectives (SEPP Waters of Victoria, schedule F7 Waters of the Yarra Catchment and Schedule F8 Waters of Westernport Catchment) to assess the health of rivers and creeks.

Regional priority investigations include but are not limited to:

- A program to track down key sources of faecal contamination in the Yarra River
- Investigating contaminant levels in fish in the lower Yarra and Maribyrnong rivers
- Assessing the use of other microbial indicators to predict recreational water quality
- Assessments to determine the risks to values associated with water quality not meeting State environment protection policy objectives
- Developing an index of river condition for urban rivers and creeks
- A program for monitoring flagship and threatened species monitoring
- A mosquito monitoring program
- Expansion of the water quality networks to provide greater coverage in the Maribyrnong and Werribee catchments and the Mornington Peninsula
- As part of the “*Better Bays and Waterways*” – *water quality improvement plan for the Port Phillip and Westernport region*, develop a revised water quality pollutant loads monitoring program.



Improving the region's rivers and creeks

An important part of the monitoring and research program is an ongoing partnership with eWater CRC (Cooperative Research Centre) and the Cooperative Research Centre for Australian Weed Management (also Department of Primary Industries Frankston) the Institute for Sustainable Water Resources (Monash University), and the Australian Platypus Conservatory. Projects range from stormwater modelling, improving stormwater treatment measures, understanding factors that control platypus distribution through to identifying introduced insects that may assist in willow management.

Market research covering the preferences, awareness and satisfaction of waterway users will continue to be undertaken to aid the targeting of waterways programs. Volunteers also provide valuable information on the condition of rivers and creeks. The Melbourne Waterwatch program and Melbourne Water Frog Census will also continue to provide important data on river health.

Everyone using rivers and creeks should have access to clear and accurate information about their condition. A comprehensive monitoring program is undertaken and assessment against State environment protection policy objectives is conducted annually. This information is available on Melbourne Water's website. The community will continue to have access to clear information on water quality starting through reports and websites including "Yarra Watch" (www.epa.vic.gov.au/YarraWatch) and the "Our Yarra" website" (www.melbournewater.com.au/ouryarra). See page 11 for more websites where water quality data and information can be obtained.

Improving river and creek vegetation

Changes in land use, vegetation removal, stock access and invasion of weeds can affect rivers and creeks by decreasing the quality and quantity of stream side vegetation. Improving this vegetation requires the protection of areas of remnant vegetation along rivers and creeks, removing introduced plants (such as willows), fencing to exclude livestock and replanting with native species that are local to the area (indigenous).

As part of this strategy, streamside revegetation is proposed for 1026 kilometres of rivers and creeks, while 1021 kilometres will be treated to control weeds. This will result in an improvement in the streamside zone Index of Stream Condition (ISC) sub index in 3000 kilometres of rivers and creeks.

These works will build on support for landowners through the Stream Frontage Program. This program helps rehabilitate degraded rural stream banks by providing funds to control weeds and vermin, fence out stock, and revegetate native plants. About 1900 grants totalling almost \$5 million dollars have been provided since this program began in 1996.

Werribee River.



Improving aquatic habitat

Barriers to fish passage in rivers and creeks are created by structures such as dams, weirs and road crossings. These structures hamper access to habitat and limit migrations of some species, especially native fish, which in turn hinders their breeding cycles. In addition to fish barriers, removal of snags, loss of habitat, land use change and poor water quality has a detrimental effect on plants and animals that live in our rivers and creeks. To protect and improve the number and range of plants and animals, it is planned to protect existing habitat, create habitat such as pools and small rapids, reintroduce large woody debris and vegetate the streamside zone.

The five-year plan involves the removal of 27 fish barriers and opening 1500 kilometres of rivers and creeks to fish movement. There will also be an improvement in habitat in eight IRC reaches and improvement in the IRC aquatic life index in about 3000 kilometres of rivers and creeks.

Establishing and managing environmental flows

The Water (Resource Management) Act 2005 establishes environmental water reserves to protect environmental flows in rivers and creeks across the State. Environmental water reserves legally protect a share of a river's water for the environment and other public benefits. An environmental water reserve can be held in reservoirs (in regulated rivers that have reservoirs) for release back to the river at crucial times, or protected as run-of-river flows that must occur before water extraction can occur (in unregulated rivers that don't have reservoirs). Environmental water reserves are established by undertaking scientific studies to establish the environmental flow needs of each river; investigating the implications of these recommendations on existing water users, and agreeing upon actions to implement the environmental water reserve over time.

In 2006, the Victorian Government released the *Central Region Sustainable Water Strategy* that recommends environmental water reserves for the Yarra, Werribee, Maribyrnong and Bunyip rivers. The draft Central Region Strategy covers the West Gippsland, Corangamite, Port Phillip and Westernport regions and includes Geelong, Ballarat, greater Melbourne and the Latrobe Valley. The strategy integrates the various water supply and environmental flow priorities across the region into a single, long-term strategy for the next 50 years.

Environmental water reserves in each river basin will be established in stream flow management plans for unregulated rivers, and in environmental entitlements for regulated rivers.

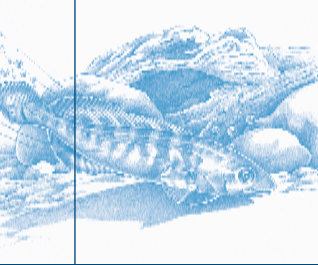
The Victorian Government proposes to delegate to Melbourne Water the responsibility of environmental water reserve manager. As a part of this responsibility, Melbourne Water will develop environmental operating strategies that identify target ecosystems to receive environmental water reserved in reservoirs.

Stream flow management plans and operating rules for diverting water from rivers and creeks are being negotiated by waterway managers, water users and environmental interests and these projects will continue as part of implementing this strategy. The aim is to better allocate the timing and volume of water diversions for consumptive uses in order to define a share of the water resource for the environment.

Stream flow management plans will set aside water volumes and timing of flows to benefit the environment without seriously affecting consumptive water users. However, some rivers and creeks are heavily committed. In these circumstances it may only be possible, during the term of this plan, to partially establish the recommended environmental flows, limit any further diversions or to create trading and operating rules that will gradually enhance flows.

Monitoring the impact of on-stream dams on flows is improving and dams are now linked to an irrigation licence. New off-stream dams will require a permit and will also consequently be monitored.

Environmental flow regimes will be negotiated for 13 rivers and creeks. An environmental entitlement will be established to create an environmental water reserve for the Yarra River, Werribee River and Coimadai Creek, Tarago River and Jacksons Creek. Stream flow management plans will be developed for the upper Maribyrnong, Olinda, Stringybark, Little Yarra, Woori Yallock and Steels, Pauls and Dixons creeks. Plans for stressed rivers and bulk water entitlements will also assist provision of environmental flows in the Lerderderg, Maribyrnong and Yarra rivers.



Improving beds and banks of rivers and creeks

Excessive bed and bank erosion is a problem in 14% of rivers and creeks. The five-year program will aim to halt erosion at 72 sites, which will result in an improvement in the IRC physical form sub index in about 3400 kilometres.

Many of our urban rivers and creeks have stable bed and banks because of channel modification such as concrete lining. Although stable, these rivers and creeks do not provide good habitat for aquatic plants and animals.

Improving bed and banks will be achieved through building artificial structures such as rock chutes to halt erosion and removing introduced plants and replanting with indigenous vegetation.

Improving water quality

Water quality is a key component of river health and poor water quality is a problem in many of the region's rivers. This limits the value of water for various uses, affects the range of plants and animals that can live within rivers and creeks and can change habitat, for example, by causing excessive growth of plants.

State environment protection policies (SEPP) specify the environmental quality objectives required to protect the uses and values of rivers and creeks in the Port Phillip and Westernport region. A *“Better Bays and Waterways” – water quality improvement plan for the Port Phillip and Westernport region* is being prepared. This plan will identify priority actions to address key risks to water quality and establish targets to measure progress towards State environment protection policy environmental quality objectives.

All activities that occur in a catchment affect water quality. Accordingly, a combined approach is required to achieve State protection policy objectives. To achieve an improvement in water quality, agencies must work in collaboration with each other on a range of integrated activities.

Water quality programs for rivers and creek in this strategy are based on the outcome of a high level risk based assessment (see section 2 of the Resource CD), the *Yarra River Action Plan*, the *Werribee Nutrient Management Strategy* and the *Port Phillip Bay Environmental Management Plan*. A more detailed *“Better Bays and Waterways” – water quality improvement plan for the Port Phillip and Westernport region* is being developed to specifically address water quality issues in bays and waterways. Water quality targets and priorities will be refined through the *“Better Bays and Waterways”*.

Programs to be implemented across the region over the five-year period of this plan include pollution prevention, sewerage system improvement, improved management of stormwater and septic tanks and improved land management practices.

The recently released *Yarra River Action Plan* features a package of projects for the Yarra catchment that build on the vast amount of work carried out by the community and organisation over many years. The action plan will deliver long-term improvement in the Yarra's water quality by:

- Improving stormwater quality in the lower Yarra
- Working with local government to increase capacity to implement better stormwater practice in the long-term
- Strengthening public education and awareness, recycling and the provision of litter traps
- Facilitating the implementation of best management practices in rural areas
- Facilitating improved management of septic tanks
- Constructing new sewers to cater for future growth and improving the capacity of existing sewers
- Replacing septic tanks with reticulated sewerage and
- Implementing a major program of eliminating key sources of faecal contamination.

Protecting heritage

The rivers and creeks of the region are rich in Aboriginal and European heritage. Aboriginal people have a strong social, cultural and spiritual connection to rivers and creeks and there are many Aboriginal and European sites of significance associated with rivers and creeks.

The strategy program includes improving knowledge by undertaking archaeological surveys, protecting listed sites and improving the health of rivers and creeks where there is a strong spiritual connection between the river and the Aboriginal communities. In this region, the five-year plan will involve protecting and enhancing heritage values in 28 rivers and creeks.

Maximising recreational opportunities

The region's rivers and creeks are a hub for recreation. Every year, more than 100 million recreational visits are made to our rivers and creeks and one in three Melburnians live within one kilometre of a river or creek. Our rivers are a playground for thousands of rowers, cyclists and walkers and support an extensive network of parklands, and bike and walking trails. In addition, recreational anglers enjoy fishing in many of the regions rivers and creeks.

The aim is to maximise opportunities for recreation while minimising the impact on the health of rivers and creeks. The program is based on Parks Victoria's "Linking People and Spaces" strategy (2002), and local government strategies.

Case Study

Estuaries – a unique environment

Estuaries are semi-enclosed bodies of water where saltwater from the sea mixes with freshwater draining from the land. They are also referred to as bays, inlets or river mouths and contain habitat such as mudflats, wetlands, mangroves, salt marshes and reed beds.

There are over 15 rivers that flow directly into Port Phillip Bay and Western Port. Our most iconic estuary in this region is the lower reaches of the Yarra River, which opens into Port Phillip Bay.

Estuaries are often the most popular and most heavily used part of rivers because of their high environmental, social and economic values. These include shipping and ports, recreational activities like swimming and fishing and access to coastal frontage. Estuaries support a unique variety of wildlife.

Our bay estuaries have all been modified by human use and require ongoing management to ensure that they are protected from the potentially detrimental impacts from increasing urbanisation, farming, fishing and modified stream flows.

Rivers connect catchments to the coast and therefore integrated management of estuaries at the whole of catchment scale is fundamental to their protection. Organisations with a responsibility for the protection and management of catchment and marine environments need to work together to ensure that estuary management and research is integrated. This includes, supporting research initiatives to understand drivers of estuary health and how these can be maintained by practical management.